Professional Engineers
Ontario

GUIDELINE

Engineering Evaluation Reports for Drinking Water Systems

Contributors: Aziz Ahmed, P.Eng. / Andy Bowers, P.Eng. / Ranee Mahalingam, P.Eng.

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1. PEO Mandate and Criteria for Guidelines

Professional Engineers Ontario (PEO) produces guidelines for the purpose of educating both licensees and the public about standards of practice. This is done to fulfill PEO's legislated objectives. Section 2(4)2 of the *Professional Engineers Act* (PEA) states: "For the purpose of carrying out its principal object", PEO shall "establish, maintain and develop standards of qualification and standards of practice for the practice of professional engineering". The association's Professional Standards Committee (PSC) is responsible for developing practice standards and preparing guidelines.

This guideline has been developed by a task group of the PSC, and reviewed and approved for publication by the full PSC and by PEO Council.

Professional Engineers Ontario produces guidelines to meet the following objectives, which were used to develop the content of this document.

1. Guidelines are intended to aid engineers in performing their engineering role in accordance with the *Professional Engineers Act*, O. Reg. 941/90 and O. Reg. 260/08.
2. Guidelines are intended to describe processes required by regulatory, administrative or ethical considerations associated with specific professional services provided by engineers. They do not aim to be short courses in an engineering subject.
3. Guidelines provide criteria for acceptable practice by describing the expected outcome of the activity, identifying the engineer's duty to the public in the particular area of practice, and identifying the relationships and interactions between the various stakeholders (e.g. government, architects, other engineers, clients).
4. Guidelines add value to the professional engineer licence for licensed engineers and for the public by establishing criteria for professional standards of competence.
5. Guidelines help the public to understand what it can expect of engineers in relation to a particular task within the practice of professional engineering. By demonstrating that the task requires specialized knowledge, higher standards of care, and responsibility for life and property, guidelines help reinforce the public perception of engineers as professionals.

This guideline is not intended to establish a "one method of practice for all" approach to the practice of professional engineering. This guideline is not intended to replace a practitioner's professional judgment when providing professional engineering services. Subject to provisions in the guideline that incorporate professional conduct requirements or legal requirements, a decision by a practitioner not to follow the guideline will not, in and of itself, indicate that a member has failed to maintain an acceptable standard of work. Following the guideline may not ensure that a member has provided services conforming to an acceptable standard. Determining whether a practitioner has provided quality service will depend upon the circumstances of each case.

See Appendix 3 for a list of PEO professional practice guidelines.

2. Preface

This guideline is the result of a concern regarding the quality of Engineering Evaluation Reports (EERs) brought to the attention of the Professional Standards Committee (PSC) by the Ministry of the Environment. Many of the reports received by the ministry were inadequate and unacceptable. The ministry also noted that the quality of scope of the reports varied considerably and the public, who retain practitioners to provide these reports, were getting either much more or much less than is required by the regulations.

PSC approved Terms of Reference for this subcommittee at its November 20, 2007 meeting. The initial meeting of the subcommittee was held on April 6, 2008.

PSC approved a final draft of this document on December 7, 2010. Following consultation with practitioners, Council approved the final draft at its meeting on April 8, 2011.

During the development of this guideline, PSC accepted the recommendation of the subcommittee that a professional standard prescribing the requirements for preparing EERs should be legislated. A standard was produced and incorporated into O. Reg. 260/08. The amendment to the regulation took effect on July 1, 2014. The professional standard for the preparation of EERs is provided in Appendix 1.

3. Purpose and Scope of Guideline

This guideline was prepared by the Professional Standards Committee of Professional Engineers Ontario. It is intended to provide practitioners with information regarding their responsibilities and obligations when preparing an Engineering Evaluation Report for drinking water systems as required by the *Drinking Water Systems Regulation* (O. Reg. 170/03) under the *Safe Water Drinking Act, 2002*, S.O. 2002, c. 32 (SDWA) (hereinafter the "Drinking Water Systems Regulation"). The Drinking Water Systems Regulation specifies requirements for the treatment capabilities, maintenance and inspection of municipal and private water systems that provide water to year-round residential developments and designated facilities that serve vulnerable populations, such as children and the elderly.

