LGL

Ecological Research Associates

# SUMMARY REPORT
## VOLUME I OF 2

FISHERIES RESOURCES ALONG THE ALASKAN GAS PIPELINE ROUTE (PRUDHOE BAY TO THE YUKON TERRITORY) PROPOSED BY NORTHWEST ALASKAN PIPELINE COMPANY

TO: FLUOR NORTHWEST, INC.
701 DOUGLAS AVE.
FAIRBANKS, ALASKA 99706
CONTRACT NUMBER 478085-9-K123

FOR: NORTHWEST ALASKAN PIPELINE COMPANY
FAIRBANKS, ALASKA 99701



OCTOBER 1981

ERRATA SHEET

for

Fisheries Resources along the Alaskan Gas Pipeline Route (Prudhoe Bay to the Yukon Territory) Proposed by Northwest Alaskan Pipeline Company.

Please note the following corrections:

Page x

Unnamed Creek NPSI 3-166 - should read 3-116
Unnamed Creek NPSI 3-155 - should read 3-115

Page 44; Line 3

RAPS should read TAPS

Page 162 Stump Creek

LT should be added to fish species

Page 171 Tanana Overflow

AHMP should read 1305.6

Page 175 Iowa Creek

NPSI should read 4-140.09

Page 208 Unnamed Creek, paragraph 1, lines 2-4 should read

"Fishing efforts have been performed near the crossing; however no fish have been caught above the highway."

Reference 2 should be removed from the summer references and added to the spring references.

Page 313 Potlatch Creek

USGS Map reference should read Fairbanks.

Page 323 Gilmore Creek

Township should read 2N

Page 330 Unnamed Tributary to Shocker Creek

NPSI should read 4-137.06

Page 351 Shorty Creek

Section should read 8

Page 370, paragraph 1, line 4

Dpeth should read depth.

Page 377 Unnamed Creek

Range should read 11W

Page 413 Unnamed Creek

Section should read 30

Page 496, paragraph 2, line 5

Deitrich should read Dietrich.

Page 515 Dietrich River Floodplain

NPSI should read 2-29.03

Page 520 West Branch of North Fork of Chandalar River

NPRX should read 031-3
NPSI should read 2-28

Page 565 Stump Creek

LT should be added to summer species list.

Page 577 Unnamed Creek

Map reference should read Sagavanirktok

Page 584 Pescado Creek

Map reference should read Sagavanirktok

Page 585 Unnamed Lake

Map reference should read Sagavanirktok

# FISHERIES RESOURCES ALONG THE ALASKAN GAS PIPELINE ROUTE (PRUDHOE BAY TO THE YUKON TERRITORY) PROPOSED BY NORTHWEST ALASKAN PIPELINE COMPANY

Final Report

Prepared for and Funded by
Northwest Alaskan Pipeline Company

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# FOREWARD

Northwest Alaskan Pipeline Company, through Fluor Northwest, Inc., has sponsored a number of investigations to delineate fish distributions along the proposed gasline route from Prudhoe Bay to the Alaska/Yukon Border and to identify critical fish habitats and activities. Fish use of many streams is highly seasonal, therefore, seasonal studies are necessary to document changing patterns of fish distribution. To date, Northwest Alaskan Pipeline Company has sponsored many fisheries investigations along the proposed pipeline route including late winter (Ref. 55), spring (Ref. 54 and 121), fall (Ref. 57 and 122) and early winter (Ref. 77).

A summary document was prepared in June 1980 (Ref. 118) that contained all historical and recent information concerning fish use of 492 waterbodies that could potentially be affected by pipeline activities. The importance of each waterbody to fish was assessed, data gaps were identified and recommendations for timing of pipeline construction were provided.

The present document is the second summarization of knowledge concerning fish along the proposed pipeline. It was made necessary primarily due to recent alterations in the route of the proposed pipeline and newly acquired fisheries data. With these changes, new waterbodies that could potentially be affected were encountered along the route and others were no longer pertinent. Results of 1980 fisheries investigations along the new route are incorporated in the present summary.

Many of the most important activities or phases in the life cycles of fish are difficult to document in space, time and even importance. Except in broad terms, fish populations in interior Alaska are largely undefined in terms of numbers, distribution and movements. In most cases, it is therefore not possible to assess the importance of a particular number of individuals or a particular spawning bed or an overwintering area to an entire population. Important activities often occur during periods when weather or hydrologic conditions are severe, and intense efforts are required to document that the activity takes place at a particular time and location.

To date, few intense studies have been performed on waterbodies along the proposed pipeline route. The relatively large number of surveys that have been performed provide a good base of knowledge concerning the distribution of fish species along the proposed pipeline. Except for a number of small streams, fish species composition in particular waterbodies is also reasonably well known. Information on potential overwintering areas is also reasonably good if presence or absence of free water is used as a criteria and the nature and size (e.g., spring-fed, large flow due to precipitation, etc.) of the stream are considered.

The present report contains recommendations concerning timing of pipeline construction and descriptions of the importance of each waterbody to fish. When faced with lack of information our approach has been biologically conservative, that is, recommendations are likely stringent and the importance of waterbodies or particular sections of streams to fish may be overestimated. For example, many streams are identified as being used for spawning on the basis of presence of young-of-the-year fish. Many of these individuals could have originated in spawning areas many kilometers away from the proposed crossing. Similarly, many streams have been identified as important spring and fall migration routes. Actual migrations have not been documented, but we have assumed that migrations must take place since fish are present in the open water period and overwintering habitat is thought or documented to be absent.

We have also been critical in that unsubstantiated reports of fish in streams have not been included. Vague references are normally discussed in written assessments but are not presented as documentation. A few streams remain totally unstudied and many seasonal data gaps remain. In these cases we again discuss species that could be present during unstudied portions of the year in the written assessments, but do not include these assumptions as documentation. A firm distinction is thus maintained between hard data and biological judgement.

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## ABSTRACT

The natural gas pipeline proposed by Northwest Alaskan Pipeline Co. traverses hundreds of waterbodies in the Yukon River and Beaufort Sea drainges. This report is a comprehensive summary of all available fish use information including reports, unpublished documents, agency memoranda, and personal communications for each water course involved and is designed to facilitate information access and retrieval for fishery resources documented along the proposed gas pipeline route. This report presents: (1) biological accounts of fish species occurring along the proposed pipeline route; (2) a tabular summary of fish use and recommended timing for pipeline construction activities at individual crossings; (3) a provisional list of 388 waterbodies crossed or potentially affected by the gas pipeline with an updated evaluation of seasonal fisheries data for each; and (4) a concise assessment of all pertinent fisheries data for each waterbody summarized on a seasonal basis.

# PART I

# HISTORICAL BACKGROUND AND BIOLOGICAL CONSIDERATIONS

# INTRODUCTION

Northwest Alaskan Pipeline Company proposes to construct the Alaskan segment of a buried pipeline which would transport chilled natural gas from the arctic to southern markets. The proposed routing of the Northwest Alaskan Pipeline parallels (with minor variations) the Alyeska Oil Pipeline from Prudhoe Bay to a point just north of Fairbanks. From here the route is directed southeastward toward Delta Junction, where it then parallels the Alaska Highway to the Alaska/Yukon Territory border.

On January 9, 1981, LGL Alaska Research Associates, Inc. (LGL) was awarded a contract by and through Fluor Northwest, Inc., funded by Northwest Alaskan Pipeline Company, to identify the waterbodies crossed or potentially affected by the gas pipeline project and to assess and summarize fish use of these waterbodies on the basis of all historical data and the results of 1980 investigations. The latter results were published in a separate seasonal report (Ref. 122). Information for the present report was assimilated from a variety of sources including published government and consultant reports, and from the Joint Fish and Wildlife Advisory Team (JFWAT) files in Anchorage. Agencies consulted included: State Pipeline Coordinator's Office, Alaska Department of Fish and Game (Habitat and Sport Divisions) and U.S. Fish and Wildlife (Stream Alteration Division).

# STUDY AREA

The study area addressed in this report extends along the proposed gas pipeline route from Prudhoe Bay to the Alaska/Yukon Territory border (Figs. 1 and 2). For descriptive purposes, the route has been separated into two distinct regions: the northern segment and the southern segment.

The northern segment is aligned closely with the Trans-Alaskan Pipeline System (TAPS) oil line and work pad and extends from Prudhoe Bay to Delta Junction with a bypass east of Fairbanks. Between Prudhoe Bay and Atigun Pass, a distance of approximately 275 km, the proposed route crosses the arctic coastal plain before traversing the northern foothills of the Brooks Range. Within this area, the proposed gas pipeline alignment parallels the Sagavanirktok River and crosses many of its tributaries. Larger streams like the Sagavanirktok characteristically are fast flowing, clear, and have wide, extensively braided, gravel floodplains. They support resident and anadromous fish at different times of year and are often used for overwintering. Smaller streams along this section are usually narrow, single channel drainages with stained water and support fewer species of fish than larger streams. These drainages usually freeze to the bottom in winter. Surrounding vegetative types include willow, dwarf birch and tundra flora.

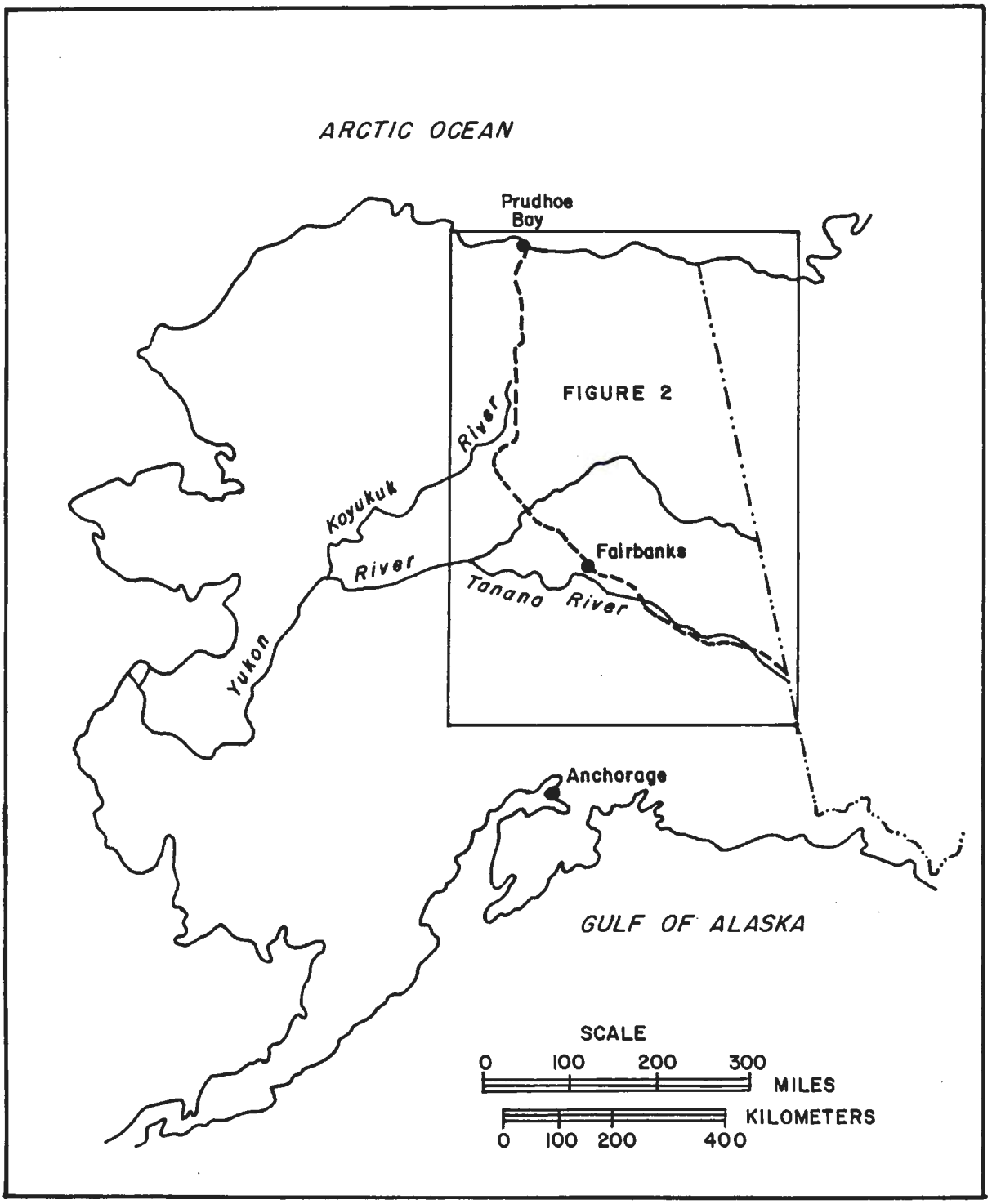


Figure 1. Location of the proposed Northwest Alaskan Gas Pipeline in Alaska.

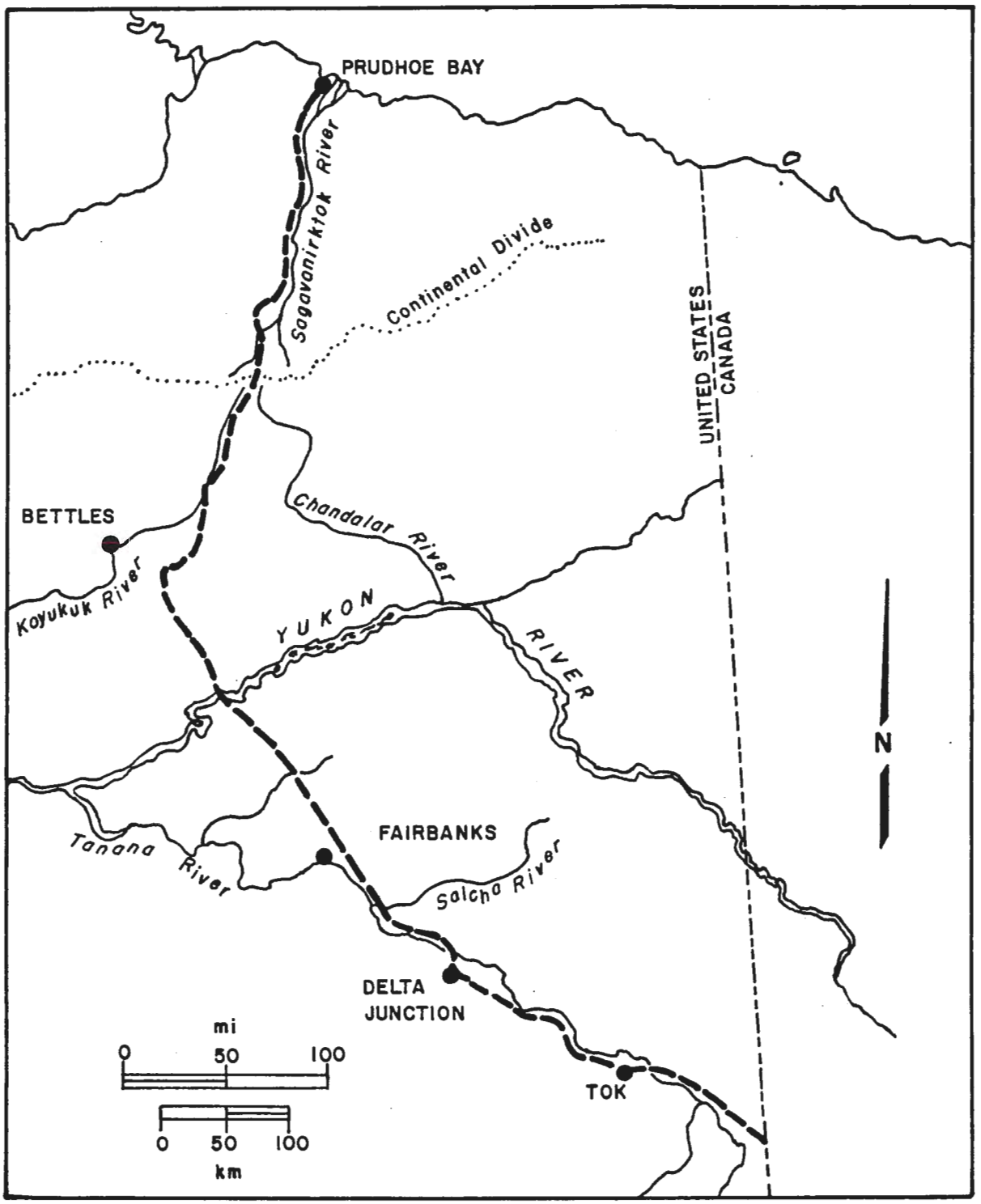


Figure 2. Route of the proposed Northwest Alaskan Gas Pipeline from Prudhoe Bay to the Alaska/Yukon Territory border.

South of Atigun Pass, the route continues through the Brooks Range where it crosses the Dietrich and Upper Koyukuk drainages. Most streams within the first 130 km south of Atigun Pass are wide, braided and fast flowing throughout the summer. Floodplains are gravel and usually without meanders. Vegetative cover in this region changes from white spruce, lichens and dwarf willows in mountainous areas, to black spruce and birch, intermixed with tundra and muskeg in lower elevations.

Approximately 130 km south of Atigun Pass, the proposed gas pipeline route enters the Yukon River drainage where most streams are slow flowing with many meanders. Although some of the larger streams are clear, most are stained brown with tannins and lignins leached from muskeg areas. Many of the larger streams, like the Koyukuk and Jim River, support overwintering fish and provide habitat for fall spawning salmon. Although most small streams do not provide overwintering habitat, they are used by juvenile and young-of-the-year fish during summer. Black spruce and willow are predominant in tundra areas, while large spruce and birch vegetate river bottoms.

From the Yukon River crossing, the proposed gas pipeline parallels the TAPS oil pipeline through the White Mountains. North of Fairbanks the northern segment is routed southeastward toward Delta Junction.

The southern segment of the study area begins near Delta Junction where the proposed gas pipeline route diverges from the Trans-Alaska Oil Pipeline. Throughout most of the 313 km between Delta and the Yukon border, the route is within the broad, flat Tanana River Valley or in the northern foothills of the Alaska Range. This routing passes through alternating tundra or muskeg and mature stands of spruce, birch and willow.

Within the first 100 km east of Delta Junction, the proposed pipeline route crosses four major rivers: The Little Gerstle, Gerstle, Johnson and Robertson rivers. These are glacial rivers that are highly turbid and have extensively braided floodplains. Most other drainages crossed in this area are small tundra streams which are used by fish during summer but often freeze solid during winter.

The current alignment leaves the foothills of the northern Alaska Range near Tok, Alaska, and borders the Tetlin Flats. This is a wet muskeg area characterized by an abundance of lakes, ponds and small streams. During ice free months, many lakes and most small streams are used by waterfowl and fish. During winter, smaller waterbodies freeze solid and do not provide overwintering habitat. Larger streams on the

southern section, like the Tanana and Chisana rivers, become clear in early winter and provide overwintering habitat. From Tetlin Flats, the proposed gas pipeline alignment continues east through the Upper Tanana River drainage basin to the eastern boundary of the study area -- the Alaska/Yukon Territory border.

## PATTERNS OF FISH MOVEMENTS AND STREAM USEAGE

Following breakup, fish are normally found in three general types of streams along the proposed pipeline route: (1) small beaded tundra streams, (2) large-size creeks, and (3) large rivers. The small beaded tundra streams (e.g. Lori Creek and Toolik River) are usually frozen solid during winter and break up between late March and early June. These streams vary from 0.5-1.5 m in width and seldom exceed 1 m in depth. Substrates are variable but contain gravel, sand, silt and detritus. Although the water is usually clear, it is frequently stained from tannins and lignins leached from surrounding vegetation. Stream banks are often 0.5-1.5 m in height, undercut and vegetated with willow and birch.

Within the proposed gasline corridor, small beaded tundra streams are used primarily by grayling, but round whitefish and/or char may occasionally be present depending on the geographical location of the stream. Adult grayling may move into these streams at spring breakup, spawn and then move some distance back downstream. During the egg incubation period (early May to early July) juvenile grayling, juvenile whitefish and/or juvenile char may also move upstream into these areas. After the grayling eggs have hatched in late June to early July, emergent fry remain in the general vicinity until freeze-up. As fall approaches and water temperature drops, all fish begin moving downstream to overwintering areas. Small beaded tundra streams generally do not provide spawning habitat for fall spawning species.

The large creeks (e.g., Prospect Creek, Moose Creek or Beaver Creek) are usually 5-10 m in width, with stained or clear water and a substrate consisting primarily of gravel and sand. Banks, 0-2 m in height, are seldom incised. These drainages typically exhibit alternating stretches of deep, slow-moving water and shallow, rapid riffles. Some pools, especially in lower reaches, may be deep enough to provide overwintering habitat.

Within the proposed gasline corridor, medium-sized streams receive more intense use by fish than do the small beaded tundra streams. Excluding overwintering, these drainages generally serve as major spring and fall migration routes for many species. Some, especially those with perennial spring sources, may be used for spawning by spring and fall spawning species. Young-of-the-year of fall spawning species (primarily

whitefish and char) and eggs of spring spawning species (primarily grayling, northern pike, longnose sucker and slimy sculpin) may be present during spring. By late June or early July, fry of spring spawners have emerged and may remain in the vicinity until freeze-up. Many streams are used intensively as nursery areas throughout the open water season by juvenile grayling, whitefish, sculpin, pike, chub, char and others. Adult fish of several species are commonly present throughout the season. Some of the most northerly medium sized streams may also support an anadromous fish run during the open water season. As fall approaches, fish generally begin moving downstream to overwintering areas.

Large rivers such as the Tanana, Yukon and Koyukuk vary from 100-1000 m in width and 1-10 m in depth. Floodplains are usually braided and consist of gravel, sand, and silt, depending on river origin. Large rivers usually do not freeze solid and therefore provide year-round habitat for fish.

Large rivers are the primary migration pathways for all species of anadromous fish. During spring, many juvenile salmon migrate downstream to enter the ocean; others may remain in freshwater for one or two years, depending on the species. A variety of freshwater fish also use large rivers as migration routes, spawning sites and nursery areas year-round. Virtually all large rivers provide overwintering habitat for fish.

## LIFE HISTORY OF FISH SPECIES

The following are individual accounts of the life histories of fishes found along the route of the proposed natural gas pipeline. Accompanying each account is a map delineating the known distribution along the route and two matrices, one containing summary statements relating environmental variables to life history stages, and the other listing the respective supportive references. This information has been synthesized from the most pertinent research publications from Alaska and northern North America. Also used in information from previous surveys along the pipeline route. The accounts, distribution maps, and matrices provide not only general life history information but also specific information which may be needed during construction activities. When available, site-specific information on spawning and migration is included after the general species account. The latter information is included only when data are available on waterbodies either crossed by or potentially affected by the proposed gas pipeline.

Account of longnose sucker

on following page

*Catostomus catostomus* - Longnose Sucker, Figure 3

Longnose suckers are abundant in most lakes, rivers and large streams along the proposed corridor south of the Continental Divide. Little is known of their biology, probably because they are widely considered as either a pest fish or a forage fish. Spawning is known to occur shortly after breakup in spring when water temperatures are 5-10° C (Ref. 129). Spawning activity takes place primarily during daylight hours, usually in water 0.10-0.60 m deep and with a current of 0.30 to 0.45 m/s (Ref. 117, 129). Up to 40,000 eggs are deposited in gravel 50 to 100 mm in diameter (Ref. 117). The adhesive, demersal eggs hatch in one to two weeks and the 0.8 cm fry remain in the gravel for an additional one to two weeks (Ref. 129). After emerging the fry migrate downstream to lakes or large river systems. Food of longnose suckers includes amphipods, insect larvae, zooplankton and some plant material (Ref. 116, 117, 129).

Site Specific Information

None.

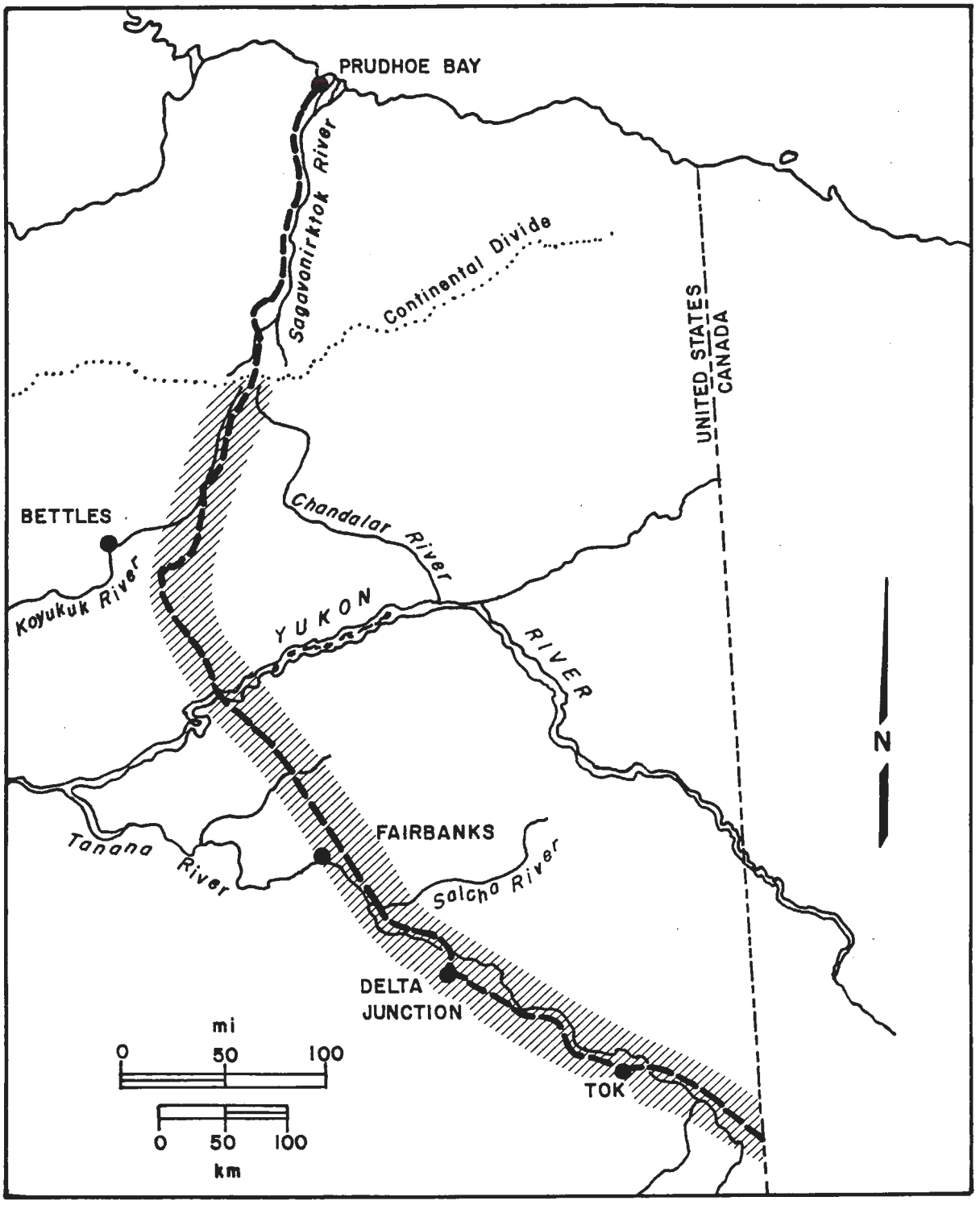


Figure 3. Known distribution of the longnose sucker in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Longnose sucker (*Catostomus catostomus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | May-July | 50-100mm | 0.30-0.45m/sec | | 0.10-0.60m | | | 5-10°C | NA | Do not spawn under ice | | | | | | NA |
| | Egg Development and Emergence | Hatch 1-2 weeks after spawning, emerge in 1-2 weeks | | | | NA | | | 10-15°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Algae, insect larvae, molluscs, zooplankton |
| ADULT | Distribution and Abundance | Spend summer in large rivers | | | | | | | | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Longnose sucker (*Catostomus catostomus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 116,117 129,204 | 117,129 | 117,129 | | 117,129 | | | 116,117 129 | NA | 116 | | | | | | NA |
| | Egg Development and Emergence | 117,129 204 | | | | NA | | | 117 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 117,129 196 |
| ADULT | Distribution and Abundance | 204 | | | | | | | | | | | | | | | |

*Coregonus autumnalis* - Arctic Cisco, Figure 4

Arctic cisco in Alaska are confined to large rivers flowing into the Beaufort Sea. The Sagavanirktok River is the only major waterbody within the proposed gas pipeline corridor known to contain Arctic cisco. The species is anadromous and individuals have been taken in marine water with a salinity content of up to 22 parts per thousand (Ref. 129). Upstream migrations begin in the summer; spawning generally takes place during the fall in swift water over a gravel substrate (Ref. 116, 117, 129). No nest or redd is constructed; the eggs are broadcast and eventually find their way into the interstices of the gravel. Shortly after spawning, adults mass migrate back to the sea or estuarine waters. The eggs hatch in the spring, at which time the fry also migrate to the Beaufort Sea (Ref. 117, 129, 189). Food of young ciscos in freshwater consists primarily of zooplankton and aquatic insects. Larger Arctic cisco consume larger prey such as mysids, amphipods and smaller fish in the marine environment.

Site Specific Information

None.

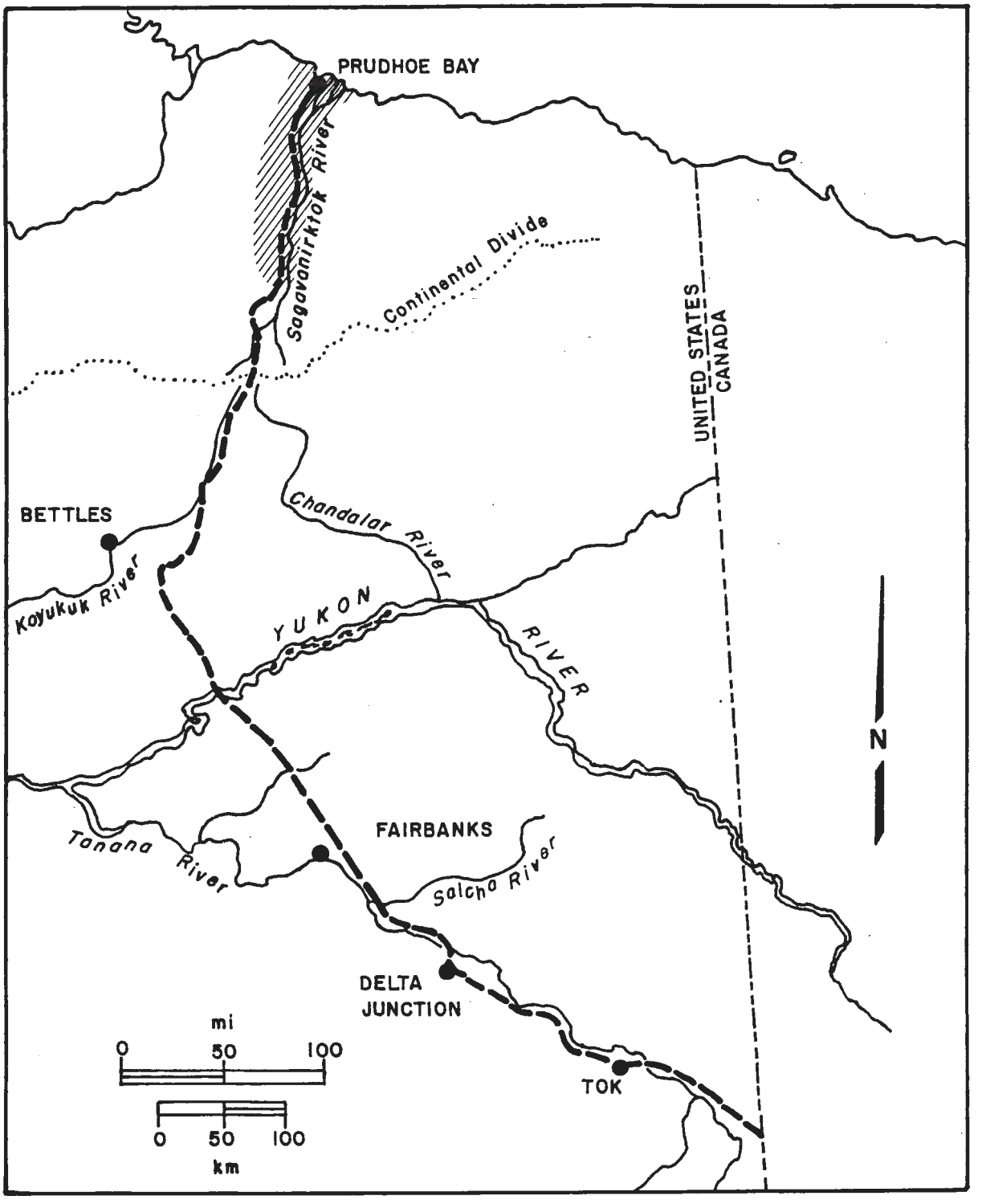


Figure 4. Known distribution of the Arctic cisco in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Arctic cisco (*Coregonus autumnalis*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | Summer | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | Late summer-early fall into Nov. | Gravel | Swift water | | | | | | NA | | | | | | | NA |
| | Egg Development and Emergence | Hatching Mar-Apr | | | | NA | | | | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | Max growth May-June | | | | | | | Fastest growth at higher temps. | NA | | 6.7-9.2 | | | | | Zooplankton |
| FRY | Distribution and Abundance | | | | | | | | | | | | As low as 1.4 mg/l at 17°C | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Zooplankton, insect larvae |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Crustaceans, amphipods, mysids, fish |
| ADULT | Distribution and Abundance | | | | | 1-3m | May be found in muddy rivers | | | | | | | 5.4-22.0 ppt | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Arctic cisco (*Coregonus autumnalis*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 116,117, 129,189, 204 | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 116,189 | 116,117, 129 | 116,117, 129 | | | | | | NA | | | | | | | NA |
| | Egg Development and Emergence | 117,129, 189 | | | | NA | | | | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | 189 | | | | | | | 189 | NA | | 189 | | | | | 189 |
| FRY | Distribution and Abundance | | | | | | | | | | | | 189 | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 189 |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,129, 204 |
| ADULT | Distribution and Abundance | | | | | 204 | 116 | | | | | | | 116,129, 204 | | | |

*Coregonus laurettae* - Bering Cisco, Figure 5

Little is known of the biology and distribution of Bering cisco. in Alaska. It is known to have life history habits similar to Arctic cisco and there appears to be some range overlap between the two species. Bering cisco generally inhabit coastal drainages of the Bering, Chukchi, and Beaufort Seas, but may enter interior drainages. It has been documented as far upstream on the Yukon River as the confluence with the Porcupine River, and on the Kuskokwim River to the South Fork (Ref. 117, 208). Migration upriver may occur as early as June (Ref. 208), but usually occurs in late summer (Ref. 117, 129, 208). Spawning occurs in the fall presumably in clear-water streams tributary to major rivers (Ref. 129). After spawning there is a downstream migration to overwintering areas, usually river deltas or brackish lagoons (Ref. 116, 129). Nothing us known of egg and fry development or of juvenile migration to brackish waters. Bering cisco apparently do not feed during migratory movements, but in brackish waters they feed upon crustaceans and small fish (Ref. 116, 117, 129, 208).

Site Specific Information

None.

