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WINTER FISH INVESTIGATION  
OF SELECTED WATERCOURSES  
IN YUKON TERRITORY, 1977

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Foothills Pipe Lines (South Yukon) Ltd.

19770501-2

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OF SELECTED WATERCOURSES  
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ALASKA HIGHWAY  
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**Foothills Pipe Lines (South Yukon) Ltd.**

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WINTER FISH INVESTIGATION OF SELECTED  
WATERCOURSES IN YUKON TERRITORY, 1977

C6136A

*Prepared for:*

FOOTHILLS PIPE LINES (YUKON) LTD.  
CALGARY, ALBERTA

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## 1.0 SUMMARY

Watercourses along the proposed pipeline route which will be crossed during winter construction were investigated from March 16 to March 20, 1977. A total of 17 watercourses were investigated. Of these 17, six watercourses were judged to exhibit overwintering potential for fish fauna. These rivers will require further investigation during the winter of 1977-78 to determine the fish fauna present during the winter season, the physical location of overwintering areas, if any, and the relative abundance of the fauna present. A summary of the results of the winter investigation is presented in Table 1.

TABLE 1

SUMMARY OF WINTER WATERCOURSE OBSERVATIONS  
MILE 0 - 110 OF PROPOSED PIPELINE

<u>Watercourse</u>	<u>Location</u>	<u>Date (1977)</u>	<u>Characteristics</u>	<u>Overwintering Potential For Fish</u>
Snag Creek	Mile 8.9	March 16	Water flowing, open in places	good
Beaver Creek	Mile 15.8	March 16	Dry, no ice cover	nil
Enger Creek	Mile 18.4	March 17	Dry, ice cover	nil
Dry Creek	Mile 31.0	March 17	Dry, ice cover	nil
Sanpete Creek	Mile 36.8	March 17	Dry, no ice cover	nil
White River	Mile 44.0	March 17	Water flowing under ice	good
Koidern River	Miles 48.2 62.8	March 18	Water flowing, open in places	good
Long's Creek	Mile 57.7	March 18	Dry, no ice cover	nil
Wolf Creek	Mile 58.7	March 18	Water flowing under ice	
Edith Creek	Mile 67.6	March 19	Water flowing, open in places, nearly anoxic	poor
Grafe Creek	---	March 20	Anchor ice	nil
Donjek River	Mile 80.1	March 19	Water flowing, open in places	good
Swede Johnson Creek	Mile 92.8	March 20	Anchor ice	nil
Quill Creek	Mile 99.7	March 20	Dry, no ice cover	nil
Burwash Creek	Mile 105.9	March 20	Dry, no ice cover	nil
Duke River	Mile 110.2	March 20	Water flowing, open in places	good
Kluane River	---	March 20	Water flowing, open in places	good

## 2.0 INTRODUCTION

Foothills Pipe Lines (Yukon) Ltd. anticipates winter construction of approximately 110 mi of the proposed Alaska Highway pipeline in the Yukon Territory, from the Alaska-Yukon border to east of the Duke River. Sixteen rivers and streams would be traversed in this section of the pipeline. This study was designed to identify those watercourses capable of maintaining fish fauna during the winter months. This report is an interim presentation of the results and initial analysis of the data collected during this study.



### 3.0 TERMS OF REFERENCE

Reduced discharge rates and heavy ice cover of surface waters during the winter months force northern fishes to larger waterbodies, or severely restrict the movement of these fishes in rivers and streams. Those waterbodies which would be crossed during the winter construction phases (Table 1) were investigated to determine overwintering potential for fish in each, and evaluate their suitability for use by fall spawners and subsequent egg incubation. The capability for overwintering potential was based on such parameters as ice conditions, open water areas, winter flow rates and dissolved oxygen levels.

#### 4.0 METHODS

The investigation of these watercourses (Table 1) was carried out from March 15 to 21, 1977. The proposed stream or river crossings were located by helicopter. In general, these crossing locations were in the vicinity of the existing Haines-Alaska Military Pipeline right-of-way. Once located, the crossing site was examined for presence of open water, ice cover, or exposed streambed. If ice cover was encountered, holes were augered to ascertain whether water was present under the ice. If water was located, the flow rate was recorded with a Marsh-McBirney Model 201 electromagnetic water current meter, and discharge rate calculated by determining the mean depth. The dissolved oxygen content was measured with a YSI Model 54 oxygen meter, and checked occasionally with a Hach Model OX-2P dissolved oxygen kit. The pH was determined with a Kruger and Eckels Model 300 pH meter. Open waters were sampled for fish with a Smith-Root Model VII electrofisher, or by angling, where possible. The watercourse was then flown, approximately one mile upstream and downstream from the crossing site, to document groundwater intrusion and open water areas.

