

# South Nation Conservation Consultant Screening Checklist

for Hydrogeological Reports Submitted in Support of **Severance** Application Approval



## Overview

The South Nation Conservation, through memorandums of understanding, provides technical advice to the municipal approval authority on hydrogeological reports prepared in support of privately serviced development applications.

## Relevant Policies and Guidelines

South Nation Conservation's technical advice informs local municipalities about whether the hydrogeological reports address provincial guidance established in the following documents:

1. **Provincial Policy Statement**, Section 2.2 (Water), May 2020.
2. **Procedure D-5-4, Technical Guideline for Individual On-Site Sewage Systems, Water Quality Impact Risk Assessment (MOE, August 1996);**

Procedure D-5-4 “applies to the combined or total impact on groundwater of a development proposal of more than five individual on-site wastewater treatment units”; and “to residential, commercial and industrial proposals which use individual on-site sewage disposal systems for the treatment of domestic waste.”

“Although [the MOE did not] normally review development proposals consisting of 5 or fewer lots, municipalities are encouraged to retain, on their behalf, professionals with demonstrated expertise in hydrogeology with emphasis on development on private services, to review studies prepared in accordance with this Guideline. Municipalities are also encouraged to implement the provisions of this guideline in their consideration of developments by consent or severance.”

3. **Procedure D-5-5, Technical Guideline for Private Wells, Water Supply Assessment (MOE, August 1996);**

“The guideline applies to all development proposals for residential development involving individual well water supplies. Development agreements between the proponent and the municipality ... shall be used to bind development to the recommendations of approved hydrogeology studies.” “The guideline also applies to developments for which a plan of condominium is required and to industrial, commercial or institutional developments where water is used for human consumption.”

Procedure D-5-5 indicates that “[although the MOE did not] normally review development proposals consisting of five or fewer private residences, the Ministry recommends that supplies serving five or fewer private residences should use the ODWOs to ensure the quality of drinking water. This recommendation may apply to development by consent or at the official plan amendment stage...” “Where development by severance is considered, determination of the availability of a potable water supply should be made as early as possible in the severance approval process.”

4. Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG) contained in “**Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines**” (MOE 2003, Updated 2016).

- Applicants are encouraged to pre-consult prior to filing an application with the approval authority
- This checklist is derived from the requirements in Procedures D-5-5 and D-5-4.
- Note: Current industry standards are expected to be applied for all field methods and analyses.