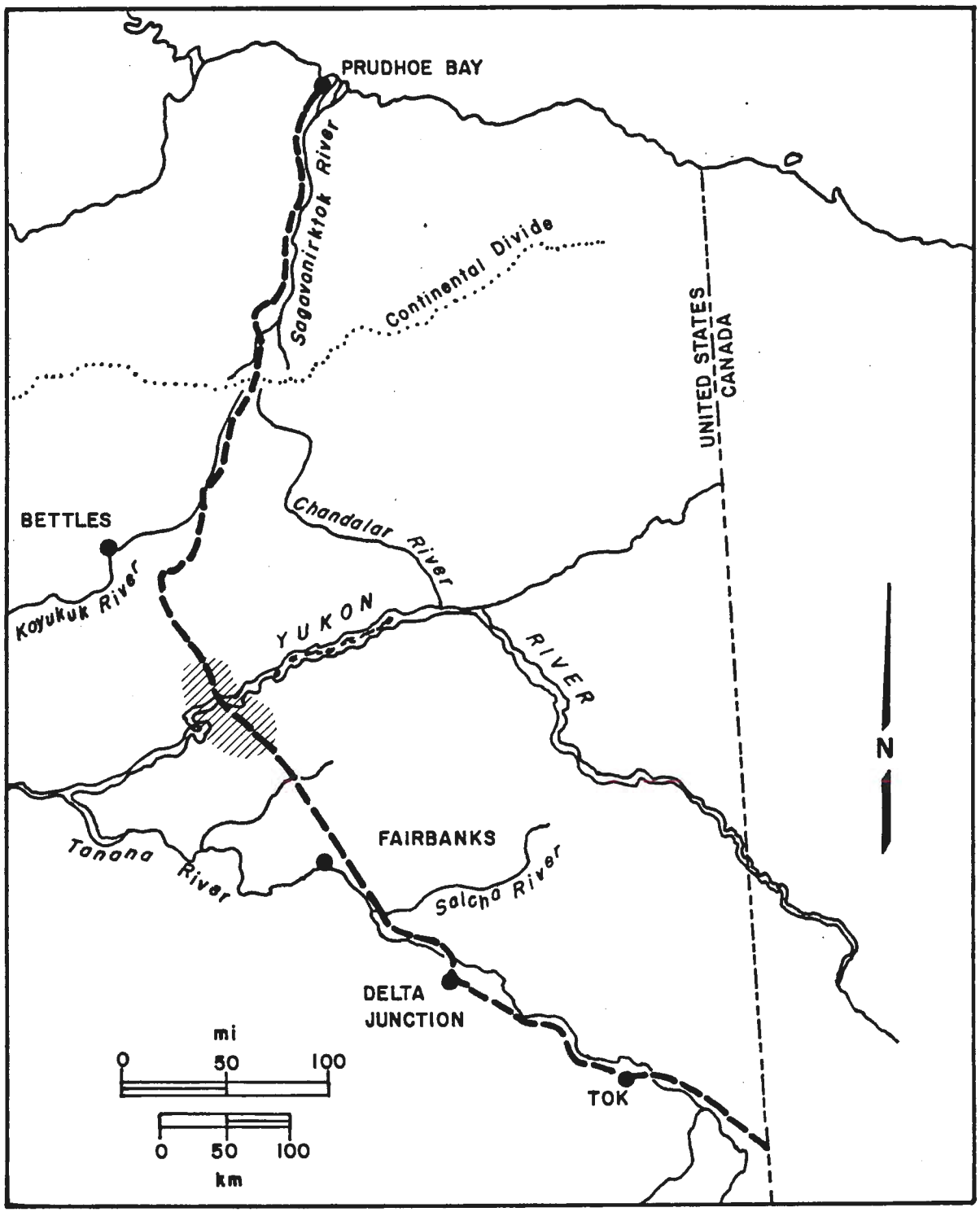


Figure 5. Known distribution of the Bering cisco in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX



Species Bering cisco (*Coregonus laurettae*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | June-Sept | | | | | | | | | | | | | | | |
| | Spawning | Fall | | | | | Clear water | | | | | | | | | | |
| | Egg Development and Emergence | | | | | | | | | | | | | | | | |
| FRY | Feeding and Growth | | | | | | | | | | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | | | | | | | | Crustaceans, small fish |
| ADULT | Distribution and Abundance | | | | | | | | | | | | | May occur in brackish lagoons | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Bering cisco (*Coregonus laurettae*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 116,117, 208 | | | | | | | | | | | | | | | |
| | Spawning | 116,129, 208 | | | | | 129 | | | | | | | | | | |
| | Egg Development and Emergence | | | | | | | | | | | | | | | | |
| FRY | Feeding and Growth | | | | | | | | | | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | | | | | | | | 116,117, 129,208 |
| ADULT | Distribution and Abundance | | | | | | | | | | | | 116,129 | | | | |

*Coregonus nasus* - Broad Whitefish, Figure 6

Broad whitefish are widely distributed north of the Yukon and Kuskokwim rivers. They have also been reported in the Tanana River as far upstream as the proposed gas pipeline crossing. Some populations of broad whitefish are anadromous while others remain in fresh water year-round (Ref. 116, 117, 129).

Upstream migration begins as early as June and may extend into September. Spawning usually begins in September and takes place in shallow streams with gravel bottoms (Ref. 129). Anadromous adults return to estuarine areas and freshwater adults return to deep waters immediately after spawning. The young hatch in the spring and move downstream. Food of broad whitefish consists of benthic organisms such as aquatic insects, snails, bivalves, molluscs, and crustaceans (Ref. 116, 117, 129).

Site Specific Information

None.

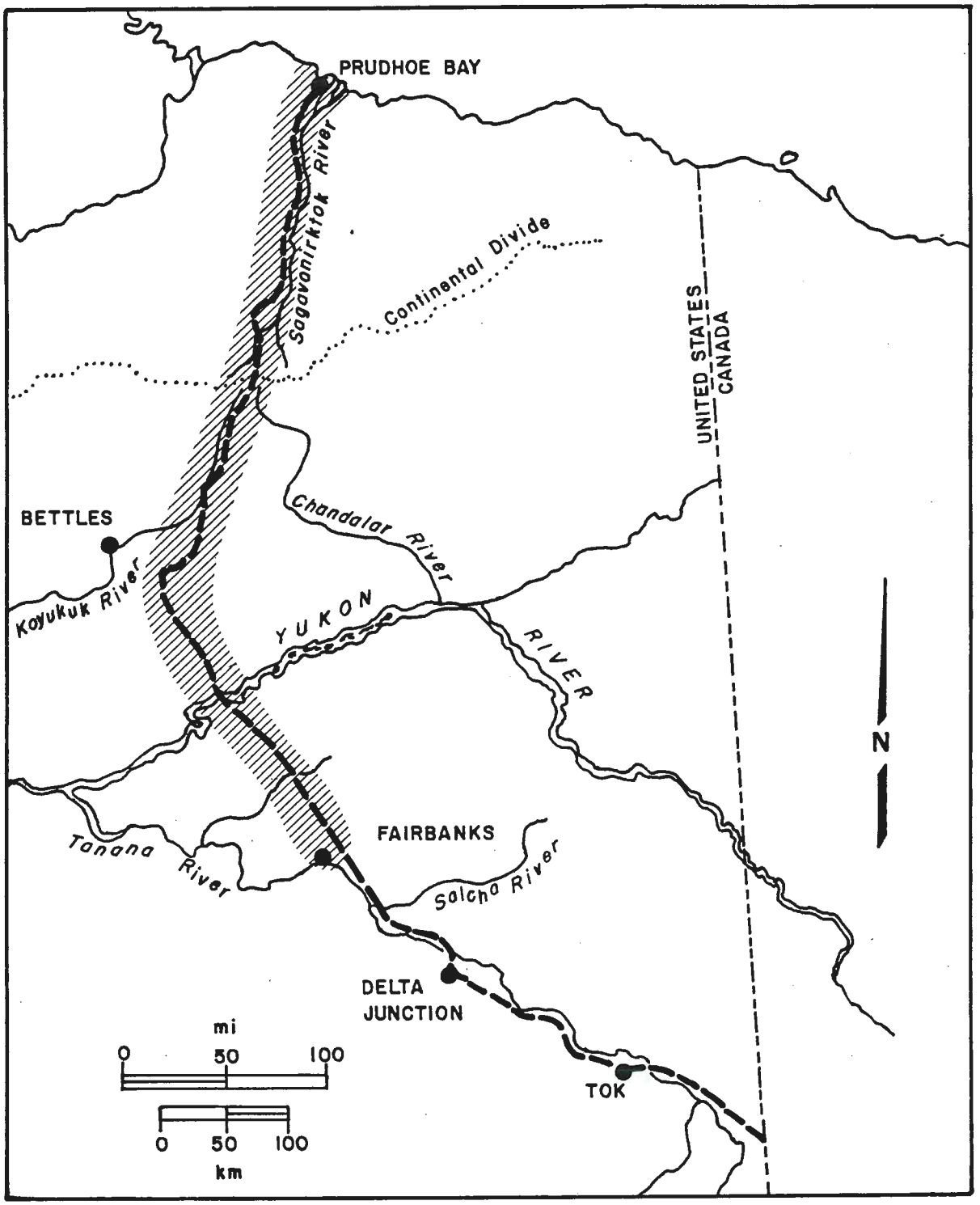


Figure 6. Known distribution of the broad whitefish in the vicinity of of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Broad whitefish (*Coregonus nasus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | June-Sept | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | Sept-Oct | Gravel | | | | | | | NA | | | | | | | NA |
| | Egg Development and Emergence | Hatching in spring | | | | NA | | | 6-12° C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Insect larvae, molluscs, crustaceans |
| ADULT | Distribution and Abundance | | | | | | | | | | | | | May occur in brackish water | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Broad whitefish (*Coregonus nasus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 129 | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 116,117, 129,146, 161 | 129 | | | | | | | NA | | | | | | | NA |
| | Egg Development and Emergence | 129,146 | | | | NA | | | 146 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,117, 129 |
| ADULT | Distribution and Abundance | | | | | | | | | | | | | 116 | | | |

*Coregonius pidschian* - Humpback Whitefish, Figure 7

Humpback whitefish have a wide distribution throughout Alaska, but are most abundant in major rivers which drain into the Beaufort, Bering and Chukchi seas. These whitefish are apparently truly anadromous but it is not known if they move out of estuarine waters. Spawning runs generally begin as early as June and spawning occurs in the fall, sometimes as late as mid-November (Ref. 129). Spawning takes place in shallow streams or littoral areas of lakes over rocky or sandy areas (Ref. 117). Spawned-out adults return downstream to overwintering areas. Eggs hatch in late winter and spring and the young begin migrating downstream, to return as mature adults 4 to 6 years later (Ref. 129). Juvenile humpback whitefish feed primarily on zooplankton while adults feed primarily upon molluscs and larval insects (Ref. 116, 116, 129).

Site Specific Information

Spawning

Chatanika River - spawning starts around 19 September (Ref. 115) with peak activity during the last week in September (Ref. 100).

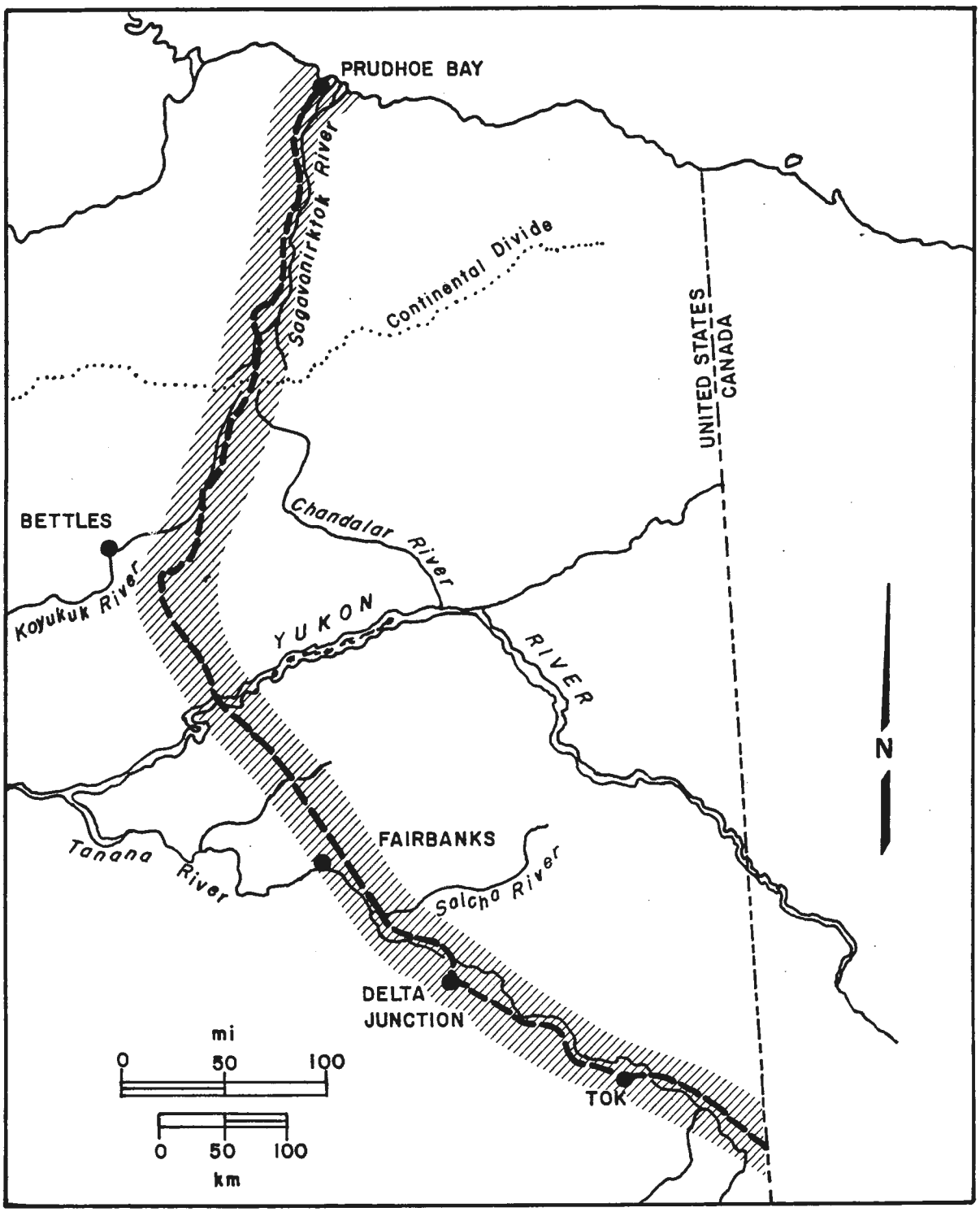


Figure 7. Known distribution of the humpback whitefish in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Humpback whitefish (*Coregonus pidschian*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | June | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | June-Nov | Rocks to sand | Swift water | | Less than 7.6m, usually 0.5-2.5m | | | 0-3° C | NA | May spawn under ice | | | | | | NA |
| | Egg Development and Emergence | Hatch from late winter to May | | | | NA | | | 0.5-6.1°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | Zooplankton |
| FRY | Distribution and Abundance | Move into deeper water by early summer | | | | Move into deeper water by early summer | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Molluscs, crustaceans, insect larvae |
| ADULT | Distribution and Abundance | Cooler deeper water in summer | | | | Cooler deeper water in summer | | | Cooler water in summer | | | | | May occur in brackish water | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Humpback whitefish (*Coregonus pidschian*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 129,136, 137 | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 116,117, 137 | 116,117, 137 | 137 | | 116,117, 137 | | | 117,137 | NA | 137 | | | | | | NA |
| | Egg Development and Emergence | 116,117, 129 | | | | NA | | | 117,137 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | 129 |
| FRY | Distribution and Abundance | 117 | | | | 117 | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,117, 129,137 |
| ADULT | Distribution and Abundance | 137 | | | | 116,117 | | | 117 | | | | | 116,129 | | | |

*Prosopium cylindraceum* - Round Whitefish, Figure 8

Round whitefish are widely distributed in Alaska, inhabiting lakes, large streams and rivers. This species has been documented along the entire route of the proposed natural gas pipeline. Spawning takes place in shallow gravel areas of lakes and larger streams in late September through October (Ref. 116, 117, 129). After spawning the adults migrate downstream to overwintering areas. As with other salmonids, no parental care is given to eggs or young. The eggs hatch after approximately 140 days at 2.2° C, and newly hatched fry carry a yolk sac for an additional two weeks (Ref. 129). Growth rates and age at sexual maturity vary according to latitude. (Ref. 129). Round whitefish are primarily bottom feeders, feeding upon a variety of insect larvae, gastropods, and in some cases eggs of lake trout, chum salmon and suckers (Ref. 116).

Site Specific Information

Migration

Goodpasture River - upstream migration occurs in late April to early May (Ref. 115).

Lupine River - downstream migration occurs during the first week of September (Ref. 101).

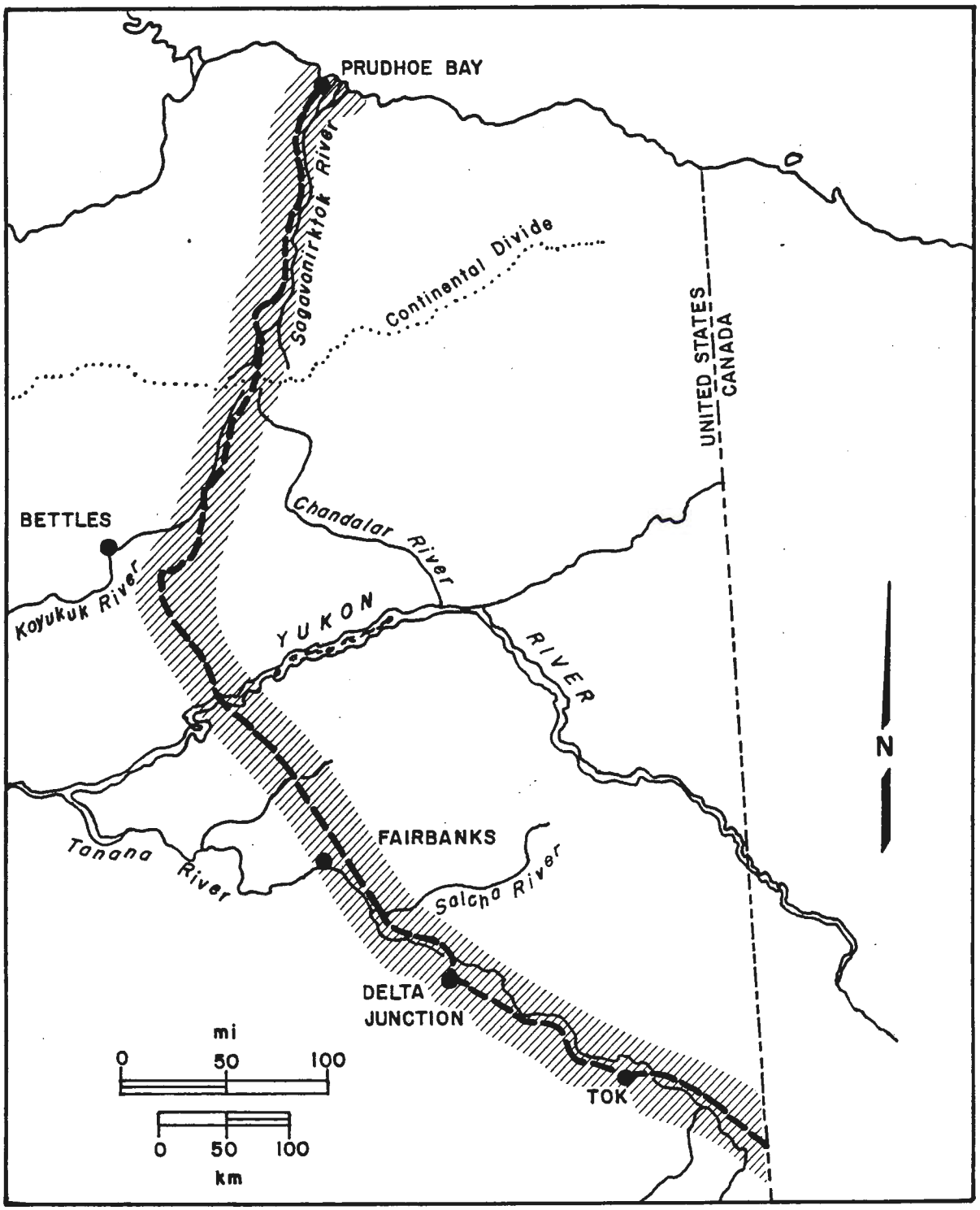


Figure 8. Known distribution of the round whitefish in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Round whitefish (*Prosopium cylindraceum*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | As late as Oct | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | Sept-Oct | Gravel | | | Shallow water | | | 4.5°C | NA | | | | | | | NA |
| | Egg Development and Emergence | 140 days after spawing | | | | NA | | | 140 days at 2.2°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Insect larvae, molluscs, fish eggs |
| ADULT | Distribution and Abundance | | | | | Shallow lakes | Clear streams | | | | | | | May occur in brack-ish water | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Round whitefish (*Prosopium cylindraceum*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 116,117 | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 116,117, 129 | 116,117 | | | 129 | | | 117 | NA | | | | | | | NA |
| | Egg Development and Emergence | 117,129 | | | | NA | | | 117,129 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,117, 129 |
| ADULT | Distribution and Abundance | | | | | 116,117 | 116 | | | | | | | 116,117 | | | |

*Coregonus sardinella* - Least Cisco, Figure 9

Least cisco, including both anadromous and non-anadromous populations, are widely distributed throughout the state from the Kuskokwim and Tanana drainages northward. The distribution of this species includes the entire proposed natural gas pipeline corridor. Spawning occurs from late September to early October in clear streams and rivers with gravel and sand bottom (Ref. 116, 117, 129). Spawning takes place at night, with peak activity between 8 PM and midnight. Eggs hatch in early spring, but the young usually do not migrate downstream until early summer, by which time they have grown to 4 cm in size (Ref. 129). Non-anadromous populations are usually restricted to large, deep lakes capable of sustaining an overwintering population. After spawning anadromous populations migrate to large river deltas or to estuarine areas to overwinter. Anadromous fish usually do not feed during upriver migration but are known to feed upon mysids, amphipods, and zooplankton in estuarine areas. Non-anadromous fish have a diet restricted to aquatic and terrestrial insects and zooplankton.

Site Specific Information

Migration

Chatanika River - upstream migration begins in early July and lasts through late September (Ref. 129).

Spawning

Chatanika River - spawning begins in mid-September (Ref. 115) with peak spawning activity during the last week of September (Ref. 100).

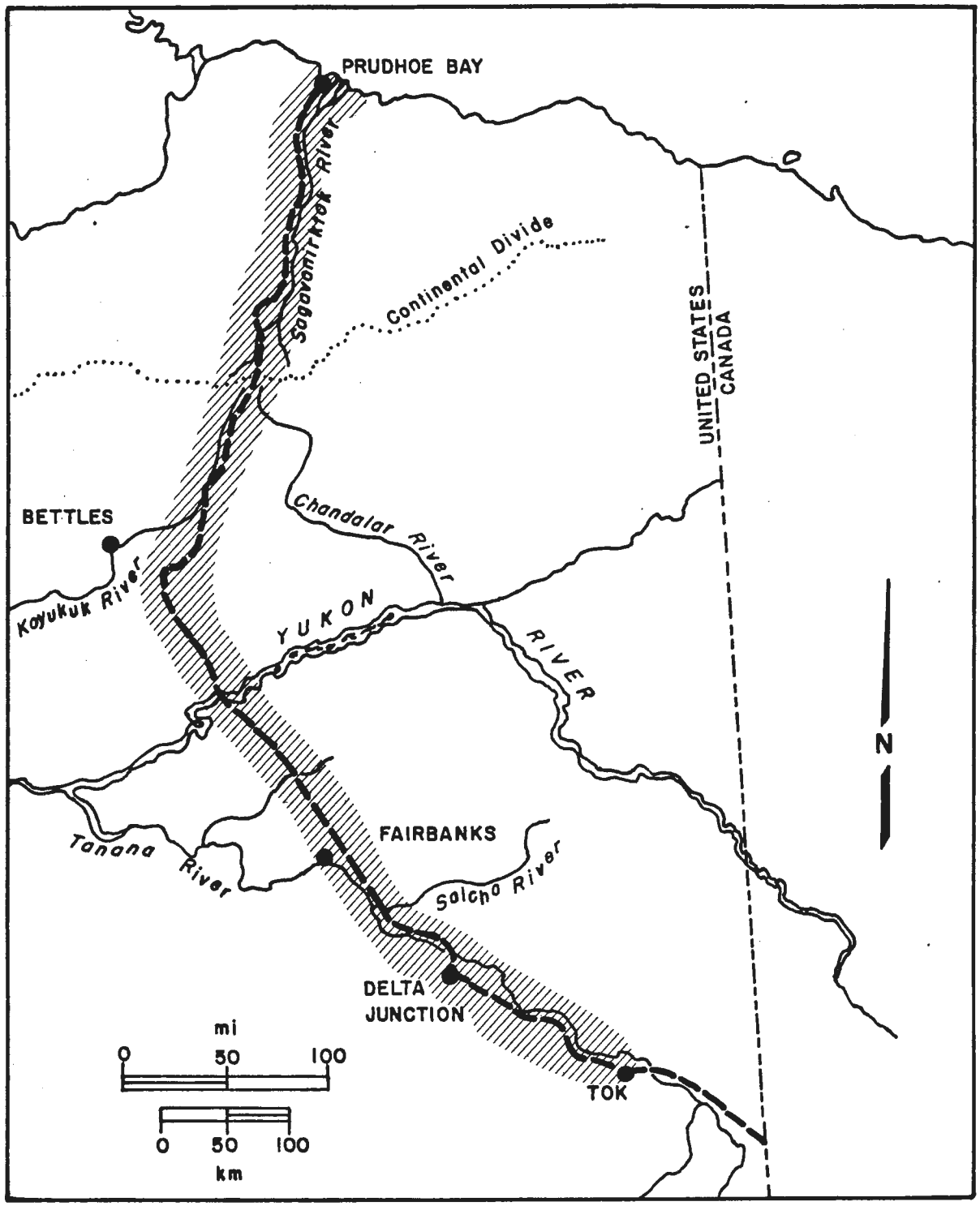


Figure 9. Known distribution of the least cisco in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Least cisco (*Coregonus sardinella*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | July-Sept | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | Sept-Oct | Sand and gravel | 0.5m/sec | | 1.3-2.6m | | | 0-3°C | NA | | | | | | | NA |
| | Egg Development and Emergence | Early spring | | | | NA | | | 1.0°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | Feeds in sea during summer | | | | | Feeding is reduced by high turbidity | | Faster growth rates at higher temps. | NA | | | | | | | Zooplankton, mysids, insect larvae |
| ADULT | Distribution and Abundance | | | | | | | | | | | | | 0-34 ppt salinity | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Least cisco (*Coregonus sardinella*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 117,129 | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 117,129, 146 | 116,117, 129 | 129 | | 117,129 | | | 129,199 | NA | | | | | | | NA |
| | Egg Development and Emergence | 129 | | | | NA | | | 199 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | 116 | | | | | 199 | | 146 | NA | | | | | | | 117,129 |
| ADULT | Distribution and Abundance | | | | | | | | | | | | | 199 | | | |

*Cottus cognatus* - Slimy Sculpin, Figure 10

Slimy sculpin are widely distributed throughout Alaska, including the entire route of the proposed gas pipeline. Slimy sculpin are found to depths of 128 m in lakes (Ref. 129) but tend to prefer rocky clear streams with cool water (Ref. 116). Spawning takes place in the spring shortly after breakup when water temperatures range from 4.5 to 10.0° C (Ref. 114, 117, 129). The male selects the nest site, usually under a rock or log, and cares for the young after hatching (Ref. 116, 117, 129). Egg development requires about 28 days and the sac fry remain in the gravel for about a week (Ref. 129). Sculpin have been observed to move through soft sediment in deep lakes (Ref. 129). Slimy sculpin feed primarily on benthic immature insects (Ref. 116, 117, 129); however, larger individuals occasionally prey on grayling fry (Ref. 131).

Site Specific Information

Spawning

Sheenjek River drainage, Monument Creek - observed newly hatched sculpin along with eyed eggs 25 June (Ref. 114).

Sheenjek River drainage, Monument Creek - estimated to have spawned in late May, one week after breakup (Ref. 114).

Delta Clearwater River - observed many sculpin spawning in shallow water on and around a large, dead log 28 April; underside of log was covered with numerous egg masses (Ref. 89).

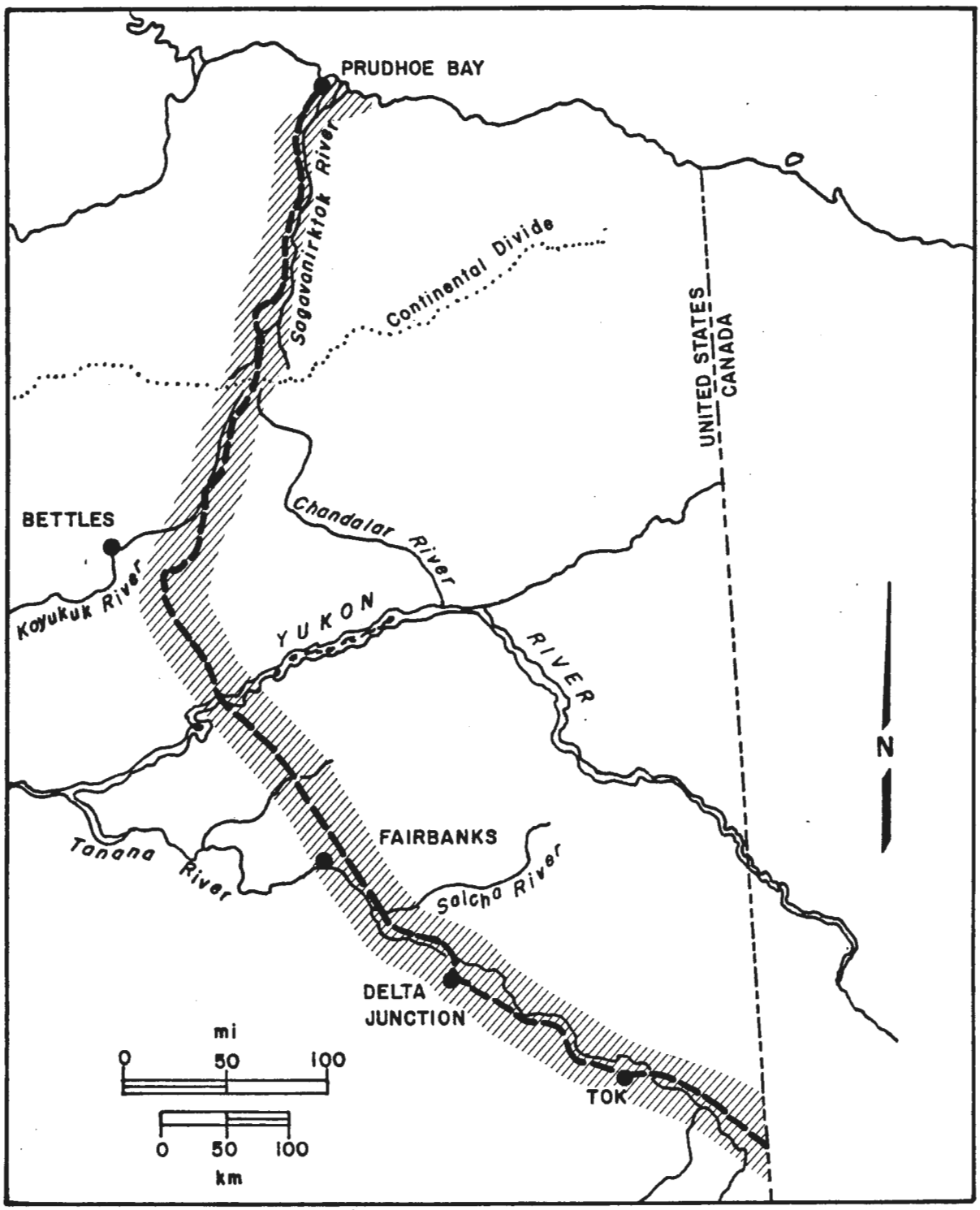


Figure 10. Known distribution of the slimy sculpin in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Slimy sculpin (*Cottus cognatus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | Spring | Sand to rocks | Flowing water | | Shallows, .02-.30m | | | 4.5-10°C | NA | | | | | | | NA |
| | Egg Development and Emergence | Hatch in June after 28 day incubation | | | | NA | | | | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | Most growth during summer | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Insect larvae |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Insect larvae, rarely fish eggs and fry |
| ADULT | Distribution and Abundance | | | | | Up to 128m | | | | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Slimy sculpin (*Cottus cognatus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 34,114, 116,117, 129 | 116,117, 129 | 116 | | 116,117, 129 | | | 114,117, 129 | NA | | | | | | | NA |
| | Egg Development and Emergence | 32,114 | | | | NA | | | | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | 114 | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 129 |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 114,116, 117,129, 131 |
| ADULT | Distribution and Abundance | | | | | 129 | | | | | | | | | | | |

*Couesius plumbeus* - Lake Chub, Figure 11

The lake chub is the only member of the minnow family found in Alaska. This species is confined to interior Alaska in the Yukon-Koyukuk-Tanana-Porcupine drainages (Ref. 129). Lake Chub are most frequently found in lakes and streams of both clear and muddy water (Ref. 116). Spawning may occur as early as April (Ref. 117) when water temperatures approach 5° C (Ref. 129). Spawning takes place in shallow streams with gravel or large rock substrates (Ref. 116, 129, 144). Very little is known about egg and fry development or about fry migration. Lake chub are visual feeders, preying upon zooplankton, larval insects, and algae (Ref. 117, 129). They are in turn preyed upon by lake trout, burbot, northern pike, and a variety of piscivorous birds including king fishers and mergansers (Ref. 118).

Site Specific Information

None.

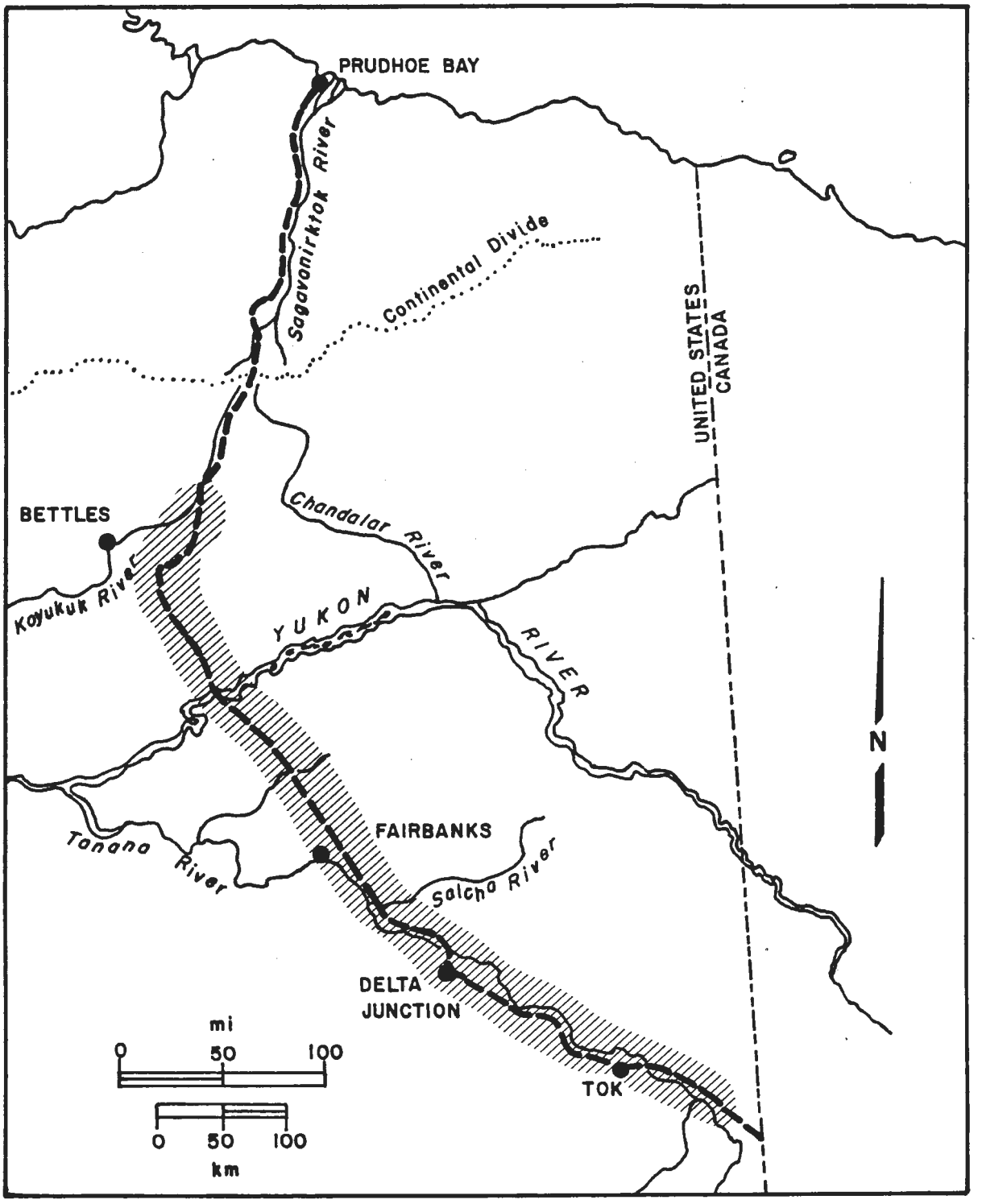


Figure 11. Known distribution of the lake chub in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Lake chub (*Couesius plumbeus*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | April-Aug | Rocks, gravel, silt, or debris | | | Shallow water | | | 4-8°C | NA | | | | | | | NA |
| | Egg Development and Emergence | Develop in 10 days, emerge in June | Will develop on silt or debris | | | NA | | | 8-19°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | Zooplankton |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Insect larvae, algae |
| ADULT | Distribution and Abundance | | | | | Occupies deeper water | Can withstand turbid water | | Typically inhabits water near 16°C | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Lake chub (*Couesius plumbeus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 116,117, 129,144 | 116,129, 144 | | | 129,144 | | | 117,144 | NA | | | | | | | NA |
| | Egg Development and Emergence | 144 | 144 | | | NA | | | 144 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | 129 |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,117, 129 |
| ADULT | Distribution and Abundance | | | | | 116 | 116,129 | | 144 | | | | | | | | |

*Dallia pectoralis* - Alaska Blackfish, Figure 12

The Alaska blackfish is found in lowland areas along Alaska's western coast from Barrow to the Alaska Peninsula. Its range also extends up the Yukon River to the RAPS crossings and up the Tanana River to Fairbanks (Ref. 129). Little is known of the biology of the Alaska blackfish and misconceptions of its ability to withstand total freezing still persist (Ref. 116, 117, 129). Blackfish can however withstand extreme cold and severe oxygen deprivation. Upstream migration into swampy, grassy areas begins in the spring when water temperatures reach 10° to 15° C (Ref. 117, 129). The demersal, adhesive eggs are deposited in spring and early summer on vegetation, and develop in about 10 days at 12° to 13° C. The newly hatched fry carry a yolk sac for an additional 10 days (Ref. 129). Blackfish feed on zooplankton and insect larvae, and are fed upon by birds, mink, and otter (Ref. 117).