## 5.0 RESULTS AND DISCUSSION

The winter of 1976-77 was very mild in the Yukon Territory (S. Supina, Climatologist, Dept. of Environment pers comm), possibly causing more streamflow and open water than would be found during a normal winter. For the purpose of this investigation, this situation was desirable, as waterbody characteristics observed may be considered maximal for the winter season. Any watercourses which did not contain water under these conditions will definitely not possess overwintering habitat for fishes.

All data collected during this survey are presented in Appendix I for each watercourse examined, tabulating the characteristics of these watercourses on the date of the investigation. A description of the winter characteristics of these creeks and rivers follows in the text. The results of the investigation are summarized in Table 1.

### 5.1 Snag Creek (Mile 8.9) - March 16, 1977

Snag Creek was sampled at the site of the existing pipeline crossing. The creek was ice covered at this location. This region marks the origin of Snag Creek, which arises from the confluence of Mirror Creek and an unnamed creek. Mirror Creek was completely ice covered, whereas the unnamed creek, arising from a muskeg which parallels this watercourse on either side of the pipeline corridor, was open. Extensive open water areas were also observed 2,000 m below the existing pipeline crossing. This watercourse is composed of an intricate network of streams and muskegs in the vicinity of the existing and proposed pipeline crossings.

Ice cover at the existing pipeline crossing ranged from 0.9 to 1.3 m in thickness. The stream channel was restricted to the west half of the creek, the channel width being 9.75 m. The mean depth of water was 0.7 m, and the discharge rate 155.03 m<sup>3</sup>/min. The water had a dissolved oxygen content of 13.4 ppm and a pH of 7.8.

The open water area of the small unnamed creek was sampled by electrofishing, and one slimy sculpin (*Cottus cognatus*) was captured. Electrofishing and angling in the open water area downstream from the pipeline crossing did not produce any fish.

Snag Creek exhibits excellent overwintering habitat for fish fauna, and further winter sampling will be required to document if this habitat is utilized.

#### 5.2 Beaver Creek (Mile 15.8) - March 16, 1977

Beaver Creek was dry in the region of the proposed pipeline crossing, and no ice cover was present. This creek appears to have seasonal flow, carrying spring and summer run-off. The overwintering potential for fish is nil in this creek, and winter construction is desirable to avoid impacts on fish fauna.

#### 5.3 Enger Creek (Mile 18.4) - March 17, 1977

Enger Creek was flowing following freeze-up in the fall, as ice cover was observed on the creek. The winter investigation revealed an ice shelf, on the east side of the creek, which covered a dry creek bed. An air space of 10 cm was present between the ice cover and substrate. Late winter construction poses no problem to fish in this watercourse, as overwintering potential is nonexistent. This applies to both the proposed crossings of Enger Creek. Aerial reconnaissance indicated the major water source of Enger Creek to be run-off from Eikland Mountain, rather than Enger Lake.

#### 5.4 Dry Creek (Mile 31.0) - March 17, 1977

No water was found in Dry Creek in the vicinity of the existing pipeline corridor. There was water in the creek during freeze-up in the fall, as one metre of ice was found on the creek, which covered a dry streambed. There was an airspace of 0.6 m between the ice cover and creek substrate. Several beaver ponds were present below the existing pipeline corridor which had become dry subsequent to freeze-up, and the ice cover collapsed. Overwintering potential for fish in this vicinity of the watercourse is nil. Late winter construction would be desirable on this creek.