This guideline provides practitioners with guidance on the level of diligence that is commensurate with the responsibility expected in their work. The guideline also suggests practices that are a professionally acceptable means of fulfilling this responsibility.

Note: References in this guideline to professional engineers apply equally to temporary licence holders, provisional licence holders and limited licence holders.

Note: The description of the Drinking Water Systems legislation is made for convenience only. Please refer to the provisions themselves to ensure the description is accurate and complete for your particular purposes and that there have been no amendments.

4. Regulatory Requirements for an EER

In Ontario, drinking water systems are categorized into eight types based on size, ownership, water use, and operational period. The eight categories are:

i. Large Municipal Residential System;
ii. Small Municipal Residential System;
iii. Large Municipal Non-Residential System;
iv. Small Municipal Non-Residential System;
v. Non-Municipal Year-Round Residential System;
vi. Non-Municipal Seasonal Residential System;
vii. Large Non-Municipal Non-Residential System; and
viii Small Non-Municipal Non-Residential System.

If they serve a designated facility, the large municipal (i), small municipal (ii), non-municipal year-round residential (v) and other systems (iii, iv, vi to viii) are governed by the SDWA and the Drinking Water Systems Regulation.

According to s. 31 of the SDWA, Certificates of Approval are required for establishing, replacing or altering large and small municipal residential system (i and ii) works. Before a certificate is issued, professional engineers of the Ministry of the Environment review and recommend approval of the works for construction and operation. The ministry does not issue Certificates of Approval for any one of the systems listed in iii to viii above, for construction or operation.

According to Schedule 21 of the Drinking Water Systems Regulation, the owner of a drinking water system of types iii to viii above, must have an Engineering Evaluation Report (EER) prepared by a professional engineer, within 30 days of completing the new, altered or replacement works. A professional engineer must complete the EER, which according to s. 53 of O. Reg. 941/90 under the *Professional Engineers Act* must be sealed, and sign a declaration form. Within seven days of receipt of an EER from a practitioner, an owner must serve a notice to the director, along with the practitioner's declaration. The owner keeps the EER and the ministry receives only the declaration form. Ministry staff neither review these EERs nor make any comments as to whether the EERs are adequate and serve the purpose of complying with the legislated requirements. The ministry relies solely on the opinion made by the professional engineer.

According to s. 21-2 of Schedule 21 of the Drinking Water Systems Regulation, a practitioner providing an EER must have experience in sanitary engineering related to drinking water systems (DWS).

According to s. 72(2)(h) of O. Reg. 941/90, made under the *Professional Engineers Act*, practitioners must not carry out work they are not qualified to provide. Only the practitioner is responsible for deciding whether he or she is capable of providing the service described in the regulations and this guideline. Every practitioner providing services related to preparing an EER must be thoroughly familiar with the provisions of the Drinking Water Systems Regulation.

To assist DWS owners and operators in understanding their responsibilities to ensure safe drinking water, the ministry has developed guidance documents for use by small DWS owners and operators. The documents specifically address the requirements and owner's responsibilities to ensure safe drinking water is delivered to consumers. Some of these documents are:

- 5361e01. *Providing Safe Drinking Water to Public: A Guide for owners and operators of non-residential and seasonal residential drinking water systems that serve designated facilities*. http://www.ontario.ca/drinkingwater/stel02_054718.pdf; and
- 5362e01. *Providing Safe Drinking Water to Public: A Guide for owners and operators of non-municipal year round residential drinking water systems*. http://www.ontario.ca/drinkingwater/stel01_046948.pdf.

These documents can be accessed from the Ministry of the Environment's website: http://www.ontario.ca/drinkingwater/.