Site Specific Information

Spawning

Lake Aleknagik (Wood River Lakes system) - spawning estimated to occur mainly in July (Ref. 112).

Big Eldorado Creek (Fairbanks) - spawning occurs from May to August with most intense spawning in June (Ref. 111).

Migration

Big Eldorado Creek - blackfish migrate upstream after breakup in May (Ref. 111).

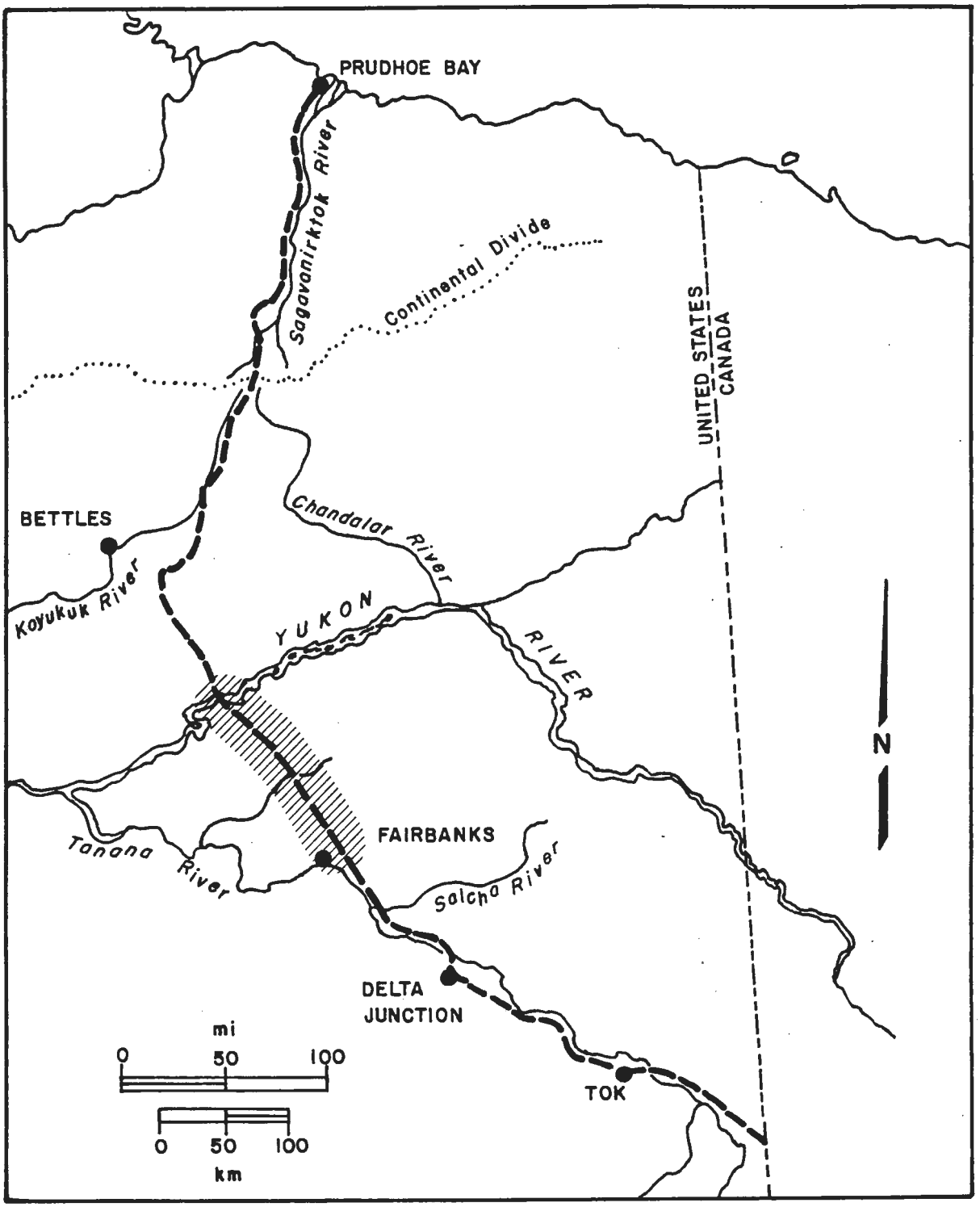


Figure 12. Known distribution of the Alaska blackfish in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Alaska blackfish (*Dallia pectoralis*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | Spring | NA | | | | | | Migration begins with a 5.6-8.3°C temp rise | | Migration may begin after break up | | | | NA | NA | |
| | Spawning | May-Aug | | | | | | | | NA | | | | | Eggs are probably spawned on aquatic vegetation | | NA |
| | Egg Development and Emergence | Hatch 10 days after spawning | | | | NA | | | 12-13°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | Rapid growth during first summer | | | | | | | | NA | | | | | | | Zooplankton |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | Most growth during summer | | | | | | | | NA | | | | | | | Insect larvae, molluscs |
| ADULT | Distribution and Abundance | | Prefer silt, mud, detritus | Can withstand high spring flows | | | Can withstand turbid water | | -20 to +20°C | | Upstream movement after break-up | Typically 7.2-8.0 | 2.3-12.6mg/l | | Occurs in weedy swamps | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Alaska blackfish (*Dallia pectoralis*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 117 | NA | | | | | | 111,117 | | 117 | | | | NA | NA | |
| | Spawning | 111,116, 117,129 | | | | | | | | NA | | | | | 116,129 | | NA |
| | Egg Development and Emergence | 129 | | | | NA | | | 112,116, 117,129 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | 117 | | | | | | | | NA | | | | | | | 129 |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | 111,177 | | | | | | | | NA | | | | | | | 116,117, 129 |
| ADULT | Distribution and Abundance | | 111 | 111 | | | 111 | | 111,129, 177 | | 111 | 177 | 117,177 | | 116,117, 177 | | |

*Esox lucius* - Northern Pike, Figure 13

Northern Pike Have a wide distribution throughout the state and are found in virtually every major drainage except the Copper River and those in Southeast Alaska. Although they do occur north of the Brooks Range, they have not been documented in waterbodies along the route of the proposed gas pipeline. Spawning occurs in the spring after breakup when water temperatures are 4° to 11° C (Ref. 116, 117, 129). Eggs are deposted on vegetation in the still shallows of marshes, lakes, and rivers (Ref. 117, 129). Egg development varies from 4 to 29 days depending upon temperature; the hatched fry carry a yolk sac for an additional 10 days (Ref. 129). Fry feed primarily upon larger zooplankton and insect larvae but may switch to a fish diet within two weeks (Ref. 129). Large pike have no predators other than man but young fish fall prey to bears, dogs, eagles, ospreys, and other pike (Ref. 117). Canabalism among young pike causes the majority of predation related mortality.

Site Specific Information

Spawning

Goodpaster River (mouth to km 53) - spawning in mainstem; ripe pike caught in April 1973 and four ripe pike caught 13 May 1973 (Ref. 95).

Minto Flats region - spawning peaked 21-26 May 1972 (Ref. 100).

Minto Flats region - spawning began 10 May and lasted til 2 June 1973 (Ref. 115).

Minto Flats region - spawning period from 15 May-15 June; spawning began 10 May 1970 (Ref. 120).

Lake Aleknagik (Wood River Lakes system) - spawning peaked 10-20 June 1976 (Ref. 104).

Migration

Goodpaster River - upstream movements during late April and early May 1973 (Ref. 95).

Minto Flats region - pike ascend the rivers in Minto Flats area beneath the ice in spring (Ref. 120).

Minto Flats region - pike migrate downstream in fall and overwinter in the Tolovana and Tanana rivers (Ref. 120).

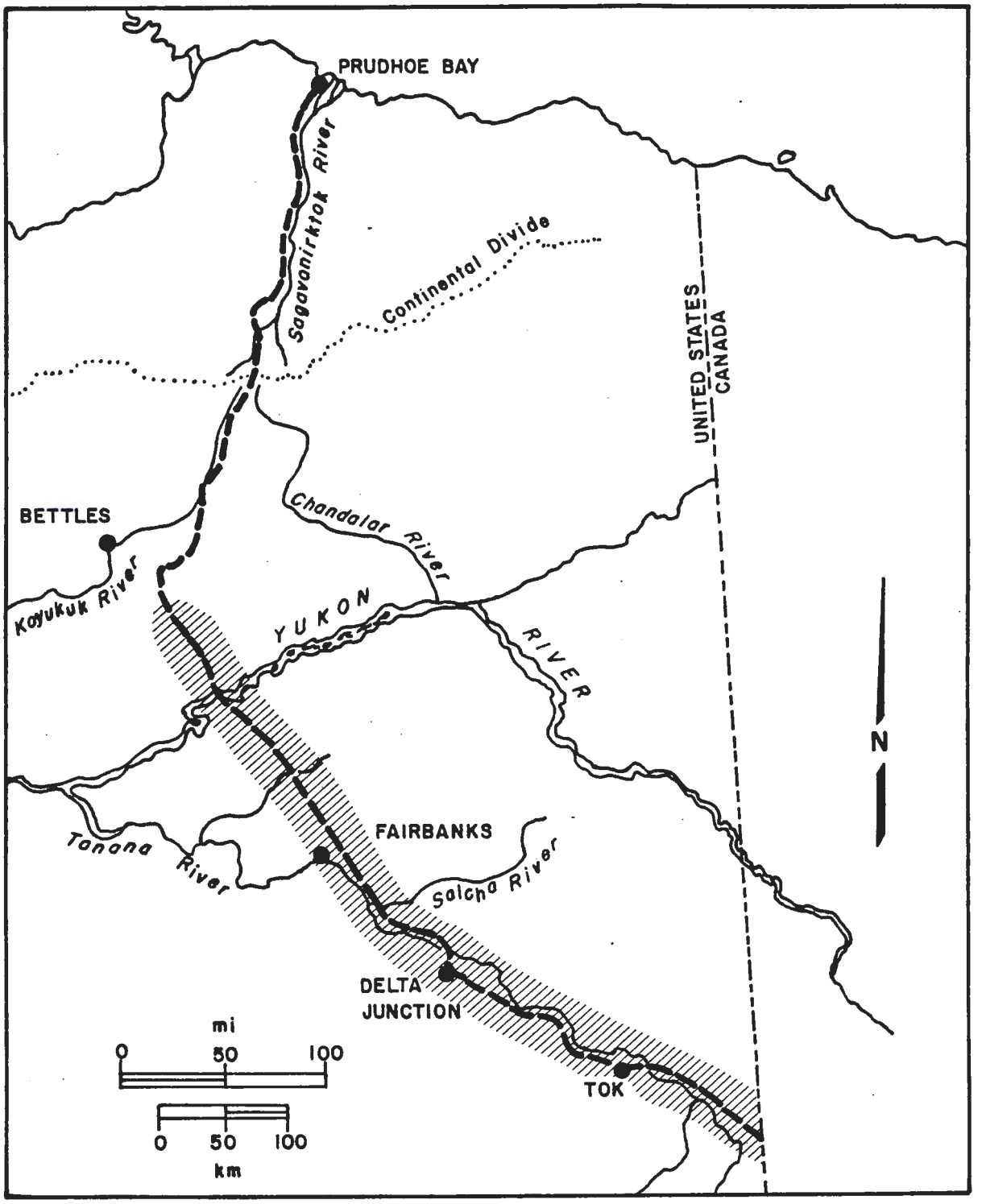


Figure 13. Known distribution of the northern pike in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Northern pike (*Esox lucius*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | April | NA | | | | | | 4.4-11.1°C | | Will migrate under ice | | | | NA | NA | |
| | Spawning | April-May | | Quiet water | | 0.18 m minimum | | | 6-9°C | NA | Begin spawning after ice out | | | | Spawns on aquatic vegetation | May spawn on overhanging cover | NA |
| | Egg Development and Emergence | Hatch 5-29 days after spawning | | | | NA | | | 6-18°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | Rapid growth during first summer | | | | | | | | NA | | | | | Fry remain on or near vegetation until yoke-sac digested | | Zooplankton, insect larvae |
| FRY | Distribution and Abundance | | | | | | | | | | | Fry sensitive to pH extremes | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Insect larvae, fish |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Fish, waterfowl, small mammals |
| ADULT | Distribution and Abundance | | | | | | | | | | | As high as 9.5 | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Northern pike (*Esox lucius*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 117 | NA | | | | | | 117 | | 120 | | | | NA | NA | |
| | Spawning | 116,117, 129,201 | | 129,201 | | 117,129 | | | 117,129 | NA | 201 | | | | 116,117, 129 | 117,201 | NA |
| | Egg Development and Emergence | 116,129 | | | | NA | | | 117,129, 201 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | 116,117 | | | | | | | | NA | | | | | 117 | | 117,129, 201 |
| FRY | Distribution and Abundance | | | | | | | | | | | 129 | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 129 |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 129,201 |
| ADULT | Distribution and Abundance | | | | | | | | | | | 117 | | | | | |

*Lampetra japonica* - Arctic Lamprey, Figure 14

Arctic lamprey are distributed primarily in coastal drainages. Their range also extends into interior Alaska via the Yukon River and its tributaries, including the Tanana, Salcha and Chatanika rivers (Ref. 129). Coastal populations are anadromous and parasitic while the freshwater forms are non-parasitic and tend to be smaller in size (Ref. 117, 129). Spawning generally occurs in May in shallow nests located in slow flowing margins of rocky streams (Ref. 129, 152). Incubation time of eggs is largely unknown but probably takes several weeks (Ref. 117, 129). The newly hatched fry, or ammocoetes, burrow into silty substrate and filter-feed by extending their head from the burrow. They remain as ammocoetes for one to several years then metamorphose into the adult form. Parasitic adults migrate downstream to the sea and non-parasitic adults remain in freshwater. Parasitic forms prey upon most species of salmon, flounders, pygmy whitefish, and threespine stickleback (Ref. 129). They in turn are preyed upon by inconnu, northern pike, burbot, and gulls particularly during their spawning activities (Ref. 117).

Site Specific Information

None.

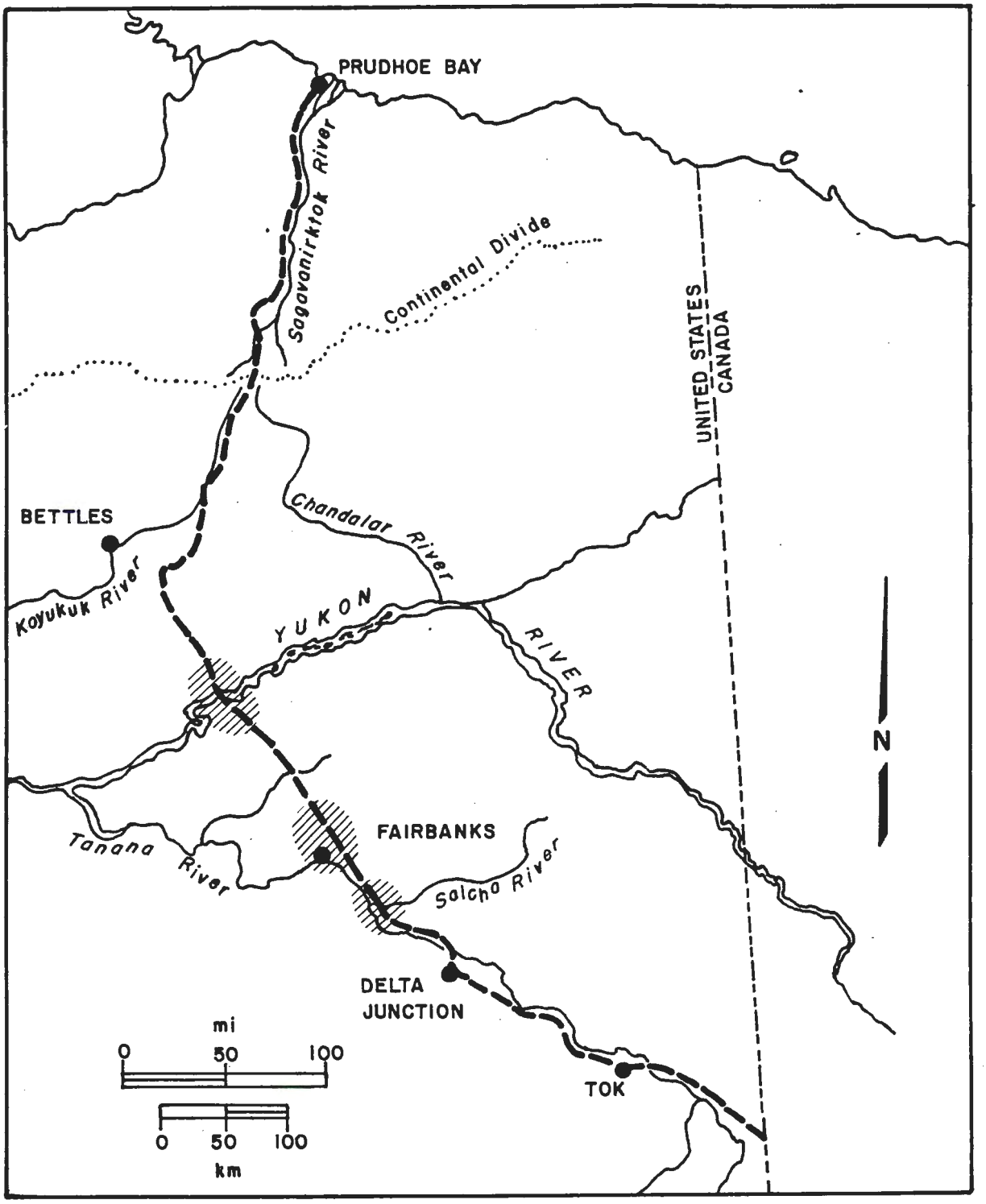


Figure 14. Known distribution of the Arctic lamprey in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Arctic lamprey (*Lampetra japonica*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | Early spring | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | May-July | Gravel, 13-51 mm | 0.15-0.30m/sec | | 0.08-0.20m | | | 12-15°C | NA | | | | | | | NA |
| | Egg Development and Emergence | Hatch 10 days after spawning | | | | NA | | | 12-13°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | Microscopic plants & animals |
| FRY | Distribution and Abundance | In rivers for first 3-4 yrs | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Microscopic plants & animals |
| JUVENILE | Distribution and Abundance | Move into lakes in spring | | | | | Sometimes found in muddy water | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Parasitic and non-parasitic populations |
| ADULT | Distribution and Abundance | Move into rivers in spring | | | | | Sometimes found in muddy water | | | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Arctic lamprey (*Lampetra japonica*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 116,152 | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 129,152 | 117 | 129,152 | | 129,152 | | | 117 | NA | | | | | | | NA |
| | Egg Development and Emergence | 117,129 | | | | NA | | | 129 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | 117 |
| FRY | Distribution and Abundance | 116,117 | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 117 |
| JUVENILE | Distribution and Abundance | 152 | | | | | 116 | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,117, 129 |
| ADULT | Distribution and Abundance | 117 | | | | | 116 | | | | | | | | | | |

*Lota lota* - Burbot, Figure 15

Burbot are widely distributed throughout Alaska, especially in deeper lakes and large river systems. Although a member of the cod family, burbot remain in freshwater for their entire lives. Burbot spawn in winter, as early as November and as late as early April (Ref. 87, 116, 117, 129). Typical spawning areas are 0.3 to 1.5 m deep with a sand, gravel and rocky substrate (Ref. 129). Egg development time is dependent upon temperature and ranges from 30 days at 6.1° C to 71 days at 0° C. Newly hatched fry are only 0.3 to 0.4 cm long, colorless, and without a yolk sac (Ref. 129). Young-of-the-year and yearling burbot frequent rocky shores and weedy areas of tributary streams (Ref. 117) and feed upon insect larvae, molluscs, and mysids (Ref. 117). After approximately 3 years there is a shift toward a diet of fish. Young burbot fall prey to other fish and gulls, while adults are preyed upon only by man.

Site Specific Information

None.

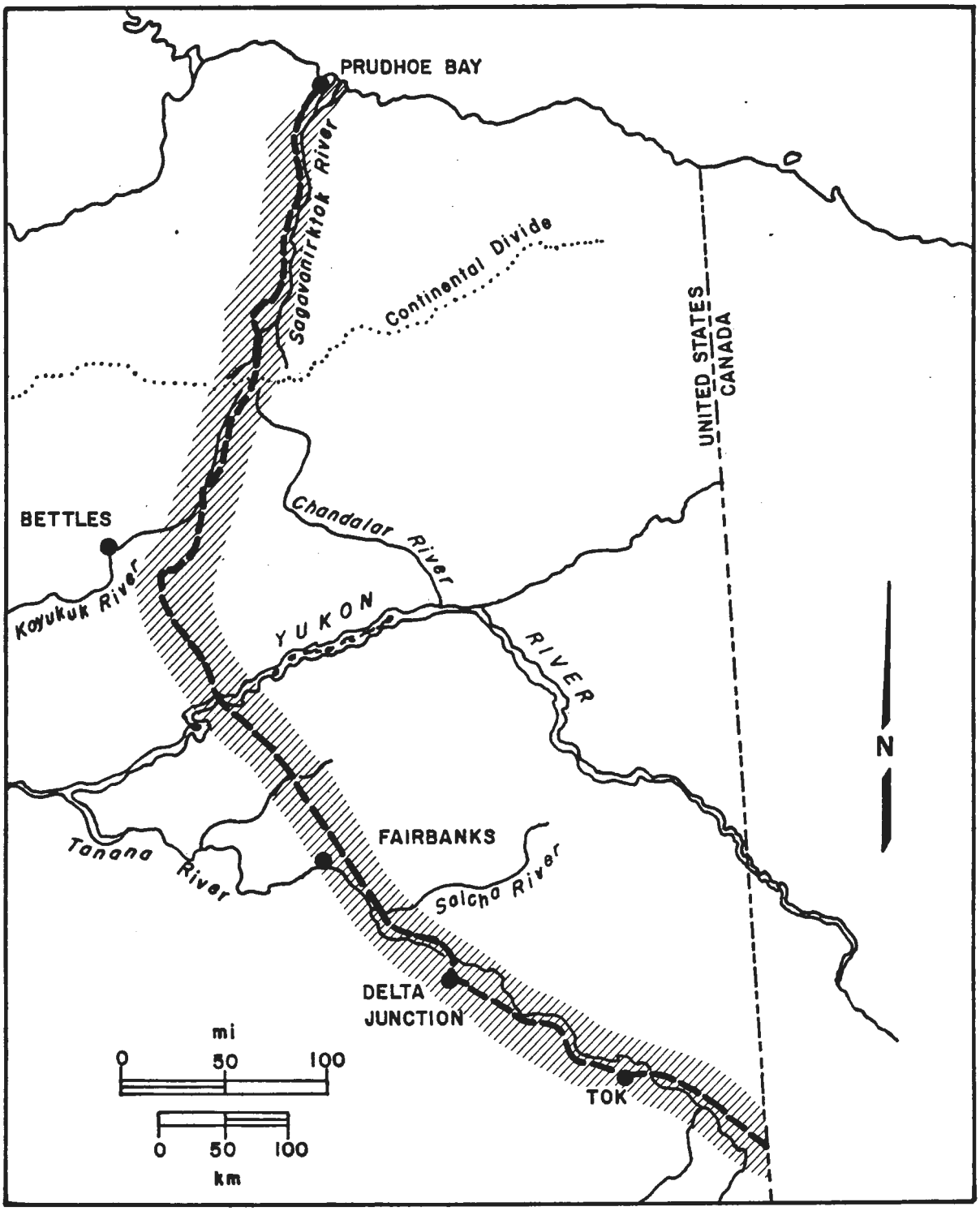


Figure 15. Known distribution of the burbot in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Burbot (*Lota lota*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | Nov-Jan | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | Nov-April | Sand, gravel, or stones | | | 0.3-1.5m | | | 0.6-1.7°C | NA | Spawns under ice | | | | | | NA |
| | Egg Development and Emergence | Hatch 30-71 days after spawning | | | | NA | | | 0-6.1°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | 15.6-18.3°C optimum | NA | | | | | | | Insect larvae |
| FRY | Distribution and Abundance | River channels and lakes in summer | Rocky shores | | | | | | | | | | | | Ofter found in weedy areas | | |
| JUVENILE | Feeding and Growth | | | | | | | | 15.6-18.3°C optimum | NA | | | | | | | Insect larvae, mysids, molluscs |
| JUVENILE | Distribution and Abundance | River channels and lakes in summer | Rocky shores | | | | | | | | | | | | Ofter found in weedy areas | | |
| ADULT | Feeding and Growth | | | | | | | | 15.6-18.3°C optimum | NA | | | | | | | Fish |
| ADULT | Distribution and Abundance | | | | | Often reside in deep water | | | | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Burbot (*Lota lota*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 10,117 | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 87,116, 117,129 | 117,129 | | | 116,117, 129 | | | 117 | NA | 10,87, 116,117 | | | | | | NA |
| | Egg Development and Emergence | 10,87, 129 | | | | NA | | | 87,129 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | 117 | NA | | | | | | | 117 |
| FRY | Distribution and Abundance | 117 | 117 | | | | | | | | | | | | 117 | | |
| JUVENILE | Feeding and Growth | | | | | | | | 117 | NA | | | | | | | 117 |
| JUVENILE | Distribution and Abundance | 117 | 117 | | | | | | | | | | | | 117 | | |
| ADULT | Feeding and Growth | | | | | | | | 117 | NA | | | | | | | 87,116, 117,129 |
| ADULT | Distribution and Abundance | | | | | 116,117, 129 | | | | | | | | | | | |

*Oncorhynchus gorbuscha* - Pink Salmon, Figure 16

Pink salmon have a primarily coastal distribution. Along the proposed pipeline route they are found only in the lower reaches of the Sagavanirktok River. Adults begin upstream migration between June and late September after spending two years in the ocean (Ref. 116, 117, 129). Spawning occurs relatively close to the ocean in rocky or gravel bottomed streams. Eggs usually hatch from December to February and the sac fry remain in the gravel until the yolk sac is absorbed in April or early May (Ref. 129). Upon emergence from the gravel, the fry begin their downstream migration. They arrive in estuaries in early summer and move offshore one or two months later (Ref. 129).

Site Specific Information

None.

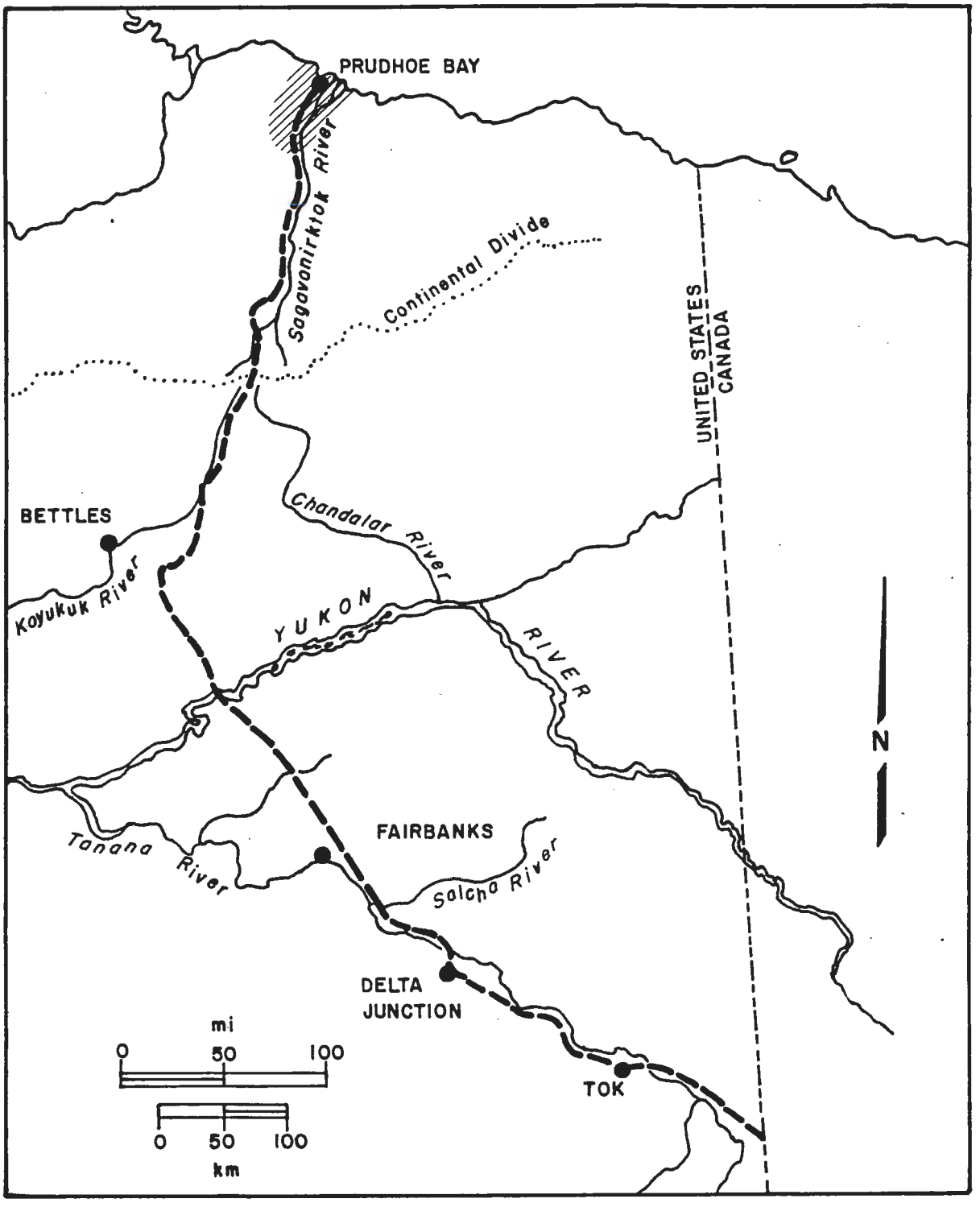


Figure 16. Known distribution of the pink salmon in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Pink salmon (*Oncorhynchus gorbuscha*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | June-Sept | NA | 2.13m/sec maximum | | 0.18m minimum | | | 7.2-15.6°C | | | | Low DO inhibits migration | | NA | NA | |
| | Spawning | Aug-Oct | 1.3-12.7mm | 0.21-1.01 m/sec | | 0.15m minimum | | | 7.2-16.0°C | NA | | | | | | | NA |
| | Egg Development and Emergence | Hatch Dec-Feb, emerge Apr-May | Optimum development in gravel | 0.17m/sec needed for proper $O_2$ exchange | Poor development at low flows | NA | | | 4.4-13.3°C | NA | | | 2.3-9.9mg/l | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | Remain in freshwater several months after emerging | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Zooplankton, krill |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Zooplankton, krill, fish |
| ADULT | Distribution and Abundance | | | | | | | | 25.8°C upper lethal, 5.6-14.6°C prefered | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Pink salmon (*Oncorhynchus gorbuscha*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 116,117, 129,167, 188 | NA | 207 | | 198,207 | | | 207 | | | | 198 | | NA | NA | |
| | Spawning | 116,117, 129,167, 187,188 | 116,117, 167,207 | 207 | | 116,198, 207 | | | 117,207 | NA | | | | | | | NA |
| | Egg Development and Emergence | 116,117, 129 | 198 | 188,198 | 198 | NA | | | 117,129, 167,187, 188,207 | NA | | | 167,197 | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | 116 | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 117,129 |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 117 |
| ADULT | Distribution and Abundance | | | | | | | | 207 | | | | | | | | |

*Oncorhynchus keta* - Chum Salmon, Figure 17

Chum salmon are widely distributed in Alaska and are found in coastal streams and in major interior water courses. Migration usually begins in late summer and may extend into September and October (Ref. 117, 129). In the Yukon and Kuskokwim rivers there are two distinct runs known as summer chums and fall chums (Ref. 129). Fall chums are slightly larger and tend to spawn in locations further upstream (Ref. 129). Chum salmon in the Salcha, Chena, Chatanika and Middle and South Fork Koyukuk rivers usually reach their spawning grounds by mid-July and spawning is complete by 1 September. Fry start emerging from the gravel in early April and emergence continues through May. Fry spend little time in freshwater and out migrations start shortly after emergence. Chum salmon generally spend 3-5 years at sea before returning to freshwater to spawn.

Site Specific Information

Spawning

Delta River - spawning peaked the last week of October 1974 (Ref. 32).

Delta River - spawning occurred from mid-October to end of November 1975; spawning peaked 29 October (Refs. 32 and 33).

Salcha River - spawning peaked during the second and third weeks of August 1976 (Ref. 14).

Chena River - chum salmon spawn in late summer (Ref. 11).

Slate Creek - spawning observed on 26 August (Ref. 131).

Jim and Middle and South Fork Koyukuk rivers - spawning in these rivers peaks 20-30 July (Ref. 88).

Delta River - hatching began early February and continued to mid-March 1976 (Ref. 33).

Chena River - eggs hatch January-February (Ref. 11).

Delta River - fry emergence began in early April and lasted through the third week of that month (Ref. 33).

Migration

Delta River - adults first arrived 8 October 1974 (Ref. 32).

Jim and Middle and South Fork Koyukuk rivers - first arrive after 1 July (Ref. 88).

Salcha River - fry out migration occurred 18 May-8 June 1973, 16-30 May 1976 and 11-13 May 1977 (Ref. 35).

Delta River - peak out migration of fry occurred 8-21 April 1976 (Ref. 16).

Jim and Middle and South Fork Koyukuk rivers - out migration peaks during breakup (Ref. 88).

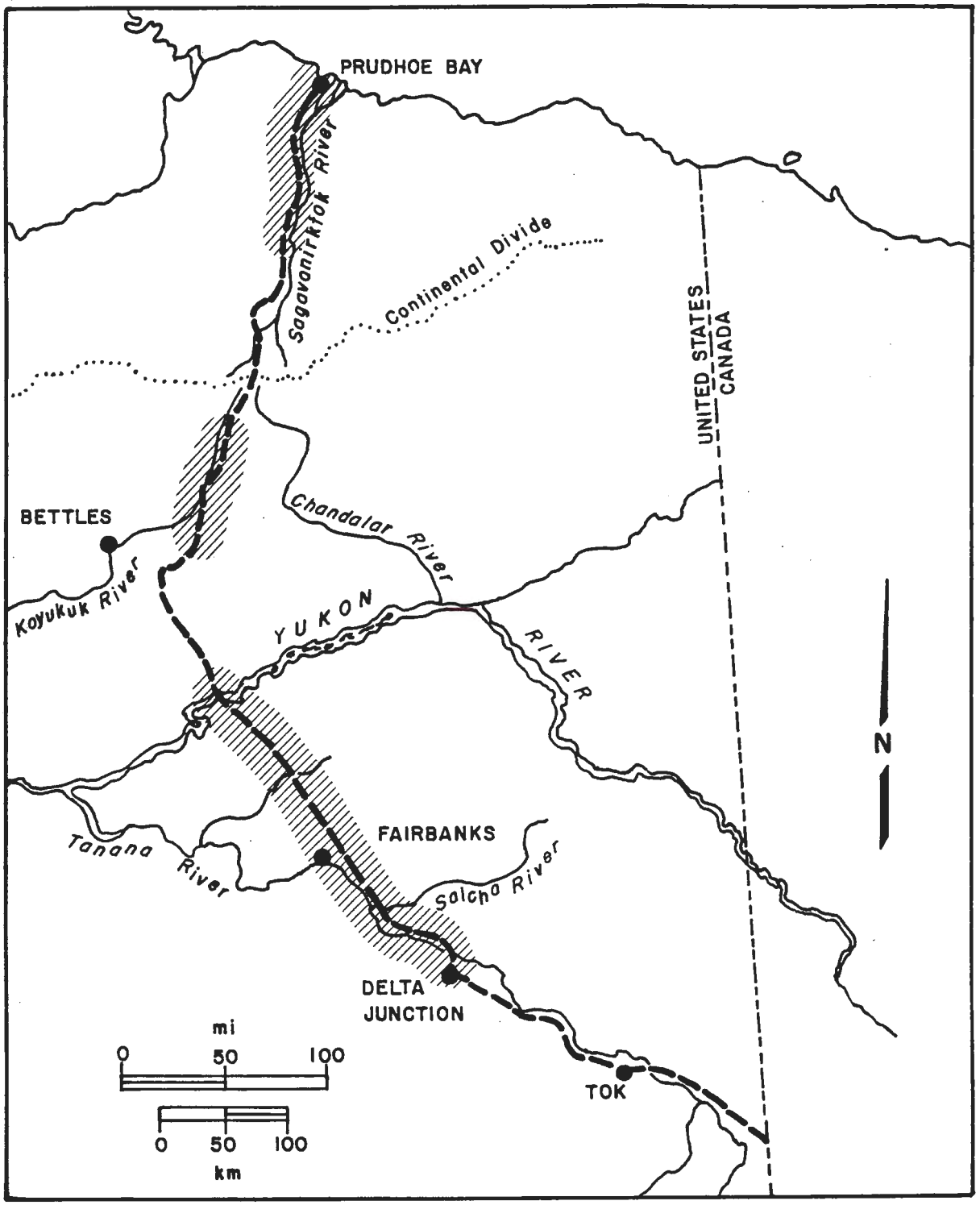


Figure 17. Known distribution of the chum salmon in the vicinity of the proposed gas pipeline.

