

5.59 Whitehorse Area - Mount Lorne Firehall Water Supply System

The Mount Lorne Firehall is serviced by a well, Well 1955, located approximately 4.5 m from the Firehall. The water is delivered from the well to a pressure tank and is separated into domestic water supply and two water storage tanks for firefighting purposes. The water system supplies domestic water to the Firehall and the water supply is governed under the Sections 12.1 (a) and (b) and 17 of the *Public Health and Safety Act* and Section 5 of the *Public Health Regulations* (C.O. 1958/079, O.I.C. 2009/194), which require safety measures and inspection for water and water sources for systems that provide water for human consumption.

5.59.1 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 the following water system owners, operators and proponents regarding the Mount Lorne Firehall Water Supply System:

- YG Property Management Division – YG PMD has been consulted and has provided review comments and data for the compilation.
- YG Community Services (the client) – YG CS provided data for systems where proponents contacted were not able to find the documents and/or YG CS had the data readily available.

5.59.2 Hydrogeology

According to the driller's well log, the well is completed through approximately 2 m of silt, which is underlain by sand with varying degrees of silt to approximately 35 m bgs. The static water level as recorded on the driller's well log at the time of well completion was 18.3 m bgs. Based on the lithology and water level, the aquifer in which the well is completed is inferred to be unconfined. Although unconfined aquifers are more vulnerable to contamination than confined aquifers, the thickness of the unsaturated zone and the presence of the silt layer at surface offers some protection of the aquifer from surface sources of contamination. The local groundwater flow direction is unknown at this time.

5.59.3 Well Summary

No well log was available for this well. The following table summarizes available data for the water well.

Well Construction Parameters	Details	Source
Date of construction	The well was completed by Midnight Sun Drilling Co. Ltd. in November 1994.	Well log
Total well depth	34.7 m bgs	
Casing	6" (152 mm) Steel Casing	
Casing depth	33.5 m bgs	
Well screen	1.2 m 20 slot (0.51 mm) from 33.5 m bgs to 34.7 m bgs	
Static water level	18.3 m bgs (November 1994)	

Table 5-157: Mount Lorne Firehall, Well 1955 Summary

Well Construction Parameters	Details	Source
Sanitary seal	3.0 m bgs to 4.5 m bgs	Tetra Tech 2006b
Wellhead completion	Pitless adapter	
Wellhead stickup	0.55 m ags	
Well rated capacity	Unknown	Tetra Tech 2006a
Well GUDI status	Not assessed	
Well Construction Comments:	Well upgraded to meet Canadian Groundwater Association Well Construction Guidelines.	

5.59.4 Source Water Quality

As part of the SPDWSA (Tetra Tech 2006a), Tetra Tech reviewed water quality results from samples collected in October 2004 and noted the following:

- The raw water quality for the sample obtained on October 4, 2004 indicated that the groundwater source was calcium-magnesium-sulphate type water with very high hardness. The hardness (as CaCO₃) was reported to be 206 mg/L and was generally poor for aesthetic purposes; and
- The water quality results indicated that all other health-based and aesthetic objectives were met for the parameters analyzed.

5.59.5 Water Treatment and Distribution

Government of Yukon owns and operates the Mount Lorne Firehall water supply system. Water is distributed to the Firehall via a piped connection.

Table 5-158: Mount Lorne Firehall Water Treatment and Distribution Details

Item	Details	Source
Owner/Operator	Government of Yukon	Tetra Tech 2006a p.c. Nick Barnett 2017
Water source	Groundwater	
Wells serving the system	Well 1955	
Treatment type	None	
Water Users	Water users	
Delivery method	Piped to the Firehall	
Age of system/last known update	Wellhead was upgraded in 2006	Tetra Tech 2006b

5.59.6 Source Water Protection Planning

There is no SWPP in place for the Mount Lorne Firehall water system. Given the limited nature of water distribution here – water is used only for firefighting and domestic water supply in the Firehall, source water protection planning may not be warranted for this water supply. Tetra Tech was not able to locate any record of a GUDI assessment for the well.

Potential sources of contamination to the Mount Lorne Firehall well were identified during the system review in 2005. The report identified the following potential sources of contamination in the vicinity of the wellhead (Tetra Tech 2006a):

- There is a sewer line leading to an onsite septic tank located approximately 26 m from the well; and
- There is a waste transfer station and former burn pit located approximately 180 m north (or up-gradient) of the well.

5.59.7 Water Supply Information Data Gaps

Tetra Tech has obtained review comments from YG PMD regarding the current status of this system and to our knowledge this summary is complete and accurate to March 2017. The following data gaps have been identified:

- There is very little known about the hydrogeology in the vicinity of the Mount Lorne Firehall and the lack of data regarding lithology means that the vulnerability of the well/aquifer to surface sources of contamination is not known.