

Appendix B:

Back River Airstrip Fish and Fish Habitat Assessment Memorandum

By Rescan Environmental Services Inc.
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REF

Memorandum



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SUBJECT: Back River Airstrip Fish and Fish Habitat Assessment

1. Introduction

Sabina has proposed to construct an airstrip and associated access roads at the Goose Lake Camp. The airstrip will be located east of camp, and roads will be constructed to access the airstrip and borrow pits east of the airstrip. Drainages exist along the access roads and in the vicinity of the airstrip. A fish habitat and community assessment was conducted on these drainages to identify potential fish habitat and to recommend measures to protect fish resources.

2. Methodology

Fish habitat assessments at each stream site were based on the Fish Habitat Assessment Procedures (FHAP) (Johnston and Slaney 1996). The FHAP protocol is best suited to describe fish habitat at the habitat unit level and was conducted over 100 m-long stream sections roughly encompassing the proposed crossing locations. The FHAP procedure involves measuring individual habitat units and quantifying cover types, substrate, bank stability and riparian vegetation. It also aids in determining the availability of pools and other habitat types within stream reaches.

Fish sampling and community assessment was conducted by electrofishing. In addition to fish sampling, a barrier assessment was conducted to determine if the crossing sites were accessible to fish migrating upstream from Goose Lake.

3. Results and Observations

Four crossing sites were identified along the proposed access routes to the airstrip. Table 3.1 shows the UTM coordinates of each site. The weather at the time of the survey was rainy, and the water level in all water bodies was high.

Table 3.1 Locations of Stream Crossings along Proposed Airstrip Access Roads

Site	Zone	Easting	Northing	Comment
AS-1	13W	433824	7269795	Non Classified Drainage with no fish habitat
AS-2	13W	433377	7269435	Fish-bearing stream upstream of Gander Pond
AS-3	13W	432883	7269904	Fish-bearing stream downstream of Gander Pond
AS-4	13W	432964	7269946	Very small stream with marginal fish habitat

Site AS-1 is located just east of Goose Lake Camp. The area is characterized as a non-classified drainage (NCD) because it has no defined channel and no alluvial deposits. The area consists of ponded and pooled water in a low, wide drainage with no connectivity to surrounding water bodies (Plate 3.1). Several ponds up to 50 m² were observed, but no channels connected the ponds. The maximum depth of the ponds measured was 0.5 m, indicating that the area has no overwintering potential for fish. The lack of connectivity between water bodies, even at the high water levels observed, indicate that the area does not provide any suitable fish habitat.

Electrofishing was conducted for 257 s over a 100 m distance in several ponds and pools. No fish were captured or observed. This area is thus classified as non-fish-bearing, and a culvert crossing is suitable for the access road.



Plate 3.1 View looking west of AS-1 non-classified drainage

Site AS-2 is located approximately 100 m upstream of Gander Pond, east of the proposed airstrip. It is a stream with poorly defined banks and multiple channels (Plate 3.2). The bankfull width ranges from 1.5 m to 6.7 m, while the wetted width ranged from 1.6 m to 8.8 m (larger than bankfull because the

stream was in flood). The stream displays pool-riffle morphology; however, there were few deep pools. Most of the habitat units were glides or riffles. The substrate was dominated by boulder and cobble, while the cover was dominated by instream vegetation and boulders. Stream temperature was 6°C, conductivity was 4 µS/cm and pH was 8.0. The water was clear with no noticeable turbidity.

Site AS-2 was electrofished for 728 s over 100 m. One slimy sculpin (*Cottus cognatus*) was observed, but could not be captured because it retreated into the boulders along the bottom of the stream. No other fish were seen; however, the site has good connectivity to Gander Pond and has high habitat complexity due to the abundance of boulders and instream cover. The habitat in this area is suitable for rearing; however, no spawning habitat or overwintering habitat was seen.

This site is considered to be fish-bearing and should be crossed with an open-bottom structure such as a bridge. The most suitable crossing location from a fish habitat standpoint is located approximately 100 m upstream of Gander Pond at 13W.433377.7269435. At this location, the stream is relatively confined between areas of raised tundra. Elsewhere, the stream is poorly confined and floodwaters extend far beyond the banks of the stream.