5. Engineering Evaluation Report (EER)

Before carrying out an EER, practitioners must read and understand the requirements for this work prescribed in section 4 of O. Reg. 260/08. The following explains the procedures for carrying out this work in a professional manner. However, practitioners are responsible for taking whatever steps are necessary to comply with the performance standard. This document is only a guideline.

5.1 Scope of an EER

A practitioner shall prepare an EER, specify the category of the drinking water system and state that, if applicable, in the practitioner's opinion, all equipment needed to comply with the treatment requirement and with the required operational checks is available and functional. The content of an EER must incorporate all requirements listed in s. 21-5, Schedule 21, of the Drinking Water Systems Regulation. To comply with these requirements, practitioners shall:

a. classify the raw water supply as a groundwater or a surface water source;
b. identify the location of the source water;
c. for drinking water systems with groundwater sources, provide a description of the physical characteristics of the well, including a copy of the well record, where available. If the record is unavailable, indicate in the EER the reasons why.
d. determine whether the well is a ground water under the direct influence of surface water (GUDI);
e. provide a raw water characterization of the source water;
f. identify the required legislated treatment equipment as per Schedule 2 of the Drinking Water Systems Regulation applicable for the type of source water;
g. identify the classification of drinking water system;
h. provide a description of the existing drinking water system, including schematic drawings of the treatment process and specification of main treatment equipment and, where possible, attach copies of important treatment equipment information;
i. provide rationale for the practitioner's opinion regarding the reliability, adequacy, redundancy and any deficiencies of the existing treatment equipment; and
j. provide an opinion, with reasons, about the adequacy of the treatment system and the operational, maintenance and monitoring plans.

The practitioner must offer an opinion as to whether the existing equipment is adequate to provide the required level of treatment listed in Schedule 2 of the Drinking Water Systems Regulation.

The practitioner must also provide an opinion as to whether the drinking water system has all the necessary equipment and provisions to carry out the operational, sampling and testing requirements listed in Schedules 6, 8 and 9 of the Drinking Water Systems Regulation.

The practitioner must provide reasons for his or her opinions. These reasons must be clearly stated and refer to all facts, technical standards and other information relied on to reach the practitioner's opinion.

The practitioner must base his or her assessment on observations made during a visit to the site (see clause 4.(2)3 of O. Reg. 260/08). The visit can be made either by the practitioner or by a person under the practitioner's supervision who has the necessary experience and knowledge to make informed observations. The practitioner must verify the location of the water source and provide a site plan. For a ground source, the plan should show the location and number of wells, any surface water bodies or courses, drains, septic tanks, and pumphouses. For a surface water

source, the site plan sketch should name the source, give the approximate length of the intake pipe from shore and show the location of pumping and treatment facilities.

In addition, the practitioner must go though the on-site records and check whether the existing inspection, maintenance and replacement schedules for the equipment would provide reliable operation of the drinking water system. If the practitioner decides the existing schedule is inadequate, he or she must include in the EER a maintenance schedule that specifies the frequency of inspection, testing and replacement of all required equipment to comply with Schedules 2, 6, 8 and 9 of the Drinking Water Systems Regulation.

If, in the opinion of the practitioner, the inspected drinking water system does not meet the requirements of Schedule 21, the practitioner must notify, in writing, the owner of the non-compliant items. It is the responsibility of the owner to have the system upgraded to meet the requirements. Within 30 days of the owner completing alterations, the professional engineer must review the alterations, complete the EER and sign a declaration form. It is the owner's responsibility to contact the practitioner after the alterations have been completed.

5.2 Treatment Adequacy (Schedule 2)

To determine the adequacy of treatment equipment, the practitioner must identify the water source, obtain a characterization of the raw water supply, and ascertain the level of treatment required for that water system, based on criteria given in Schedule 2 of the Drinking Water Systems Regulation.

In the absence of historic data regarding the physical, chemical and microbiological parameters of the raw water supply, the practitioner will need to obtain independent laboratory analyses to obtain the raw source water characteristics.