Matrices for chum salmon

on following pages

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Chum salmon (*Oncorhynchus keta*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | June-Oct | NA | 2.44m/sec maximum | | 0.18m minimum | | | 8.3-15.6°C | | May migrate under ice | | | | NA | NA | |
| | Spawning | Aug-Nov | 13-102mm | 0.46-1.01 m/sec | | 0.18m minimum | | | 7.2-12.8°C | NA | May spawn under ice | | | | | | NA |
| | Egg Development and Emergence | Hatch Dec-Feb, emerge 60-90 days later | Higher mortality in small gravel, 1.0-3.8mm | | | NA | | | 4.4-13.3°C | NA | | | 0.72-3.7mg/l critical level | | | NA | NA |
| FRY | Feeding and Growth | Rapid growth during first summer | | | | | | | | NA | | | | Majority of growth in salt water | | | Insect larvae, zooplankton |
| FRY | Distribution and Abundance | Some fry remain in fresh water during 1st summer | Will hide in gravel | | | | | | 23.9°C upper lethal | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Crustaceans fish, krill |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| ADULT | Distribution and Abundance | | | | | | | | 11.2-14.6°C prefered | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Chum salmon (*Oncorhynchus keta*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 8,10,16, 32,35, 116,117, 129,162, 191 | NA | 207 | | 207 | | | 207 | | 32 | | | | NA | NA | |
| | Spawning | 8,10,15, 16,32,34, 116,117, 129,131 | 15,32, 116,117, 129,191, 207 | 191,207 | | 32,207 | | | 116,117, 207 | NA | 32 | | | | | | NA |
| | Egg Development and Emergence | 10,15,16, 32,34, 117,129 | 148 | | | NA | | | 34,116, 117,207 | NA | | | 148,197, 206,207 | | | NA | NA |
| FRY | Feeding and Growth | 16,34, 191 | | | | | | | | NA | | | | 117 | | | 14,117, 129,191 |
| FRY | Distribution and Abundance | 15,116, 117,191 | 116,117 | | | | | | 129 | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,129, 162 |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| ADULT | Distribution and Abundance | | | | | | | | 15,117, 207 | | | | | | | | |

*Oncorhynchus kisutch* - Coho Salmon, Figure 18

In the vicinity of the gas pipeline corridor, coho salmon are found primarily in the Yukon, Chena and upper Tanana rivers. Adults migrate upriver from September to October and spawning takes place from October to November. Adults die shortly after spawning is completed. Eggs hatch in early spring, but the young (alevins) remain in their natal gravels for two to three weeks. Fry emerge from March to July and remain in freshwater to rear for one to two years, including streams and lakes located upstream of natal areas. Seaward migration of smolts generally occurs during and immediately following breakup. Coho salmon spend two to three years at sea before returning to spawn in their fourth or fifth year of life.

Site Specific Information

None.

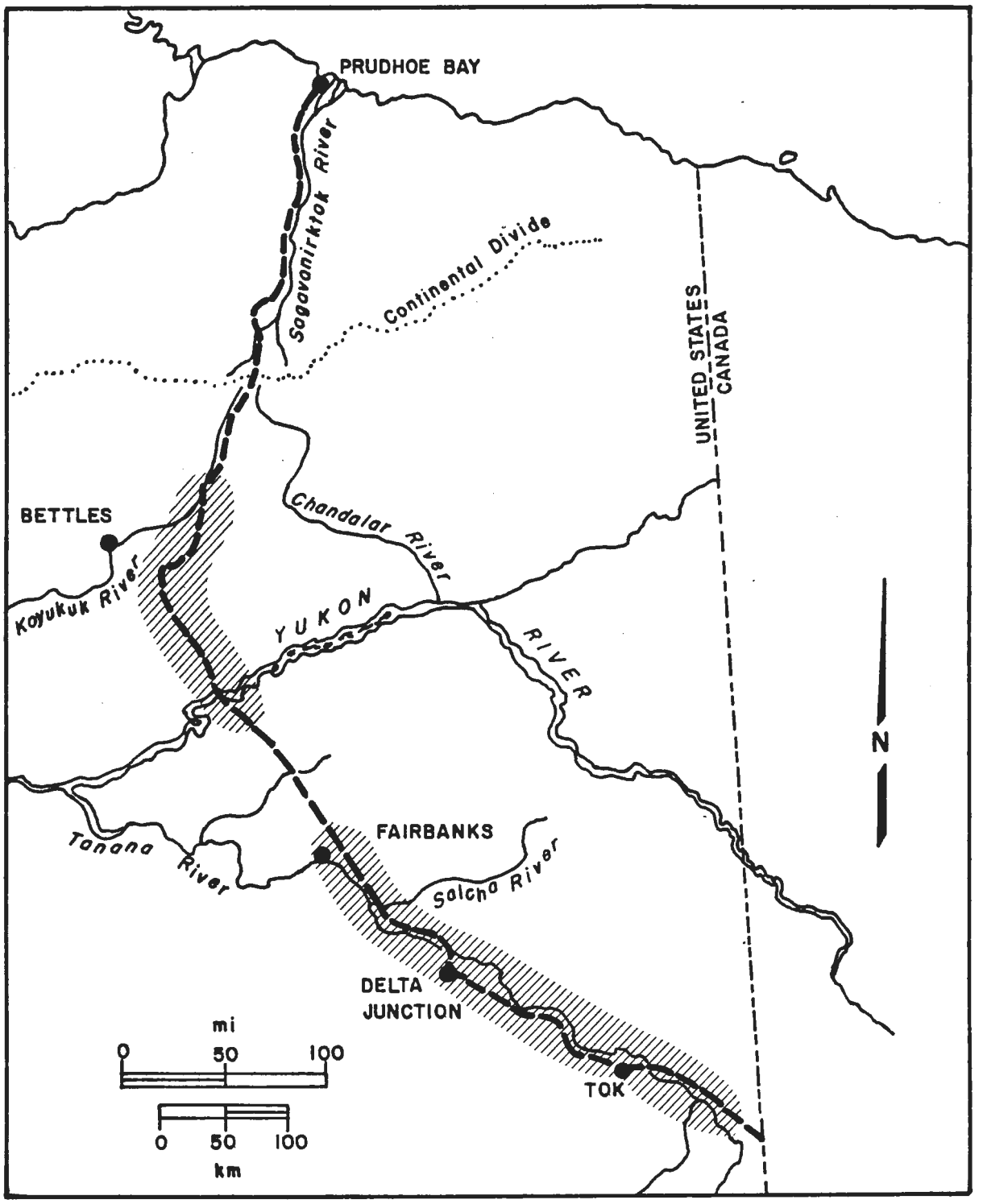


Figure 18. Known distribution of the coho salmon in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Coho salmon (*Oncorhynchus kisutch*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | Sept-Oct | NA | 2.44m/sec maximum | | 0.18m minimun | | | 7.2-15.6°C | | | | | | NA | NA | |
| | Spawning | Oct-Nov | Gravel, 13-102mm | 0.3-0.9m/sec | | 0.18m minimum, 0.3-0.38m typically | | | 4.4-9.4°C | NA | May spawn under ice | | | | | | NA |
| | Egg Development and Emergence | Hatch 35-50 days after spawning, emerge Mar-July | | | | NA | | | 4.4-13.3°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | Feed heavily in summer | Gravel | | | | | | | NA | | | | | | | Zooplankton, insects, mites |
| FRY | Distribution and Abundance | | Gravel to boulders | 0.05-0.24m/sec | | Shallow water in early summer, pools in late summer | | | 25.1°C upper lethal, 12-14°C prefered | | | | | | | | |
| JUVENILE | Feeding and Growth | Feed heavily in summer | Gravel | | | | | | | NA | | | | | | | Zooplankton, insects, fish fry |
| JUVENILE | Distribution and Abundance | | Gravel to boulders | | | Shallow water in early summer, pools in late summer | | | 10-20°C | | | | 4.0-11.3mg/l | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Fish, crustaceans |
| ADULT | Distribution and Abundance | | | | | | | | 25.8°C upper leathal, 11.8-14.6°C prefered | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Coho salmon (*Oncorhynchus kisutch*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 8,10,116 117,179 | NA | 207 | | 117,207 | | | 207 | | | | | | NA | NA | |
| | Spawning | 8,10,32, 116,117, 129 | 117,207 | 117,207 | | 207 | | | 207 | NA | 32 | | | | | | NA |
| | Egg Development and Emergence | 10,117, 129 | | | | NA | | | 116,117, 207 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | 117 | 117 | | | | | | | NA | | | | | | | 116,117, 129 |
| FRY | Distribution and Abundance | | 117 | 207 | | 117 | | | 117 | | | | | | | | |
| JUVENILE | Feeding and Growth | 117 | 117 | | | | | | | NA | | | | | | | 116,117, 129 |
| JUVENILE | Distribution and Abundance | | 117 | | | 117 | | | 206,207 | | | | 206,207 | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 129,183 |
| ADULT | Distribution and Abundance | | | | | | | | 207 | | | | | | | | |

*Oncorhynchus tshawytscha* - King Salmon, Figure 19

King salmon that use streams along the proposed pipeline route are found primarily in the upper Tanana River drainages (Goodpaster, Salcha and Chena rivers) and middle Yukon River drainages (Prospect, Jim and Middle and South Fork Koyukuk rivers). King salmon destined for the aforementioned streams probably enter the Yukon River in late May and arrive on the spawning grounds in early July. Spawning peaks 20-30 July in middle Yukon River drainages and in early August in upper Tanana River drainages. After hatching and emergence from spawning redds, young king salmon generally remain in freshwater for two years before migrating to sea. Smolts begin their downstream migration during and immediately following spring breakup. King salmon remain at sea two to five years before returning to freshwater to spawn in their fourth to seventh year of life.

Site Specific Information

Spawning

Salcha River - peak spawning during last week of July 1974 (Ref. 25).

Salcha River - peak spawning during first week of August 1976 (Ref. 14).

Jim, Prospect and Middle and South Fork Koyukuk rivers - peak spawning occurs 20-30 July (Ref. 88).

Salcha River - fry emergence continued at least through 18 June 1976 and possibly through that entire month (Ref. 14).

Migration

Salcha River - adults entered river in early July 1974 (Ref. 25).

Jim, Prospect and Middle and South Fork Koyukuk rivers - adults begin arriving after 1 July (Ref. 88).

Salcha River - smolt out migration probably peaked before 25 May 1976 (Ref. 14).

Jim, Prospect and Middle and South Fork Koyukuk rivers - smolt out migration peaks during breakup (Ref. 88).

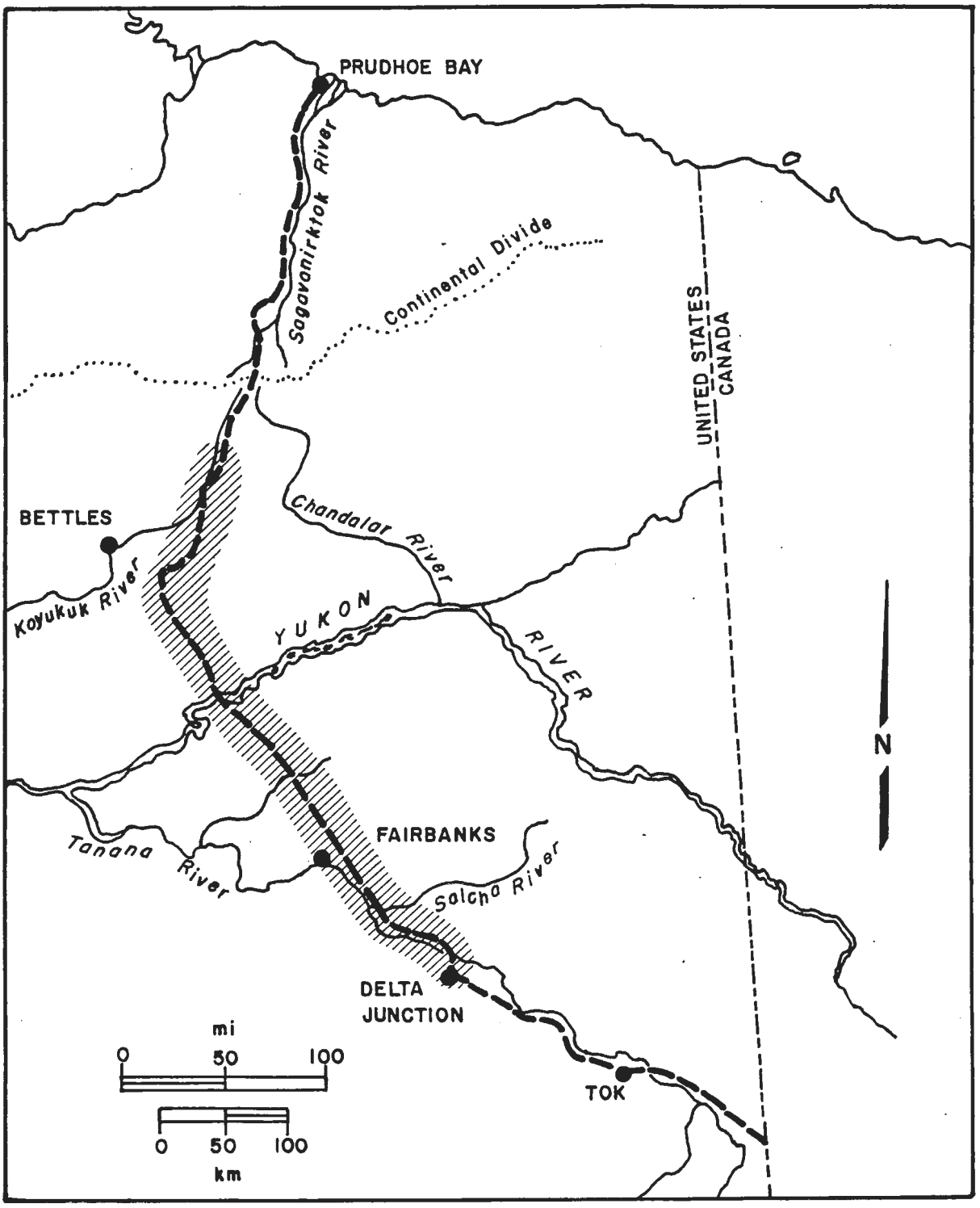


Figure 19. Known distribution of the king salmon in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species King salmon (*Oncorhynchus tshawytscha*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | May-July | NA | 2.44m/sec | | 0.24m minimum | | | 3.3-13.3°C | | | | | | NA | NA | |
| | Spawning | July-Sept | 13-102mm | 0.32-1.09m/sec | | 0.30m minimum | | Silt load may inhibit spawning | 5.6-13.9°C | NA | | | | | | | NA |
| | Egg Development and Emergence | Hatch 7-12 weeks after spawning, emerge in 2-3 weeks | Smaller gravel may increase mortality | Reduced velocity may increase mortality | | NA | | Silt load may inhibit development | 5.0-14.4°C | NA | | | 2.5mg/l minimum | | | NA | NA |
| FRY | Feeding and Growth | Rapid growth Mar-May | | | | | | | | NA | | | | | | | Insects, crustaceans |
| FRY | Distribution and Abundance | | | 0.09-0.46m/sec | | May occupy deep water | | Sediment loading may increase mortality | | | | | Less than 9.0mg/l increases mortality | | | Fry found near brush piles and beaver lodges | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Insects, molluscs, fish |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | Less than 4.5mg/l is avoided | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| ADULT | Distribution and Abundance | | | | | | | | 25.2°C upper lethal, 7.3-14.6°C prefered | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species King salmon (*Oncorhynchus tshawytscha*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 32,34,35, 116,117, 129,162 | NA | 207 | | 35,207 | | | 35,207 | | | | | | NA | NA | |
| | Spawning | 32,35, 117,129 | 116,117, 207 | 207 | | 116,207 | | 35 | 207 | NA | | | | | | | NA |
| | Egg Development and Emergence | 129 | 186 | 186 | | NA | | 186 | 116,117, 186,207 | NA | | | 186 | | | NA | NA |
| FRY | Feeding and Growth | 32 | | | | | | | | NA | | | | | | | 14,129 |
| FRY | Distribution and Abundance | | | 14,32, 35,207 | | 14,32, 35 | | 207 | | | 32 | | 32,206 | | | 14 | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,117, 129,162 |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | 206,207 | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| ADULT | Distribution and Abundance | | | | | | | | 207 | | | | | | | | |

*Percopsis omiscomaycus* - Trout-perch, Figure 20

Presence of the trout-perch in the vicinity of the proposed pipeline corridor is confined to the Yukon River. Little is known of the biology of this fish in river systems, however lake populations have been investigated. In the Yukon River spawning apparently occurs from late spring through summer as ripe specimens were taken at Circle, Alaska, on 28 June 1958. Timing of spawning of river populations is suspected to closely follow that of lake populations. The latter move into shallow clearwater tributaries of lakes to spawn at night in gravel and cobble substrate. The eggs adhere to the substrate and hatch in 10 to 20 days.

Site Specific Information

None.

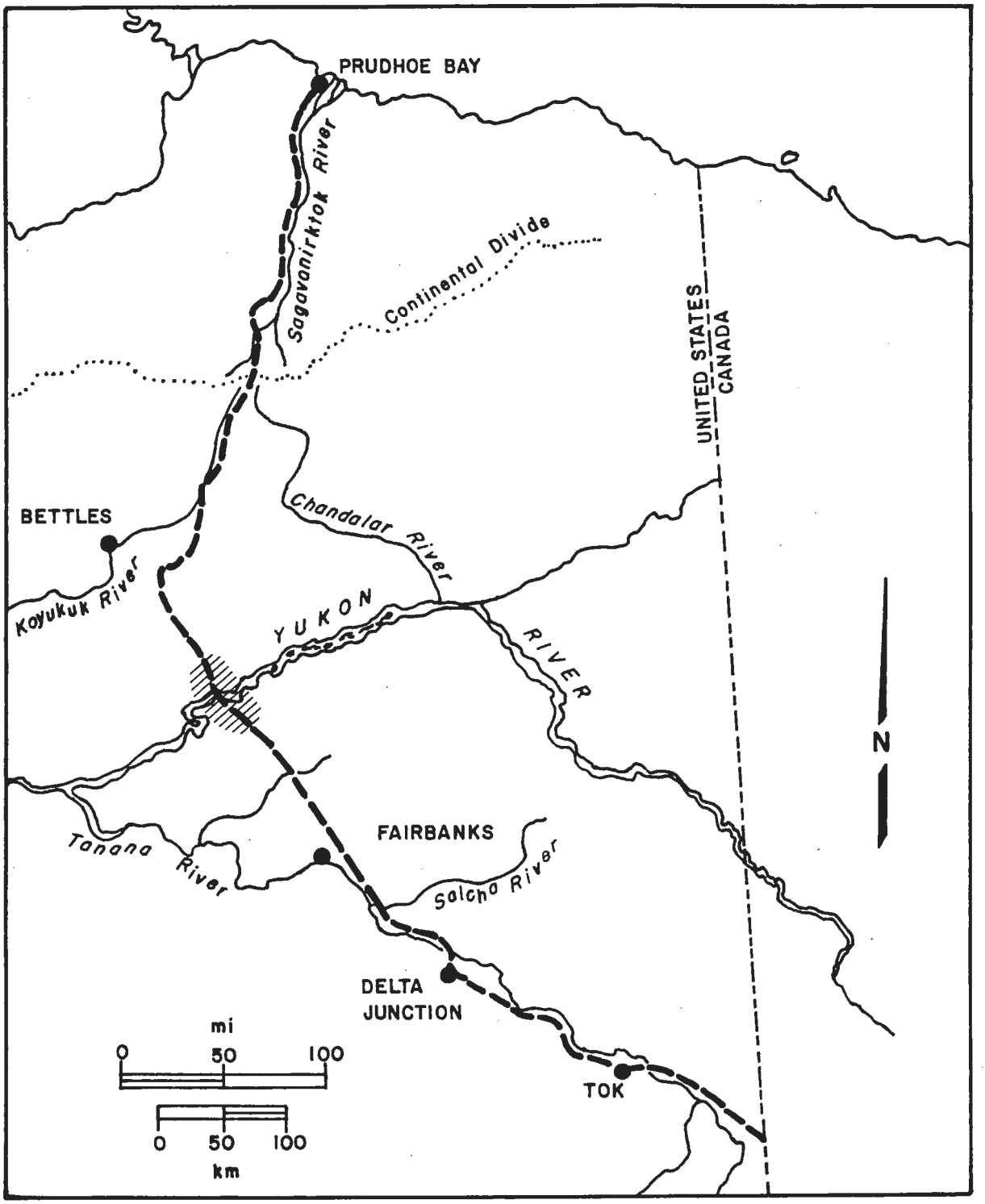


Figure 20. Known distribution of the trout-perch in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Trout-perch (*Percopsis omiscomaycus*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | May | NA | | | 0.6m | | | | Beaver dam foundation may inhibit migration | | | | | NA | NA | |
| | Spawning | May-Aug | Silt, sand, and gravel | | | 0.1-1.0m | | | 4.5-20°C | NA | | | | | | | NA |
| | Egg Development and Emergence | Hatch 1 week after spawning | | | | NA | | | 20-23°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | Most growth during summer | | | | | | | | NA | | | | | | | Aquatic insects, molluscs, algae |
| ADULT | Distribution and Abundance | | May occupy rocky streams | | | 0.10-61m | May occupy turbid water | | | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Trout-perch (*Percopsis omiscomaycus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 202 | NA | | | 202 | | | | 202 | | | | | NA | NA | |
| | Spawning | 116,117, 129,202, 203 | 117,202 | | | 116,117, 203 | | | 129 | NA | | | | | | | NA |
| | Egg Development and Emergence | 129 | | | | NA | | | 129,203 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | 190 | | | | | | | | NA | | | | | | | 116,117, 129 |
| ADULT | Distribution and Abundance | | 117 | | | 117,129 | 117 | | | | | | | | | | |

*Pungitius pungitius* - Ninespine Stickleback, Figure 21

Ninespine stickleback are present in many waterbodies along the pipeline corridor north of the Brooks Range. Spawning generally takes place in shallow, well vegetated areas during spring and summer. Spawning may occur more than once in a season (Ref. 116). Eggs normally hatch within 7 days and the young disperse into nearby nursery areas.

Site Specific Information

None.

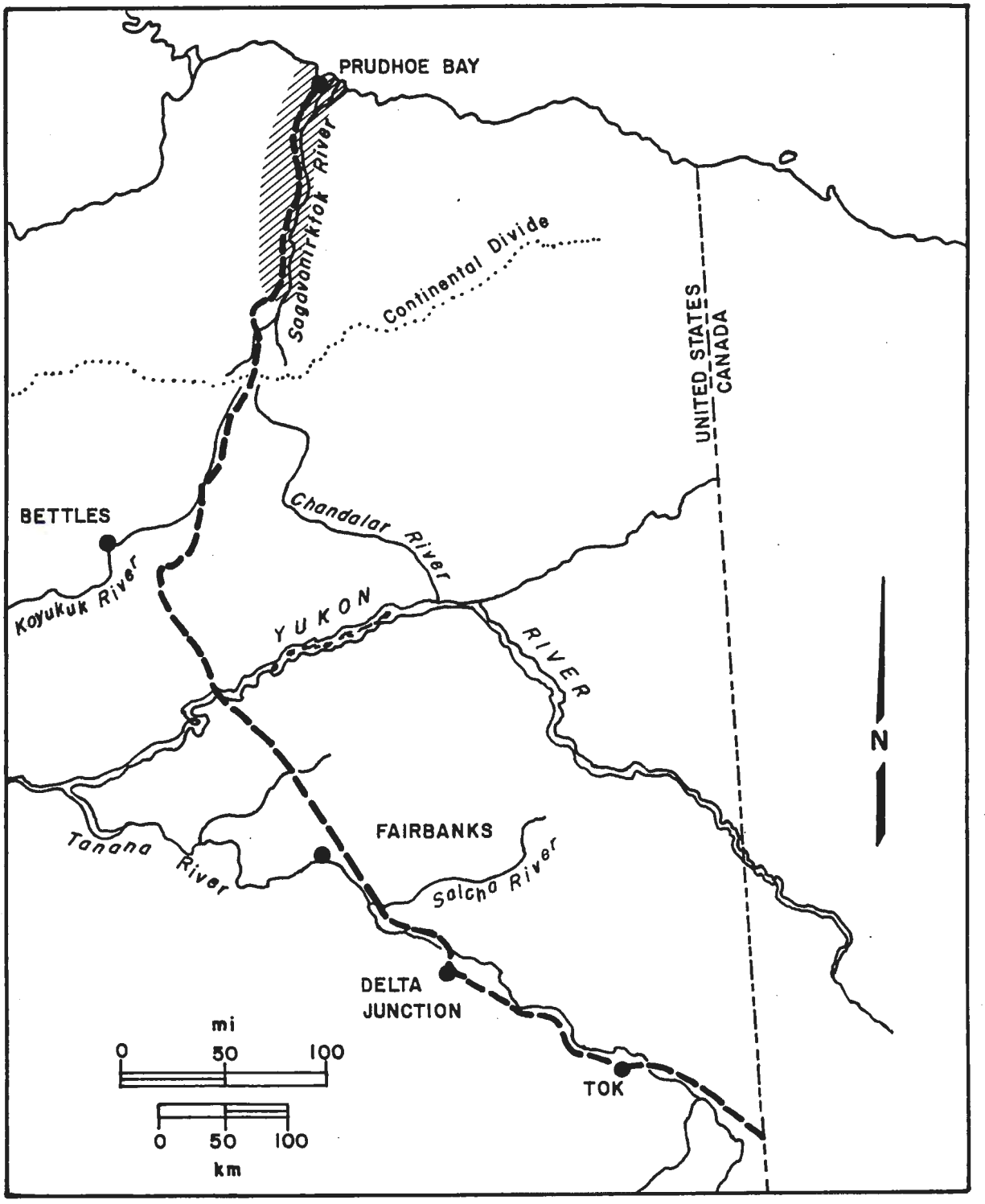


Figure 21. Known distribution of the ninespine stickleback in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Ninespine stickleback (*Pungitius pungitius*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | | NA | | | | | | | Low water crossing may impede migration | | | | | NA | NA | |
| | Spawning | May-July | | | | | | | 11-12°C | NA | | | | | Eggs deposited on aquatic vegetation | | NA |
| | Egg Development and Emergence | Hatch 1 week after spawning | | | | NA | | | 18°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | 3-16°C | NA | | | | | | | Insect larvae, Zooplankton |
| FRY | Distribution and Abundance | | | | | | | | 3-16°C | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | 3-16°C | NA | | | | | | | Insect larvae, Zooplankton |
| JUVENILE | Distribution and Abundance | | | | | | | | 3-16°C | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | 3-16°C | NA | | | | | | | Insect larvae, Zooplankton |
| ADULT | Distribution and Abundance | Overwinter in deep water | | | | May occur in lakes to 110m | | | 3-16°C | | | | Can withstand low DO | Can withstand high salinity | Inhabits vegetated stream margins | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Ninespine stickleback (*Pungitius pungitius*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | | NA | | | | | | | 205 | | | | | NA | NA | |
| | Spawning | 116,117, 129 | | | | | | | 129,145 | NA | | | | | 116,117, 129 | | NA |
| | Egg Development and Emergence | 129 | | | | NA | | | 129 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | 145 | NA | | | | | | | 145 |
| FRY | Distribution and Abundance | | | | | | | | 145 | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | 145 | NA | | | | | | | 145 |
| JUVENILE | Distribution and Abundance | | | | | | | | 145 | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | 145 | NA | | | | | | | 116,117, 129,145 |
| ADULT | Distribution and Abundance | 129 | | | | 129 | | | 129,145 | | | | 129 | 129 | 116 | | |

*Salvelinus alpinus* - Arctic Char, Figure 22

Arctic char are abundant in streams and lakes along the gas pipeline corridor draining into the Beaufort Sea but are only occasionally present in Yukon River drainages. Arctic char are generally replaced by Dolly Varden south of the Brooks Range to the Yukon River and in headwater streams of the upper Tanana River. Mature anadromous Arctic char, followed shortly by immature fish, generally enter freshwater streams (upstream migration) from August to September. Arctic char generally seek large rivers or perennial springs that flow year-round. Spawning takes place from mid-August to October. Adults may remain in spawning areas to overwinter but most move downstream to overwinter in lower reaches of spawning streams. Spawning areas must also provide overwintering habitat for eggs, since hatching occurs in spring or late winter. Emigration to the sea of adult and juvenile (smolts) char occurs shortly after breakup (June to early July). Arctic char generally remain near the mouths of natal streams and feed in estuarine waters before returning to freshwater in late summer and fall. Non-anadromous Arctic char have a similar life history as anadromous fish except that they remain in freshwater year-round.

Site Specific Information

Spawning

Beaufort Sea drainges - spawn in fall in spring fed and mountain streams (Ref. 105).

Sagavanirktok River drainage - eggs are deposited in late September 1972 (Ref. 102).

Echooka, Ivishak and Lupine rivers and Accomplishment Creek - spawning occurred from the last week of August to the third week of November 1971 (Ref. 101).

Firth River drainage, Yukon Territory - spawning from mid-August to late September (Ref. 110).

Sadlerochit Spring, Arctic National Wildlife Refuge - evidence suggests that non-anadromous dwarf Arctic char spawn late in the year since spawning had not occurred by early November (Ref. 108).

Sagavanirktok River drainage - fry began to emerge from spawning gravels in mid-June; hatching occurred in mid-April (Ref. 102).

Canning River drainage, Spring CS-10 - fry emerged from gravel from the last week of May to the first week of June 1973 (Ref. 102).

Firth River drainage, Yukon Territory - fry emerge from gravel in late May (Ref. 110).

Migration

Sagavanirktok River - migrations occur from breakup through September (Ref. 101).

Lupine River - upstream migration occurred from 15 August to 4 September 1971; run peaked 25 August 1971 (Ref. 101).

Ivishak River - most upstream migrants present by 3 September 1971 (Ref. 101).

Ivashak River - upstream migrant spawners run peaked 21-25 August 1972; non-spawners run peaked 1-6 September 1972 (Ref. 102).

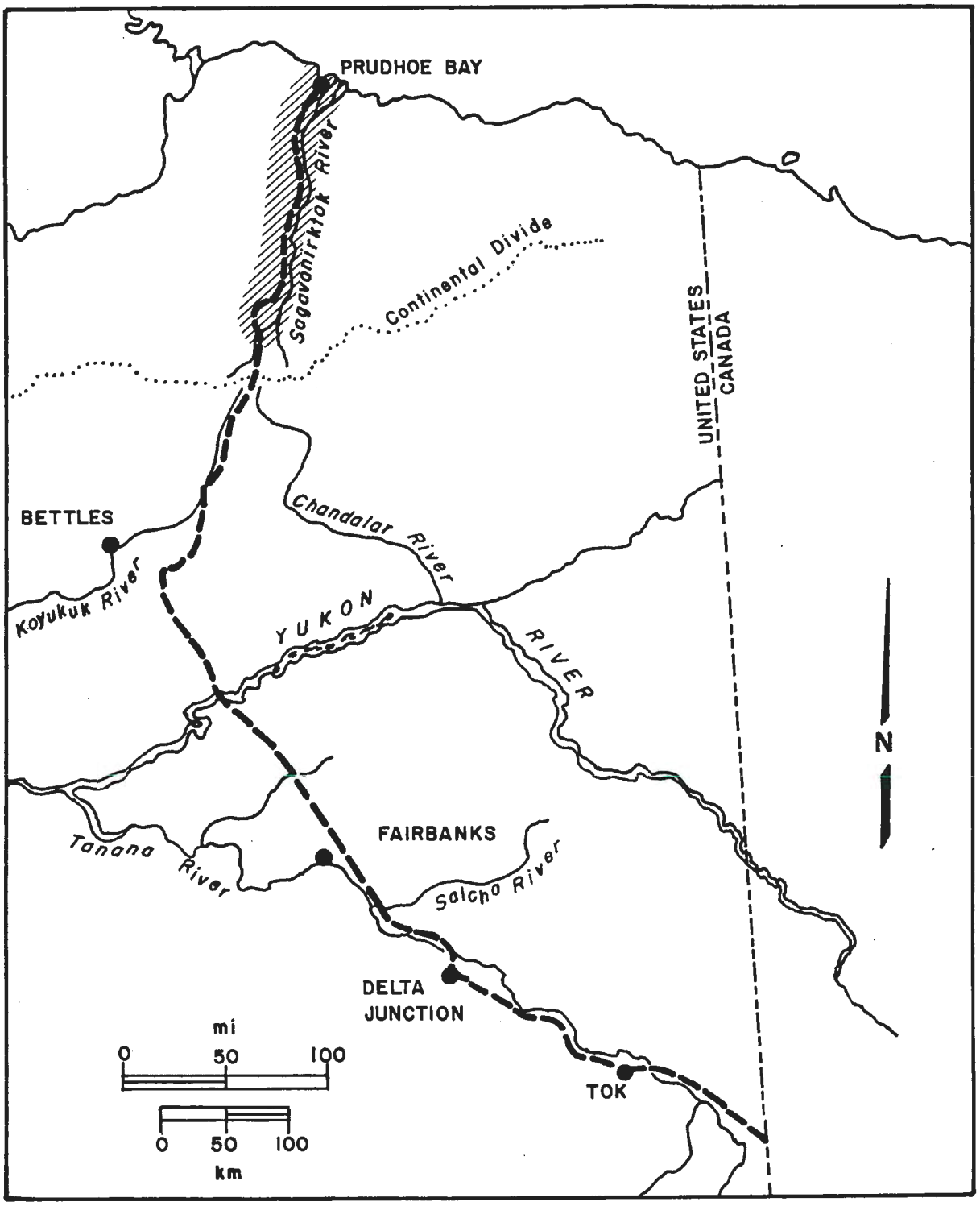


Figure 22. Known distribution of the Arctic char in the vicinity of the proposed gas pipeline.

Matrices for Arctic char

on following pages

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Arctic char (*Salvelinus alpinus*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | To sea June-July, return Aug-Sept to spawn | NA | 2.5-3.0m/sec | | 1.0-2.0m | | | 6°C | Can leap falls 1.5m high, blocked by 3.3m falls | | | | | NA | NA | |
| | Spawning | Aug-Oct | Gravel or rocks | | | 1.0-4.5m | | | 0.5-13°C | NA | | | | | | | NA |
| | Egg Development and Emergence | Hatch in Apr, emerge May-June | | | | NA | | | 0-2.2°C typically, 7.8°C maximum | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | Rapid growth July-Sept | | | | | | | | NA | | | | | | | Insect larvae, amphipods |
| FRY | Distribution and Abundance | Over-winter in springs | Hide among rocks and gravel | 0.1-0.5m/sec typically | | Usually in water less than 1.0m | | | | | | | About 9.4mg/l | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Insect larvae, amphipods |
| JUVENILE | Distribution and Abundance | Over-winter in springs | Hide among rocks | | | More abundant in deeper pools | | | | | Over-winter near ice edge | | About 9.4mg/l | | | | |
| ADULT | Feeding and Growth | | | | | | | | Slow growth at low temps. | NA | | Low pH may slow growth rate | | | | | Insect larvae, molluscs, crusta-ceans, fish |
| ADULT | Distribution and Abundance | Over-winter in springs | | | | 2.0m or deeper | | | | | Over-winter near ice edge | | About 9.4mg/l | May inhabit saline water | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Arctic char (*Salvelinus alpinus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 106,107, 116,117, 149,170 | NA | 170 | | 170 | | | 107 | 170 | | | | | NA | NA | |
| | Spawning | 107,116, 117,129, 166,170, 192,204 | 116,117 129 | | | 117 | | | 117 | NA | | | | | | | NA |
| | Egg Development and Emergence | 107,117, 129,204 | | | | NA | | | 117,129 204 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | 204 | | | | | | | | NA | | | | | | | 204 |
| FRY | Distribution and Abundance | 107 | 116,204 | 170 | | 170,204 | | | | | | | 204 | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,117, 204 |
| JUVENILE | Distribution and Abundance | 107 | 116 | | | 204 | | | | | 204 | | 204 | | | | |
| ADULT | Feeding and Growth | | | | | | | | 170 | NA | | 182 | | | | | 116,117, 129,166, 170,182 |
| ADULT | Distribution and Abundance | 107 | | | | 170 | | | | | 204 | | 204 | 116,170, 192,204 | | | |

*Salvelinus malma* - Dolly Varden, Figure 23

Along the proposed pipeline route, Dolly Varden are found primarily in clear headwater streams of the Alaska Range in the upper Tanana River drainage and the southern Brooks Range in the middle Yukon drainage. Fish from both regions appear to be non-anadromous and spawn in September and October. Dolly Varden were seen spawning in Schroeder's Spring (Overwintering Creek), a Dietrich River tributary, on 13 September 1976 (Ref. 11). Dolly Varden in both regions are usually associated with clear spring water areas and only minor seasonal movements occur. Dolly Varden in the vicinity of the proposed pipeline are small, rarely exceeding 25 cm in length.