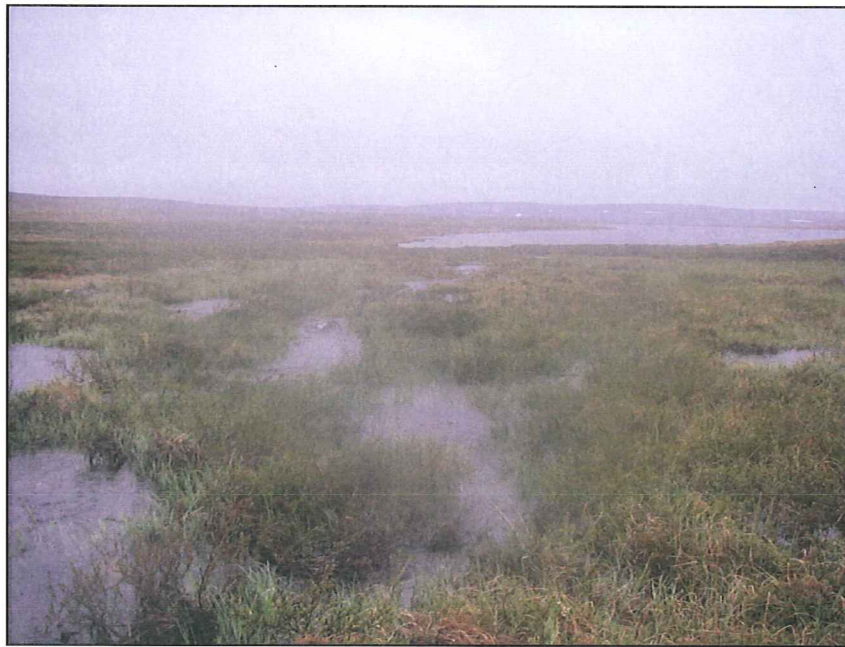


Plate 3.2 Site AS-2 looking downstream towards Gander Pond. Note the multiple channels and poorly defined banks.

Site AS-3 is located approximately 100 m downstream of Gander Pond near the existing hydrology station. The stream in this location is well-defined with stable banks and a deep channel (Plate 3.3). The morphology is riffle-pool; however, most of the channel was characterized by deep glides and riffles. The bankfull width ranged from 2.0 to 3.2 m, and the wetted width ranged from 2.0 to 6.2 m. Cover was dominated by instream vegetation and deep water, while the substrate was dominated by fine sediment and boulders. The habitat in this area has good potential for rearing, but no spawning habitat was observed. The channel is not likely deep enough to support overwintering.

Site AS-3 was electrofishing for 450 s over 100 m. No fish were captured or seen; however, electrofishing conditions were difficult due to the deep channel and swift flow. The stream was followed downstream to Goose Lake to look for potential barriers to fish migration. No permanent barriers to migration were observed; however, the stream becomes more poorly defined as it approaches Goose Lake and it flows through a wide swath of scrub birch and willow.

This reach should be considered fish-bearing due to the observation of a fish upstream at site AS-2. The confined channel and high banks near the hydrology station (UTM 13W.432870.7269944) make it suitable for a bridge crossing.



Plate 3.3 Site AS-3 looking upstream near the hydrology station. This area is suitable for a bridge crossing due to the confined channel and high banks.

Site AS-4 is a very small stream that also drains Gander Pond into Goose Lake. It has a defined channel approximately 0.3 m wide and 0.1 m deep (Plate 3.4). It is ephemeral and while it is accessible to fish at high flows, it does not provide any suitable habitat for any life stage. It is likely suitable for an arched culvert crossing due to the poor habitat quality. No sampling was conducted at this crossing.

The airstrip centreline was also surveyed for fish habitat. The airstrip is located on raised land, and no water was observed anywhere along its length.

Gander Pond (Pond 5) was also surveyed as part of the pond assessment. It is a small, very shallow pond with limited fish habitat potential. The maximum depth observed was approximately 0.5 m, and the substrate was dominated by fine sediment and boulders. Ten minnow traps were set overnight along the shoreline, but no fish were captured. This pond may provide rearing habitat during the summer months; however, the shallow depth makes it unsuitable for overwintering. The absence of

spawning habitat in the inflow and outflow streams makes it unlikely that anadromous fish (such as grayling or lake trout) enter this pond.



Plate 3.4 Site AS-4 looking downstream towards Goose Lake.

4. Conclusions and Recommendations

From a fish and fish habitat perspective, the airstrip and access roads are proposed for suitable locations. No fish habitat exists between the airstrip and camp; therefore a culvert crossing of the non-classified drainage (AS-1) is suitable. Bridge crossings should be considered for the sites upstream and downstream of Gander Pond (AS-2 and AS-3) due to the presence of fish and potentially high flows. Site AS-4 is likely suitable for a culvert crossing due to the poor fish habitat potential; however, installing an open-bottom crossing such as an arch culvert would avoid the uncertainty of requiring approval from DFO. No fish habitat was present along the airstrip centreline.

References

Johnston, N. T. and P. A. Slaney. 1996. Fish Habitat Assessment Procedures. *Watershed Technical Circular* No. 8.