The practitioner must confirm and note in the EER the type of source water: well water, groundwater under the direct influence of surface water (GUDI) or surface water. Criteria are provided in section 2(2) of the Drinking Water Systems Regulation for determining whether a groundwater source should be deemed to be under the direct influence of surface water.

Once the practitioner identifies the minimum level of treatment, the practitioner must compare the equipment on site and provide an opinion, with reasons, as to whether the existing equipment can provide the required treatment. The practitioner can use the *Procedure for Disinfection of Drinking in Water in Ontario* (PIBS 4448e01), which assigns credits for various treatment processes, to determine whether the appropriate treatment process is being used.

5.3 Operational Check, Sampling and Testing (Schedule 6)

Treated water must be periodically checked for chlorine residual, microbiology and turbidity to ensure the drinking water system is operating properly. Schedule 6 of the Drinking Water Systems Regulation outlines the type and frequency at which the sampling checks should be performed for all types of drinking water systems under the following headings:

- frequency of sampling (6-1.1);
- sample locations (6-2);
- microbial samples and free chlorine residual check (6-3);
- form of sampling (6-4);
- continuous monitoring (6-5);
- turbidity testing (6-6);
- chlorine residual testing (6-7);
- sample handling (6-8); and
- record keeping (6-10).

A professional engineer is required to identify the applicable requirements for the particular drinking water system and verify from the existing records whether the drinking water system owner is carrying out the required checks.

Also, a practitioner must confirm the existing, on-site equipment and procedures are adequate to sample, monitor and record the checks to fulfill the requirements in Schedule 6 of the Drinking Water Systems Regulation.

The practitioner should review the manufacturer's information and, if appropriate, conduct tests to verify the equipment fulfills the requirements. The practitioner should at least verify the appropriate equipment exists, is in working condition, and will actually perform the necessary control or monitoring tasks.

Note: A Point of Entry (POE) treatment unit does not use chlorine as one of the treatment processes. For drinking water systems where POE treatment units are installed, operational checks for chlorine residual are not required.

Microbial samples must be taken from plumbing on a rotational basis so that a sample is taken downstream of each POE unit at least once every 24 months.

5.4 Maintenance and Operational Checks (Schedules 8 and 9)

Schedules 8 and 9 of the Drinking Water Systems Regulation list the required maintenance and operational checks for various drinking water systems, under the following headings:

- equipment maintenance (8-2 and 9-2);
- chlorine residual (8-3 and 9-3);
- turbidity (8-4 and 9-4); and
- testing by certified operators or water quality analysts (8-5 and 9-5).

A practitioner is required to check records and equipment and to verify the actual practice on site to assess whether the drinking water system operator has carried out the operations and maintenance check as listed in Schedules 8 and 9 of the Drinking Water Systems Regulation. In particular, the practitioner must verify that, according to the system records, the drinking water system operator has at least:

a. carried out equipment maintenance according to a pre-existing schedule prepared by a professional engineer or the manufacturer of the treatment equipment;
b. taken residual chlorine measurements at the required frequency and locations applicable to the type of drinking water system, as specified in the regulation; and
c. taken turbidity measurements at required frequency and locations applicable to the type of drinking water system, as specified in the regulation.

Also, the practitioner must ask the system operator who carries out the above tests to provide evidence that he or she has the qualifications described in the regulation and to document this evidence in the EER.

The Point of Entry (POE) treatment unit is designed to provide primary disinfection, but does not use chlorine or chloramination as one of the treatment processes. The POE unit is installed in individual home plumbing at or near where water from the system enters a building or other structure. The units are either owned or leased by the DWS owner.

Although home owners or occupants do not own POE treatment units, they are responsible for their operation. POE units must have an automatic shut-off feature that ensures no water is directed to users in the event the equipment malfunctions, loses power or ceases to provide the appropriate level of treatment. It is the responsibility of a DWS owner to check the units every 12 months and confirm proper functioning and recording. Therefore, for systems where POE treatment units are installed, practitioners must ensure that individual units are functioning properly by checking the records maintained by their owners and carrying out some spot checks.