Site Specific Information

None.

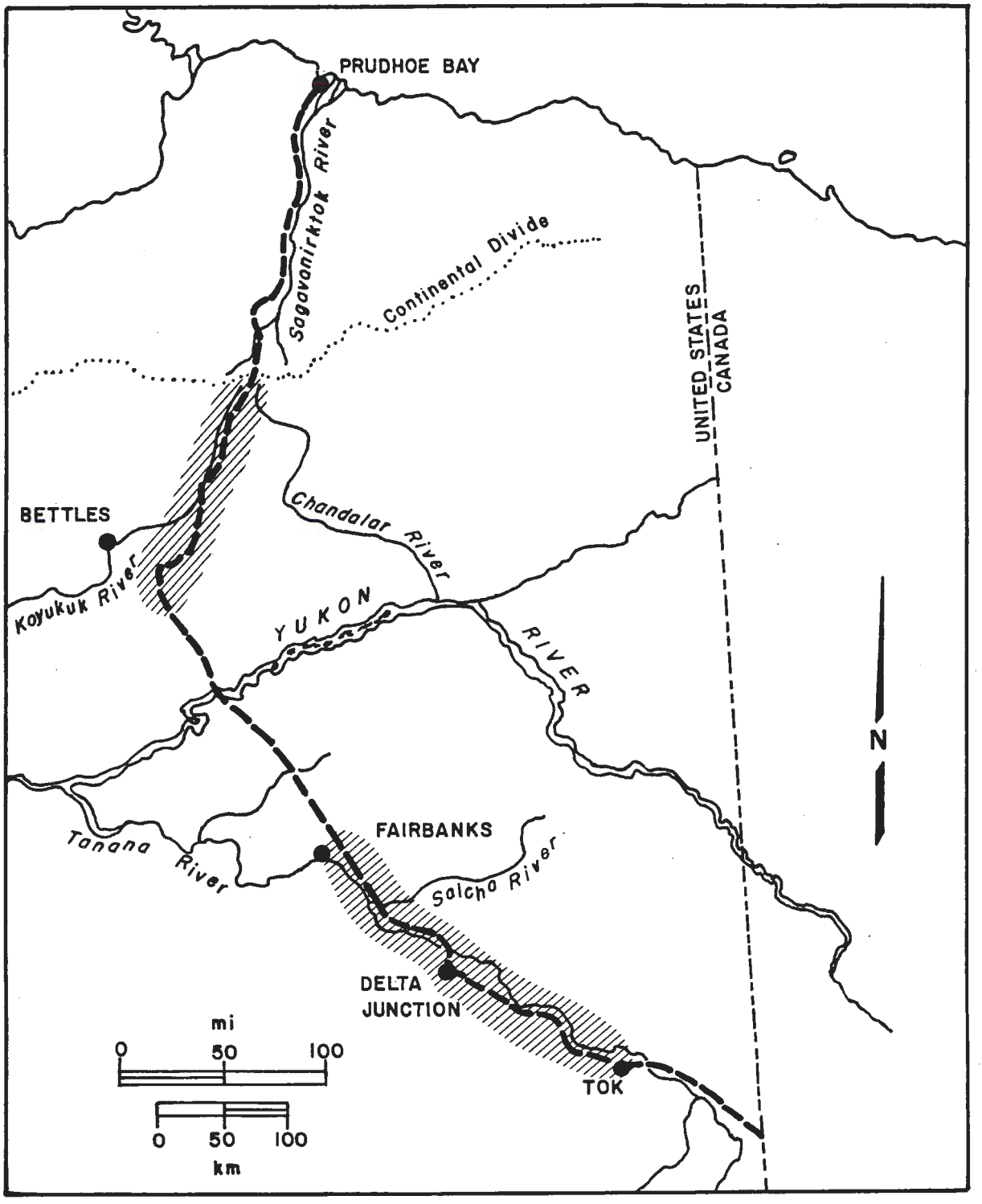


Figure 23. Known distribution of the Dolly Varden in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Dolly Varden (*Salvelinus malma*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | May-Dec | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | Aug-Nov | 6-50mm | Moderate current | | At least 0.3m | | | 5.5-7.8°C | NA | | | | | | | NA |
| | Egg Development and Emergence | Hatch Mar-Apr, emerge Apr-May | | | | NA | | | 8.5°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | Rapid growth during first 6 months | | | | | | | | NA | | | | | | | Insects, crustaceans |
| FRY | Distribution and Abundance | | Gravel | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Insects, spiders, fish eggs |
| JUVENILE | Distribution and Abundance | | Gravel | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Snails, fish eggs fish |
| ADULT | Distribution and Abundance | Over-winter in lakes | Mud to gravel | | | | Rarely inhabit muddy water | | | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Dolly Varden (*Salvelinus malma*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 117,129, 139,147, 192 | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 117,129, 139,147 | 117,129 | 117 | | 129 | | | 117,129 | NA | | | | | | | NA |
| | Egg Development and Emergence | 116,117, 129 | | | | NA | | | 129 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | 116,117, 138 | | | | | | | | NA | | | | | | | 129,138 |
| FRY | Distribution and Abundance | | 117 | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 117,129, 138,182 |
| JUVENILE | Distribution and Abundance | | 117 | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,117, 129,138, 182 |
| ADULT | Distribution and Abundance | 117,147 | 117 | | | | 116 | | | | | | | | | | |

*Salvelinus namaycush* Lake Trout, Figure 24

In Alaska, the distribution of the lake trout is confined to Beaufort Sea drainages of the Brooks Range and areas within the Alaska Range south to the coast. Lake trout are only documented along the proposed gas pipeline corridor in Stump Creek, Roche Moutonee Creek and the Atigun River, all of which are Sagavanirktok River drainages. Adult lake trout favor deep, cool waters of lakes during summer but move into shallow shoreline areas to spawn in fall. Eggs remain within gravel and rubble substrates during winter and hatch after four to five months. After spawning, adult lake trout disperse throughout lake or river systems. Young trout remain in shallow water along the shores for several years before moving into deeper waters.

Site Specific Information

None.

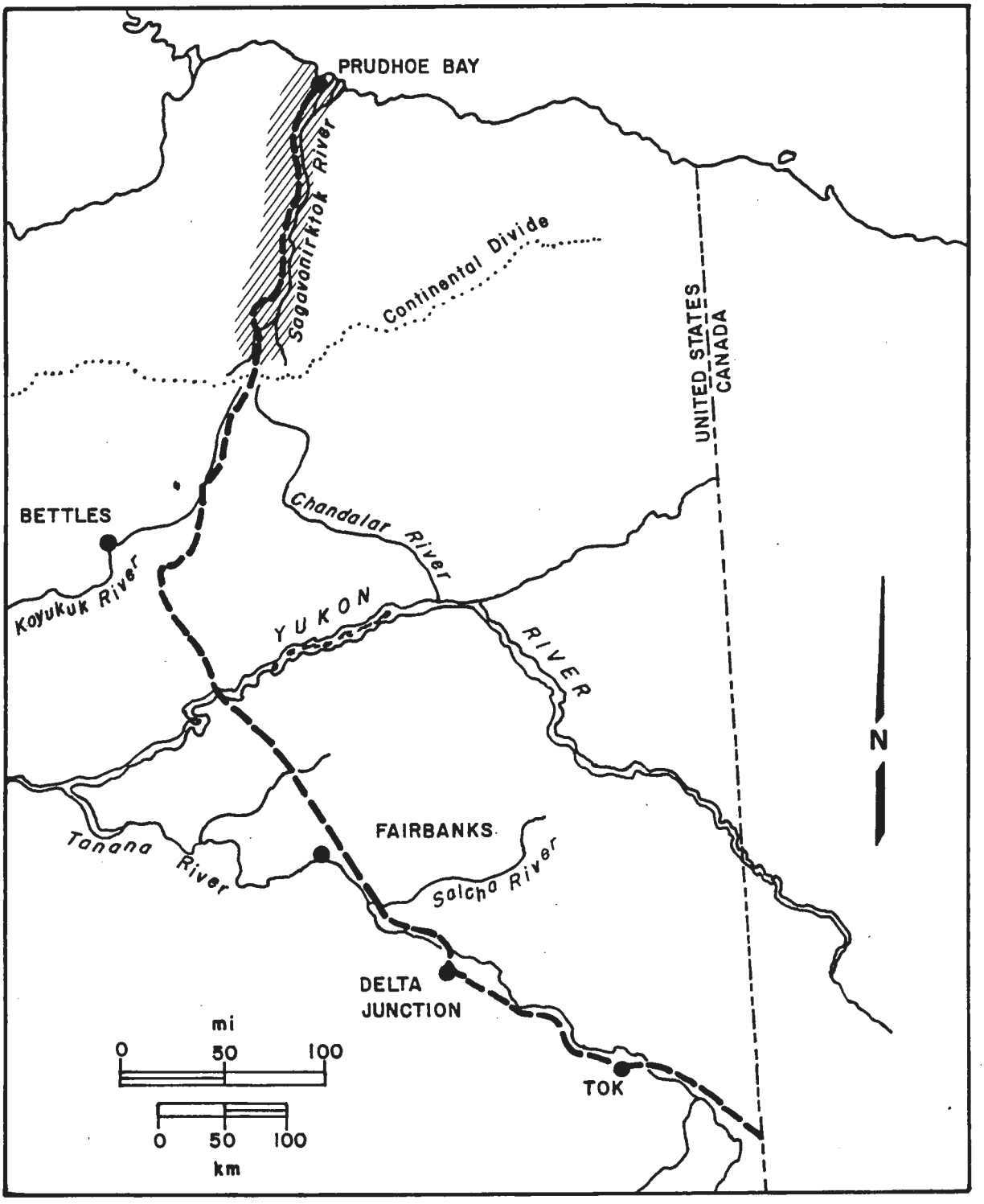


Figure 24. Known distribution of the lake trout in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Lake trout (*Salvelinus namaycush*)



| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | Late summer to early fall | Gravel, boulders | | | 0.3-36.0m | | | 8.9-13.9°C | NA | | | | | | | NA |
| | Egg Development and Emergence | Hatch Feb-Mar | | | | NA | | | 0.3-1.0°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | Crustaceans |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Crustaceans |
| JUVENILE | Distribution and Abundance | | | | | Prefer shallow lake margins | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | Mysids, insects, snails, fish |
| ADULT | Distribution and Abundance | | | | | Inhabits deep cold lakes and clear streams | | | | | | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Lake trout (*Salvelinus namaycush*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | | NA | | | | | | | | | | | | NA | NA | |
| | Spawning | 116,117, 129 | 116,117, 129 | | | 117,129 | | | 117 | NA | | | | | | | NA |
| | Egg Development and Emergence | 116,117, 129 | | | | NA | | | 117 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | 129 |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,129 |
| JUVENILE | Distribution and Abundance | | | | | 116,117 | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | | | | | NA | | | | | | | 116,117, 129,158, 190 |
| ADULT | Distribution and Abundance | | | | | 116,117 | | | | | | | | | | | |

*Stenodus leucichthys* - Sheefish (Inconnu), Figure 25)

Sheefish or inconnu are found in streams of the Yukon and Tanana river drainages. They inhabit primarily the Chena, Chatanika, Tatalina, Tolovana, Yukon, Ray, Dall, Kanuti and Koyukuk rivers and Hess Creek. Sheefish appear to utilize the lower reaches of many of the aforementioned streams more heavily than upper reaches where the proposed pipeline corridor is often situated. They begin a gradual upstream spawning migration after spring breakup. This migration may last several months, with non-spawners traveling to summer rearing areas and spawners reaching spawning grounds as early as August. Spawning occurs from late September to early October and a rapid downstream post-spawning migration to overwintering areas occurs shortly afterward. Anadromous sheefish overwinter in estuarine areas near the mouths of large rivers which probably do not occur within the proposed pipeline corridor. Non-anadromous (i.e., Minto Flats sheefish) populations overwinter in large, deep rivers.

Site Specific Information

Spawning

Chatanika River - spawning occurs in late September and early October (Ref. 113).

Upper Kobuk River - spawning occurs in late September (Ref. 86).

Koyukuk River - spawning occurs in September and October (Ref. 11).

Migration

Minto Flats/Chatanika River - sheefish enter Minto Flats in late May after breakup; sheefish reach spawning grouns on Chatanika River in late August and September; rapid downstream migration following spawning (Ref. 113).

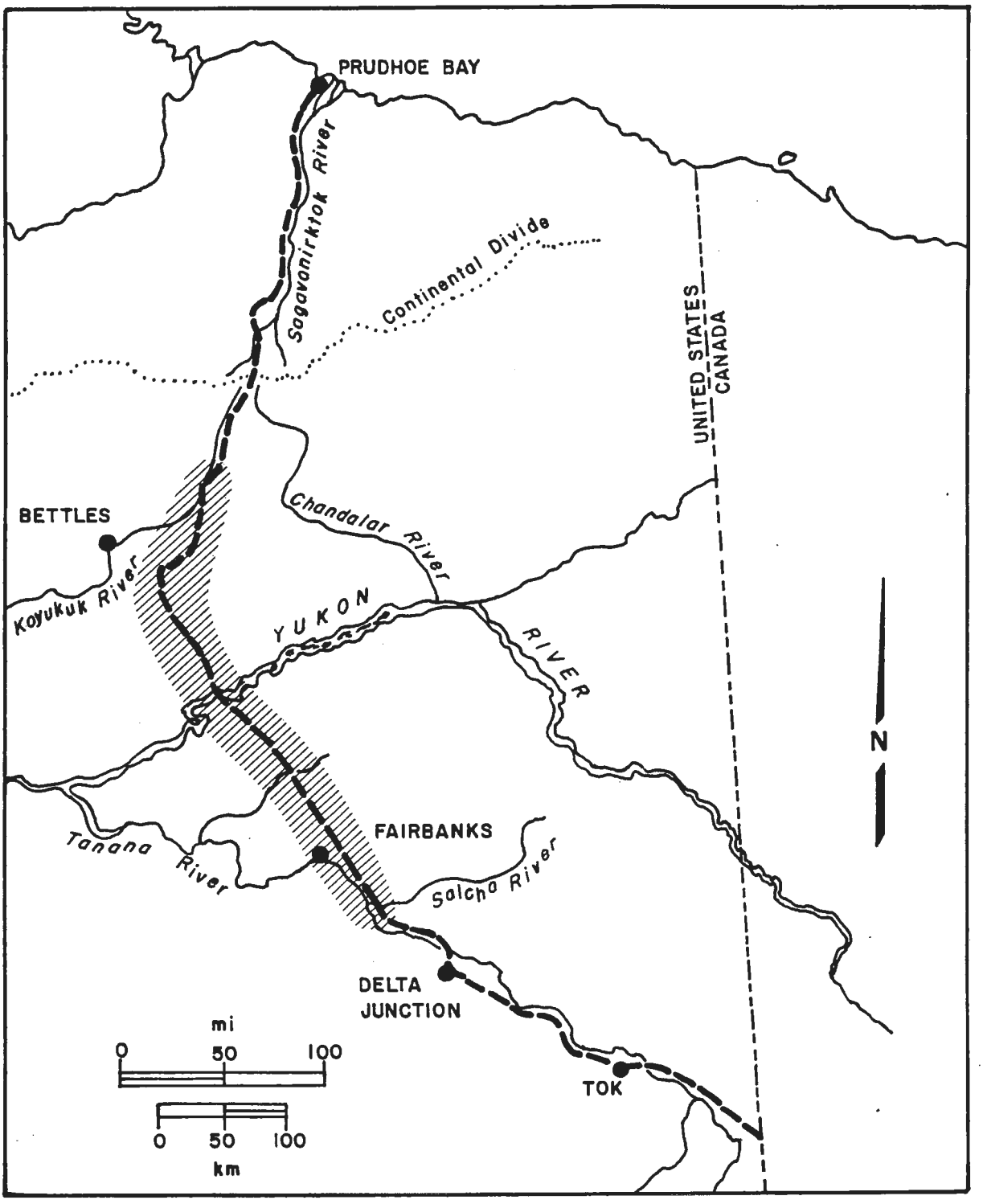


Figure 25. Known distribution of the sheefish in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Sheefish (*Stenodus leuichthys*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | June-Sept | NA | | | | | | | Water falls may stop migration | Will out-migrate under ice | | | | NA | NA | |
| | Spawning | Sept-Oct | Sand and gravel | Swift streams | | 1-3m | Clear streams | | 1.4-4.6°C | NA | May spawn under ice | | | | | | NA |
| | Egg Development and Emergence | Feb-Apr | | | | NA | | | | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | Plankton, insect larvae |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | Aquatic insects, crustaceans |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | May feed in shallow water 0.6-1.5m | May feed in silty water | | | NA | | | | | | | Fish, isopods, mysids |
| ADULT | Distribution and Abundance | | Gravel | Slow moving water | | | Common in muddy water | | | | | | Avoids DO deficient water | Can withstand brackish water 6-7ppt | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Sheefish (*Stenodus leuichthys*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 83,113, 116,117 | NA | | | | | | | 86 | 86,113 | | | | NA | NA | |
| | Spawning | 86,113, 116,117, 129 | 86,116, 129 | 86,129 | | 86,129 | 86,129 | | 86,129 | NA | 86,117 | | | | | | NA |
| | Egg Development and Emergence | 129 | | | | NA | | | | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | | | | | | | | | NA | | | | | | | 86,129 |
| FRY | Distribution and Abundance | | | | | | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | | | | | | | | | NA | | | | | | | 86,116, 117,129, 150 |
| JUVENILE | Distribution and Abundance | | | | | | | | | | | | | | | | |
| ADULT | Feeding and Growth | | | | | 134 | 134 | | | NA | | | | | | | 86,116, 117,129, 134 |
| ADULT | Distribution and Abundance | | 86 | 86 | | | 116 | | | | | | 113 | 86 | | | |

*Thymallus arcticus* - Arctic Grayling, Figure 26

Arctic grayling are found throughout the proposed pipeline corridor and are the most frequently occurring species. Adult grayling begin their upstream spawning migration as early as 10 April in some streams and juveniles follow shortly thereafter. Spawning generally lasts 3-15 days and falls within the period 10 May to 20 June depending upon the region (see site-specific information below). The timing of migration and spawning for grayling in streams north of the Brooks Range generally appears to be two weeks after the same events in more southerly Alaskan streams. Adults may remain in the vicinity of spawning grounds to rear but most spend the summer months in other tributaries or the mainstem of the system. Juvenile and young-of-the-year grayling generally remain in natal streams until near freeze-up when all grayling begin moving downstream into large rivers or lakes to overwinter.

Site Specific Information

Spawning

Little Salcha River - spawning occurred 13 May-16 June 1952 (Ref. 83).

Chatanika River - spawning occurs mid-May to early June (Ref. 84).

Mineral Lake Outlet - spawning began on 18 May 1969 and 1970 (Ref. 39).

Mineral Lake Outlet - spawning occurred from 31 May to 7 June 1971 (Ref. 93).

Goodpaster River - spawning began 11 May near mouth and 18 May approximately 50 km upstream in 1973 (Ref. 95).

Upper Chena River - all adult female grayling were spawned out by 22 May 1970 (Ref. 39).

Upper Chena River - spawning began 26 May 1973 (Ref. 94).

Jim River - grayling spawned 28 May to 11 June 1972 (Ref. 21).

Tea Lake Outlet - spawning occurs from late May to early June (Ref. 11).

Kuparuk River - spawning completed by 14 June (Ref. 11).

Happy Valley Camp Creek - spawning occurred 1-10 June (Ref. 11).

Weir Creek, Kavik River drainage - spawning occurred 11-18 June 1973 (Ref. 106).

Chatanika River - grayling first hatch 1 July (Ref. 84).

Upper Chena River - first fry found 18 June 1970 (Ref. 39).

Jim River - grayling hatched 20 June to 4 July 1972 (estimated) (Ref. 21).

Happy Valley Camp Creek - fry emerged 25 June (Ref. 11).

Weir Creek, Kavik River drainage - fry emerged late June and early July 1973 (Ref. 106).

Tea Lake Outlet - hatching is completed by mid-July (Ref. 11).

Migration

Shaw Creek - first grayling captured 15 March 1953; major immigration took place 12-23 April in 1952 and 1953 (Ref. 83).

Little Salcha River - major immigration took place 4-13 May 1952; stream was ice free 15 May 1952 (Ref. 83).

Little Salcha River - major immigration took place 28 April to 9 May 1953; stream was ice free 16 May 1953 (Ref. 83).

Chatanika River - Spring migration occurs 15 May to 10 June (Ref. 84).

Mineral Lake Outlet - grayling first entered stream 19 May 1971; major immigration began 25 May 1971 (Ref. 93).

Upper Chena River - major upstream migration began 20 April 1973 (Ref. 94).

North and South Fork Goodpaster River - first upstream migrant caught. 16 April 1973; grayling moving steadily by 29 April 1973 (Ref. 95).

Poplar Creek near Gulkana River - adult grayling began moving into stream 14 May 1972; spawning run lasted 12 days (Ref. 21).

Unnamed Tributary of Jim River - grayling began upstream movement before 25 May 1972 (Ref. 21).

Prospect Creek - upstream spawning migration began 2 June 1972 (Ref. 21).

Weir Creek, Kavik River drainage - grayling first entered stream 7 June 1973 (Ref. 106).

Chatanika River - downstream movement of fry occurs 1 August to 1 September (Ref. 84).

Rosie Creek - heaviest fall emigration occurred 31 August to 4 September 1975 (Ref. 34).

Organo Creek - heaviest fall emigration occurred 25-29 August 1975 (Ref. 34).

Prospect Creek - most adult grayling had left stream by 15 October 1972 but immatures were still common (Ref. 21).

Weir Creek, Kavik River drainage - peak out migration of fry and juveniles occurred 13-21 September 1973 prior to freeze-up (Ref. 106).

Lupine River - downstream migration began 2 September 1971 (Ref. 101).

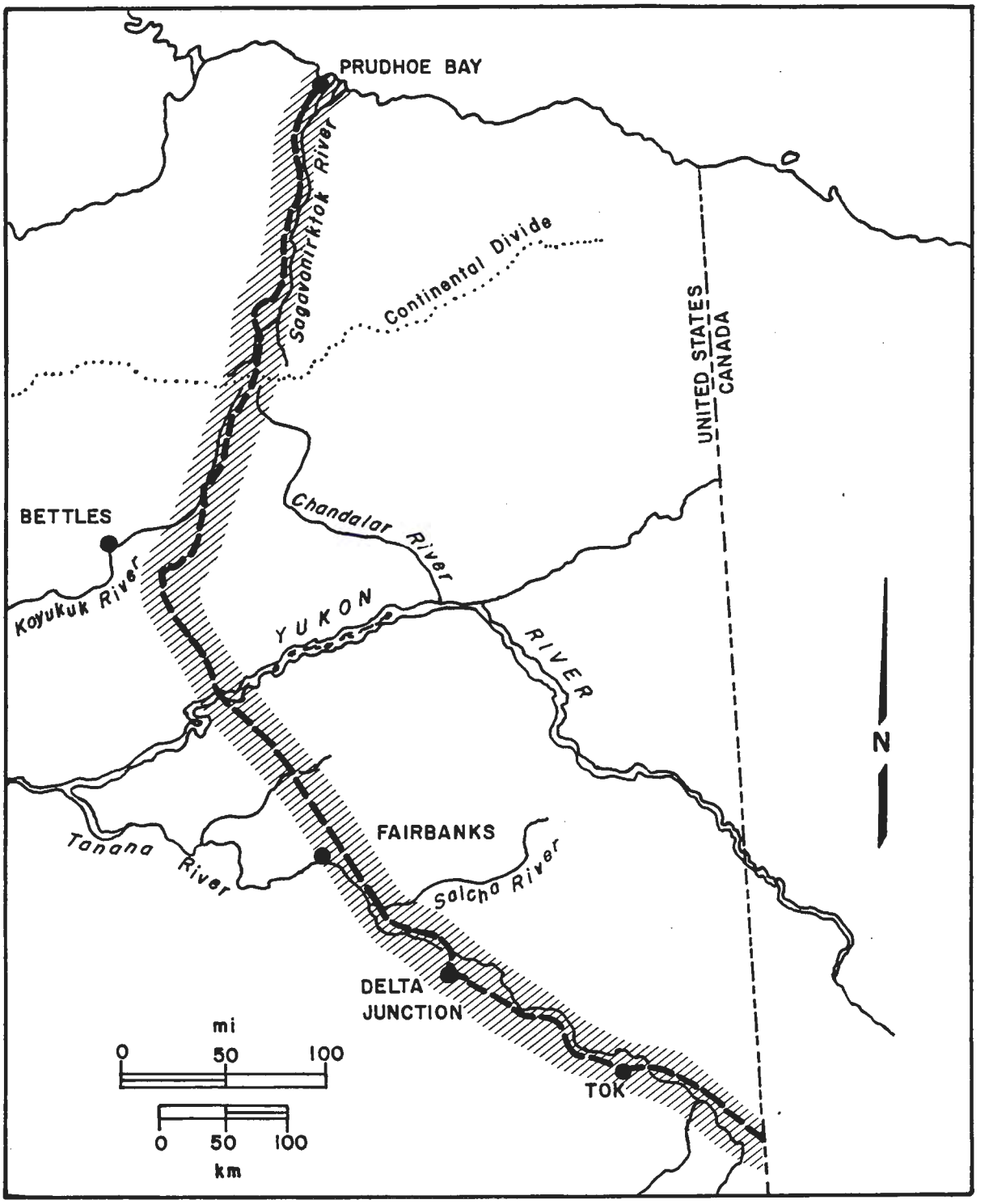


Figure 26. Known distribution of the Arctic grayling in the vicinity of the proposed gas pipeline.

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Arctic grayling (*Thymallus arcticus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | April after break up | NA | | | 0.25-0.50m | | | 0-4°C | Water falls may block migration | Begin migration at break-up | | | | NA | NA | |
| | Spawning | April-June | Sand, gravel, rocks 5-76mm | Swift riffles | 1-17m$^3$/sec | 0.20-0.25m | Rarely spawns in turbid waters | | 4-11.5°C | NA | | | | | May spawn near vegetated areas | | NA |
| | Egg Development and Emergence | Hatch 11-31 days after spawning | | High flow can wash-out eggs | | NA | | | 1-11.5°C | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | Rapid growth in summer | | | | | | | No growth at 0°C | NA | | | | | | | Zooplankton, benthic invertebrates |
| FRY | Distribution and Abundance | Small streams in summer | | Prefers low flow | | 0.25-0.5m | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | Rapid growth in summer | | | | | | | | NA | | | | | | | Insect larvae |
| JUVENILE | Distribution and Abundance | Small streams in summer | | Prefers low flow | | 0.25-0.5m | | | | | May congregate at edge of ice | | | | | | |
| ADULT | Feeding and Growth | | | | | Tend to feed in pools | | | | NA | | | | | | | Insects, amphipods, molluscs |
| ADULT | Distribution and Abundance | Small streams in summer | Inhabits rocky shores | Prefers low flow | | 0.25-0.5m | Prefers clear water | | Prefers cold water | | May congregate at edge of ice | | | | | | |

# FISH HABITAT REQUIREMENTS DATA MATRIX

Species Arctic grayling (*Thymallus arcticus*)

| | | Time of Year | Substrate | Stream Velocity | Stream Discharge | Stream Depth | Turbidity | Settleable Solids | Temperature | Barriers to Movement or Migration | Ice Cover | pH | Dissolved Oxygen | Conductivity | Aquatic Vegetation | Riparian Vegetation and/or Cover | Food Quantity and/or Quality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Migration | 83,84,85, 106,117, 204 | NA | | | 106 | | | 84,106, 117,204 | 204 | 83,106, 117 | | | | NA | NA | |
| | Spawning | 21,83,85, 116,117, 129,141, 159,181, 204 | 86,116, 117,129, 159 | 84 | 84,106 | 84 | 83,84, 106 | | 84,106, 117,204 | NA | | | | | 117 | | NA |
| | Egg Development and Emergence | 106,117, 129,159 204 | | 159 | | NA | | | 83,84, 117,204 | NA | | | | | | NA | NA |
| FRY | Feeding and Growth | 84,106, 191 | | | | | | | 204 | NA | | | | | | | 117,204 |
| FRY | Distribution and Abundance | 83,84,85, 106 | | 85 | | 85,106 | | | | | | | | | | | |
| JUVENILE | Feeding and Growth | 84,206 | | | | | | | | NA | | | | | | | 85,117 |
| JUVENILE | Distribution and Abundance | 106,204 | | 85,106 | | 85,106 | | | | | 106 | | | | | | |
| ADULT | Feeding and Growth | | | | | 194 | | | | NA | | | | | | | 83,84,85, 116,117, 129,204 |
| ADULT | Distribution and Abundance | 106,204 | 116,117 | 85 | | 85,106, 117 | 85,116 117 | | 21,83, 117 | | 106,204 | | | | | | |

# PART II

## SUMMARY OF FISH USE AND PRELIMINARY RECOMMENDATIONS FOR TIMING OF CONSTRUCTION ACTIVITY

# INTRODUCTION

A tabular summary has been derived from evaluation of all available fisheries data pertinent to construction of the gas pipeline by Northwest Alaskan Pipeline Company. This summary includes documented fish presence, use and recommendations that prioritize the period or periods of year when instream construction would have the least impact on aquatic fauna found at individual waterbody crossings. These recommendations can aid in preconstruction planning, design and construction scheduling.

Recommendations for timing of construction activity were based on all available fisheries data, including general and site-specific life history information for indigenous species (see Part I of this report), professional judgement and knowledge of the region traversed by the gasline. Recommendations are presented as 'preferred' and 'alternate' time periods. In general, preferred timing of construction avoids critical (instream disturbance might result in a fairly significant mortality to a portion of the population) and sensitive (instream construction should be limited; effects of disturbance variable) periods in fish life histories. Alternate recommendations avoid critical periods but may encompass sensitive times when fish are present (rearing). Some waterbodies are critical and/or sensitive to fish year-round. In such cases, recommendations indicate the period (or periods) that would least impact the aquatic fauna.

The words 'critical' and 'sensitive' are relative terms used to compare the importance of fish habitat to fish and the potential for adverse effects to fisheries resources. When habitat is utilized by fish for spawning, wintering, migrating or rearing, the habitat is considered critical and/or sensitive. An explanation of these fish uses and an assessment of their importance to fish populations follows:

Spawning: For the purposes of this report, spawning includes the spawning act, egg incubation, hatching and pre-emergent fry stages of fishes. Spawning habitat has been identified by the presence of young-of-the-year or pre-spawning, ripe or post-spawning adults. Spawning is a time of site-specific use of habitat and is considered a non-mobile activity. Consequently, spawning areas are extremely vulnerable to disturbance. Therefore, for the purpose of making recommendations, spawning is considered a critical fish use.

Wintering: Wintering is the use of habitat by fish (any life history stage, egg to adult) during some part of the winter period (generally freeze-up to break-up). Some waterbodies are undoubtedly used for only a short period (early winter use areas) while others provide good habitat for fish from freeze-up to break-up (over-wintering areas). Wintering is generally site-specific and may

involve non-mobile life history stages of fish. Wintering areas then, are highly vulnerable to disturbance, and the the purpose of this report, wintering is considered a critical fish use.

Migrating: Migrating is the use of aquatic habitat by fish for moving between seasonal use areas and/or habitats. Migrating fish are by definition mobile and may be capable of moving to avoid or reduce the effects of physical disturbance. However, disruption of major upstream spawning migrations or major emigrations, prior to freeze-up, could have extremely detrimental, and in some cases, lethal effects on fish populations (e.g., the blockage of a small tundra stream just prior to freeze-up would trap fish in upstream areas that soon become dry or freeze to the bottom during winter). Long-term seasonal migration and short-term movements associated with feeding and social behavior may not be so adversely affected. For the purpose of this report, migrating may be sensitive or critical depending upon the magnitude and significance of the migration.

Rearing: All waterbodies containing fish are considered rearing areas. Rearing fish are generally mobile and can often move to avoid or reduce the impact of physical disturbance. Fish mobility may vary with species, size, behavior and physical conditions within the stream, however. For example, fry are usually not as mobile as adults; some fish are sedentary while others are highly mobile; and, turbidity could affect species reaction to a disturbance. For the purpose of this report, rearing is considered a sensitive fish use.

For the purpose of making recommendations regarding timing of construction activity, the gasline corridor has been divided into three large geographical regions: Region I, Beaufort Sea to the Continental Divide of the Brooks Range; Region II, Continental Divide of the Brooks Range to the Yukon River; Region III, Yukon River to the Canadian Border. The following broad temporal guidelines for recommendations were developed for each gasline corridor region based on fish use habitat.

| | | |
|---|---|---|
| Region I | 1 May-20 July | A critical period for most streams due to the occurrence of major spring migrations and spring spawning (primarily grayling). |
| Region II | 15 April-15 July | |
| Region III | 1 April-15 July (early breakup streams)<br>15 April-15 July (late breakup streams) | |
| Region I | 20 July-25 August | A sensitive period. Fry of spring spawning species have emerged and major fall emigrations have not yet begun. Fish are mobile at this time and can move to avoid or reduce effects of disturbance. |
| Region II | 15 July-25 August | |
| Region III | 15 July-1 September | |

| | | |
|---|---|---|
| Region I | 25 August-1 October (small streams) | A critical period for all streams. Fish must emigrate from streams that do not provide winter habitat prior to freeze-up. Major upstream migrations and spawning of fall spawning species occurs in streams that provide over-wintering habitat. |
| | 25 August-15 October (large streams) | |
| Region II | 25 August-1 October (small streams) | |
| | 25 August-15 October (large streams) | |
| Region III | 1 September-1 November | |
| Region I | 1 October-1 May (small streams) | A preferred period for construction in many streams that do not provide winter habitat. These streams generally are dry or freeze to the bottom during winter. This is a critical period for fish overwintering in springs, large rivers and lakes. |
| | 15 October-1 May (large streams) | |
| Region II | 15 October-15 April (small streams) | |
| | 1 November-15 April (large streams) | |
| Region III | 1 November-1 April (early breakup streams) | |
| | 1 November-15 April (late breakup streams) | |

Due to the immense number of waterbodies (primarily streams) traversed by the proposed gasline, a wide spectrum of stream types is encountered (i.e., size, flow regime, species present, water source, water chemistry, etc.). Many streams are similar in nature and can be adequately protected by the guidelines developed above. However, each waterbody is unique and not all fall into such clearly definable categories. Little information is available for some streams, making specific detailed recommendations improbable. In addition, recommendations must take into account natural variability (i.e., effects of weather on fish and their environment). Consequently, recommendations for timing of construction activity presented in this report are considered conservative and favor fisheries resources when adequate information is not available to properly assess the fishery resource status of the waterbody involved. Recommendations are based on biological considerations only and do not take into account other aspects of a large construction project (i.e., engineering, economics, etc.). It is important to note that recommendations in this report can be more flexible if (1) suitable mitigative measures alleviate the particular fisheries concerns, or (2) additional data clarifies the fish use status of some streams.

All waterbodies crossed or potentially affected by the proposed gas pipeline route are presented in a south to north geographic sequence beginning at the Alaska/Canada border and ending at Prudhoe Bay. The appropriate Northwest Pipeline Stream Identification (NPSI) number and

Northwest Pipeline River and Floodplain Crossing (NPRX) number has been used to identify each waterbody crossing or waterbody potentially affected by pipeline construction. Site specific fishery information may be found in Part I.