#### 5.5 Sanpete Creek (Mile 36.8) - March 17, 1977

Sanpete Creek exhibited neither water nor ice in the vicinity of the proposed pipeline crossing. Overwintering potential is nonexistent, and winter construction desirable. One tributary to Sanpete Creek, which is also crossed by the proposed pipeline, originates from a small lake 5 km east of the Sanpete Creek crossing. This creek possessed approximately 1.4 m of ice cover, due to groundwater intrusions. No flowing water was found under the ice cover, as there was an air space of 10 cm between the overflow ice and the stream substrate. Overwintering potential is nil, and winter construction poses no problem to fish during the winter season.

#### 5.6 White River (Mile 44.0) - March 17, 1977

The White River was investigated at the existing Water Survey of Canada Station No. 09CB001. The river channel during this season is located on the east side of the river bed, encompassing approximately one-third of the basin. Due to equipment failure, discharge rates could not be determined. Seasonal data for this watercourse are available from Environment Canada, Inland Waters Directorate.

At the time of sampling, the river ice was 1.2 m thick, with approximately 1 m of water flowing in the river channel. No open water was observed in this locality. The pH of the water was 7.6, with a dissolved oxygen content of 13.7 ppm. The White River exhibits very good overwintering potential for aquatic organisms, and further sampling is required to determine actual utilization by fish fauna.

#### 5.7 Koidern River (Mile 48.2) - March 18, 1977

The Koidern River was ice covered at the proposed crossing site. Ice thickness varied from 0.79 to 0.85 m. The river channel width was 21.34 m, with a mean water depth of 0.38 m. The discharge rate was calculated to be 35.7 m<sup>3</sup>/min. The dissolved oxygen content of the river water was found to be 6.3 ppm on the sampling date, and a pH of 7.4.

The Koidern River was found to be open approximately 1.6 km below the proposed crossing site, with open water observed from this point to the convergence of the Koidern and White Rivers. Extensive electrofishing resulted in the capture of two round whitefish (*Prosopium cylindraceum*) and a large number of slimy sculpins (*Cottus cognatus*). This river exhibits good overwintering potential for fishes, and further sampling is required to determine the entire fish fauna and the degree of utilization by this fauna.

#### 5.8 Long's Creek (Mile 57.7) - March 18, 1977

Long's Creek was visited at the proposed crossing site, approximately 250 m above the existing pipeline corridor. At this location, Long's Creek was dry and overgrown with grasses. It appears that this area of the creek is active only during spring and summer run-off. Winter construction poses no problems to fish overwintering.

#### 5.9 Wolf Creek (Mile 58.7) - March 18, 1977

Investigation of this site revealed ice cover ranging from 0.9 to 1.5 m, largely a result of a groundwater intrusion approximately 100 m above the proposed crossing location. The mean water depth under ice cover was 0.38 m, with a channel width of 11.28 m. The discharge rate was calculated to be  $9.84 \text{ m}^3/\text{min}$ . The water was observed to be yellow in color, with a pH of 7.1 and a dissolved oxygen content of 2.1 ppm.

The physical characteristics of the creek indicate very low overwintering potential for fishes. The creek is used as a spawning area by whitefish, according to local residents (Tom Bradley pers comm), and will therefore require further investigation, particularly during the fall spawning period of whitefish.

#### 5.10 Koidern River (Mile 62.8) - March 19, 1977

The Koidern River was completely ice covered at this proposed crossing site. The river was not investigated further, as the results of the reconnaissance of the Koidern near its convergence with the White River will be applicable to this section of the river. In summary, the Koidern exhibits good overwintering potential, and requires further investigation to determine the fish fauna present during this season, and the degree of utilization of this watercourse by this fauna.

#### 5.11 Edith Creek (Mile 67.6) - March 19, 1977

Edith Creek converges with Grafe Creek just below the proposed pipeline crossing location to form the Koidern River. Edith Creek was sampled 100 m above this crossing site, at an open water location.

This creek had a very strong sulphur odor. The pH of the water was found to be 7.3, and the dissolved oxygen content 0.6 ppm. The channel width was 2.74 m, with a mean depth of 0.12 m. The discharge rate was calculated to be  $4.59 \text{ m}^3/\text{min}$ . Due to the sulphur odor, and the very low dissolved oxygen content of the water, the overwintering potential for aquatic life in the region below this proposed crossing site was judged to be very poor. Winter construction should not be a threat to fish overwintering.

