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Standard for Hydrogeological Assessments: Consents and Additional Dwelling Units

1.0 Overview

This document is intended to serve as the standard to support Planning Act applications for lot creation through consent, and for additional dwelling units on private wells and sewage systems. A terms of reference would be prepared for any other type development and Planning Act application as part of the pre-application process.

In order to support lot creation and additional dwelling units, the Township of South Frontenac needs to have reasonable assurance that the quality and quantity of groundwater is sufficient for the intended land use, that groundwater will provide safe, long-term potable water, and that the proposal will not adversely impact the water supply of adjacent lots.

This document will provide clarity on the Hydrogeological Assessment requirements of the Official Plan and Zoning By-law related to severance applications and to additional dwelling unit applications.

The amount of detail needed for assessing a water supply can vary depending on the location of the property and the scale of the proposal. This document provides direction on the requirements for a Letter of Opinion on Private Water Supply, and for a Hydrogeological Assessment.

2.0 Pre-Application Consultation

Proponents must consult with Planning Services staff to determine what level of study is needed for their proposal before submitting a Planning Act application.

3.0 Letter of Opinion on Existing Water Supply

For applications involving additional dwelling units that will be connected to the existing water supply/well of the principal dwelling unit.

A letter of opinion signed by a qualified professional must be submitted to support the application. For the purpose of this study, a qualified professional may be a Water treatment specialist, Hydrogeologist, Professional Engineer or Geoscientist.

The letter of opinion shall confirm that the private water supply is sufficient in quantity and quality, and without unacceptable interference to offsite existing groundwater users, to support the additional dwelling unit(s) in combination with the normal operation of the principal dwelling unit on the lot. The letter must adequately demonstrate how the supply well will

support the increased demand required by the proposed additional dwelling unit(s) while ensuring that neighbouring wells are not adversely impacted. The letter must also include a statement confirming that any water quality treatment systems in place at the time of review are sufficient in terms of design, treatment capacity, maintenance, and condition to safely service the proposed project.

If the qualified professional is not able to determine the feasibility of the site through this investigation, then they will, at their discretion, recommend a Hydrogeological Assessment be conducted. A Hydrogeological Assessment may also be required if there are additional existing or proposed water-using uses on the property (e.g. a home-based business such as a dog grooming service).

4.0 Hydrogeological Assessment

For applications involving new lot creation through consent, and for applications involving additional dwelling units that will be connected to a new, separate water supply/well than the principal dwelling unit.

The Township requires a comprehensive assessment of groundwater quality and quantity, and potential for impacts to adjacent well water users and properties for proposed development using a new well.

A Hydrogeological Assessment must be completed by a Hydrogeologist, and the final report must be signed and stamped by the Hydrogeologist. For the purpose of this study, a Hydrogeologist is a qualified Professional Engineer or Professional Geoscientist licensed to practice in Ontario, and who has training and experience as a hydrogeologist.

4.1 Well Construction

Any new wells used for the purpose of the Hydrogeological Assessment must be drilled and constructed by a licensed well contractor in accordance with the Provincial D-5-5 guidelines on water supply assessment for private wells, and Ontario Regulation 903 (R.S.O. 1990) as amended.

4.2 Water Quality Assessment

The objective of this section is to demonstrate that the new well provides water that is safe for human consumption.

Water sampling must be supervised and reported by the Hydrogeologist and completed by trained, qualified staff under the direct supervision of the Hydrogeologist. The Hydrogeologist may expand the scope of the sampling program at their own discretion based on a review of land uses and potential hazards within 500 metres of the sample well.

Defensible professional practices for well development, sampling, and analysis must be followed, including adherence to the Provincial D-5-5 guidelines on water supply assessment for private wells. In addition to these standards:

- The sampler must confirm and document zero chlorine residual at the time of sampling.
- Sampling must take place during the last hour of the prescribed 6-hour pump test.
- All samples must be submitted to a Canadian Association of Laboratory Accreditation (CALA) certified laboratory, and lab certificates for this analysis must accompany the Hydrogeologist's report.

Water quality parameters to be tested for are outlined in Tables 1, 2 and 3 of the Provincial D-5-5 guidelines on water supply assessment for private wells.

All Health-Related Ontario Drinking Water Objectives (i.e. Tables 1 and 2) must be met without the need for an any additional treatment, with the exceptions of Sodium. The Ontario Drinking Water Standard for Sodium is 20mg/L and the aesthetic objective is 200mg/L. The local Medical Officer of Health should be notified when sodium concentration exceeds 20mg/L. A warning indicating high sodium concentration must be included in future agreements for purchase, sale, or rental of the property.

In addition, while fluoride is not identified in Procedure D-5-5 as a health-related parameter, it is noted in the M.O.E. Drinking Water Standards (August 2001) that naturally occurring fluoride levels higher than 1.5mg/L must be reported to the local Medical Officer of Health. A warning indicating elevated fluoride levels must be included in future agreements of purchase, sale, and rental of the property.

