

5.23 Destruction Bay - Kluane Lake School Public Water Supply System

Kluane Lake School, located in Destruction Bay, Yukon, has water supplied by a water well drilled adjacent to the school. The well is piped into the school for domestic water supply. This system is regulated under the *Public Health Act*, General Regulations Sections 18 and 19 (YG *Public Health Act*, 1958/079), which requires safety measures and inspection for water and water sources for systems that provide for human consumption.

5.23.1 Data Compilation Methodology

Tetra Tech approached stakeholders including water system operators and owners to let them know the project was in progress and to request their assistance in compiling the most complete data set possible. Through the process of compiling the data, Tetra Tech has had communication with YG PMD regarding all water systems they operate and/or maintain. YG PMD has provided review comments review comments and data for the compilation.

5.23.2 Hydrogeology

Tetra Tech oversaw the drilling and completion of a new water well at the Kluane Lake School in 2006. During the drilling of the well, Tetra Tech noted lithology and recorded well completion details. Subsurface soils consist primarily of till deposits with lenses of sand and gravel. Wells in this area are frequently confined and under artesian pressure. The well was installed in a confined sand and gravel aquifer. Other wells installed in the vicinity supply domestic water to residences, the community centre, the health centre and the Talbot Arm Lodge.

5.23.3 Well Summary

The well log for the Kluane Lake School supply well is included in the GIS map and database portion of this project. The following table summarizes the completion characteristics of the Kluane Lake School well.

Well Construction Parameters	Details	Source
Date of construction	The well was completed by Double D Drilling Ltd. in October 2006	Tetra Tech 2007
Total well depth	24.4 m bgs	
Casing	6" (152 mm) ID Steel Well Casing	
Casing depth	23.2 m bgs	
Well screen	1.2 m 30 slot (0.76 mm) stainless steel v-wire screen from 23.2 m bgs to 24.4 m bgs	
Static water level	6.4 m bgs (October 26, 2006)	
Sanitary seal	Bentonite surface seal to 6 m bgs	Onsite observation, Tetra Tech
Wellhead completion	Enclosed in a locked insulated wood box with locked fence	
Wellhead stickup	Approximately 1 m ags	
Well rated capacity	1.0 L/s (13 IGPM)	Tetra Tech 2007

Table 5-56: Kluane Lake School, Well 3171-B Summary		
Well Construction Parameters	Details	Source
Well GUDI status	Non-GUDI	
Well Construction Comments:	Well was constructed to meet Canadian Groundwater Association Well Construction Guidelines.	

5.23.4 Source Water Quality

Tetra Tech reviewed the original well quality testing results. From the water sample collected on October 27, 2006, the water quality met the GCDWQ AO and MAC for all the parameters analyzed. The water can be described as calcium-magnesium-sulphate type and was considered very hard with a hardness of 367 mg/L (as CaCO₃) on the date sampled.

5.23.5 Water Treatment and Distribution

Table 5-57: Kluane Lake School Water Treatment and Distribution Details		
Item	Details	Source
Owner/Operator	Government of Yukon	
Water source	Groundwater	
Wells serving the system	Kluane Lake School	Tetra Tech 2007 p.c. Nick Barnett 2017 p.c. Martin Eckervogt 2017
Treatment type	Charcoal filtration, water softening	
Water users	Kluane Lake School	
Delivery method	Direct connection to building	
Age of system/last known update	New water well was completed in 2006	

5.23.6 Source Water Protection Planning

There is no source water protection planning in place for the Kluane Lake School Well 3171-B. Source water protection planning here should be incorporated with source water protection planning throughout the community to create a comprehensive Destruction Bay SWPP.

Destruction Bay was established as an US army camp during the construction of the Alaska Highway in the 1940s. Historical industrial activity here included army activities relating to highway construction and maintenance. Destruction Bay is the modern location of the YG Department of Highways and Engineering Grader Station and other services stations, including Talbot Arm fuel storage and a private mechanic shop, are also located in the area up-gradient of the Kluane Lake School well.

Potential sources of contamination in the area of the well that were identified during the 2006 site review, included a small drainage less than 30 m from the well; the Alaska Highway to the north of the well; UST and AST fuel

storage tanks on the site; scrap cars and septic lines in the vicinity of the wellhead; *and* septic and fuel spills in the surrounding area.

5.23.7 Water Supply Information Data Gaps

YG PMD has reviewed this summary and provided comments. To our knowledge, this system summary includes all available data and is accurate and up to date as of March 2017. Tetra Tech identified the following data gaps:

- No source water protection is in place for the system. Source water protection planning is an effective tool for maintaining the integrity of water supply systems and aquifers and is considered an essential part of best management practices for water supply systems; and,
- Several upgrades on the water system including installation of a disinfection system were recommended by Tetra Tech in 2006; however, it is our understanding that no updates have been completed to the system since 2006.