#### 5.12 Grafe Creek - March 20, 1977

Grafe Creek was investigated just above the point of convergence of Edith Creek, at the origin of the Koidern River. This creek is not actually traversed by the existing pipeline corridor, but its point of convergence with Edith Creek was very close to the existing pipeline corridor, and a substantial flow of water could have diluted the water from Edith Creek sufficiently to provide suitable fish habitat. Upon investigation, Grafe Creek was found to be completely frozen, containing 1 m of ice. A substantial amount of overflow ice was observed, which covered the banks of the creek and vegetation on either side. The overwintering potential of Grafe Creek is nil, and this creek should not improve the undesirable water quality of Edith Creek at this location.

#### 5.13 Donjek River (Mile 80.1) - March 19, 1977

The only channel of the Donjek River which possessed flowing waters at the time of investigation was on the far east side of the river bed. Large areas of groundwater intrusions were evident, but anchor ice (1+ m thick) was found in these channels. Trickles of water were observed flowing up through the ice on the western half of the Donjek River.

The flowing water on the eastern side of the river was restricted to a channel width of 23 m. The mean depth of the water in the channel was found to be 0.38 m, while ice thickness varied from 0.61 to 1.04 m. The discharge rate was calculated to be 62.2 m<sup>3</sup>/min. The water had a dissolved oxygen content of 10.0 ppm, and a pH of 7.6. This sampling was carried out at the bridge crossing, and open water was observed 150 m below this site. The open water channel was narrow, ranging from 0.6 to 1.5 m, containing waters varying in depth from 5 to 20 cm. Deeper waters were ice covered. Open water areas were examined visually for several hundred metres, and no fish were observed in the shallow waters.

The Donjek River exhibits favorable overwintering potential for fish fauna, particularly in deeper waters, and will require further sampling to establish the degree of utilization by fish.

#### 5.14 Swede Johnson Creek (Mile 92.8) - March 20, 1977

Anchor ice was present at the site of the proposed pipeline crossing of Swede Johnson Creek. Overflow ice was apparent, as the first 0.5 m consisted of ice shelves and air spaces. There were no groundwater intrusions

apparent, possibly obscured by new snow cover. The depth of ice was observed to be 1 m. Swede Johnson Creek may be crossed during the winter season with no detrimental affects on aquatic life, as overwintering does not occur in this vicinity of the creek.

#### 5.15 Quill Creek (Mile 99.7) - March 20, 1977

Quill Creek appears to be an intermittent spring and summer creek, as the creek bed was dry in the vicinity of the proposed pipeline crossing. No adverse affects on aquatic life are anticipated to result from winter construction, as there is no overwintering potential in this watercourse.

#### 5.16 Burwash Creek (Mile 105.9) - March 20, 1977

Burwash Creek appears to be a spring and summer run-off creek, as the creek bottom was exposed on the date of examination with no ice cover. Winter construction is desirable on such creeks, as no overwintering potential exists in them.

#### 5.17 Duke River (Mile 110.2) - March 20, 1977

The Duke River was investigated at the bridge crossing, 150 m above the proposed pipeline crossing. The river was narrow at this point with flowing water restricted to a channel on the west side. There appeared to be groundwater intrusions in this locality, as two very large holes in the ice were noted. The ice thickness was 1.1 m. The river channel was 5.9 m wide, with a mean water depth of 0.35 m and a discharge rate of 23.75 m<sup>3</sup>/min. The water had a pH value of 7.4, and a dissolved oxygen content of 8.0 ppm.

The Duke River exhibits good overwintering potential for fishes, and further sampling is required to determine the fish fauna present and degree of utilization during the winter season.

#### 5.18 Kluane River - March 20, 1977

The Kluane River will not be crossed by the proposed pipeline, but construction will take place in tributary rivers and creeks, close to their convergence with the Kluane. This is particularly important in terms of winter construction, as increased silt loads resulting from operations on rivers



and streams with winter flows will be deposited in the Kluane River. The potential for adverse affects on overwintering fish fauna exists in this region of the Kluane River. This will be applicable to areas in the vicinity of the convergence of the Duke and Donjek Rivers with the Kluane River.

No physical data were recorded from the Kluane River. An aerial reconnaissance revealed this river to be approximately 80 percent open at the outlet of Kluane Lake. The degree of ice cover gradually increased until the river was completely frozen over just downstream from the convergence with the Duke River. The Kluane River should be sampled during the winter season in an effort to determine the degree of utilization of these areas by overwintering fish fauna.