<b>Water Supply Assessment (Procedure D-5-5)</b>	
<b>1. Water Quantity Assessment</b>	
1a	Water well records for the area around the site are provided, mapped, and analyzed in the report (300m minimum).
1b	Technically appropriate hydrogeological cross-section(s) of the site is provided.
1c	The report contains a discussion (conceptual model) of regional and site geology and hydrogeology (aquifer characteristics, groundwater flow regime, recharge and discharge areas, interaction with local surface water features, etc.) and provides all related mapping.
1d	A minimum number of technically appropriate and <b>representative</b> test wells were used in the investigation; corresponding well logs and discussion are provided.
1e	All ( <b>representative</b> ) test wells conform to O. Reg. 903, were drilled under the supervision of a Qualified Person, are typical of wells proposed for the development, have a MECP well record and located no further than 250 m from the proposed well location of the severance.
1f	Aquifer testing methodologies are described in the report and meet standard industry practice. *
1g	<b>Representative</b> test wells were pumped at or above the minimum rate and duration. Unless approved prior to testing this level should be greater than or equal to 18.75 L/min for a duration of no less than 6 hours. Recovery of the water level following the pump test achieved 95% within a minimum of 24 Hours.
1h	Raw (field) data and technical analyses are provided for (aquifer) pumping and recovery testing; and related observation well monitoring if available.
1i	Analyses are provided to address the long-term safe yield of the aquifer and long-term sustainability of the proposed 24-hour pumping cycles, and for any potential supply interference.
<b>2. Water Quality Assessment</b>	
2a	Field data, original laboratory reports and technical analyses are provided for at least two raw water quality samples from each test well. Field data and professional opinion indicates that chlorine residuals were zero at the time of all sampling; and that raw water turbidity is acceptable.
2b	Water sampling methodologies and analyses are described in the report and meet standard industry practice. *
2c	Lab analyses are provided for the common 'subdivision suite' of analyses, including fluoride, hydrogen sulphide, phenols, tannin & lignin, total kjeldahl nitrogen, organic nitrogen and hydrogen sulphide. High TDS values require written rationale, with supporting analyses, that corrosion, encrustation or taste problems will not occur. (LSI and RI Index to be provided).
2d	Raw water quality from each well meets the Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG) and/or is within the provincial treatability limits for aesthetic/operational parameters.
2e	Where raw water quality parameters are within the D-5-5 treatment limits, water treatment recommendations are discussed and treatment interferences are explained (indicate <b>NA</b> if not applicable).
2f	The report describes land uses within a minimum of 500 m of the site, provides related documentation, and addresses the potential adverse impact of former or current adjacent land uses.
2g	A well and septic owner survey and groundwater sampling results from representative raw well water are presented and evaluated in the report.
<b>Individual On-site Sewage Systems: Water Quality Impact Risk Assessment (Procedure D-5-4)</b>	
<b>3. General Evaluation</b>	
3a	Representative background nitrate (as nitrogen) levels from the receiving groundwater (Potential Receiving Aquifer) and a description of the sampling rationale and methodologies are presented. Background nitrate does not exceed the 10 mg/l. All nitrate levels are explained.
3b	The report demonstrates that the site is not obviously hydrogeologically sensitive (i.e. no karst, fractured bedrock exposed at surface, areas of thin soil cover, or areas with highly permeable soils). Detailed justification is given based on appropriate technical information and analyses (e.g. test pit logs, borehole logs, grain-size analyses, regional geologic mapping, water well record analyses, hydrogeological conceptual model, terrain unit mapping etc.)
3c	All field methods are described in the report and meet standard industry practice*.
3d	A composite map of site constraints and proposed on-site wastewater treatment system locations and setbacks is provided. (including but not limited to, if relevant, groundwater flow directions, development envelope (housing, driveway), well locations, lots, septic field and sand mantle, setbacks (adjust if raised bed), test pit/auger hole/test hole/monitoring well locations.
<b>4. Water Quality Impact Risk Analysis: Three-Step Assessment Process</b>	
4a	<b>Step One: Lot Size Considerations</b> - Generally, new lots with an area >0.4 hectares will not require further analysis within Section 4; however, further work may be required depending on the specific location and conditions of the proposed severances. Pre-consultation is highly recommended*. (indicate <b>NA</b> if not applicable)

4b	<b>Step Two: System Isolation Considerations</b> - A system isolation assessment was provided in the report. <i>Scope of work should be site specific. Pre-consultation is recommended*</i> . (indicate <b>NA</b> if not applicable)		
4c	<b>Step Three: Contaminant Attenuation Considerations</b> - A contaminant attenuation assessment was provided in the report. (indicate <b>NA</b> if not applicable)		
	4c.1	A monitoring-based contaminant attenuation assessment was provided in the report. <i>*This line of study is rarely used and the scope of work should be site specific. Pre-consultation is highly recommended*</i> . (indicate <b>NA</b> if not applicable)	
	4c.2	A predictive contaminant attenuation assessment was provided in the report and included the following items. (indicate <b>NA</b> if not applicable)	
		4c.2.1. The report considers a nitrate loading of 40 mg/L; and only dilution was considered as the attenuation mechanism.	
		4c.2.2. Site specific water surplus values, based on local climate station data, were provided in the report;	
		4c.2.3. Water surplus values and site infiltration factor(s) were based on areas with discrete combinations of overburden, topography, and land cover (impervious areas, type of vegetation, etc.) and are accompanied by a terrain unit and topographic mapping with post-development land cover*.	
		4c.2.4. The assessment makes use of no more than 1000 L/day per lot of <i>on-site wastewater treatment system</i> (OWTS) flow;	
		4c.2.1. The assessment includes an explanation of the validity and limitations of the model used to determine the nitrate attenuation at the property boundaries; and a sensitivity analysis of the model.	
	4c.3	A predictive contaminant attenuation assessment, such as that in 4c.2, for an industrial/commercial development was provided in the report. (indicate <b>NA</b> if not applicable)	
<b>Conclusions and Recommendations</b>			
5a	A summary of conclusions and professional assertions that speak to the key areas above are provided in the report.		
5b	A list of recommendations, which will be reproduced in the subdivision agreement, is provided in the report. Recommendations should speak to: well and OWTS location, design and construction requirements; drilling supervision requirements; well water treatment recommendations; best management practices for water wells and OWTS; requirements for earth energy systems; provision of a final (original) digital report; etc.		