



EPB 233B – Waterworks System Assessment Round 3 – Frequently Asked Questions

What is involved in an Assessment?

Based on section 32 of *The Waterworks and Sewage Works Regulations* these Assessments are to be an independent engineering assessment of certain aspects of a waterworks, as outlined in the Waterworks System Assessment – Round 3 Standards (EPB 233A). Important aspects of the Assessment include highlighting upgrades that are needed or will be needed in order to continue providing drinking water that meets all of the Water Security Agency (Agency) requirements. Assessments should also look into system capacity and identify capacity upgrade requirements that are or will be needed to service a population, along with the remainder of the EPB 233A requirements.

Why do we need to do another Assessment?

With the high cost and complexity of water treatment and distribution systems, routine evaluations are important to help ensure that problems are identified earlier, or potentially avoided. In many cases, these Assessments help to draw attention to areas that may become a problem, allowing communities and waterworks owners to plan for needed maintenance and upgrades. If a thorough Assessment is performed, it has many benefits to the waterworks owner, and can help ensure that the owner is prepared for future challenges and costs.

Who can conduct an Assessment?

The Assessments are to be conducted by, or under the supervision of, an independent Professional Engineer licensed to practice in Saskatchewan.

Why is it important to evaluate the capacity of the waterworks?

With the current growth being experienced in Saskatchewan, it is extremely important to understand how many people can be accommodated by existing infrastructure. If a system can only accommodate a population of 1000 people, but the growth rate suggests that the population will exceed this number within 5 or 10 years, a proper evaluation of the waterworks' capacity may identify this potential limitation so that upgrades or expansions can be made before this limitation can hinder the community's growth.

Why should we evaluate the operation and maintenance costs?

It is important to understand the ongoing operation and maintenance costs of a system so that appropriate rates can be set to cover these costs, as well as the costs of upcoming maintenance or upgrades.

What is expected in an estimate of capital replacement costs?

The estimated capital replacement cost pertains to any major system components that are expected to require replacement within the next 10 years. It should consider the estimated current cost of replacing an asset with a new one of equal effectiveness. Please note that this may differ from the costs of

recommended upgrades or expansions, in that this requirement pertains exclusively to the complete replacement of components.

What is meant by “reliability issues”?

Reliability issues are areas where the system is not performing optimally or reliably. For example, if your system is prone to depressurizations due to power outages, this would be a reliability issue, and the Assessment might suggest installing a backup generator or gas powered pump as a method to increase reliability.

What is meant by non-routine maintenance?

Non-routine maintenance refers to maintenance work beyond the general day to day maintenance of the waterworks, or maintenance to aspects of the waterworks that do not typically require maintenance. These are useful to identify in the Assessment because they may represent additional costs to the waterworks owner, outside of the typical operations and maintenance costs.

When is water quality sampling and analysis required?

Water quality testing is advised where adverse risk is suspected but cannot be determined without new water quality testing. If, for example, there is a concern that breakpoint chlorination is not being reached due to raw water quality, the Water Security Agency would encourage raw water quality testing to determine whether there is a risk to public health and, if so, what that risk is.

Can Environmental Project Officers (EPOs) provide assistance?

Permittees, consultants and representatives are encouraged to contact EPOs to discuss waterworks issues, and EPOs may provide clarification or comments to a consultant on regulatory issues. Consultants are encouraged to contact the EPO at the start of the Assessment study to foster an early discussion of the known waterworks problems, issues and challenges.

Can prior reports be used in the Assessment?

Use of prior design and evaluation and similar reports as part of the Assessment submittal is both acceptable and encouraged. Supplemental information may be required to ensure the Assessment Standards are met by the submitted Assessment. The submitted Assessment needs to cover off all items listed in the Waterworks System Assessment - Round 3 Standards (EPB 233A).

When is a report considered complete?

The Water Security Agency will determine that a report is complete when it is satisfied that the report addresses all applicable items in the Assessment standards document (EPB 233A).

What is the scope of the Assessment?

The Assessment is not as detailed as a facility design report; instead, the Assessment’s focus is mainly on the efficiency, sustainability and costs of a system, the quality of water produced, and any risk to public health posed by a system. An Assessment must contain firm recommendations for improvements to these and other aspects of a waterworks, or recommendations for further study where such need exists.

What is the Assessment completion timeline?

The third round of Assessments are to be completed by December 31, 2015, or by the date specified in your Permit to Operate. Assessments are to be submitted to the Water Security Agency within 90 days of the above completion date, which means that the Water Security Agency is to receive the finished Assessment by March 30, 2016.