## 6.0 CONCLUSIONS

The majority of watercourses investigated in this survey did not exhibit overwintering potential for fish fauna. Of the seventeen rivers and streams surveyed, eleven were of this category with winter pipeline construction preferred. Five rivers (White, Koidern, Donjek, Duke and Kluane Rivers) and one creek (Snag Creek) were judged capable of supporting overwintering populations of fish, and additionally, appear suitable for overwinter egg incubation of fall spawning fish species. Further study is needed of these six watercourses to determine if actual fish overwintering occurs, and to assess the implications of winter pipeline construction. The data collected from this survey reduces the number of streams of potential concern to winter pipeline construction.

DATA SHEET

Watercourse: Snag Creek

Date: March 16, 1977

Location: Mile 8.9

---

Physical Characteristics

Water Temperature: 0.0 °C

pH: 7.8

Dissolved Oxygen: 13.4 ppm

Ice Cover: 0.9-1.3 m

Channel Width: 9.75 m

Mean Depth: 0.71 m

Flow Rate: 22.86 m/min

Discharge Rate: 155.03 m<sup>3</sup>/min

---

**Fish Fauna:**

Electrofishing - slimy sculpin (*Cottus cognatus*) - one

Angling - nothing

---

**Observations:**

Intricate network of creeks and muskeg areas, open water observed above and below existing pipeline crossing. Substrate varies from sand to gravel.

---

**Overwintering Potential:**

Good

---

DATA SHEET

Watercourse: Beaver Creek

Date: March 16, 1977

Location: Mile 15.8

---

Physical Characteristics

Water Temperature: °C

pH:

Dissolved Oxygen: ppm

Ice Cover: None m

Channel Width: m

Mean Depth: m

Flow Rate: m/min

Discharge Rate: m<sup>3</sup>/min

---

Fish Fauna:

None

---

Observations:

Creek bed dry, no ice cover.

---

Overwintering Potential:

None

---

DATA SHEET

Watercourse: Enger Creek

Date: March 16, 1977

Location: Mile 18.4

---

Physical Characteristics

Water Temperature: °C

pH:

Dissolved Oxygen: ppm

Ice Cover: 0.08 m

Channel Width: m

Mean Depth: m

Flow Rate: m/min

Discharge Rate: m<sup>3</sup>/min

---

**Fish Fauna:**

None

---

**Observations:**

Creek was flowing at freeze-up. Air space of 10 cm between ice cover and substrate.

---

**Overwintering Potential:**

None

---

DATA SHEET

Watercourse: Dry Creek

Date: March 17, 1977

Location: Mile 31.0

---

Physical Characteristics

Water Temperature: °C

pH:

Dissolved Oxygen: ppm

Ice Cover: 1.0 m

Channel Width: m

Mean Depth: m

Flow Rate: m/min

Discharge Rate: m<sup>3</sup>/min

---

Fish Fauna:

None

---

Observations:

Creek was flowing at freeze-up. Air space of 0.6 m between ice cover and substrate. Beaver ponds below crossing site dry, ice cover caved in.

---

Overwintering Potential:

None

---

DATA SHEET

Watercourse: Sanpete Creek

Date: March 17, 1977

Location: Mile 36.8

---

Physical Characteristics

Water Temperature: °C

pH:

Dissolved Oxygen: ppm

Ice Cover: None m

Channel Width: m

Mean Depth: m

Flow Rate: m/min

Discharge Rate: m<sup>3</sup>/min

---

Fish Fauna:

None

---

Observations:

Sanpete Creek dry, no ice cover. A tributary creek draining Moose Lake (not gazetted) exhibited 1.4 m of ice, from groundwater intrusions, but no water in creek bed.

---

Overwintering Potential:

None

---

## DATA SHEET

Watercourse: White River

Date: March 17, 1977

Location: Mile 44.0

---

### Physical Characteristics

Water Temperature: 0.0 °C

pH: 7.6

Dissolved Oxygen: 13.7 ppm

Ice Cover: 1.2 m

Channel Width: m

Mean Depth: m

Flow Rate: m/min

Discharge Rate: m<sup>3</sup>/min

---

### Fish Fauna:

Unknown

---

### Observations:

River channel on east side of basin. No data on discharges due to equipment failure. Data available from Water Survey of Canada. No open water observed.