Fish species are abbreviated following Rockwell and Johnson (Ref. 11). For ease of reference, fish species found in the study area and appropriate symbols are as follows:

| | |
|---|---|
| AB | Alaska blackfish *(Dallia pectoralis)* |
| AC | Arctic char *(Salvelinus alpinus)* |
| AL | Arctic lamprey *(Lampetra japonica)* |
| BB | Burbot *(Lota lota)* |
| BC | Bering cisco *(Coregonus laurettae)* |
| BW | Broad whitefish *(Coregonus nasus)* |
| CA | Arctic cisco *(Coregonus autumnalis)* |
| CD | Sculpin *(Cottus* sp.*)* |
| CI | Cisco *(Coregonus* sp.*)* |
| CN | Slimy sculpin *(Cottus cognatus)* |
| CS | Least cisco *(Coregonus sardinella)* |
| DS | Chum salmon *(Oncorhynchus keta)* |
| DV | Dolly Varden *(Salvelinus malma)* |
| GR | Arctic grayling *(Thymallus arcticus)* |
| BW | Humpback whitefish *(Coregonus pidschian)* |
| IN | Inconnu *(Stenodus leucichthys)* |
| KS | King salmon *(Oncorhynchus tshawytscha)* |
| LC | Lake chub *(Couesius plumbeus)* |
| LS | Longnose sucker *(Catostomus catostomus)* |
| LT | Lake trout *(Salvelinus namaycush)* |
| NP | Northern pike *(Esox lucius)* |
| PS | Pink salmon *(Oncorhynchus gorbuscha)* |
| RW | Round whitefish *(Prosopium cylindraceum)* |
| SB | Stickleback (Family *Gasterosteidae)* |
| S9 | Ninespine stickleback *(Pungitius pungitius)* |
| SK | Sucker *(Catostomus* sp.*)* |
| SS | Coho salmon *(Oncorhynchus kisutch)* |
| TP | Trout-perch *(Percopsis omiscomaycus)* |
| WF | Whitefish *(Coregonus* or *Prosopium* sp.*)* |
| X | Fish present but species not identified |

# TABULAR SUMMARY

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Unnamed Creek | 131-2 | 6-227.03 | None | None | 1 Jan-31 Dec | None necessary | Construction activity may affect fish in downstream areas |
| Scottie Creek | 131-1 | 6-227 | BB,HW,LS, NP | Migrating Rearing Wintering | 15 Jun-1 Sep | 1 Sep-1 Nov | This stream is important to fish year-round |
| Desper Creek | 130-1 | 6-226 | NP | Rearing | 1 Nov-15 Apr | 15 Jun-1 Sep | Data gap present |
| Unnamed Creek | 129-5 | 6-225.01 | None | None | 1 Jan-31 Dec | None necessary | |
| Sweetwater Creek | 129-4 | 6-225 | None | None | 1 Jan-1 Dec | None necessary | |
| Unnamed Creek | 129-3 | 6-224 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 129-2 | 6-223 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 129-1 | 6-222 | GR | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |
| Unnamed Creek | 128-2 | 6-221 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 128-1 | 6-220 | None | None | 1 Jan-31 Dec | None necessary | |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Gardiner Creek | 127-1 | 6-219 | CN,GR,LS | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | |
| Tenmile Creek | 126-1 | 6-218 | None | Unknown | 1 Nov-15 Apr | 15 Apr-31 Oct | Good habitat but numerous surveys have failed to document fish use |
| Silver Creek | 125-1 | 6-217 | NP | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gaps present |
| Unnamed Creek | 124-3 | 6-216.01 | None | None | 1 Jan-31 Dec | None necessary | |
| Lethe Creek | 124-2 | 6-216 | GR,NP,X | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | |
| Beaver Creek | 124-1 | 6-125 | GR,LS,RW | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | |
| Unnamed Creek | 123-2 | 6-214.01 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 123-1 | 6-213.01 | GR | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | |
| Unnamed Creek | 122-2 | 6-213 | None | None | 1 Jan-31 Dec | None necessary | |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Bitters Creek | 122-1 | 6-212 | CN,GR,LS NP,RW,WF | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov | No fish at gasline crossing but construction may affect fish downstream |
| Unnamed Creek | 121-2 | 6-210.02 | None | None | 1 Jan-31 Dec | None necessary | Data gap present |
| Unnamed Creek | 121-1 | 6-210.01 | None | None | 1 Jan-31 Dec | None necessary | Data gap present |
| Unnamed Creek | 119-2 | 6-210 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 119-1 | 6-209 | None | None | 1 Jan-31 Dec | None necessary | |
| Tanana River | 118-2 | 6-207 | BB,CN,GR, HW,LC,LS, NP,RW | Migrating Rearing Spawning Wintering | 15 Jun-1 Sep | None | This stream is important to fish year-round |
| Tanana Overflow | 118-1 | 6-206 | None | None | 1 Jan-31 Dec | None necessary | |
| Tok River | 117-2 | 6-205 | BB,CN,GR, LC,LS,RW, WF | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | |
| Tok Overflow | 117-1 | 6-204 | None | None | 1 Jan-31 Dec | None necessary | |
| Crystal Slough Creek | 114-1 | 6-203.03 | CN,GR,NP, LS,X | Migrating Rearing Spawning | 1 Nov-1 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Good habitat during winter but no fish have been caught |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Unnamed Creek | 113-4 | 6-203.01 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 113-3 | 6-203 | None | None | 1 Jan-31 Dec | None necessary | |
| Moon Lake Tributary | 113-2 | 6-202 | None | None | 1 Jan-31 Dec | None necessary | |
| Yerrick Creek | 113-1 | 6-201 | CN,DV,GR, RW | Migrating Rearing Wintering | 15 Jul-1 Sep | 1 May-1 Nov | This stream is important to fish year-round |
| Unnamed Creek | 112-10 | 6-200.01 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 112-9 | 6-200 | None | None | 1 Jan-31 Dec | None necessary | |
| Cathedral Rapids Creek #1 | 112-8 | 6-199 | None | None | 1 Jan-31 Dec | None necessary | |
| Cathedral Rapids Creek #2 | 112-7 | 6-198 | None | None | 1 Jan-31 Dec | None necessary | |
| Cathedral Rapids Creek #3 | 112-6 | 6-197B | None | None | 1 Jan-31 Dec | None necessary | |
| Cathedral Rapids Creek #4 | 112-5 | 6-197A | None | None | 1 Jan-31 Dec | None necessary | |
| Cathedral Rapids Creek #5 | 112-4 | 6-197 | None | None | 1 Jan-31 Dec | None necessary | |
| Cathedral Rapids Creek #6 | 112-3 | 6-196 | None | None | 1 Jan-31 Dec | None necessary | |
| Cathedral Rapids Creek #7 | 112-2 | 6-195 | None | None | 1 Jan-31 Dec | None necessary | |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Unnamed Creek | 112-1 | 6-193.01 | GR,LC,LS, NP,RW | Rearing | 1 Jan-31 Dec | None necessary | Avoid downstream areas. See assessment |
| Unnamed Creek | 111-6 | 6-192.01 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 111-5 | 6-192 | None | None | 1 Jan-31 Dec | None necessary | |
| Sheep Creek | 111-4 | 6-191 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 111-3 | 5-190 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 111-2 | 5-189 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 111-1 | 5-188 | None | None | 1 Jan-31 Dec | None necessary | |
| Robertson River | 110-4 | 5-187 | CN,GR,LC, WF | Migrating Rearing | 15 Nov-1 Apr | 1 Jun-15 Nov if fish passage is adequate to allow for emigration; otherwise, 1 Jun-1 Sep | Winter construction may affect fish in downstream overwintering areas of the Tanana River |
| Unnamed Creek | 110-3 | 5-186 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 110-2 | 5-185.03 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 110-1 | 5-185.02 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 109-2 | 5-185.01 | None | None | 1 Jan-31 Dec | None necessary | |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Bear Creek | 109-1 | 5-185 | CN,DV,GR, LS | Migrating Rearing Spawning | 1 Nov-1 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | |
| Chief Creek | 108-4 | 5-184 | GR | Rearing | 1 Oct-15 Apr | 15 Apr-1 Oct | Data inconclusive; additional investigations recommended |
| Unnamed Creek | 108-3 | 5-183 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 108-2 | 5-182.01 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 108-1 | 5-182 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 107-2 | 5-181 | None | None | 1 Jan-31 Dec | None necessary | |
| Sam Creek | 107-1 | 5-180 | None | None | 1 Jan-31 Dec | None necessary | |
| Unnamed Creek | 106-3 | 5-179 | CN,GR,LS, RW | Rearing | 1 Jan-31 Dec | None necessary | Fish do not get as far upstream as proposed gasline |
| Berry Creek | 106-2 | 5-178 | BB,CN,DV, GR,LS,RW | Migrating Rearing Spawning Wintering | 1 Aug-1 Sep | 10 Jul-31 Oct | This stream is important to fish year-round |
| Sears Creek | 106-1 | 5-177 | GR,LS | Migrating Rearing Spawning Wintering | 15 Jul-1 Sep | 1 Sep-1 Nov | This stream is important to fish year-round |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Unnamed Creek | 105-2 | 5-176.01 | None | None | 1 Jan-31 Dec | None necessary | |
| Dry Creek | 105-1 | 5-176 | None | None | 1 Jan-31 Dec | None necessary | Avoid spring breakup and periods of extreme high run-off |
| Johnson River | 104-1 | 5-175 | GR,LC,RW | Migrating Rearing | 15 Nov-1 Apr | 15 Jun-15 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jun-1 Sep | Data gap present |
| Little Gerstle River | 103-2 | 5-174 | CN,GR,LS, RW | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |
| Dougherty Creek | 103-1 | | None | None | 1 Jan-31 Dec | None necessary | |
| Gerstle River | 102-1 | 5-172 | GR | Migrating Rearing | 1 Nov-1 Apr | 1 Jun-1 Nov if fish passage is adequate to allow for emigration; otherwise, 1 Jun-1 Sep | Avoid low clear water periods |
| Sawmill Creek | 100-2 | 5-171 | None | None | 1 Jan-31 Dec | None necessary | |
| Rhoads Creek | 100-1 | 5-170 | None | None | 1 Jan-31 Dec | None necessary | |
| Granite Creek | 099-1 | 5-169 | None | None | 1 Jan-31 Dec | None necessary | |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Tanana River | 096-1 | 5-166 | BB,BW,CI, CN,CS,DS, GR,HW,KS, LC,LS,NP, RW,SS | Migrating Rearing Spawning Wintering | 15 Jun-1 Jul | 1 Jul-15 Aug | This stream is important to fish year-round |
| Tanana River Side Channel | 095-1 | 5-165.01 | BW,LC,LS, RW | Migrating Rearing | 15 Jun-1 Jul | 1 Jul-15 Aug | Data gap present |
| Shaw Creek | 093-2 | 5-165 | BB,GR,HW, RW | Migrating Rearing Spawning Wintering | 15 Jul-1 Sep | 1 Jul-15 Jul | This stream is important to fish year-round |
| Lower Rosa Creek | 093-1 | 5-164 | GR,WF | Migrating Rearing Spawning | 1 Nov-15 Apr | 1 Jul-1 Nov is fish passage is adequate to allow for emigration; otherwise, 1 Jul-1 Sep | Data gap present |
| Rosa Creek #2 | 092-12 | 5-162 | None | None | 1 Sep-15 Apr | 1 Jul-1 Sep | Data gap present |
| Rosa Creek #3 | 092-11 | 5-161.09 | None | None | 1 Sep-15 Apr | 1 Jul-1 Sep | Data gap present |
| Rosa Creek #4 | 092-10 | 5-161.08 | None | None | 1 Sep-15 Apr | 1 Jul-1 Sep | Data gap present |
| Rosa Creek #5 | 092-9 | 5-161.07 | None | None | 1 Jan-31 Dec | None necessary | |
| Rosa Creek #6 | 092-8 | 5-161.06 | None | None | 1 Jan-31 Dec | None necessary | |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| East Fork Minton Creek #6 | 092-7 | 5-161.05 | None | None | 1 Jan-31 Dec | None necessary | |
| East Fork Minton Creek #5 | 092-6 | 5-161.04 | None | None | 1 Jan-31 Dec | None necessary | |
| South Fork Minton Creek | 092-5 | 5-161.032 | None | None | 1 Jan-31 Dec | None necessary | |
| South Fork Minton Creek | 092-4 | 5-161.031 | None | None | 1 Jan-31 Dec | None necessary | |
| East Fork Minton Creek #4 | 092-3 | 5-161.03 | None | None | 1 Jan-31 Dec | None necessary | |
| East Fork Minton Creek #3 | 092-2 | 5-161.02 | None | None | 1 Jan-31 Dec | None necessary | Fish may reach as far upstream as this crossing in some years |
| East Fork Minton Creek #2 | 092-1 | 5-161.01 | None | None | 1 Jan-31 Dec | None necessary | |
| East Fork Minton Creek #1 | 091-6 | 5-161 | None | None | 1 Jan-31 Dec | None necessary | |
| West Fork Minton Creek #1 | 091-5 | 5-161 | None | None | 1 Jan-31 Dec | None necessary | |
| West Fork Minton Creek #2 | 091-4 | 5-161 | None | None | 1 Jan-31 Dec | None necessary | |
| Gold Run Creek | 091-3 | 5-160 | None | None | 1 Jan-31 Dec | None necessary | |
| Small Creek | 091-2 | 5-159.02 | None | None | 1 Jan-31 Dec | None necessary | |
| Tributary to Small Creek | 091-1 | 5-159.01 | None | None | 1 Jan-31 Dec | None necessary | |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Redmond Creek | 090-1 | 5-159 | BB,GR,RW | Migrating Rearing Spawning | 1 Nov-1 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | |
| Tributary to Salcha River | 089-3 | 4-158.03 | None | None | 1 Jan-31 Dec | None necessary | |
| Salcha River | 089-1 | 4-158 | AL,BB,CN DS,GR,KS, LS,RW,SB | Migrating Rearing Spawning Wintering | 1 Jun-10 Jul | None | This stream is important to fish year-round |
| Two-Nineteen Creek | 088-4 | 4-157.01 | None | None | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |
| Little Salcha River | 088-3 | 4-157 | CN,GR | Migrating Rearing Spawning | 15 Jul-1 Sep | 1 Oct-1 Nov | Further winter work recommended. This stream may be sensitive and/or critical to fish year-round |
| Tributary to Little Salcha River | 088-2 | 4-156.05 | None | None | 1 Jan-31 Dec | None necessary | |
| Tributary to Million Dollar Creek | 088-1 | 4-156.04 | None | None | 1 Jan-31 Dec | None necessary | |
| Million Dollar Creek | 087-2 | 4-156.03 | CN,GR | Migrating Rearing Spawning | 1 Nov-1 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| French Creek | 087-1 | 4-155 | CN,GR | Migrating Rearing | 1 Nov-1 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |
| Knokanpeover Creek | 086-5 | 4-154 | GR | Migrating Rearing Spawning | 1 Nov-1 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | |
| Tributary to French Creek | 086-4 | 4-148.06 | None | None | 1 Jan-31 Dec | None necessary | Data gap present |
| Tributary to French Creek | 086-3 | 4-148.05 | GR | Rearing | 1 Nov-1 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | |
| Tributary to French Creek | 086-2 | 4-148.04 | None | None | 1 Jan-31 Dec | None necessary | Data gap present |
| Unnamed Creek | 086-1 | 4-148.03 | None | Unknown | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |
| Unnamed Creek | 085-2 | 4-148.02 | None | Unknown | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Moose Creek | 085-1 | 4-148 | CN,GR | Migrating Rearing | 15 Jun-1 Sep | None | Data gap present |
| Unnamed Creek | 084-5 | 4-144.04 | None | Unknown | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |
| Unnamed Creek | 084-4 | 4-144.03 | None | Unknown | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |
| Chena River Side Channel | 084-3 | 4-144.02 | None | None | 1 Jan-31 Dec | None necessary | |
| Chena River | 084-2 | 4-144 | AL,BB,BW, CN,CS,DS, GR,HW,IN, KS,LS,NP, RW,SK,SS, WF | Migrating Rearing Spawning Wintering | 15 Jul-1 Nov | None | This stream is important to fish year-round |
| Unnamed Creek | 084-1 | 4-140.14 | None | Unknown | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |
| Potlatch Creek | 083-6 | 4-140.13 | None | None | 1 Jan-31 Dec | None necessary | |
| Tributary to Little Chena River #1 | 083-5 | 4-140.12 | None | None | 1 Jan-31 Dec | None necessary | |
| Tributary to Little Chena River #2 | 083-4 | 4-140.11 | None | None | 1 Jan-31 Dec | None necessary | |
| Little Chena River | 083-3 | 4-140.10 | None | None | 1 Nov-15 Apr | 15 Apr-1 Nov | Good fish habitat but surveys have failed to document fish use |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| South Fork Koyukuk River | 047-1 | 3-85 | CN,DS,GR, KS,SK,WF | Migrating Rearing Spawning Wintering | 5 Jun-5 Jul | None | This stream is important to fish year-round |
| South Fork Koyukuk River | 046-4 | 3-85 | None | Unknown | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Crossroads Creek #1 | 046-3 | 3-82.03 | None | None | 1 Jan-31 Dec | None necessary | |
| Crossroads Creek #2 | 046-2 | 3-82.02 | None | None | 1 Jan-31 Dec | None necessary | |
| Chapman Creek | 046-1 | 3-81 | GR | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| South Fork Windy Arm Creek | 045-7 | 3-80 | GR | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| North Fork Windy Arm Creek | 045-6 | 3-79 | CN,GR | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Unnamed Creek | 045-5 | 3-78.01 | None | None | 1 Jan-31 Dec | None necessary | |
| Trent's Trickle | 045-4 | 3-78 | GR | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Jackson Slough East Channel #1 | 045-3 | 3-77.02 | CN,GR,KS, RW | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 1 Jul-25 Aug | Data gap present |
| Jackson Slough Cross Channel | 045-2 | 3-77.01 | CN,GR,RW KS | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Jackson Slough East Channel #2 | 045-1 | 3-77 | CN,GR,KS, RW | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Cathedral Mountain Creek | 044-6 | 3-75 | None | None | 1 Jan-31 Dec | None necessary | |
| Rosie Creek | 044-5 | 3-74 | CD,CN,DV, GR,RW | Migrating Rearing Spawning Wintering | 15 Jul-25 Aug | 25 Aug-1 Nov | This stream may be important to fish year-round |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| First Creek | 044-4 | 3-72.06 | CN,GR | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Tributary to East Fork Spring Slough | Q44-3 | 3-72.04 | GR | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Tributary to Spring Slough #1 | 044-2 | 3-72.03 | GR | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Tributary to Spring Slough #2 | 044-1 | 3-72.02 | GR | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Tributary to Spring Slough #3 | 043-9 | 3-72.01 | GR | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Slate Creek | 043-8 | 3-72 | CN,DV,GR, RW,KS,DS | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gaps present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Calf Creek | 043-7 | 3-71 | GR | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| South Fork Clara Creek Overflow | 043-6 | 3-70.01 | CN,GR,WF | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Clara Creek Overflow | 043-5 | 3-70 | GR,RW | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Clara Creek | 043-4 | 3-69 | GR,X | Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| South Fork Mary Angel Creek | 043-3 | 3-65 | CN,GR | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Mary Angel Creek | 043-2 | 3-63.04 | BB,CN,GR, LS,RW | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| South Fork Sharon Creek | 043-1 | 3-63.03 | GR | Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Marion Creek | 042-6 | 3-63 | CD,DV,GR | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | |
| North Marion Creek Overflow #1 | 042-5 | 3-62.04 | None | None | 1 Jan-31 Dec | None necessary | |
| North Marion Creek Overflow #2 | 042-4 | 3-62.03 | None | Unknown | 15 Jul-15 Apr | None | Data gap present |
| North Marion Creek Overflow #3 | 042-3 | 3-62.02 | None | Unknown | 15 Jul-15 Apr | None | Data gap present |
| Pence's Pond Creek | 042-2 | 3-62.01 | GR | Migrating Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Dry Gulch | 042-1 | 3-62 | None | Unknown | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| South Fork Confusion Creek | 041-8 | 3-61.03 | None | Unknown | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Confusion Creek | 041-7 | 3-61.02 | GR | Rearing | 1 Nov-1 May | 1 Jul-1 Nov | Data gaps present - fish may not be present during May and June |
| Middle Fork Confusion Creek | 041-6 | 3-61.015 | None | Unknown | 15 Oct-1 May | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Minnie Creek | 041-4 | 3-61 | BB,CN,GR | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Middle Fork Koyukuk River | 041-3 | 3-60.19 | CN,DV,GR, LS,RW | Migrating Rearing Wintering | 15 Jul-25 Aug | 25 Aug-1 Nov | Data gap present. This stream is important to fish year-round |
| Union Gulch Creek | 041-2 | 3-60.17 | CD,GR,RW | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Confederate Gulch Creek | 041-1 | 3-60.16 | GR | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Middle Fork Koyukuk River | 040-8 | 2-60.13 | CN,DV,GR, LS,RW | Migrating Rearing Wintering | 15 Jul-25 Aug | 25 Aug-1 Nov | Data gap present. This stream is important to fish year-round |
| One-O-One Creek | 040-7 | 2-60.122 | CN,GR,LS | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Coon Gulch Creek | 040-6 | 2-60.121 | GR,SK | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Richardson's Slough | 040-5 | 2-60.12 | GR,RW | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Over Creek | 040-4 | 2-60.07 | BB,GR | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish | Data gap present |
| Nugget Creek | 040-3 | 2-60 | CN,GR | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Wolf Pup Creek | 040-2 | 2-59 | CN | Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Sheep Creek | 040-1 | 2-53 | CN,GR | Migrating Rearing | 15 Sep-15 Apr | 15 Jul-15 Aug | Data gap present |
| Cushing Creek | 039-4 | 2-52.01 | None | None | 15 Sep-15 Apr | 15 Jul-15 Aug | Data gap present |
| Gold Creek | 039-3 | 2-52 | GR,X | Migrating Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Linda Creek | 039-2 | 2-51 | CN,GR | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Valve Site Creek | 039-1 | 2-49.07 | None | Unknown | 15 Jul-15 Apr | 15 Jun-15 Jul | Data gap present |
| Sukakpak Creek | 038-8 | 2-49.03 | GR | Migrating Rearing Spawning | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Access Road Creek | 038-7 | 2-49.026 | GR | Migrating Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| West Fork Sukakpak Creek | 038-6 | 2-49.025 | GR | Migrating Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Middle Fork Koyukuk River | 038-5 | 2-49 | CN,DV,GR, LS,RW | Migrating Rearing | 15 Jul-25 Aug | None | This stream is important to fish year-round |
| Millie's Meander | 038-4 | 2-48.03 | CN,GR | Migrating Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Eva's Alv | 038-3 | 2-48.01 | GR | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Dietrich River (Lower) | 038-2 | 2-48 | BB,CN,GR, LS,RW,X | Migrating Rearing Wintering | 15 Jul-25 Aug | 25 Aug-1 Nov | This stream is important to fish year-round |
| 1415 Lake Outlet | 038-1 | 2-46.01 | None | None | 1 Oct-15 Apr | 15 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Brockman Creek | 037-7 | 2-46 | CN,DV,GR | Rearing | 1 Nov-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| South Branch Airport Creek | 037-5 | 2-45.03 | GR | Rearing | 1 Oct-15 Apr | 15 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Airport Creek | 037-3 | 2-45.01 | DV,GR | Migrating Rearing | 1 Oct-15 Apr | 15 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Disaster Creek | 037-2 | 2-45 | CN,GR | Rearing | 1 Oct-15 Apr | 15 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Unnamed Creek | 037-1 | 2-43.07 | None | Unknown | 1 Oct-15 Apr | 15 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Snowden Creek | 036-4 | 2-43 | CN,GR | Rearing | 1 Nov-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Snowden Pond Inlet | 036-3 | 2-41.06 | None | Unknown | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Numbers Lake Creek | 036-2 | 2-41.03 | CD,GR,X | Migrating Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Ugh Creek | 036-1 | 2-41 | GR | Migrating Rearing | 1 Oct-15 Apr | 15 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Steep Creek | 035-4 | 2-39 | None | None | 1 Jan-31 Dec | None necessary | |
| Buff Creek | 035-3 | 2-38 | None | None | 1 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Fish use suspected to be sporadic during open water |
| Burger's Bayou | 035-2 | 2-36.02 | CN,DV,GR, BB | Migrating Rearing Wintering | 15 Jul-25 Aug | None | This stream is important to fish year-round |
| Tracy's Trickle | 035-1 | 2-36 | GR | Rearing | 15 Jul-15 Apr | None | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Unnamed Creek | 034-8 | 2-34.07 | None | Unknown | 1 Oct-15 Apr | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Beaver Dam Brook #1 | 034-7 | 2-34.05 | GR,CN,RW | Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Beaver Dam Brook #2 | 034-6 | 2-34.04 | None | None | 1 Jan-31 Dec | None necessary | |
| Beaver Dam Brook #3 | 034-5 | 2-34.03 | None | None | 1 Jan-31 Dec | None necessary | |
| Beaver Dam Brook #4 | 034-4 | 2-34.02 | None | None | 1 Jan-31 Dec | None necessary | |
| Nutirik Creek | 034-3 | 2-34 | DV,GR | Migrating Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | |
| Homewood Spring | 034-2 | 2-32.05 | CN,DV,GR | Migrating Rearing Wintering | 15 Jul-1 Nov | None | Data gap present |
| Unnamed Creek | 034-1 | 2-33 | None | Unknown | 15 Jul-25 Aug | 25 Aug-1 Nov | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Overwintering Creek | 033-7 | 2-32.02 | BB,CN,DV, GR | Migrating Rearing Spawning Wintering | 15 Jul-25 Aug | None | This stream is important to fish year-round |
| Nina Creek | 033-6 | 2-31.01 | None | None | 15 Jul-25 Aug | None | Data gap present |
| Oskar's Eddy | 033-5 | 2-31 | DV | Migrating Rearing | 15 Oct-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Unnamed Creek | 033-4 | 2-30.02 | None | None | 1 Jan-31 Dec | None necessary | |
| Dietrich River | 033-3 | 2-32.04 | None | None | 1 Dec-15 Apr | 15 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Wetfoot Creek | 033-2 | 2-29.04 | DV,GR,RW | Migrating Rearing | 1 Nov-15 Apr | 15 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Dietrich River Floodplain | 033-1 | 2-29.03 | GR | Migrating Rearing | 1 Dec-15 Apr | 15 Jul-1 Dec if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |
| Dietrich River Floodplain | 032-3 | 2-29.02 | CN,DV,GR, RW | Migrating | 1 Dec-15 Apr | 15 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Unnamed Creek | 032-2 | 2-28.02 | None | Unknown | 20 Jul-1 May | None | Data gaps present |
| Unnamed Creek | 032-1 | 2-28.01 | None | Unknown | 20 Jul-1 May | None | Data gap present |
| Unnamed Creek | 031-3 | 2-27.05 | None | Unknown | 20 Jul-1 May | None | Data gap present |
| East Creek | 031-2 | 2-27.04 | None | Unknown | 20 Jul-1 May | None | Data gap present |
| North Atigun Pass Creek | 031-1 | 2-27.03 | None | Unknown | 20 Jul-1 May | None | Data gap present |
| Unnamed Creek | 030-2 | 2-27.02 | None | Unknown | 20 Jul-1 May | None | Data gap present |
| Unnamed Creek | 030-1 | 2-27.01 | None | Unknown | 20 Jul-1 May | None | Data gap present |
| Who Creek | 029-9 | 2-26 | None | Unknown | 20 Jul-1 May | None | Data gap present |
| Mickey's 6:30 Creek | 029-8 | 2-25.03 | None | Unknown | 20 Jul-1 May | None | Data gap present |
| Whybother Creek | 029-7 | 2-25.02 | None | Unknown | 20 Jul-1 May | None | Data gap present |
| Named Creek | 029-6 | 2-25.01 | None | Unknown | 20 Jul-1 May | None | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Trevor Creek | 029-5 | 2-25 | AC,GR,RW | Migrating Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Tyler Creek | 029-4 | 2-24.02 | GR,RW | Migrating Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Unnamed Creek | 029-2 | 2-24.007 | GR | Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Bicycle Creek | 029-1 | 2-24.006 | GR | Rearing | 15 Oct-1 May | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |
| Waterhole Creek | 028-2 | 2-24.005 | GR | Rearing | 15 Oct-1 May | 15 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | Data gap present |
| Roche Moutonee | 028-1 | 2-24 | GR,LT,RW, AC | Migrating Rearing Spawning | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Leentha Creek | 027-4 | 2-23.015 | AC,GR | Rearing | 1 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Holden Creek | 027-3 | 2-23.01 | AL,GR,RW | Migrating Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | |
| Tad Creek | 027-2 | 2-22.04 | GR | Rearing | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Atigun River | 027-1 | 2-22 | AC,BB,CN, GR,LT,RW | Migrating Rearing Spawning | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | |
| Jill Creek | 025-9 | 2-21.11 | GR | Rearing | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Jill Creek Tributary | 025-8 | 2-21.10 | None | Unknown | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Ed Creek | 025-7 | 2-21.09 | GR | Rearing | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Mack Creek | 025-6 | 2-21.08 | GR | Rearing | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Terry Creek | 025-5 | 2-21.07 | GR | Rearing | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Moss Creek | 025-4 | 2-21.06 | None | Unknown | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Hallock Creek | 025-3 | 2-21.05 | None | None | 1 Jan-31 Dec | None necessary | |
| Clawsod Creek | 025-2 | 2-21.045 | None | Unknown | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Yan Creek | 025-1 | 2-21.04 | CN | Rearing | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Kuparuk River | 024-1 | 2-21 | CN,GR | Migrating<br>Rearing<br>Spawning | 1 Nov-1 May | 20 Jul-1 Nov if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | |
| East Fork Kuparuk River | 023-3 | 1-20.01 | GR | Rearing | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Toolik River | 023-2 | 1-20 | AC,GR | Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| East Fork Toolik River | 023-1 | 1-19.01 | None | None | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Good fish habitat but surveys failed to document fish use |
| Mary Lamb Creek | 022-2 | 1-19.005 | None | Unknown | 15 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 15 Jul-1 Sep | |
| Oksrukuyik Creek | 022-1 | 1-19 | AC,CN,GR | Migrating<br>Rearing<br>Spawning | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Lower Oksrukuyik Creek | 020-1 | 1-18.01 | AC,BB,CN, GR,WF,RW | Migrating Rearing Spawning | 20 Jul-25 Aug | 25 Aug-1 Nov | |
| Rudy Creek | 019-6 | 1-17 | AC,GR | Migrating Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | |
| Bassett Creek | 019-5 | 1-16.03 | None | Unknown | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Dennis Creek | 019-4 | 1-16.02 | AC,GR | Migrating Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | |
| Climb Creek | 019-3 | 1-16.01 | AC,GR,X | Migrating Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Poison Pipe Creek | 019-2 | 1-16 | AC,GR | Migrating Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Polygon Creek | 019-1 | 1-15 | AC,BB,CN, GR | Migrating Rearing Spawning | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Gustafson Gulch | 018-4 | 1-14 | AC,GR | Migrating Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Arthur Creek | 018-3 | 1-13 | AC,BB,CN, GR | Migrating Rearing Spawning | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Sagavanirktok River Side Channel | 018-2 | 1-12.05 | GR | Migrating Rearing Spawning | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Sagavanirktok River Side Channel | 018-1 | 1-12.04 | CN,GR | Migrating Rearing Spawning | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Stump Creek | 017-3 | 1-12.02 | GR,S9 | Migrating Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Tributary to Lori Creek | 017-2 | 1-12.015 | None | Unknown | 1 Sep-1 May | 20 Jul-1 Sep | Data gap present |
| Lori Creek | 017-1 | 1-12.01 | GR | Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Charlotte Creek | 016-3 | 1-12 | AC,CN,GR, S9,RW | Migrating Rearing Spawning | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | |
| Happy Valley Camp Creek | 016-2 | 1-11 | AC,CN,GR, RW | Migrating Rearing Spawning | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | |
| Milke Creek | 016-1 | 1-10 | AC,GR,S9 | Migrating Rearing Spawning | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Unnamed Creek | 015-3 | 1-9.5 | GR | Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Stout Creek | 015-2 | 1-9 | AC,GR,BB, CN | Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity Preferred | Alternate | Comments |
|---|---|---|---|---|---|---|---|
| Spoiled Mary Creek | 015-1 | 1-8 | AC,CN,GR | Migrating Rearing | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Mark Creek | 014-1 | 1-7 | BB,CN,GR, WF | Migrating Rearing Spawning | 15 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Toolik River Tributary | 013-1 | 1-5.49 | None | Unknown | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gaps present |
| Sand Creek | 012-2 | 1-5.485 | None | Unknown | 1 Oct-1 May | 20 Jul-15 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |
| Unnamed Creek | 012-1 | 1-5.48 | None | Unknown | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-25 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Lake 802 | 010-1 | 1-5.295 | None | Unknown | 20 Jul-15 May | None | Data gap present |
| East Fork Sylvia Creek | 007-5 | 1-5.055 | None | None | 1 Jan-31 Dec | None necessary | |
| Sylvia Creek | 007-4 | 1-5.05 | AC,GR,S9 | Migrating<br>Rearing<br>Spawning | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-20 Aug | Data gap present |
| Tributary to Short Creek | 007-3 | 1-5.045 | None | Unknown | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-20 Aug | Data gap present |
| Short Creek | 007-2 | 1-5.02 | None | Unknown | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-20 Aug | Data gap present |
| Telma Creek | 007-1 | 1-5.01 | S9 | Rearing | 1 Oct-1 May | 20 Jul-1 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-20 Aug | Data gap present |
| Pescado Creek | 005-2 | 1-4.07 | S9 | Rearing | 1 Oct-1 May | 20 Jul-7 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-20 Aug | Data gap present |

| Waterbody | NPRX | NPSI | Fish Species Documented | Fish Use Documented | Recommended Timing for Construction Activity | | Comments |
|---|---|---|---|---|---|---|---|
| | | | | | Preferred | Alternate | |
| Unnamed Lake | 005-1 | 1-4.06 | None | Unknown | 20 Jul-15 May | None | Data gap present |
| Low-Life Creek | 004-2 | 1-3.05 | S9 | Rearing | 1 Oct-1 May | 20 Jul-7 Oct if fish passage is adequate to allow for emigration; otherwise, 20 Jul-20 Aug | Data gap present |
| Unnamed Lake | 004-1 | 1-3.04 | None | Unknown | 20 Jul-15 May | None | Data gap present |
| Unnamed Lake | 003-1 | 1-3.03 | None | Unknown | 20 Jul-15 May | None | Data gap present |
| Little Putuligayuk River | 002-1 | 1-3 | None | None | 15 Sep-1 May | 1 May-15 Sep | Data gap present |
| Putuligayuk River | 001-1 | 1-1 | S9 | Rearing | 15 Sep-1 May | 1 May-15 Sep | Data gap present |

# PART III

## PROVISIONAL LIST OF WATERBODIES CROSSED OR POTENTIALLY AFFECTED BY THE GAS PIPELINE PROPOSED BY NORTHWEST ALASKAN PIPELINE COMPANY

# INTRODUCTION

In a large scale project such as pipeline construction it is essential for reference purposes to maintain an updated list of waterbodies crossed or potentially affected by the pipeline. To date, the provisional list contains 388 entries. Reference 4, 11, 42, 48 and 125 provided the basis for this list which includes lotic and lentic habitats. Many waterbodies have multiple pipeline crossings -- in most cases each crossing is treated as a separate entry in the list.

Data sources (see Literature Reviewed) that contain physical or biological information are listed by number for each waterbody. The most recent evaluation of the fish use status of each is provided in the form of seasonal criteria. These criteria were developed to standardize the manner in which waterbodies were evaluated. It is important to note that criteria definitions in this report differ somewhat from those used in 1979-1980 seasonal reports (Refs. 54, 55, 57, and 77). This is due, in part, to the availability of new information as well as to a change in rationale concerning conditions that must be met for a specific criteria to be assigned. For the purpose of this report, criteria assignment has been limited to actual documentation of fish use or non fish use (habitat not available) for each season. These have been based on interpretation of results of field investigations and/or literature (see Part IV - Compendium). These criteria numbers do not necessarily reflect the authors' recommendations for additional field sampling. Although seasonal data gaps may remain for some streams, further investigations may be unnecessary and costly. The criteria used are as follows:

| Number | Criteria |
|---|---|
| 1 | Fish Use Area - Waterbody investigated and fish use documented. |
| 2 | No Fish Use - Waterbody investigated and no fish use documented. |
| 3 | No Fish Use Inferred - Absence of habitat inferred and supported by indirect evidence: small drainage with negligible intermittent or no flow or fish blockage present. |
| 4 | Data Gaps Present - Waterbody investigations incomplete or lacking: waterbody has not been surveyed for fish use, or previous data were inconclusive. |

Waterbody evaluations were based on an extensive literature review, communications with state and federal agencies, previous field surveys and professional judgement. Primary sources for literature were published government and consultant reports and file data from the Joint Fish and Wildlife Advisory Team (JFWAT) in Anchorage. Agencies consulted included the State Pipeline Coordinator's Office, Alaska Department of Fish and Game (Habitat and Sport Fish Divisions) and U.S. Fish and Wildlife (Stream Alteration Division).

