

MUNICIPAL APPROVALS RENEWAL PROCESS

POINTS OF CLARIFICATION

System Assessment Reports

1. Report to be Signed Off by an Engineer

Although the Terms of Reference for the System Assessment Reports say that an engineer shall complete the work, it is expected that much of the preliminary work, such as compiling approvals or preparing the operational plan, can be accomplished in-house by competent individuals knowledgeable of plant operations. However, based on the need to complete design calculations to verify that the system can meet accepted water safety standards, and the desire to utilize existing infrastructure as much as possible to reduce future capital costs, it is required that the assessment report be written and signed off by an engineer recognized as a technical expert in the area of water treatment and distribution.

2. Intent of the System Assessment Report

The purpose of the system assessment is to evaluate and document the capabilities of the water systems sources, treatment, distribution system, and overall management to continually provide safe drinking water and to identify any deficiencies that may adversely impact a public water system's ability to provide a safe, reliable water supply. The report should document whether the system's source, facilities and management are effective in producing safe drinking water operation and, if not, what improvements are necessary to meet accepted drinking water industry standards including, but not limited to, those referenced in the System Assessment Terms of Reference.

3. Level of Detail Required

The System Assessment Report is intended to be a preliminary review to document whether the system meets accepted drinking water industry standards and that appropriate operational and management procedures are in place to provide safe drinking water. Where physical, operational and management deficiencies are identified, the report must note the deficiency and document how the water system owner plans to become compliant.

For example, if the system operations manuals and standard operating procedures are not current, the water system owner must identify in the System Assessment Report when these will be updated. Water system owners are not required to submit updated material with the System Assessment Report in April 2004. Rather, the deficiencies identified must be addressed in accordance with the compliance strategy documented in the System Assessment Report. All operational and physical improvements must be in place by April 1, 2008.

4. Source Water Protection

The System Assessment Report should include a preliminary review of obvious sources of

contamination for the source of supply. The report should also assess the potential for water quality degradation for these known risks and identify additional data requirements to prepare a source water protection plan. It is not necessary to conduct a detailed review of land uses within the watershed or wellhead protection zone if this information is not readily available. Rather, it is intended that any data gaps or source protection issues noted in the System Assessment Report be addressed through the development of a separate watershed management plan or wellhead protection plan.

Treatment Standard for Municipal Surface Source Water Treatment Facilities

5. Duplexing of Equipment

Duplexing of disinfection systems means that a minimum of two primary disinfection units, configured to apply disinfection treatment to the potable water at all times, must be available. Each unit must be designed to meet the plant design capacity (i.e. maximum daily demand). Inadequately disinfected water must not enter the distribution system unless the volume is required to meet system needs and/or maintain positive pressures. If inadequately disinfected water enters the distribution system, NSEL must be notified as required by the Guidelines for Monitoring Public Drinking Water Supplies.

Duplexing of filtration systems means that at least two units shall be provided. Where only two units are provided, each shall be capable of meeting the plant design capacity (i.e. maximum daily demand) at the approved filtration rate. Where more than two filter units are provided, the filters shall be capable of meeting the plant design capacity (i.e. maximum daily demand) at the approved filtration rate with one filter removed from service (i.e. backwash conditions). Where declining rate filtration is provided, the variable aspect of filtration rates, and the number of filters, must be considered when determining the design capacity for the filters.

6. Turbidity Monitoring

For plants treating surface water, a continuous monitoring turbidimeter, with measurements taken and recorded at no more than 5 minute intervals, is required for each filter and for the combined filtrate being pumped to the distribution system.

7. Interim Requirements

This will affect all surface water systems that do not currently meet the requirement for having both filtration and disinfection processes.

Other facilities that are in a state of repair that is adversely impacting the public water system's ability to provide a safe, reliable water supply facilities may also be required to meet the interim requirements.

8. Expected Log Removals By Filtration

For any new and/or alternative method of filtration which is not identified in the table

entitled “Expected Log Removals By Filtration”, the engineered system must provide log removal expectations for approval by NSEL in order to apply the credit towards CT.

Membrane Filtration is considered by industry to provide in excess of 3 log removal (giardia). The NSEL treatment standard allows a maximum of 2.5 log removal credits as 0.5 log removal must be addressed by disinfection. If membrane filtration is used, membrane suppliers must provide certification of the log removal capabilities of their product.

Protocol for Determining Groundwater Under the Direct Influence of Surface Water

9. Does the GUDI Protocol need to be completed for each well in a wellfield, or can the wellfield be evaluated as a whole?

The protocol must be completed for each well in the wellfield and each well must be classified as either GUDI or non-GUDI. This also means that when water quality data is collected under Step 2 and Step 3 of the protocol (e.g., temperature, conductivity, MPA tests, etc.), the samples must be collected from each individual well, not from a point in the distribution system where water has already been mixed with water from other wells. Raw water quality samples from each well can be collected using a sampling port at the wellhead.

10. If a well fails Step 1 of the GUDI Protocol because it does not meet the well construction requirements, is it okay to modify the well construction rather than declaring the well GUDI or potentially GUDI?