---

### Overwintering Potential:

Good

---



### DATA SHEET

Watercourse: Koidern River

Date: March 18, 1977

Location: Mile 48.2

---

#### Physical Characteristics

Water Temperature:	0.0 °C	pH:	7.4
Dissolved Oxygen:	6.3 ppm		
Ice Cover:	0.79-0.85 m		
Channel Width:	21.34 m	Mean Depth:	0.38 m
Flow Rate:	4.61 m/min	Discharge Rate:	35.70 m <sup>3</sup> /min

---

#### Fish Fauna:

Electrofishing - round whitefish (*Prosopium cylindraceum*) - two  
- slimy sculpin (*Cottus cognatus*) - many

---

#### Observations:

Complete ice cover at proposed crossing site. Open water 1.6 km below this location, to convergence with White River. Up to 80 percent cover of substrate by filamentous green algae in some open water areas. Substrate varies from sand to cobble.

---

#### Overwintering Potential:

Good

---

DATA SHEET

Watercourse: Long's Creek

Date: March 18, 1977

Location: Mile 57.7

---

Physical Characteristics

Water Temperature:

°C

pH:

Dissolved Oxygen:

ppm

Ice Cover:

None

m

Channel Width:

m

Mean Depth:

m

Flow Rate:

m/min

Discharge Rate:

m<sup>3</sup>/min

---

Fish Fauna:

None

---

Observations:

Creek dry, substrate overgrown with grasses. Spring run-off creek only.

---

Overwintering Potential:

None

---

DATA SHEET

Watercourse: Wolf Creek

Date: March 18, 1977

Location: Mile 58.7

---

Physical Characteristics

Water Temperature: 0.0 °C

pH: 7.1

Dissolved Oxygen: 2.1 ppm

Ice Cover: 0.9-1.5 m

Channel Width: 11.28 m

Mean Depth: 0.38 m

Flow Rate: 2.19 m/min

Discharge Rate: 9.84 m<sup>3</sup>/min

---

**Fish Fauna:**

Unknown

---

**Observations:**

Yellow coloured water. Groundwater intrusion 100 m above crossing site, overflow ice very thick. Sampled below convergence with tributary of Long's Creek. No open water.

---

**Overwintering Potential:**

Appears to be minimal. Tom Bradley (White River Lodge) stated this stream is used by fall-spawning whitefish.

---

### DATA SHEET

Watercourse: Koidern River

Date: March 19, 1977

Location: Mile 62.8

---

#### Physical Characteristics

Water Temperature:	°C	pH:	
Dissolved Oxygen:	ppm		
Ice Cover:	m		
Channel Width:	m	Mean Depth:	m
Flow Rate:	m/min	Discharge Rate:	m <sup>3</sup> /min

---

#### Fish Fauna:

Unknown

---

#### Observations:

This is the second proposed pipeline crossing location of the Koidern River. Observations at proposed crossing of pipeline at Mile 48 will be applicable. No open water in this area of the river.

---

#### Overwintering Potential:

Good

---

## DATA SHEET

Watercourse: Edith Creek

Date: March 19, 1977

Location: Mile 67.6

---

### Physical Characteristics

Water Temperature:	0.0 °C	pH:	7.3
Dissolved Oxygen:	0.6 ppm		
Ice Cover:	0.0 m		
Channel Width:	2.74 m	Mean Depth:	0.12 m
Flow Rate:	13.72 m/min	Discharge Rate:	4.59 m <sup>3</sup> /min

---

### Fish Fauna:

Unknown

---

### Observations:

Sulphur odor strong. This creek converges with Grafe Creek just below existing pipeline corridor to form the Koidern River. Substrate gravel, covered with black algae.

---

### Overwintering Potential:

Poor, due to low dissolved oxygen content and suspected high concentration of sulphur in the water.

---

### DATA SHEET

Watercourse: Grafe Creek

Date: March 20, 1977

Location: Near Mile 68

---

#### Physical Characteristics

Water Temperature: °C

pH:

Dissolved Oxygen: ppm

Ice Cover: 1.0 m

Channel Width: m

Mean Depth: m

Flow Rate: m/min

Discharge Rate: m<sup>3</sup>/min

---

#### Fish Fauna:

None

---

#### Observations:

Creek frozen to substrate. Good deal of overflow ice, which covers creek banks and vegetation.