Abbreviations used in the Provisional List of Waterbodies are as follows:

NPRX - Northwest Alaskan Pipeline River Crossing

NPSI - Northwest Alaskan Pipeline Stream Identification number

NPAS - Northwest Alaskan Pipeline Alignment Sheet

NPMP - Northwest Pipeline Milepost

AHMP - Alaska Highway Milepost

Alyeska AS- Alyeska Alignment Sheet

Sta. - Station

S - Spring

F - Fall

W - Winter

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unnamed Creek | 131-2 | 6-227.03 | 131 | 740.6 | 1222.2 | | | | 2 | 3 | 3 | 2,30,54,76,118 |
| Scottie Creek | 131-1 | 6-227 | 131 | 739.4 | 1223.4 | | | | 1 | 1 | 1 | 5,6,7,8,9,10,17,22,26,29,30, 54,55,57,59,60,72,73,76,77, 118 |
| Desper Creek | 130-1 | 6-226 | 130 | 737.4 | 1225.6 | | | | 4 | 1 | 2 | 5,6,7,9,10,17,26,29,30,54,55, 57,60,68,72,73,76,118,121 |
| Unnamed Creek | 129-5 | 6-225.01 | 129 | 732.5 | 1232.1 | | | | 2 | 3 | 3 | 2,30,54,76,118 |
| Sweetwater Creek | 129-4 | 6-225 | 129 | 730.2 | 1234.2 | | | | 2 | 3 | 2 | 2,9,29,30,54,57,59,60,72,73 76,118 |
| Unnamed Creek | 129-3 | 6-224 | 129 | 729.8 | 1234.7 | | | | 2 | 3 | 3 | 2,29,30,54,59,60,73,76,118 |
| Unnamed Creek | 129-2 | 6-223 | 129 | 728.6 | 1235.9 | | | | 3 | 3 | 3 | 2,29,30,54,76,118 |
| Unnamed Creek | 129-1 | 6-222 | 129 | 728.2 | 1236.3 | | | | 3 | 1 | 2 | 2,27,30,54,55,57,59,60,76,118 |
| Unnamed Creek | 128-2 | 6-221 | 128 | 724.2 | 1240.6 | | | | 3 | 3 | 3 | 2 |
| Unnamed Creek | 128-1 | 6-220 | 128 | 723.5 | 1241.2 | | | | 2 | 3 | 3 | 2 |
| Gardiner Creek | 127-1 | 6-219 | 127 | 718.5 | 1246.7 | | | | 1 | 1 | 2 | 5,6,7,8,9,10,17,22,26,29,30, 54,55,57,59,60,68,72,73,76,118 |
| Tenmile Creek | 126-1 | 6-218 | 126 | 712.5 | 1252.8 | | | | 2 | 2 | 2 | 2,5,6,9,10,17,26,29,30,54,55, 57,59,60,73,118 |
| Silver Creek | 125-1 | 6-217 | 125 | 706.5 | 1258.7 | | | | 3 | 4 | 3 | 2,5,6,9,10,26,29,30,54,59,60, 73,76,118,121 |
| Unnamed Creek | 124-3 | 6-216.01 | 124 | 703.5 | 1262.3 | | | | 2 | 3 | 3 | 2,30,54,76,118 |
| Lethe Creek | 124-2 | 6-216 | 124 | 701.0 | 1266.5 | | | | 2 | 3 | 2 | 2,29,30,54,55,59,60,76,118,123 |
| Beaver Creek | 124-1 | 6-215 | 124 | 699.2 | 1268.0 | | | | 1 | 1 | 2 | 5,6,7,8,9,10,17,22,26,29,30, 54,55,57,59,60,72,76,118 |
| Unnamed Creek | 123-2 | 6-214.01 | 123 | 697.0 | 1270.4 | | | | 2 | 3 | 3 | 2,30,54,76,118 |
| Unnamed Creek | 123-1 | 6-213.01 | 123 | 694.6 | 1273.0 | | | | 3 | 4 | 3 | 2,30,59,60,76,118,123 |
| Unnamed Creek | 122-2 | 6-213 | 122 | 690.1 | 1278.3 | | | | 2 | 3 | 2 | 2,9,29,30,59,60,76,118 |
| Bitters Creek | 122-1 | 6-212 | 122 | 688.2 | 1280.2 | | | | 1 | 1 | 2 | 5,6,9,10,26,29,30,54,57,59,60, 69,72,73,76,118 |
| Unnamed Creek | 121-2 | 6-210.02 | 121 | 685.5 | 1283.2 | | | | 4 | 4 | 4 | 2,30,76,118 |
| Unnamed Creek | 121-1 | 6-210.01 | 121 | 683.5 | 1285.4 | | | | 4 | 4 | 4 | 2,30,76,118 |
| Unnamed Creek | 119-2 | 6-210 | 119 | 672.7 | 1296.7 | | | | 3 | 3 | 3 | 2,29,30,76,118 |
| Unnamed Creek | 119-1 | 6-209 | 119 | 671.4 | 1297.9 | | | | 3 | 3 | 3 | 2,29,30,59,60,76,118 |
| Tanana River | 118-2 | 6-207 | 118 | 666.0 | 1303.3 | | | | 1 | 1 | 1 | 3,5,6,7,9,10,13,17,22,26,29, 30,54,55,57,60,69,72,76,118 |
| Tanana Overflow | 118-1 | 6-206 | 118 | 663.8 | 1305.4 | | | | 2 | 3 | 3 | 2 |
| Tok River | 117-2 | 6-205 | 117 | 659.9 | 1309.4 | | | | 1 | 1 | 2 | 3,5,6,7,9,10,17,22,26,29,30, 54,55,57,59,60,72,73,76,118 |

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tok Overflow | 117-1 | 6-204 | 117 | 657.6-658.0 | 1311.5 | | | | 2 | 3 | 3 | 2 |
| Crystal Slough Creek | 114-1 | 6-203.03 | 114 | 640.7 | 1328.2 | | | | 1 | 1 | 4 | 2,9,26,30,54,55,57,60,73,76,118,123 |
| Unnamed Creek | 113-4 | 6-203.01 | 113 | 639.2 | 1329.5 | | | | 3 | 3 | 3 | 2,30,60,76,118 |
| Unnamed Creek | 113-3 | 6-203 | 113 | 638.2 | 1330.5 | | | | 2 | 3 | 3 | 2,30,54,59,60,76,118 |
| Moon Lake Tributary | 113-2 | 6-202 | 113 | 636.9 | 1331.9 | | | | 2 | 2 | 3 | 2,6,29,30,59,69,76,118 |
| Yerrick Creek | 113-1 | 6-201 | 113 | 634.7 | 1333.7 | | | | 1 | 1 | 1 | 3,5,6,7,8,9,10,17,22,26,29,54,55,57,64,68,69,72,73,76,77,118 |
| Unnamed Creek | 112-10 | 6-200.01 | 112 | 632.5 | 1336.9 | | | | 2 | 3 | 3 | 2,29,30,54,59,60,69,76,118 |
| Unnamed Creek | 112-9 | 6-200 | 112 | 632.5 | 1336.9 | | | | 2 | 3 | 3 | 2,29,30,54,59,60,69,76,118 |
| Cathedral Rapids Creek #1 | 112-8 | 6-199 | 112 | 630.9 | 1338.1 | | | | 2 | 3 | 3 | 2,4,7,22,29,30,60,68,69,73,118 |
| Cathedral Rapids Creek #2 | 112-7 | 6-198 | 112 | 630.4 | 1338.7 | | | | 2 | 3 | 3 | 2,4,7,22,29,30,59,60,68,69,76,118 |
| Cathedral Rapids Creek #3 | 112-6 | 6-197B | 112 | 630.3 | 1338.7 | | | | 2 | 3 | 3 | 2,4,7,22,29,30,59,60,68,69,76,118 |
| Cathedral Rapids Creek #4 | 112-5 | 6-197A | 112 | 630.2 | 1338.8 | | | | 2 | 3 | 3 | 2,4,7,22,29,30,59,60,68,69,76,118 |
| Cathedral Rapids Creek #5 | 112-4 | 6-197 | 112 | 630.1 | 1338.9 | | | | 3 | 3 | 3 | 2,4,7,22,30,60,68,69,76,118 |
| Cathedral Rapids Creek #6 | 112-3 | 6-196 | 112 | 629.9 | 1339.0 | | | | 2 | 3 | 3 | 2,4,7,22,29,30,59,60,68,69,76,118 |
| Cathedral Rapids Creek #7 | 112-2 | 6-195 | 112 | 629.7 | 1339.2 | | | | 2 | 3 | 3 | 2,4,7,22,29,30,60,68,69,76,118 |
| Unnamed Creek | 112-1 | 6-193 | 112 | 628.9 | 1339.8 | | | | 1 | 3 | 2 | 2,5,6,10,26,29,30,54,57,69,72,76,118 |
| Unnamed Creek | 111-6 | 6-192.01 | 111 | 628.4 | 1340.5 | | | | 2 | 3 | 3 | 2,30,54,76,118 |
| Unnamed Creek | 111-5 | 6-192 | 111 | 628.0 | 1340.9 | | | | 2 | 3 | 3 | 2 |
| Sheep Creek | 111-4 | 6-191 | 111 | 626.8-627.0 | 1342.2 | | | | 3 | 3 | 3 | 3,5,6,7,8,10,22,29,30,54,68,69,72,76,118 |
| Unnamed Creek | 111-3 | 6-190 | 111 | 625.4 | 1343.7 | | | | 2 | 2 | 3 | 2,29,30,54,76,118 |
| Unnamed Creek | 111-2 | 5-189 | 111 | 624.9 | 1344.1 | | | | 2 | 3 | 3 | 2 |
| Unnamed Creek | 111-1 | 5-188 | 111 | 623.6 | 1345.2 | | | | 2 | 3 | 3 | 2 |
| Robertson River | 110-5 | 5-187 | 110 | 621.2-621.5 | 1347.6 | | | | 1 | 1 | 2 | 3,5,6,7,8,9,10,17,22,26,29,30,54,55,57,73,75,76,77,118 |
| Unnamed Creek | 110-4 | 5-186 | 110 | 619.7 | 1349.4 | | | | 2 | 3 | 3 | 2 |
| Unnamed Creek | 110-2 | 5-185.03 | 110 | 618.9 | 1350.1 | | | | 2 | 3 | 3 | 2,30,54,76,118 |

Provisional List of Waterbodies (continued)

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unnamed Creek | 110-1 | 5-185.02 | 110 | 618.7 | 1350.2 | | | | 2 | 2 | 3 | 2,30,54,76,118 |
| Unnamed Creek | 109-2 | 5-185.01 | 109 | 616.8 | 1352.3 | | | | 2 | 2 | 3 | 2,30,54,76,118 |
| Bear Creek | 109-1 | 5-185 | 109 | 611.6 | 1357.3 | | | | 1 | 1 | 2 | 3,5,6,7,8,9,10,17,22,26,29,30,54,55,57,59,60,69,72,73,76,77,118,123 |
| Chief Creek | 108-4 | 5-184 | 108 | 610.3 | 1358.6 | | | | 3 | 3 | 2 | 3,5,6,7,8,9,10,17,22,26,29,30,54,55,57,59,60,72,76,118 |
| Unnamed Creek | 108-3 | 5-183 | 108 | 607.1 | 1361.7 | | | | 3 | 3 | 3 | 2,5,26,29,30,54,76,118 |
| Unnamed Creek | 108-2 | 5-182.01 | 108 | 606.8 | 1362.0 | | | | 2 | 3 | 3 | 2,5,30,54,76,118 |
| Unnamed Creek | 108-1 | 5-182 | 108 | 605.8 | 1363.4 | | | | 2 | 3 | 3 | 2 |
| Unnamed Creek | 107-2 | 5-181 | 107 | 604.8 | 1364.4 | | | | 3 | 3 | 2 | 2,29,30,54,59,60,73,76,118 |
| Sam Creek | 107-1 | 5-180 | 107 | 603.3 | 1365.9 | | | | 2 | 3 | 2 | 3,5,6,7,8,9,10,26,30,54,55,76,118 |
| Unnamed Creek | 106-3 | 5-179 | 106 | 600.1 | 1369.1 | | | | 1 | 1 | 2 | 3,5,6,9,10,26,29,30,54,57,59,60,73,76,118 |
| Berry Creek | 106-2 | 5-178 | 106 | 597.9 | 1371.4 | | | | 1 | 1 | 1 | 3,5,6,7,8,9,10,22,29,30,54,57,59,60,69,72,73,76,77,118 |
| Sears Creek | 106-1 | 5-177 | 106 | 594.8 | 1374.4 | | | | 1 | 1 | 4 | 3,5,6,7,8,9,10,17,22,29,30,54,57,59,60,64,69,72,76,77,118 |
| Unnamed Creek | 105-2 | 5-176.01 | 105 | 592.3 | 1377.0 | | | | 2 | 2 | 3 | 2,30,54,76,118 |
| Dry Creek | 105-1 | 5-176 | 105 | 591.2 | 1378.1 | | | | 2 | 2 | 2 | 3,5,6,7,8,9,10,22,29,30,54,57,59,60,68,69,72,73,76,118 |
| Johnson River | 104-1 | 5-175 | 104 | 588.6-588.8 | 1380.5 | | | | 4 | 1 | 3 | 3,5,6,7,8,9,10,17,22,26,29,30,54,57,60,69,72,73,76,77,118 |
| Little Gerstle River | 103-2 | 5-174 | 103 | 581.0 | 1388.4 | | | | 1 | 4 | 2 | 3,5,6,7,8,9,10,17,22,26,29,30,72,73,76,77,118 |
| Dougherty Creek | 103-1 | 5-173 | 103 | 579.0 | 1390.4 | | | | 2 | 3 | 3 | 2 |
| Gerstle River | 102-1 | 5-172 | 102 | 576.3-576.7 | 1393.0 | | | | 4 | 1 | 2 | 3,5,6,7,8,9,10,17,22,26,29,30,54,57,72,73,76,118,130 |
| Sawmill Creek | 100-2 | 5-171 | 100 | 565.4 | 1403.9 | | | | 2 | 2 | 2 | 3,5,6,7,8,9,10,29,30,54,76,118 |
| Rhoads Creek | 100-1 | 5-170 | 100 | 561.2 | 1407.6 | | | | 2 | 3 | 2 | 3,5,6,9,10,29,30,54,76,118 |
| Granite Creek | 099-1 | 5-169 | 99 | 559.4 | 1409.2 | | | | 2 | 2 | 2 | 3,5,6,7,9,10,22,29,30,54,76,118 |
| Tanana River | 096-1 | 5-166 | 96 | 539.2 | | 47 | 9215+00 | | 1 | 1 | 1 | 3,5,11,13,15,16,27,29,30,32,57,76,118,123 |
| Tanana River Side Channel | 095-1 | 5-165.01 | 95 | 538.7 | | | | | 4 | 1 | 4 | 3,11,13,30,42,43,57,76,77,118,122 |
| Shaw Creek | 093-2 | 5-165 | 93 | 527.4 | | 49 | 9789+15 | | 1 | 1 | 1 | 3,5,11,29,30,57,65,76,77,118 |
| Lower Rosa Creek | 093-1 | 5-164 | 93 | 526.4 | | 49 | 9800+40 | | 1 | 3 | 4 | 5,11,29,30,76,122 |

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rosa Creek #2 | 092-12 | 5-162 | 92 | 521.4 | | 49 | 10110+50 | | 3 | 3 | 3 | 5,11,29,30,55,57,76,118 |
| Rosa Creek #3 | 092-11 | 5-161.09 | 92 | 521.3 | | 50 | 10142+74 | | 3 | 3 | 2 | 5,11,29,30,55,57,76,118 |
| Rosa Creek #4 | 092-10 | 5-161.08 | 92 | 520.4 | | 50 | 10165+25 | | 3 | 3 | 2 | 5,11,29,30,55,57,76,118 |
| Rosa Creek #5 | 092-9 | 5-161.07 | 92 | 520.1 | | 50 | 10214+80 | | 4 | 3 | 2 | 5,11,29,30,55,57,76,118 |
| Rosa Creek #6 | 092-8 | 5-161.06 | 92 | 519.9 | | 50 | | | 3 | 3 | 2 | 5,11,29,30,55,57,76,118 |
| East Fork Minton Creek #6 | 092-7 | 5-161.05 | 92 | 518.7 | | 51 | 10244+06 | | 2 | 2 | 2 | 5,11,29,30,32,54,66,76,118 |
| East Fork Minton Creek #5 | 092-6 | 5-161.04 | 92 | 518.3 | | 51 | 10258+12 | | 2 | 2 | 2 | 5,11,29,30,32,54,66,76,118 |
| South Fork Minton Creek | 092-5 | 5-161.032 | 92 | 518.2 | | 51 | | | 2 | 2 | 2 | 5,11,29,30,32,54,66,76,118 |
| South Fork Minton Creek | 092-4 | 5-161.031 | 92 | 518.0 | | | | | 2 | 3 | 2 | 5,11,29,30,32,54,55,66,76,118 |
| East Fork Minton Creek #4 | 092-3 | 5-161.03 | 92 | 517.8 | | 51 | 10298+63 | | 2 | 3 | 2 | 5,11,29,30,32,54,55,66,76,118 |
| East Fork Minton Creek #3 | 092-2 | 5-161.02 | 92 | 517.4 | | 51 | 10305+90 | | 3 | 3 | 2 | 5,11,29,30,32,66,76,121 |
| East Fork Minton Creek #2 | 092-1 | 5-161.01 | 92 | 517.1 | | 51 | 10316+98 | | 3 | 3 | 2 | 5,11,29,30,32,54,66,76,118 |
| East Fork Minton Creek #1 | 091-6 | 5-161 | 91 | 517.0 | | | | | 4 | 4 | 2 | 121 |
| West Fork Minton Creek #1 | 091-5 | 5-160.02 | 91 | 516.0 | | 51 | 10393+01 | | 3 | 3 | 2 | 5,11,30,32,54,76,118 |
| West Fork Minton Creek #2 | 091-4 | 5-160.01 | 91 | 515.5 | | 51 | 10394+86 | | 3 | 3 | 2 | 5,11,30,32,54,76,118 |
| Gold Run Creek | 091-3 | 5-160 | 91 | 514.3 | | 51 | 10487+62 | | 2 | 3 | 2 | 3,5,11,29,30,54,76,118 |
| Small Creek | 091-2 | 5-159.02 | 91 | 512.9 | | 52 | 10561+41 | | 2 | 2 | 3 | 11,30,54,57,76,118 |
| Tributary to Small Creek | 091-1 | 5-159.01 | 91 | 512.3 | | 52 | 10589+47 | | 2 | 3 | 3 | 11,30,54,76,118 |
| Redmond Creek | 090-1 | 5-159 | 90 | 507.3 | | 53 | 10855+33 | | 1 | 1 | 3 | 3,5,11,14,25,29,30,32,35,38,54,55,57,76,77,118 |
| Tributary to Salcha River | 089-3 | 4-158.03 | 89 | 504.5 | | 53 | 11037+79 | | 2 | 2 | 2 | 11,30,54,76,118 |
| Salcha River | 089-1 | 4-158 | 89 | 503.5 | | 53A | 19+00 | | 1 | 1 | 1 | 3,5,11,13,14,25,30,32,35,38,76,118,123,128 |
| Two-Nineteen Creek | 088-4 | 4-157.01 | 88 | 499.8 | | 54 | 223+50 | | 3 | 4 | 4 | 11,30,54,76,118 |
| Little Salcha River | 088-3 | 4-157 | 88 | 498.2 | | 54 | 281+71 | | 1 | 1 | 3 | 3,5,11,13,29,30,31,38,55,57,76,77,83,118 |
| Tributary to Little Salcha River | 088-2 | 4-156.05 | 88 | 497.3 | | 54 | 345+50 | | 3 | 3 | 3 | 11,30,54,76,118 |
| Tributary to Million Dollar Creek | 088-1 | 4-156.04 | 88 | 495.7 | | 54 | 417+00 | | 2 | 3 | 3 | 11,20,30,31,54,76,118 |
| Million Dollar Creek | 087-2 | 4-156.03 | 87 | 493.4 | | 54 | 545+00 | | 1 | 4 | 2 | 5,11,29,30,31,57,64,76,118,126 |
| French Creek | 087-1 | 4-155 | 87 | 489.9 | | 55 | 643+55 | | 4 | 1 | 2 | 3,5,11,19,29,30,31,38,55,57,76,77,118 |
| Knokanpeover Creek | 086-5 | 4-154 | 86 | 487.5 | | 56 | 809+40 | | 1 | 1 | 2 | 3,5,11,19,29,30,31,55,57,76,118 |
| Tributary to French Creek | 086-4 | 4-148.06 | 86 | 485.6 | | | | | 2 | 2 | 2 | 122 |
| Tributary to French Creek | 086-3 | 4-148.05 | 86 | 485.1 | | | | | 4 | 1 | 4 | 122 |

Provisional List of Waterbodies (continued)

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tributary to French Creek | 086-2 | 4-148.04 | 86 | 484.7 | | | | | 4 | 2 | 4 | 122 |
| Unnamed Creek | 086-1 | 4-148.03 | 86 | 483.7 | | | | | 4 | 4 | 4 | |
| Unnamed Creek | 085-2 | 4-148.02 | 85 | 482.6 | | | | | 4 | 4 | 4 | |
| Moose Creek | 085-1 | 4-148 | 85 | 482.0 | | | | | 4 | 1 | 4 | 5,11,29,30,31,38,54,57,76,77, 118,122 |
| Unnamed Creek | 084-5 | 4-144.04 | 84 | 476.3 | | | | | 4 | 4 | 4 | |
| Unnamed Creek | 084-4 | 4-144.03 | 84 | 476.2 | | | | | 4 | 4 | 4 | |
| Chena River Side Channel | 084-3 | 4-144.02 | 84 | 475.8 | | | | | 3 | 2 | 3 | 122 |
| Chena River | 084-2 | 4-144 | 84 | 475.3 | | | | | 1 | 1 | 1 | 3,5,11,13,17,27,29,30,31,38, 59,76,118 |
| Unnamed Creek | 084-1 | 4-140.14 | 84 | 475.1 | | | | | 4 | 4 | 4 | |
| Potlatch Creek | 083-6 | 4-140.13 | 83 | 472.7 | | | | | 4 | 3 | 4 | 122 |
| Tributary to Little Chena River #1 | 083-5 | 4-140.12 | 83 | 469.9 | | | | | 4 | 4 | 4 | |
| Tributary to Little Chena River #2 | 083-4 | 4-140.11 | 83 | 469.2 | | | | | 4 | 4 | 4 | 122 |
| Little Chena River | 083-3 | 4-140.10 | 83 | 468.9 | | | | | 4 | 4 | 4 | 122 |
| Iowa Creek | 083-2 | 4-140.04 | 83 | 468.3 | | | | | 4 | 1 | 4 | 122 |
| Tributary to Smallwood Creek | 082-2 | 4-140.08 | 82 | 465.9 | | | | | 4 | 4 | 4 | 122 |
| Smallwood Creek | 082-1 | 4-140.07 | 82 | 463.9 | | | | | 4 | 1 | 4 | 122 |
| Nugget Creek Tributary | 081-5 | 4-140.06 | 81 | 460.5 | | | | | 4 | 3 | 4 | 122 |
| Rose Creek | 081-4 | 4-140.05 | 81 | 459.3 | | | | | 4 | 4 | 4 | |
| Gilmore Creek | 081-3 | 4-140.04 | 81 | 457.6 | | | | | 4 | 4 | 4 | |
| Pedro Creek | 081-2 | 4-140.03 | 81 | 457.4 | | | | | 4 | 4 | 4 | |
| Gold Run Creek | 081-1 | 4-140.02 | 81 | 456.9 | | | | | 4 | 4 | 4 | |
| Fox Creek | 080-2 | 4-140.01 | 80 | 454.4 | | | | | 3 | 3 | 3 | 122 |
| Treasure Creek | 080-1 | 4-140 | 80 | 450.1 | | 62 | 659+43 | | 3 | 3 | 3 | 3,5,11,17,29,30,54,55,57,76,118 |
| Chatanika River | 079-4 | 4-139 | 79 | 446.4 | | 63 | 873+63 | | 1 | 1 | 1 | 3,5,11,17,29,30,31,39,76,81, 84,89,113,118 |
| Shocker Creek | 079-3 | 4-138 | 79 | 445.3 | | 63 | 914+00 | | 1 | 1 | 4 | 5,11,29,30,54,57,76,118 |
| Unnamed Tributary to Shocker Creek | 079-2 | 4-137.06 | 79 | 445.0 | | 63 | | | 3 | 3 | 3 | 30,54,76,118 |
| Unnamed Tributary to Shocker Creek | 079-1 | 4-137.05 | 79 | 444.8 | | 63 | | | 3 | 3 | 3 | 30,54,76,118 |
| Unnamed Tributary to Chatanika River #1 | 078-5 | 4-137.03 | 78 | 443.3 | | 63 | 1025+70 | | 3 | 3 | 3 | 11,30,76,118 |
| Unnamed Tributary to Chatanika River #2 | 078-4 | 4-137.02 | 78 | 443.2 | | 63 | 1027+70 | | 3 | 3 | 3 | 11,30,76,118 |
| Unnamed Tributary to Chatanika River #3 | 078-3 | 4-137.01 | 78 | 443.1 | | 63 | 1032+20 | | 3 | 3 | 3 | 11,30,76,118 |

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Washington Creek | 078-2 | 4-137 | 78 | 439.8 | | 64 | 1209+62 | | 1 | 1 | 1 | 1,3,5,11,17,29,30,31,38,54,56,76,77,118 |
| Unnamed Tributary to Washington Creek | 078-1 | 4-136.01 | 78 | 439.6 | | 64 | 1220+00 | | 4 | 4 | 4 | 11,30,76,118 |
| South Fork Aggie Creek | 076-5 | 4-136 | 76 | 432.5 | | 64 | 1595+00 | | 3 | 3 | 3 | 1,3,5,11,17,29,30,31,38,54,57,76,118 |
| North Fork Aggie Creek | 076-4 | 4-135 | 76 | 431.7 | | 65 | 1635+00 | | 3 | 3 | 3 | 1,3,5,11,17,29,30,31,38,48,54,57,76,118 |
| Tributary of Little Globe Creek | 076-3 | 4-134.01 | 76 | 430.0 | | 66 | 1740+00 | | 4 | 4 | 4 | 11,30,76,118 |
| Little Globe Creek | 076-2 | 4-134 | 76 | 429.0 | | 66 | 1759+00 | | 4 | 3 | 4 | 11,17,29,30,67,76,118,122 |
| Unnamed Tributary to Little Globe Creek | 076-1 | 4-133.01 | 76 | 428.9 | | 66 | 1796+00 | | 4 | 4 | 4 | 11,30,76,118 |
| Globe Creek | 075-2 | 4-133 | 75 | 426.3 | | 65 | 1966+75 | | 4 | 4 | 4 | 1,3,5,11,17,29,30,38,48,66,76,118,121,122 |
| Unnamed Tributary to Globe Creek | 075-1 | 4-132.02 | 75 | 425.3 | | 67 | 1988+88 | | 4 | 4 | 4 | 11,30,66,76,118 |
| Unnamed Tributary to Tatalina River | 074-2 | 4-132.01 | 74 | 422.0 | | 67 | 2167+00 | | 4 | 4 | 4 | 11,30,48,76,118 |
| Tatalina River | 074-1 | 4-132 | 74 | 421.0 | | 67 | 2241+80 | | 1 | 4 | 4 | 1,3,5,11,17,29,30,48,55,76,118,121 |
| Tributary of Slate Creek | 073-5 | 4-131.01 | 73 | 416.8 | | 68 | 2456+31 | | 4 | 2 | 4 | 11,30,76,118,122 |
| Slate Creek | 073-4 | 4-131 | 73 | 416.6 | | 68 | 2459+35 | | 3 | 3 | 4 | 3,5,11,17,29,30,38,48,76,118,121,122 |
| Ski Jump Ramp Creek | 073-3 | 4-130 | 73 | 414.9 | | 68 | 2550+00 | | 4 | 3 | 4 | 11,29,30,76,122 |
| Wilber Creek | 073-2 | 4-129 | 73 | 414.0 | | 68 | 2608+00 | | 1 | 4 | 4 | 3,5,11,17,29,30,48,76,118 |
| Tributary of Wilber Creek | 073-1 | 4-128.04 | 73 | 412.7 | | 69 | 2666+35 | | 4 | 3 | 4 | 11,30,76,118,122 |
| Shorty Creek | 072-3 | 4-128.03 | 72 | 408.5 | | 69 | 2855+73 | | 4 | 3 | 4 | 11,30,76,118,122 |
| Tributary to Tolovana River | 072-2 | 4-128.01 | 72 | 407.5 | | 70 | 2924+55 | | 4 | 2 | 4 | 11,30,76,118,122 |
| Tolovana River | 072-1 | 4-128 | 72 | 407.0 | | 70 | 2957+90 | | 4 | 1 | 2 | 1,3,5,11,13,17,20,30,31,48,57,74,76,118,121 |
| Unnamed Tributary to West Fork Tolovana River | 071-2 | 4-127.01 | 71 | 403.9 | | 70 | 3122+16 | | 4 | 3 | 4 | 11,30,76,118,122 |
| Lost Creek | 071-1 | 4-127 | 71 | 400.7 | | 71 | 104+33 | | 1 | 4 | 4 | 3,5,11,17,29,30,31,48,76,118,121,122,123,132 |
| Erickson Creek Tributary | 070-1 | 4-126 | 70 | 396.3 | | 72 | 337+66 | | 3 | 4 | 4 | 3,11,29,30,76,118,121 |
| West Fork Erickson Creek | 069-1 | 4-125 | 69 | 393.0 | | 72,73 | 513+62 | | 4 | 4 | 4 | 3,5,11,17,29,30,31,76,118,122,123 |
| Hess Creek Oxbow | 068-5 | 4-123.05 | 68 | 387.0 | | 73 | 800+02 | | 4 | 2 | 4 | 11,17,30,76,118,122 |
| Hess Creek | 068-4 | 4-123A.04 | 68 | 386.8 | | 73,74W | 820+00 | | 1 | 1 | 2 | 1,3,5,11,17,29,30,31,48,70,76,118,121 |

Provisional List of Waterbodies (continued)

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hess Creek and Tributary from Fish and Mastadon Creeks | 068-3 | 4-123.03 | 68 | 386-387.3 | | 73 | 829+65 | | 4 | 4 | 4 | 3,5,11,29,30,31,48,76,118 |
| Two-Bank Creek | 068-2 | 4-123.02 | 68 | 382.4 | | 74 | 1040+40 | | 4 | 3 | 4 | 11,30,76,118,122 |
| Unnamed Creek | 068-1 | 4-123.01 | 68 | 381.8 | | 74 | 1071+47 | | 4 | 3 | 4 | 11,30,76,118,122 |
| Two-Bit Creek | 067-5 | 4-123 | 67 | 381.4 | | 74 | 1096+85 | | 4 | 3 | 4 | 11,29,30,76,118,122 |
| Unnamed Creek | 067-4 | 3-122.05 | 67 | 380.2 | | 75 | 1150+15 | | 4 | 4 | 4 | 11,17,30,76,118 |
| Unnamed Creek | 067-3 | 3-122.04 | 67 | 379.5 | | 75 | 1181+44 | | 4 | 4 | 4 | 11,30,76,118,122 |
| Hot Cat Creek | 067-2 | 3-122.03 | 67 | 378.5 | | 75 | 1242+94 | | 3 | 4 | 4 | 5,11,17,30,31,48,61,76,118,121,122 |
| Unnamed Creek | 067-1 | 3-122.02 | 67 | 375.9 | | 75 | 1367+33 | | 4 | 3 | 4 | 11,17,30,76,118,122 |
| Unnamed Creek | 066-4 | 3-122.01 | 66 | 374.3 | | 75 | 1447+20 | | 4 | 3 | 4 | 11,17,30,76,118,122 |
| Isom Creek | 066-3 | 3-122 | 66 | 371.4 | | 76 | 1642+50 | | 4 | 4 | 4 | 3,5,11,29,30,31,48,76,118,122 |
| Tributary to Isom Creek | 066-2 | 3-121.02 | 66 | 370.6 | | 76 | 1649+50 | | 4 | 3 | 4 | 3,5,11,17,29,30,31,48,76,118,122 |
| Tributary to Isom Creek | 066-1 | 3-121.01 | 66 | 370.4-370.5 | | | | | 4 | 4 | 4 | |
| Tributary to Isom Creek | 065-1 | 3-121 | 65 | 369.4 | | 76 | 1682+08 | | 4 | 4 | 4 | 11,30,76,118 |
| Yukon River | 064-2 | 3-120 | 64 | 360.7-361.1 | | 77-78 | 58+00 | | 1 | 1 | 1 | 1,3,5,11,13,17,20,21,29,30,38,48,76,118 |
| Burbot Creek | 064-1 | 3-119 | 64 | 359.3 | | 78 | 158+21 | 1HR168+10 | 4 | 4 | 4 | 5,11,20,21,29,30,48,76,118 |
| Woodchopper Creek | 063-1 | 3-118 | 63 | 358.4 | | 78 | 215+30 | 1HR215+20 | 1 | 4 | 4 | 5,11,20,21,29,30,48,76,118 |
| Phelps Creek | 062-4 | 3-117 | 62 | 352.9 | | 79 | 508+70 | 1HR501+00 | 4 | 1 | 3 | 5,11,20,21,29,30,48,64,76,118 |
| Unnamed Creek | 062-3 | 3-116 | 62 | 351.1 | | | | | 4 | 3 | 4 | 122 |
| Unnamed Creek | 062-2 | 3-115 | 62 | 350.0 | | | | | 4 | 3 | 4 | 122 |
| Stumblin Creek | 062-1 | 3-114 | 62 | 348.6 | | | | | 4 | 3 | 4 | 122 |
| Unnamed Creek | 061-3 | 3-113 | 61 | 347.3 | | | | | 4 | 4 | 4 | |
| Unnamed Creek | 061-2 | 3-112 | 61 | 345.4 | | 80 | 899+00 | 1HR892+15 | 4 | 3 | 4 | 11,17,20,21,29,119,122 |
| Fort Hamlin Hills Creek | 061-1 | 3-111 | 61 | 344.1 | | 81 | 971+50 | 1HR1011+08 | 1 | 4 | 4 | 5,11,20,21,29,30,45,61,70,76,118 |
| Knowater Creek | 060-2 | 3-110.01 | 60 | 341.3 | | 81 | 1123+25 | 1HR1158+45 | 4 | 3 | 4 | 11,20,21,30,76,118,122 |
| North Fork Ray River | 060-1 | 3-110 | 60 | 337.9 | | 82 | 58+49 | 1HR1337+34 | 1 | 4 | 1 | 1,5,11,17,20,21,29,30,38,48,55,64,74,76,77,118 |
| Fed Creek | 059-1 | 3-109 | 59 | 333.2 | | 82 | 270+25 | 1HR1600+24 | 4 | 3 | 4 | 11,29,30,48,76,118,121,122 |
| (South Branch) West Fork Dall River | 057-3 | 3-108 | 57 | 325.8 | | 84 | 673+00 | 1HR2001+50 | 1 | 4 | 3 | 1,5,11,20,21,29,30,38,48,76,118 |
| (Middle Branch) West Fork Dall River | 057-2 | 3-107 | 57 | 323.4 | | 84 | 798+00 | 1HR2125+39 | 1 | 4 | 3 | 1,5,11,20,21,29,30,38,48,76,118 |
| Smoky Creek | 057-1 | 3-106.02 | 57 | 322.7 | | 84 | 818+75 | 1HR2163+02 | 3 | 3 | 4 | 11,20,21,30,76,118,121,122 |
| Unnamed Creek | 056-3 | 3-106.01 | 56 | 321.1 | | 85 | 915+75 | 1HR2245+45 | 3 | 4 | 4 | 11,20,21,30,76,118,121,122 |

Provisional List of Waterbodies (continued)