Yes. If after the modifications are made the well meets all the screening criteria in Step 1, it can be classified as non-GUDI. If after the modifications are made the well still fails the screening criteria in Step 1, then Step 2 should be completed. Note that if well construction improvements are planned, they should be completed prior to proceeding to Step 2 because changes to the well may affect the results of Step 2.

11. If a well fails Step 1 of the GUDI Protocol because it does not meet the current Well Construction Regulations, does the well have to be upgraded to meet the regulations?

The GUDI protocol does not require older wells to be upgraded to meet the current Well Construction Regulations. However, the water system owner may decide to do this if the improvements would cause the well to be non-GUDI. If there are obvious well construction problems they should be addressed.

12. What options are available if a well fails Step 1 of the GUDI Protocol?

There are several options that can be chosen if a well fails Step 1, including:

- declare the well GUDI (Steps 2 and 3 of the GUDI protocol will not be required and the surface water treatment standard will apply);
- declare the well potentially GUDI (then proceed to Step 2 of the GUDI protocol);
- if the well failed Step 1 because of well construction, then well construction modifications can be made (see point 10 above).

- 13. If a well is suspected to be GUDI, is it okay to declare the well GUDI right away without completing the GUDI Protocol.**

Yes. The well can be declared GUDI and the surface water treatment standard will apply. Note that the System Assessment Report requires Step 1 of the protocol to be completed and documented. Within this section of the System Assessment Report, the reason for declaring the well GUDI should be discussed. This can be done by simply stating the well failed Step 1 because of its proximity to a surface water body, well construction, bacteria occurrences, etc.

- 14. One of the screening criteria in Step 1 of the GUDI Protocol checks to see if the well has less than 12.2 m (40 ft) of casing. Is the Department now requiring that all wells be constructed with at least 12.2 m of casing?**

No. The Well Construction Regulations require a minimum of 6.1 m (20 ft) of casing. We are not requiring wells to have 12.2 m (40 ft) of casing, but if they do not, then further investigation is needed to make a GUDI determination (i.e., Steps 2 and 3 of the GUDI protocol must be completed).

Step 1 of the GUDI protocol uses a casing length of 12.2 m (40 ft) only as a screening criteria to determine if a well is likely to be influenced by surface water. The 12.2 m casing depth is based on USEPA (1991) literature, which states that shallow wells (<50 ft deep) are more likely to be hydraulically connected to surface water. For practical purposes we have chosen 12.2 m (40 ft) for the screening criteria, since it is common in Nova Scotia to use two 6.1 m (20 ft) lengths of casing in municipal wells.

- 15. Is there an option to skip Step 2 and proceed directly to Step 3 to collect MPA samples?**

No. The information collected in Step 2 is needed to make a GUDI determination. As stated in the protocol, GUDI determinations should consider all the information collected, rather than relying solely on MPA test results. In addition, the results from Step 2 will identify the lag time between a surface water event and the response at the well. This information is used to select the most appropriate time to collect MPA samples in Step 3. For example, the lag time tells you how long after a flood event (i.e., how many days or weeks) before you would expect to see the effects in the well.

If desired, the protocol can be completed more quickly by completing Steps 2 and 3 at the same time. However, this would mean that MPA samples would be collected before a lag time is known and, therefore, more MPA samples will be needed to ensure the response in the well is not missed. At least 6 MPA samples should be collected if this approach is used.

- 16. How much does an MPA test cost and are there any labs in Nova Scotia that do this test?**

At the time when the Nova Scotia GUDI Protocol was released in 2002, there were no laboratories in Nova Scotia that offered MPA tests; however, this may change in the future so you should contact your local NSEL office for current information. There are laboratories in Canada and the United States that offer MPA testing. The cost for an MPA test typically ranges between \$500 and \$700, including the sampling equipment rental fee. Note that

testing for Giardia and Cryptosporidium is also useful for making GUDI determinations and laboratories may be able to check for Giardia and Cryptosporidium during the MPA test.

17. The GUDI Protocol states that GUDI studies should be completed by, or supervised by, a qualified hydrogeologist. What is a “qualified hydrogeologist”?

For the purposes of this protocol, a “qualified hydrogeologist” is a person with hydrogeology training and experience, and licenced to practice in Nova Scotia by a scientific or engineering organization, such as APGNS or APENS.

Operator Certification Standards

18. What happens if operators are not certified to the same level as the facility?

If a municipality does not have an operator certified to the class of their facility, they must notify the Department. They shall submit a transition plan indicating how they will achieve compliance with the regulations. The transition plan will be attached to the terms and conditions of the operating approval and must be adhered to.

The transition plan must summarize the experience and education of all operations staff and identify the gaps required to overcome non-compliance. The transition plan will outline the steps and time lines required for staff to work towards compliance. It is also recommended that all municipalities develop a succession management plan to ensure that operations staff is working towards higher certification levels to address staff turnover.

Application for Approval

19. What documentation needs to be attached to the application?

There is no need to meet the minimum submission standard in this case. All that needs to be submitted is a completed application form.

Additional Information

If you have any questions or require additional information or clarification, please contact your local NSEL office. Contact information follows.

September 2, 2004

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