---

#### Overwintering Potential:

None

---

## DATA SHEET

Watercourse: Donjek River

Date: March 19, 1977

Location: Mile 80.1

---

### Physical Characteristics

Water Temperature: 0.0 °C

pH: 7.6

Dissolved Oxygen: 10.0 ppm

Ice Cover: 0.61-1.04 m

Channel Width: 23.16 m

Mean Depth: 0.38 m

Flow Rate: 6.73 m<sup>3</sup>/min

Discharge Rate: 62.18 m<sup>3</sup>/min

---

### Fish Fauna:

Unknown. Open water areas examined visually, very shallow riffles, deeper water ice covered.

---

### Observations:

Moving water restricted to channel on east side of basin, which was completely ice covered at sampling location (bridge). Open water present 150 m below bridge. Overflow water and ice on western side of river basin. Some areas of filamentous green algae in open waters.

---

### Overwintering Potential:

Good

---

## DATA SHEET

Watercourse: Swede Johnson Creek

Date: March 20, 1977

Location: Mile 92.8

---

### Physical Characteristics

Water Temperature: °C

pH:

Dissolved Oxygen: ppm

Ice Cover: 1.0 m

Channel Width: m

Mean Depth: m

Flow Rate: m/min

Discharge Rate: m<sup>3</sup>/min

---

### Fish Fauna:

None

---

### Observations:

Anchor ice present. Overflow ice obvious, as top 0.5 m of ice consisted of ice shelves and air spaces. No groundwater intrusions observed, but these were probably covered by the fresh snow.

---

### Overwintering Potential:

None

---



### DATA SHEET

Watercourse: Quill Creek

Date: March 20, 1977

Location: Mile 99.7

---

#### Physical Characteristics

Water Temperature: °C

pH:

Dissolved Oxygen: ppm

Ice Cover: None m

Channel Width: m

Mean Depth: m

Flow Rate: m/min

Discharge Rate: m<sup>3</sup>/min

---

#### Fish Fauna:

None

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#### Observations:

Creek bed dry, no ice cover. Appears to be spring and summer run-off stream.

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#### Overwintering Potential:

None

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DATA SHEET

Watercourse: Burwash Creek

Date: March 20, 1977

Location: Mile 105.9

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Physical Characteristics

Water Temperature: °C

pH:

Dissolved Oxygen: ppm

Ice Cover: None m

Channel Width: m

Mean Depth: m

Flow Rate: m/min

Discharge Rate: m<sup>3</sup>/min

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Fish Fauna:

None

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Observations:

Creek bed dry, no ice cover. Apparently this creek functions as a spring and summer run-off creek only.

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Overwintering Potential:

None

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## DATA SHEET

Watercourse: Duke River

Date: March 20, 1977

Location: Mile 110.2

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### Physical Characteristics

Water Temperature: 0.0 °C

pH: 7.4

Dissolved Oxygen: 8.0 ppm

Ice Cover: 0.0-1.1 m

Channel Width: 5.91 m

Mean Depth: 0.35 m

Flow Rate: 21.03 m<sup>3</sup>/min

Discharge Rate: 23.75 m<sup>3</sup>/min

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### Fish Fauna:

Unknown

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### Observations:

Groundwater intrusions had caused two large holes in 1.1 m of ice cover. River channel restricted to west side of basin. Sampling carried out at bridge, in largest ice-hole.

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### Overwintering Potential:

Good

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## DATA SHEET

Watercourse: Kluane River

Date: March 20, 1977

Location: Parallels Miles 90-110

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### Physical Characteristics

Water Temperature: °C

pH:

Dissolved Oxygen: ppm

Ice Cover: m

Channel Width: m

Mean Depth: m

Flow Rate: m/min

Discharge Rate: m<sup>3</sup>/min

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### Fish Fauna:

Unknown

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### Observations:

Aerial reconnaissance of river. About 80 percent open at outlet of Kluane Lake. Ice cover gradually increased until river completely ice covered just below convergence with Duke River.

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### Overwintering Potential:

Good

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