My community receives treated water from another municipality/company (eg. SaskWater). Do we still need to complete a Round 3 Assessment?

If your community falls under the requirements laid out in section 32 of *The Waterworks and Sewage Works Regulations*, you will need to perform an Assessment on the portions of your community's system that are owned by your municipality, such as the distribution system, pumping stations, or any additional storage. However, if your community does not fall under the requirements in section 32, you will not need to submit an Assessment, even if the plant you receive water from is required to perform an Assessment.

Our community recently built a waterworks project – do we need to submit an Assessment?

Waterworks projects that submitted construction plans after December 31, 2010 as a part of the Permit for Construction of Waterworks process and received a new permit dated after December 31, 2010, are only required to complete an Assessment for those portions of the waterworks that are not newly-permitted. Portions of a waterworks system (including the distribution system) that were constructed prior to the last round of Assessments must submit an Assessment for Round 3 as per section 32 of the Regulations.

Our waterworks is newly regulated by the Water Security Agency – do we need an Assessment?

For waterworks systems not previously regulated by the Water Security Agency, issuance of a first-time operating permit by the Water Security Agency after December 31, 2010 means that the permittee will not be required to submit a Round 3 Assessment, unless it is listed as a requirement in the works' Permit to Operate a Waterworks.

Who should draft Assessments be submitted to?

First drafts of Waterworks System Assessments must be submitted to both the Environmental Project Officer and to the community or waterworks owner. These can be submitted at the same time. The community or waterworks owner must have received a draft of the Assessment before the Water Security Agency will accept the final Assessment.

What is considered adequate disinfection?

As part of the Water Security Agency's multi-barrier approach to safe drinking water, all water treatment plants must provide an effective disinfection process.

For groundwater systems, a minimum of 4 log virus reduction must be achieved, and for surface water, a minimum of 0.5 log reduction of giardia must be achieved, provided the treatment system uses one of the treatment processes prescribed in section 30 of *The Waterworks and Sewage Works Regulations*. For surface water treatment systems that do not fall under one of the prescribed treatment methods in section 30 of the Regulations, the water treatment processes must provide a minimum of 3-log reduction of *Giardia lamblia* and *Cryptosporidium parvum* and a minimum of 4-log reduction for viruses.

How should we show adequate disinfection?

This will vary depending on the type of disinfectant used, but is based on demonstrating that the necessary log reductions in viruses and bacteria are achieved.

Chlorine based disinfection processes are evaluated based on the CT method. The following section describes the typical process for demonstrating adequate chlorine disinfection through a CT calculation. If you require information on demonstrating adequate disinfection using non-chlorine based disinfectants, please contact your EPO or the Engineering & Approvals section of the Water Security Agency.

How to perform a typical CT calculation:

<p>C = minimum disinfectant residual concentration required to achieve appropriate CT (in mg/L at the peak hourly flow) T = Contact Time (detention time in storage reservoirs, etc.) Q = Peak Hourly Flow (or peak pump rate) V = Volume at the Low Water Level (if unknown, make a conservative assumption, such as 50% of maximum volume) BF = Baffle factor (please see the Baffle Factors table on the next page. If an inappropriate BF is used, the WSA may request a revised calculation. For clarification on acceptable Baffle Factors, please contact the WSA) TDT = Theoretical detention time.</p>	$TDT = \frac{V}{Q}$ $T = TDT \times BF$ $CT = C \times T$
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Using the appropriate CT value (these can be obtained from Tables 1 – 13 of EPB 501 – Waterworks Design Standard, Appendix A) for the necessary inactivation required, solve the equations listed above to determine “C”. This is the necessary chlorine residual that is required. If “C” is found to be greater than 0.1 mg/L, the Permit to Operate a Waterworks may be amended to include the new minimum free chlorine to ensure adequate disinfection is achieved.

Baffle Factors:

Baffling Condition	Baffling Factor	Baffling Description
Un-baffled (mixed flow)	0.1	None, agitated basin, very low length to width ratio, high inlet and outlet flow velocities.
Poor	0.3	Single or multiple unbaffled inlets and outlets, no intra-basin baffles.
Average	0.5	Baffled inlet or outlet with some intra-basin baffles.
Superior	0.7	Perforated inlet baffle, serpentine or perforated intra-basin baffles, outlet weird or perforated launders.
Perfect (plug flow)	1	Very high length to width ratio (pipeline flow), perforated inlet, outlet and intra-basin baffles.

If inappropriate baffle factors are selected, you may be required to resubmit CT calculations. If clarification or help is required in selecting an appropriate baffle factor, please contact either your EPO or the Engineering & Approvals section of the Water Security Agency.