

2.0 Description Of The Proposed Development And Method Of Operation

2.1 Background

The Pembina Valley Water Cooperative Inc (PVWC) currently operates a water system that supplies treated water to approximately 45,000 residents in the area primarily west of the Red River and south of the City of Winnipeg from water treatment plants on the Red River at Morris and Letellier, as well as from the Stephenfield Reservoir on the Boyne River. As part of their ongoing risk management strategy to ensure that the water supply is safe and secure, the PVWC has identified that the water supply is susceptible to periods of drought when it may not be possible to maintain the required flows from the surface water sources. The solution to this potential is to develop a supplemental water supply from an independent source that is capable of supplying at least emergency levels of water and is not susceptible to drought. The results of an initial evaluation of potential sources has identified groundwater within the Bedford Ridge area of the Sandilands Provincial Forest as a potential source.

The PVWC has indicated that, as a minimum, a supplemental water source capable of providing 50 litres per second (650 l/gpm) is required. However it is desirable that a supply source be chosen that could potentially provide a potential 20 year future need of up to 300 litres per second (3,950 l/gpm, depending on future growth trends). Assuming that the system is operated continuously at full flow, the initial annual water requirement would be 1,500 dam³ per annum, with an ultimate potential annual water requirement of 9,500 dam³ per annum. This proposal only addresses the initial emergency level requirement of 50 litres per second (650 l/gpm). Depending on future needs, approvals to expand the system would be applied for if and when they are needed.

2.2 Well Design

The proposed water supply will be withdrawn from the test well constructed in the southwest corner of SE22-05-09E (Figure 1). The well consists of 406 mm (16 inch) steel casing installed from grade to a depth of 61 metres, followed by 254 mm (10 inch) 25 slot stainless steel screen installed from a depth of 61 to 99 metres. The annulus around the screen has been backfilled with a 10-20 sand pack. The casing was installed using the dual-rotary method which does not require the hole to be overdrilled. Therefore, grout around the casing is not required. The casing extends a minimum of 0.3 metres above grade.

The well will be completed and mechanized for operation. This will include the installation of a pitless well head with a discharge connection to the 300 mm diameter pipeline. A single submersible pump will be installed in the well rated at 50 L/sec at 400 kPa continuous operation. The pump output pressure will be sized to overcome the combination of lift within the well casing plus local piping friction losses.

A small building will house an electrical panel for the well and controls. Permanent power will be provided by a Hydro service to the building. The building will be single storey with a footprint of approximately 2.5 x 3 meters. A spare submersible pump will be kept on site as a back up to the installed pump. The area around the well and building will be fenced. As indicated on the Crown Land Easement Application in Appendix A, the area requested for the well and associated equipment is 18.3 metres x 18.3 metres (60 feet by 60 feet). The actual area required will be less, dependant on the final general arrangement of the well head, control building and access.

2.3 Well Operation

Pump start / stop will be initiated by either a pressure switch located in the pitless well head or radio telemetry from other remote facilities (Morris WTP). When water is required in the Morris system, the well pump will start and water will be supplied through the 300 mm diameter pipeline to the Morris plant. The well site will not require a full time operator to be present. Personnel would only visit the site on an as required basis to conduct routine maintenance.