Aesthetic and operational well water parameters outlined in Procedure D-5-5 Table 3 are also to be analyzed. The Hydrogeologist must provide comment related to aesthetic and operational well water parameters. and commented upon in their final report.

A description of well development and sampling methodologies used must be included in the hydrogeological assessment report.

4.2.1 Adverse Results and Resampling – Health Related

Should adverse results be identified, resampling may occur under the condition that two or more additional confirmatory samples with acceptable water quality are achieved. Additional samples must be undertaken on separate occasions, with a minimum time between sampling events of 24 hours, to allow for full recovery of the well. All health-related parameters listed in the D-5-5 Standard Water Supply Assessment must be analyzed and reported on when conducting resampling activities.

4.3 Water Quantity and Interference Assessment

The purpose of this section is to determine whether a new well has adequate and sustainable groundwater quantity, and to demonstrate whether operation of the new well will have unacceptable impact on the quantity of groundwater available to existing, adjacent users of the groundwater resource.

A six hour pump test must be done for each newly created lot, or for an additional dwelling unit(s) that is supplied by a different well than the principal dwelling, to determine if adequate quantity of water is available to the new well(s) without unacceptable interference to existing wells at adjacent properties.

The Hydrogeologist may submit additional information if it can be determined that one pump test is sufficient for multiple lots off the same property. In either case, the Hydrogeologist will need to make a clear statement that each new well can provide sufficient quantity for year round service.

Pump tests should conform to Procedure D-5-5 Private Wells: Water Supply Assessment. This includes:

- Applicable flow rate calculation with a minimum flow rate of 3.5 gallons per minute for a new lot, or a minimum pumping test rate and well yield described in Procedure D-5-5 for additional dwelling units
- Must be performed at a fixed rate (±5%) for a minimum of six hours
- Recovery must be monitored in the test well until 95% recovery occurs or for 24 hours, whichever is less

In addition to the provisions of Procedure D-5-5, the Hydrogeologist will comment on the acceptability of draw down interference of the well in question on adjacent existing wells. The appropriate radius of interference under consideration will be determined by the Hydrogeologist. This radius must be justified in their final report.

If owners of adjacent properties do not wish to have their wells monitored for interference, the Hydrogeologist shall provide documentation of this, preferably a signed letter by the adjacent homeowner that indicates that they do not wish to have their well monitored. Where adjacent landowners do not consent to a signed letter, the Hydrogeologist will need to demonstrate the efforts taken to obtain permission in other ways such as field notes detailing dates and location of attempts made. Applicants cannot refuse access to existing wells located on the subject property.

Based on the available data for the area (e.g. the tests conducted, well records, geological mapping, contractor knowledge, neighbouring well survey), the Hydrogeologist will need to make an assessment of the probability of impact of the new well on existing wells, regardless of the adjacent owners consent to monitor.

4.4 Summary of Report Requirements

The Hydrogeological Assessment report shall be signed and stamped by the Hydrogeologist and shall provide a detailed discussion of the methodology and finds of well construction, water quality, water quantity and interference. The minimum report requirements are listed below.

- Well Construction – provide a clear statement on the well's construction and status of compliance with Regulation 903

- Water Quality – conform to section 4.2 of this Standard, and provide a clear statement indicating the ability of the well to meet the Ontario Drinking Water Standards for health related parameters without treatment. Provide comment related to the aesthetic and operational well water parameters observed.
- Water Quantity – conform to section 4.3 of this Standard, and provide a clear statement indicating if the well water quantity is sufficient to meet the year round needs of the intended land use.
- Interference – Provide a clear statement that indicates the potential of the well to have an adverse impact on adjacent wells and properties.

5.0 Dug and Blasted Wells

In general, dug and blasted wells are more susceptible to drought and contamination from surface water infiltration and therefore are discouraged. Ontario Regulation 903 provides a methodology for the installation of a dug well by a licensed well driller. The Township recognizes that in some cases, a dug or blasted well may be the only acceptable option for providing potable water to a new residence.

The Township will only allow the installation of a dug well if the Hydrogeologist, in consultation with the well driller, and after review of well logs in the area, determines that such a well is the only reasonable option available to obtain potable water for the proposed lot. The methodology and the rationale that led to this determination must be provided in writing to the Township prior to proceeding with the construction of a dug or blasted well.

If applicable, all dug and/or blasted wells are subject to the requirements of a Hydrogeological Assessment, and must meet the requirements for construction, water quality, quantity and interference.

6.0 Review of Report

The Township may require a peer review of the completed letter of opinion or hydrogeological assessment report at the Township's sole discretion and at the expense of the applicant. Factors considered for whether a peer review is required include infill development, dug wells, identification of bacteria and/or nitrate problems, and known areas of constraints.