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Finger Mountain Creek | 056-2 | 3-106 | 56 | 320.2 | | 85 | 961+66 | 1HR2291+88 | 1 | 4 | 4 | 5,11,20,29,30,48,76,118 |
| Unnamed Creek | 056-1 | 3-105.01 | 56 | 319.8 | | | | | 4 | 4 | 4 | |
| Olson's Lake Creek | 055-3 | 3-105 | 55 | 316.9 | | 85 | 1149+38 | 1HR2469+77 | 1 | 4 | 4 | 5,11,29,30,48,70,76,118 |
| Kristie's Creek | 055-2 | 3-104.01 | 55 | 316.6 | | | | | 4 | 4 | 4 | |
| Caribou Mountain Creek | 055-1 | 3-104 | 55 | 314.1 | | 86 | 56+03 | 1HR2609+50 | 1 | 4 | 4 | 5,11,29,30,31,48,76,118 |
| Kanuti River | 054-4 | 3-103 | 54 | 311.0 | | 86 | 231+00 | 1HR2777+75 | 1 | 4 | 2 | 1,3,5,11,13,17,20,21,29,30,31, 32,37,55,67,74,76,118 |
| Netsch's Creek Tributary #1 | 054-3 | 3-102 | 54 | 309.1 | | 87 | 331+60 | 1HR2875+90 | 4 | 4 | 4 | 11,29,30,76,118,122 |
| Netsch's Creek Tributary #2 | 054-2 | 3-101 | 54 | 308.7 | | 87 | 349+00 | 1HR2894+96 | 4 | 4 | 4 | 11,29,30,76,118 |
| Netsch's Creek Tributary #3 | 054-1 | 3-100.01 | 54 | 308.5 | | 87 | 370+80 | 1HR2944+05 | 4 | 4 | 4 | 11,30,76,118 |
| South Fork Fish Creek | 053-4 | 3-100 | 53 | 305.0 | | 87 | 520+50 | 1HR3255 | 1 | 4 | 1 | 1,3,5,11,20,21,29,30,48,76,118 |
| Middle Fork Fish Creek | 053-3 | 3-99 | 53 | 304.0 | | 87 | 577+90 | 1HR3255 | 4 | 1 | 2 | 1,3,5,11,20,21,29,30,48,76,118, 128 |
| Fish Creek | 053-2 | 3-98 | 53 | 302.3 | | 88W | 653+50 | 1HR3255+12 | 1 | 1 | 2 | 1,3,5,11,17,20,21,29,30,34,37, 38,48,55,64,67,76,118,123,128 |
| Alder Mountain Creek | 053-1 | 3-97 | 53 | 300.7 | | 88W | 742+50 | 2HR115+00 | 4 | 4 | 4 | 5,11,20,21,29,30,48,76,118 |
| Pung's Crossing Creek | 052-4 | 3-96.01 | 52 | 297.6 | | 89 | 932+40 | 2HR363+36 | 1 | 4 | 4 | 5,11,20,21,30,76,118 |
| South Fork Bonanza Creek | 052-3 | 3-95 | 52 | 293.8 | | 89 | 1123+60 | 2HR550+59 | 1 | 1 | 1 | 1,3,5,11,17,20,21,29,30,31,34, 37,38,55,76,77,118 |
| Grizzly Creek | 052-2 | 3-94.03 | 52 | 293.7 | | 89 | | 2HR545 | 4 | 1 | 4 | 11,122 |
| Unnamed Bonanza Creek Channel | 052-1 | 3-94.02 | 52 | 293.7 | | 89 | 1128+50 | 2HR547 | 4 | 2 | 4 | 11,20,21,30,76,118,122 |
| Oxbow Lake System | 051-5 | 3-94.01 | 51 | 293.2 | | 89 | 1148+00 | 2HR561+64 | 1 | 3 | 4 | 11,20,30,48,76,118,122 |
| North Fork Bonanza Creek | 051-4 | 3-94 | 51 | 292.2 | | 89 | 1208+32 | 2HR606+69 | 4 | 1 | 2 | 1,3,5,11,17,20,21,29,30,31,34, 38,45,67,76,118,121,123,128 |
| South Fork Little Nasty Creek | 051-3 | 3-93 | 51 | 289.9 | | 90 | 1327+15 | 2HR759+84 | 4 | 4 | 4 | 5,11,20,21,29,30,48,67,76,118, 121 |
| The Little Nasty Creek | 051-2 | 3-92 | 51 | 289.7 | | 90 | 1340+25 | 2HR767+82 | 1 | 1 | 4 | 1,5,11,20,21,24,30,48,61,64, 76,118,123,128 |
| North Fork of Little Nasty Creek | 051-1 | 3-91.02 | 51 | 289.6 | | | | | 4 | 3 | 4 | 11,122 |
| Prospect Creek | 050-3 | 3-91 | 50 | 285.3 | | 91 | 1590+00 | 2HR1099+52 | 1 | 1 | 1 | 1,3,5,11,17,20,21,29,30,31,34, 37,38,43,55,70,74,76,77,118, 123 |
| Unnamed Creek | 050-2 | 3-90.05 | 50 | 284.6 | | | | | 4 | 4 | 4 | |
| Unnamed Creek | 050-1 | 3-90.04 | 50 | 282.1 | | | | | 4 | 4 | 4 | |

Provisional List of Waterbodies (continued)

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Douglas Creek | 049-2 | 3-89 | 49 | 278.4 | | 92 | 330+00 | 2HR1470+34 | 4 | 1 | 3 | 1,3,5,11,17,20,21,29,30,34,48, 62,74,76,118,121 |
| Unnamed Creek | 049-1 | 3-87.03 | 49 | 276.6 | | | | | 4 | 4 | 4 | |
| Jim River | 048-3 | 3-87 | 48 | 275.2 | | 92 | 453+50 | 2HR1579+80 | 1 | 1 | 1 | 1,3,5,11,13,17,20,21,30,34,38, 48,62,76,118,123,128 |
| Inlet to Grayling Lake | 048-1 | 3-86.05 | 48 | 270.4 | | | | | 4 | 4 | 4 | 11 |
| Ward's Wallow | 047-6 | 3-86.04 | 47 | 269.8 | | | | | 4 | 4 | 4 | 122 |
| Grayling Lake Inlet | 047-5 | 3-86.02 | 47 | 269.3 | | 93 | 849+00 | 2HR1949+14 | 1 | 4 | 4 | 11,20,21,30,48,70,76,118 |
| Elwood Creek | 047-4 | 3-86.01 | 47 | 267.6 | | | | | 4 | 4 | 4 | |
| East Fork Abba-dabba Creek | 047-3 | 3-86.005 | 47 | 267.0 | | | | | 4 | 4 | 4 | |
| Abba-dabba Creek | 047-2 | 3-86 | 47 | 266.5 | | 94 | 963+28 | 2HR2098+18 | 1 | 1 | 1 | 1,5,11,20,21,29,30,48,61,64, 74,75,76,77,122 |
| South Fork Koyukuk River | 047-1 | 3-85 | 47 | 264.4 | | 94-95 | 1073+00 | 2HR2206+88 | 1 | 1 | 1 | 1,3,5,11,13,17,20,21,29,30,48, 76,118 |
| South Fork Koyukuk River | 046-4 | 3-85 | 46 | 264.3 | | | | | 4 | 4 | 4 | |
| Crossroads Creek #1 | 046-3 | 3-82.03 | 46 | 259.5 | | 95 | 222+50 | 3HR129+23 | 4 | 3 | 4 | 11,20,21,29,30,76,118,122 |
| Crossroads Creek #2 | 046-2 | 3-82.02 | 46 | 259.4 | | 95 | 288+75 | 3HR129+58 | 4 | 4 | 4 | 11,20,21,29,30,76,118 |
| Chapman Creek | 046-1 | 3-81 | 46 | 258.3 | | 96 | 295+17 | 3HR205+23 | 4 | 1 | 4 | 1,5,11,20,21,29,30,48,76,118 |
| South Fork Windy Arm Creek | 045-7 | 3-80 | 45 | 257.3 | | 96 | 343+75 | 3HR255+64 | 1 | 1 | 4 | 1,11,20,21,29,30,48,76,118,121 |
| North Fork Windy Arm Creek | 045-6 | 3-79 | 45 | 256.0 | | 96 | 417+25 | 3HR326+94 | 1 | 1 | 4 | 1,5,11,20,21,29,30,48,64,74, 76,118 |
| Unnamed Creek | 045-5 | 3-78.01 | 45 | 255.1 | | 96 | 458+70 | 3HR369+59 | 4 | 4 | 4 | 11,20,21,30,76,118,121 |
| Trent's Trickle | 045-4 | 3-78 | 45 | 254.0 | | 96 | 518+39 | 3HR413+47 | 1 | 1 | 4 | 5,11,20,21,29,30,48,61,62,70, 76,118,122 |
| Jackson's Slough East Channel #1 | 045-3 | 3-77.02 | 45 | 253.2 | | 97 | 555+85 | 3HR452+15 | 1 | 1 | 4 | 5,11,30,34,48,61,62,64,76,118, 123,132 |
| Jackson's Slough Cross Channel | 045-2 | 3-77.01 | 45 | 253.0 | | 97 | 570+70 | 3HR464+00 | 1 | 1 | 4 | 5,11,29,30,34,48,61,62,66,74, 76,118,123,132 |
| Jackson's Slough East Channel #2 | 045-1 | 3-77 | 45 | 252.8 | | 97 | 593+00 | 3HR483+00 | 1 | 1 | 4 | 5,11,30,34,48,61,62,64,76,118, 123,132 |
| Cathedral Mountain Creek | 044-6 | 3-75 | 44 | 251.8-252.0 | | | | | 4 | 2 | 4 | 11,122 |
| Rosie Creek | 044-5 | 3-74 | 44 | 250.5 | | 97 | | 3HR599+00 | 1 | 1 | 1 | 3,5,11,17,20,21,29,30,31,48, 74,76,77,118 |
| First Creek | 044-4 | 3-72.06 | 44 | 248.1 | | 97 | | 3HR727+14 | 1 | 4 | 4 | 11,20,21,30,76,118 |
| Tributary to East Fork Spring Slough | 044-3 | 3-72.04 | 44 | 247.0 | | 97-98 | | 3HR776+84 | 1 | 4 | 4 | 5,11,30,76,118,130 |

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tributary to Spring Slough | 044-2 | 3-72.03 | 44 | 246.8 | | 98 | | 3HR783+98 | 1 | 1 | 4 | 5,11,30,76,118 |
| Tributary to Spring Slough | 044-1 | 3-72.02 | 44 | 246.7 | | 98 | | 3HR790+14 | 1 | 1 | 4 | 5,11,30,76,118,128 |
| Tributary to Spring Slough | 043-9 | 3-72.01 | 43 | 246.5 | | 98 | | 3HR797+60 | 1 | 1 | 4 | 5,11,30,48,76,118 |
| Slate Creek | 043-8 | 3-72 | 43 | 245.0 | | 98 | 976+83 | 3HR876+86 | 1 | 1 | 4 | 1,3,5,11,17,20,21,29,30,31, 34,38,76,118,122,123,128,131, 132 |
| Calf Creek | 043-7 | 3-71 | 43 | 244.3 | | 98 | 1004+75 | 3HR910+70 | 1 | 4 | 3 | 5,11,29,30,31,48,76,118 |
| South Fork Clara Creek Overflow | 043-6 | 3-70.01 | 43 | 244.0 | | 98 | 1015+80 | 3HR925+49 | 1 | 4 | 4 | 5,11,29,30,31,48,76,118 |
| Clara Creek Overflow | 043-5 | 3-70 | 43 | 243.9 | | 98 | 1019+50 | 3HR933+34 | 1 | 4 | 4 | 5,11,29,30,31,48,64,76,118 |
| Clara Creek | 043-4 | 3-69 | 43 | 243.8 | | 98 | 1036+20 | 3HR941+85 | 1 | 4 | 4 | 5,11,17,29,30,31,34,48,76,118 |
| South Fork Mary Angel Creek | 043-3 | 3-65 | 43 | 241.5 | | 98-99 | 4+30 | 3HR1052+04 | 1 | 4 | 4 | 5,11,29,30,31,48,64,76,118 |
| Mary Angel Creek | 043-2 | 3-63.04 | 43 | 241.4 | | 99 | 8+40 | 3HR1055+57 | 1 | 1 | 3 | 5,11,30,34,48,61,64,70,74,76, 118,123 |
| South Fork Sharon Creek | 043-1 | 3-63.03 | 43 | 240.8 | | 99 | 38+70 | 3HR1076+29 | 1 | 4 | 4 | 5,11,30,76,118 |
| Marion Creek | 042-6 | 3-63 | 42 | 240.3 | | 99 | 59+85 | 3HR1114+14 | 1 | 1 | 3 | 1,3,5,11,20,21,29,30,31,34,38, 48,74,76,118,122 |
| North Marion Creek Overflow #1 | 042-5 | 3-62.04 | 42 | 240.2 | | 99 | 68+80 | 3HR115 | 4 | 2 | 4 | 11,30,76,118,122 |
| North Marion Creek Overflow #2 | 042-4 | 3-62.03 | 42 | 240.1 | | 99 | 70+75 | 3HR1120+33 | 4 | 4 | 4 | 11,30,76,118 |
| North Marion Creek Overflow #3 | 042-3 | 3-62.02 | 42 | 240.0 | | 99 | 78+00 | 3HR1122+90 | 4 | 4 | 4 | 11,30,76,118 |
| Pence's Pond Creek | 042-2 | 3-62.01 | 42 | 239.9 | | 99 | 85+50 | 3HR1143+81 | 1 | 4 | 3 | 4,11,20,21,30,31,48,76,118 |
| Dry Gulch | 042-1 | 3-62 | 42 | 236.3 | | | | | 4 | 4 | 4 | |
| South Fork Confusion Creek | 041-8 | 3-61.03 | 41 | 234.1 | | 100 | 369+00 | 3HR1439+92 | 4 | 3 | 2 | 5,11,20,30,31,48,76,77,118 |
| Confusion Creek | 041-7 | 3-61.02 | 41 | 233.9 | | 100 | 391+70 | 3HR1443 | 1 | 4 | 3 | 5,11,20,30,31,48,76,118 |
| Middle Fork Confusion Creek | 041-6 | 3-61.015 | 41 | 233.8 | | | | | 4 | 4 | 4 | |
| Minnie Creek | 041-5 | 3-61 | 41 | 232.3 | | 100 | 454+46 | 3HR1519+34 | 1 | 4 | 3 | 1,3,5,11,17,20,21,29,30,34,38, 48,76,118,123,128 |
| Middle Fork Koyukuk River | 041-4 | 3-60.19 | 41 | 231.2 | | 100 | 495+50 | 3HR1588+80 | 1 | 4 | 1 | 1,3,5,11,13,17,20,21,30,76, 118,123,128 |
| Union Gulch Creek | 041-3 | 3-60.17 | 41 | 230.3 | | 100 | 536+00 | 3HR1600 | 1 | 1 | 4 | 5,11,20,21,30,31,48,76,118 |
| Confederate Gulch Creek | 041-2 | 3-60.16 | 41 | 229.8 | | 100 | 590+75 | 3HR1655+00 | 1 | 4 | 4 | 11,30,76,118 |
| Hammond River | 041-1 | 2-55 | 41 | 229.0 | | 101 | 635+60 | 3HR1711+42 | 1 | 4 | 2 | 1,5,11,13,20,21,29,30,38,48, 76,118,132 |
| Middle Fork Koyukuk River | 040-8 | 2-60.13 | 40 | 228.8 | | 101 | | | 1 | 4 | 1 | 1,3,5,11,17,20,21,29,30,37,48, 67,76 |

Provisional List of Waterbodies (continued)

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| One-O-One Creek | 040-7 | 2-60.122 | 40 | 228.6 | | | | | 1 | 4 | 4 | |
| Coon Gulch Creek | 040-6 | 2-60.121 | 40 | 228.1 | | | | | 1 | 4 | 4 | |
| Richardson's Slough | 040-5 | 2-60.12 | 40 | 226.1 | | 101 | 778+30 | 3HR1861+03 | 1 | 1 | 4 | 5,11,30,48,76,118 |
| Over Creek | 040-4 | 2-60.07 | 40 | 225.8 | | 101 | 805+39 | 3HR1896+30 | 1 | 4 | 4 | 1,11,30,48,76,118 |
| Nugget Creek | 040-3 | 2-60 | 40 | 224.2 | | 101 | 886+60 | 3HR1969+70 | 4 | 4 | 4 | 5,11,20,21,30,34,48,76,118,121 |
| Wolf Pup Creek | 040-2 | 2-59 | 40 | 223.7 | | 102 | 906+50 | 3HR1990+56 | 4 | 4 | 4 | 5,11,20,30,34,48,76,118,121 |
| Sheep Creek | 040-1 | 2-53 | 40 | 223.2 | | 102 | 933+00 | 3HR2018+85 | 1 | 4 | 4 | 5,11,20,21,29,30,34,48,76,118 |
| Cushing Creek | 039-4 | 2-52.01 | 39 | 222.9 | | 102 | 948+60 | 3HR2033+06 | 4 | 3 | 4 | 5,11,20,30,48,76,118,122 |
| Gold Creek | 039-3 | 2-52 | 39 | 222.4 | | 102 | 976+00 | 3HR2059+11 | 1 | 4 | 3 | 3,5,11,17,20,21,29,30,31,34, 48,64,76,118,121 |
| Linda Creek | 039-2 | 2-51 | 39 | 221.9 | | 102 | 1001+18 | 3HR2087+21 | 4 | 4 | 4 | 5,11,17,20,21,29,30,31,34,48, 76,118,121 |
| Valve Site Creek | 039-1 | 2-49.07 | 39 | 219.7 | | 102 | 1121+05 | 3HR2203+04 | 4 | 3 | 3 | 11,20,30,76,118 |
| Sukakpak Creek | 038-8 | 2-49.03 | 38 | 216.5 | | 103 | 1305+00 | 3HR2373+80 | 1 | 1 | 4 | 5,11,20,21,30,31,61,62,76,118, 130 |
| Access Road Creek | 038-7 | 2-49.026 | 38 | 216.2 | | | | | 1 | 4 | 4 | 11 |
| West Fork Sukakpak Creek | 038-6 | 2-49.025 | 38 | 216.0 | | | | | 1 | 4 | 4 | 11 |
| Middle Fork Koyukuk River | 038-5 | 2-49 | 38 | 214.3-214.6 | | 103 | 1361+45 | 3HR2440+47 | 1 | 4 | 4 | 1,3,5,13,17,20,21,29,30,31,38, 48,74,76,118,123,128,132 |
| Millie's Meander | 038-4 | 2-48.03 | 38 | 214.0 | | 103 | 1418+76 | 3HR2489+60 | 1 | 4 | 4 | 11,30,31,48,64,70,76,118,121 |
| Eva's Alv | 038-3 | 2-48.01 | 38 | 212.4 | | 103 | 1507+08 | 3HR2583+84 | 2 | 1 | 4 | 11,20,30,48,76,118,121 |
| Dietrich River (Lower) | 038-2 | 2-48 | 38 | 212.1 | | 104 | 1526+55 | 3HR2604+66 | 1 | 1 | 1 | 1,3,5,11,17,20,21,29,30,31,37, 38,48,61,62,76,77,118 |
| 1415 Lake Outlet | 038-1 | 2-46.01 | 38 | 211.5 | | 104 | 1556+18 | 3HR2631+80 | 4 | 4 | 4 | 11,30,76,118,121 |
| Brockman Creek | 037-7 | 2-46 | 37 | 210.6 | | 104 | 1581+87 | 3HR2662+07 | 4 | 1 | 2 | 11,20,21,29,30,48,64,76,118 |
| South Branch Airport Creek | 037-5 | 2-45.03 | 37 | 209.4 | | 104 | 1637+70 | 3HR2728+26 | 4 | 4 | 4 | 11,20,30,76,118,123,128 |
| Airport Creek | 037-3 | 2-45.01 | 37 | 208.5 | | 104 | 1681+92 | 3HR2775+58 | 1 | 4 | 4 | 11,20,30,48,76,118,130 |
| Disaster Creek | 037-2 | 2-45 | 37 | 207.8 | | 104 | 1719+41 | 3HR2809+90 | 4 | 4 | 4 | 3,5,11,20,29,30,48,64,76,118 |
| Unnamed Creek | 037-1 | 2-43.07 | 37 | 207.5 | | 104 | 1831+09 | 3HR2925+28 | 4 | 4 | 4 | 11,30,76,118 |
| Snowden Creek | 036-4 | 2-43 | 36 | 205.0 | | 105 | 1870+20 | 3HR2959+42 | 1 | 1 | 4 | 3,5,11,17,20,21,29,30,34,48, 64,76,118,122 |
| Snowden Pond Inlet | 036-3 | 2-41.04 | 36 | 204.4 | | | | | 4 | 4 | 4 | |
| Number Lake Creek | 036-2 | 2-41.03 | 36 | 203.7 | | 105 | 1941+95 | 4HR3026+13 | 1 | 4 | 4 | 1,5,11,20,30,48,76,118,121 |
| Ugh Creek | 036-1 | 2-41 | 36 | 202.3 | | 105 | 2011+00 | 4HR3103+51 | 1 | 4 | 4 | 11,20,30,48,76,118 |
| Steep Creek | 035-4 | 2-39 | 35 | 198.3 | | 106 | 2235+00 | 4HR3309+86 | 4 | 3 | 4 | 11,29,30,76,118,121,122 |
| Buff Creek | 035-3 | 2-38 | 35 | 196.8 | | 106 | 52+10 | 4HR3375+85 | 4 | 3 | 4 | 11,29,30,76,118,121,122 |

Provisional List of Waterbodies (continued)

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Burger's Bayou | 035-2 | 2-36.02 | 35 | 196.3 | | 106 | 72+50 | 4HR3414+01 | 1 | 1 | 1 | 1,5,11,20,30,48,76,77,118,122,128 |
| Tracy's Trickle | 035-1 | 2-36 | 35 | 193.9 | | 107 | 212+40 | 4HR3543+02 | 4 | 4 | 4 | 11,30,76,118 |
| Unnamed Creek | 034-8 | 2-34.07 | 34 | 192.9 | | 107 | | | 4 | 4 | 4 | |
| Beaver Dam Brook #1 | 034-7 | 2-34.05 | 34 | 192.4 | | 107 | 295+10 | 4HR255+58 | 1 | 1 | 4 | 11,30,76,118,122 |
| Beaver Dam Brook #2 | 034-6 | 2-34.04 | 34 | 192.0 | | 107 | 321+32 | 4HR280+97 | 4 | 3 | 4 | 11,30,76,118,122 |
| Beaver Dam Brook #3 | 034-5 | 2-34.03 | 34 | 191.8 | | 107 | 329+88 | 4HR290+66 | 4 | 3 | 4 | 11,30,76,118,122 |
| Beaver Dam Brook #4 | 034-4 | 2-34.02 | 34 | 191.8 | | 107 | 334+05 | 4HR293+50 | 4 | 3 | 4 | 11,30,76,118,122 |
| Nutirwik Creek | 034-3 | 2-34 | 34 | 190.8 | | 107 | 375+54 | 4HR343+00 | 1 | 1 | 4 | 3,5,11,17,20,21,30,38,48,64,67,76,118,122 |
| Homewood Spring | 034-2 | 2-32.05 | 34 | 188.4-188.7 | | | 496+00 | | 4 | 1 | 1 | 30,41,76,118,122,130 |
| Unnamed Creek | 034-1 | 2-33 | 34 | 187.8 | | | | | 4 | 4 | 4 | |
| Overwintering Creek | 033-7 | 2-32.02 | 33 | 186.8 | | 108 | | 4HR553+73 | 4 | 1 | 1 | 11,30,40,41,64,76,118 |
| Nina Creek | 033-6 | 2-31.01 | 33 | 186.0 | | 108 | | | 4 | 4 | 4 | |
| Oskar's Eddy | 033-5 | 2-31 | 33 | 185.1 | | 108 | 662+80 | 4HR632+98 | 1 | 4 | 4 | 5,11,30,76,87,118 |
| Unnamed Creek | 033-4 | 2-30.02 | 33 | 184.9 | | 108 | 675+00 | 4HR649+00 | 4 | 3 | 3 | 11,20,30,76,118 |
| Wetfoot Creek | 033-2 | 2-29.04 | 33 | 184.0 | | | | | 4 | 1 | 4 | 11,121,122,130 |
| Dietrich River Floodplain | 033-1 | 2-29.03 | 33 | 182.1-183.3 | | 109 | | | 4 | 1 | 4 | 1,3,5,11,20,30,31,62,76,118,121,126 |
| Dietrich River Floodplain | 032-3 | 2-29.02 | 32 | 181.8-182.1 | | | | | 4 | 1 | 4 | 1,3,5,11,20,30,62,118,122,126 |
| Unnamed Creek | 032-2 | 2-28.02 | 32 | 177.4 | | | | | 4 | 4 | 4 | |
| Unnamed Creek | 032-1 | 2-28.01 | 32 | 177.0 | | | | | 4 | 4 | 4 | |
| Unnamed Creek | 031-3 | 2-27.05 | 31 | 174.8 | | | | | 4 | 4 | 4 | |
| North Branch North Fork Chandalar River | 031-3 | 2-27.05 | 31 | 175.4 | | | | | 4 | 4 | 4 | |
| East Creek | 031-2 | 2-27.04 | 31 | 171.8 | | 110 | 247+32 | 4HR1360 | 4 | 4 | 4 | 1,3,5,11,30,31,48,67,76 |
| North Atigun Pass Creek | 031-1 | 2-27.03 | 31 | 171.7 | | | | | 4 | 4 | 4 | |
| Unnamed Creek | 030-2 | 2-27.02 | 30 | 168.6 | | | | | 4 | 4 | 4 | |
| Unnamed Creek | 030-1 | 2-27.01 | 30 | 165.5 | | | | | 4 | 4 | 4 | |
| Who Creek | 029-9 | 2-26 | 29 | 163.8 | | 111 | | 5HR520+00 | 4 | 4 | 4 | 11,30,76,118 |
| Mickey's 6:30 Creek | 029-8 | 2-25.03 | 29 | 163.6 | | 111-112 | | 5HR541+66 | 4 | 4 | 4 | 11,30,76,118 |
| Whybother Creek | 029-7 | 2-25.02 | 29 | 163.5 | | 112 | | 5HR550+80 | 4 | 4 | 4 | 11,30,76,118 |
| Named Creek | 029-6 | 2-25.01 | 29 | 163.2 | | 112 | | 5HR552+37 | 4 | 4 | 4 | 11,30,76,118 |
| Trevor Creek | 029-5 | 2-25 | 29 | 160.6 | | 112 | 837+00 | 5HR709+72 | 1 | 1 | 4 | 11,30,48,64,70,76,118,123,128,132 |

Provisional List of Waterbodies (continued)

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tyler Creek | 029-4 | 2-24.03 | 29 | 160.5 | | 112 | 881+00 | 5HR717+90 | 1 | 4 | 4 | 11,30,48,76,118,121,123,128 |
| Unnamed Creek | 029-2 | 2-24.007 | 29 | 159.6 | | | | | 4 | 4 | 4 | |
| Bicycle Creek | 029-1 | 2-24.006 | 29 | 159.5 | | | | | 4 | 4 | 4 | 128 |
| Waterhole Creek | 028-2 | 2-24.005 | 28 | 158.8 | | | | | 4 | 4 | 4 | 123,128,132 |
| Roche Moutonee | 028-1 | 2-24 | 28 | 154.1 | | 113 | 1170+91 | 5HR1053+28 | 1 | 1 | 4 | 3,11,30,48,57,62,64,76,118,128 |
| Leentha Creek | 027-4 | 2-23.015 | 27 | 152.8 | | | | | 4 | 4 | 4 | 11,121 |
| Holden Creek | 027-3 | 2-23.01 | 27 | 151.8 | | 114 | 30+44 | 5HR1176+47 | 1 | 1 | 4 | 11,30,48,62,64,76,118,121,123, 128,130,132 |
| Tad Creek | 027-2 | 2-22.04 | 27 | 151.7 | | 114 | 44+00 | 5HR1169 | 2 | 4 | 4 | 11,118,121 |
| Atigun River | 027-1 | 2-22 | 27 | 148.4 | | 114 | 20+94 | 5HR1364+44 | 1 | 1 | 2 | 1,3,5,11,30,31,48,76,77,118,128 |
| Jill Creek | 025-9 | 2-21.11 | 25 | 141.6 | | 115 | 380+60 | 6HR229+00 | 4 | 4 | 4 | 11,30,48,64,76,118,121,122,128 |
| Jill Creek Tributary | 025-8 | 2-21.10 | 25 | 141.5 | | 115 | 395+24 | 6HR234+75 | 4 | 4 | 4 | 11,30,48,76,118 |
| Ed Creek | 025-7 | 2-21.09 | 25 | 140.9 | | 115 | 421+74 | 6HR436+25 | 4 | 4 | 4 | 11,20,30,48,76,118,121,122,123, 130,132 |
| Mack Creek | 025-6 | 2-21.08 | 25 | 140.6 | | 115 | 438+29 | 6HR452+00 | 4 | 4 | 4 | 11,30,48,76,118,122,123,130,132 |
| Terry Creek | 025-5 | 2-21.07 | 25 | 139.9 | | 115 | 466+12 | 6HR490+00 | 4 | 4 | 4 | 11,30,48,64,76,118 |
| Moss Creek | 025-4 | 2-21.06 | 25 | 139.4 | | 115 | 494+00 | 6HR500+41 | 4 | 4 | 4 | 11,30,48,76,118 |
| Hallock Creek | 025-3 | 2-21.05 | 25 | 139.3 | | 115 | 504+27 | 6HR512+00 | 4 | 4 | 4 | 11,30,48,76,118 |
| Clawsod Creek | 025-2 | 2-21.045 | 25 | 137.6 | | | | | 4 | 2 | 2 | 11,30 |
| Yan Creek | 025-1 | 2-21.04 | 25 | 137.0 | | 115 | 629+06 | 6HR641+00 | 4 | 4 | 4 | 11,30,48,76,118,122 |
| Kuparuk River | 024-1 | 2-21 | 24 | 132.6 | | 117 | 842+00 | 6HR936+50 | 1 | 1 | 2 | 1,3,5,11,29,30,36,48,64,67,76, 118 |
| East Fork Kuparuk River | 023-3 | 1-20.01 | 23 | 130.7 | | 117 | 921+55 | 6HR911+80 | 4 | 4 | 4 | 5,11,30,48,64,76,118,121 |
| Toolik River | 023-2 | 1-20 | 23 | 130.0 | | 117 | 968+30 | 6HR948+50 | 4 | 4 | 4 | 3,5,11,29,30,48,64,76,118,121, 122 |
| East Fork Toolik River | 023-1 | 1-19.01 | 23 | 129.6 | | 117 | 973+30 | 6HR970+25 | 4 | 4 | 4 | 11,30,48,76,118,121,122 |
| Mary Lamb Creek | 022-2 | 1-19.005 | 22 | 125.0 | | | | | 4 | 4 | 4 | |
| Oksrukuyik Creek | 022-1 | 1-19 | 22 | 124.0 | | 118 | 1325+64 | 6HR1285+32 | 1 | 4 | 4 | 1,3,5,11,29,30,48,50,57,64,76, 118 |
| Lower Oksrukuyik Creek | 020-1 | 1-18.01 | 20 | 110.3 | | 120 | 895+76 | 6HR2109+00 | 1 | 1 | 4 | 1,11,30,48,57,64,70,76,77,118, 123,124 |
| Rudy Creek | 019-6 | 1-17 | 19 | 108.6 | | 120 | 947+99 | 6HR2153 | 1 | 1 | 4 | 3,11,29,30,48,76,118,121,122 |
| Bassett Creek | 019-5 | 1-16.03 | 19 | 107.0 | | 121 | 1029+20 | 6HR2228+14 | 4 | 4 | 4 | 11,30,48,76,118 |
| Dennis Creek | 019-4 | 1-16.02 | 19 | 106.9 | | 121 | 1033+60 | 6HR2234+80 | 1 | 1 | 4 | 11,30,48,76,118,121,122 |
| Climb Creek | 019-3 | 1-16.01 | 19 | 106.3 | | 121 | 1060+34 | 6HR2262+60 | 1 | 4 | 4 | 11,30,48,64,76,118,121 |
| Poison Pipe Creek | 019-2 | 1-16 | 19 | 106.1 | | 121 | 1077+10 | 6HR2318+92 | 1 | 1 | 4 | 11,29,30,48,76,118 |

Provisional List of Waterbodies (continued)

| Waterbody | NPRX | NPSI | NPAS | NPMP | AHMP | Alyeska AS | Alyeska Pipe Station | Haul Road Station | Criteria* S | F | W | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Polygon Creek | 019-1 | 1-15 | 19 | 105.1 | | 121 | 1125+00 | 6HR2351+97 | 1 | 1 | 4 | 11,30,48,64,76,118,122 |
| Gustafson Gulch | 018-4 | 1-14 | 18 | 102.3 | | 122 | 1280+00 | 6HR2517+85 | 1 | 1 | 4 | 11,30,48,63,76,118,121,122 |
| Arthur Creek | 018-3 | 1-13 | 18 | 101.9 | | 122 | 1297+50 | 6HR2536+20 | 1 | 1 | 4 | 11,29,30,48,63,64,76,118,122 |
| Sagavanirktok River Side Channel | 018-2 | 1-12.05 | 18 | 99.7 | | 122 | 1424+79 | 6HR2657+20 | 1 | 4 | 4 | 11,30,48,64,76,118,121 |
| Sagavanirktok River Side Channel | 018-1 | 1-12.04 | 18 | 99.1 | | 122 | 1445+85 | 6HR2684+43 | 1 | 4 | 4 | 11,30,48,76,118,121 |
| Stump Creek | 017-3 | 1-12.02 | 17 | 97.4 | | 122 | 1499+00 | 6HR2770+86 | 4 | 1 | 4 | 11,30,48,57,63,76,118 |
| Tributary to Lori Creek | 017-2 | 1-12.015 | 17 | 94.7 | | | | | 4 | 4 | 4 | |
| Lori Creek | 017-1 | 1-12.01 | 17 | 93.6 | | 123 | 1719+50 | 6HR2974+15 | 4 | 4 | 4 | 11,30,48,63,70,76,118,121 |
| Charlotte Creek | 016-3 | 1-12 | 16 | 91.5 | | 123 | | 6HR3083+19 | 1 | 1 | 2 | 11,29,30,64,76,118,122 |
| Happy Valley Camp Creek | 016-2 | 1-11 | 16 | 87.6 | | 124 | | 6HR3259+77 | 1 | 1 | 3 | 3,5,11,29,30,48,63,64,76,118, 122 |
| Milke Creek | 016-1 | 1-10 | 16 | 87.1 | | 124 | | 6HR3296+20 | 1 | 1 | 4 | 3,11,29,30,48,63,64,76,118 |
| Unnamed Creek | 015-3 | 1-9.5 | 15 | 86.4 | | | | | 4 | 4 | 4 | 30 |
| Stout Creek | 015-2 | 1-9 | 15 | 83.6 | | 124 | | 6HR3471+69 | 1 | 1 | 4 | 11,30,48,64,70,76,118,122 |
| Spoiled Mary Creek | 015-1 | 1-8 | 15 | 82.4 | | 125 | 493+95 | 6HR3535+62 | 1 | 4 | 4 | 11,29,30,48,76,118,122 |
| Mark Creek | 014-1 | 1-7 | 14 | 76.5 | | 126 | 791+40 | 6HR3849+41 | 1 | 1 | 4 | 3,11,29,30,48,63,76,118 |
| Toolik River Tributary | 013-1 | 1-5.49 | 13 | 69.6 | | 126W | | 6HR4195+99 | 4 | 4 | 4 | 11,30,42,43,76,118 |
| Sand Creek | 012-2 | 1-5.485 | 12 | 67.8 | | | | | 4 | 4 | 4 | |
| Unnamed Creek | 012-1 | 1-5.48 | 12 | 64.3 | | 126W | | 6HR4481+00 | 4 | 3 | 4 | 11,30,42,43,76,118,122 |
| Lake 802 | 010-1 | 1-5.295 | 10 | 54.4 | | | | | 4 | 4 | 4 | |
| East Fork Sylvia Creek | 007-5 | 1-5.055 | 7 | 39.3 | | | | | 4 | 2 | 4 | 11,122 |
| Sylvia Creek | 007-4 | 1-5.05 | 7 | 39.0 | | 132 | 1316+45 | 7HR1624+77 | 1 | 4 | 3 | 11,30,48,76,118 |
| Tributary to Short Creek | 007-3 | 1-5.045 | 7 | 38.6 | | | | | 4 | 4 | 4 | |
| Short Creek | 007-2 | 1-5.02 | 7 | 38.4 | | 132 | 4822+81 | 7HR1655+59 | 4 | 4 | 4 | 11,30,48,76,118 |
| Telma Creek | 007-1 | 1-5.01 | 7 | 35.8 | | 132 | 4951+44 | | 4 | 1 | 4 | 11,30,48,76,118,122 |
| Pescado Creek | 005-2 | 1-4.07 | 5 | 27.4 | | | | | 4 | 1 | 4 | 11,30,43,48,76,77,122 |
| Unnamed Lake | 005-1 | 1-4.06 | 5 | 26.7 | | 135 | 806 | 7HR2482+36 | 4 | 4 | 4 | 11,30,76,118 |
| Low-life Creek | 004-2 | 1-3.05 | 4 | 23.0 | | | | | 4 | 1 | 4 | 122 |
| Unnamed Lake | 004-1 | 1-3.04 | 4 | 17.6 | | | | | 4 | 4 | 4 | |
| Unnamed Lake | 003-1 | 1-3.03 | 3 | 12.5 | | | | | 4 | 4 | 4 | |
| Little Putuligayuk River | 002-1 | 1-3 | 2 | 9.4 | | | 1478+52 | | 4 | 3 | 3 | 3,11,30,48,57,76,118,121,122 |
| Putuligayuk River | 001-1 | 1-1 | 1 | 3.2 | | | | | 4 | 1 | 3 | 27,30,40,43,48,56,76,118,121 |

* S = Spring, F = Fall, W = Winter