5.5 Inspection, Maintenance and Replacement Schedule

To ensure reliable operation of a drinking water system, an EER must include a maintenance schedule, prepared by the equipment supplier or system designer, identifying such periodic activities as equipment inspection, testing and replacement of such components as filters. If a maintenance schedule has not been provided, a practitioner must prepare one and provide it in the EER. An EER should refer to the information used for determining the schedule and should identify documentation an operator will need to carry out these maintenance activities.

A practitioner must provide a list of the existing on-site equipment and verify the equipment has been maintained in compliance with an existing schedule prepared by a professional engineer or by the equipment manufacturer.

The practitioner must also ensure that the frequency at which water treatment equipment providing the required treatment and other equipment providing operational checks is inspected, maintained, calibrated and tested complies with the requirements of Schedules 6, 8 and 9 of the Drinking Water Systems Regulation.

5.6 Recommendations and Certification

A practitioner must include in the EER recommendations on best management practice and proposed additions or alterations to the equipment maintenance schedule to correct any noted deficiencies.

Practitioners must also complete and sign declaration form PIBS 5390e. To complete the form, a practitioner must obtain and verify all the information that must be supplied. This form must indicate the category of the drinking water system and include the ministry-issued drinking water sys-

tem number. This number can be obtained from the system owner. When completed, the practitioner must immediately deliver, preferably by the quickest means possible, a copy of the report and the signed declaration form to the owner of the drinking water system. The owner is responsible for serving a notice and delivering the declaration form to the director within seven days of receiving the EER.

6. Conceptual Guidance In Developing An EER

The Professional Engineers Ontario *Guideline on Professional Practice* provides detailed guidance on the style and other requirements for sound engineering reports and practitioners are expected to be familiar with and follow this guidance in developing an EER.

While an EER is a regulated requirement under the Drinking Water Systems Regulation, it should be noted that the EER is directed to the water system owner rather than to the Ministry of the Environment, which does not review it at the time of delivery. As such, a practitioner is providing services to a public whose understanding of the issues involved is likely less than that of the regulator, without direct regulatory oversight, and on a matter relating to safe drinking water, i.e. services that directly relate to an engineer's paramount duty to protect public welfare. In such circumstances, a higher than normal standard of due diligence might reasonably be applied.

An important element of an EER is the opinion, with reasons, on the adequacy of the treatment system and operational practices. The reasoning must be an engineering judgment founded on observed capability, applicable published guidelines or standards, and specific site and process characteristics. It is insufficient to rely on such reasoning as "the system is adequate as the water meets quality standards", or is it sufficient to provide reasoning of the "it is well known" type without verifiable citations.

In determining the adequacy of process elements, it is important to consider that process needs are subject to such fluctuations as seasonal flow variations and seasonal quality variations. A process that is adequate at average flow and with good raw water quality may be totally inadequate at peak flows or under adverse raw water conditions. Adequacy should be considered in all of these cases, rather than merely under average conditions.

The provision of oversized process components is likely to adversely affect performance and may increase initial cost, space requirements and energy use. That is, it may be a significantly less sustainable solution than the provision of process components better sized to the functional requirements of the treatment plant. Oversized equipment will run at a low percentage of capacity, which may well affect the process' ability to maintain stable control or accurate measurement of important process variables. Engineers should consider the adequacy of components for the task at hand not only in terms of whether they can meet standard or guideline performance criteria under all anticipated flow and quality conditions, but also the extent to which oversized equipment will result in design parameters that lie well outside conventional ranges.

It is likely an EER that meets the requirements of this guideline will contain significant volumes of historical, statistical and equipment data, and the commentary included in the report will be a lesser volume. In light of an EER's anticipated readership, practitioners should strive to maintain a reasonable narrative flow and to append substantiating data, thus producing more readily understood reports, rather than inserting large quantities of information into the bodies of their reports and impeding comprehension.

Appendix 1. Performance Standard For Engineering Evaluation Reports Under *Safe Drinking Water Act, 2002* (Drinking Water Systems)

4. (1) In this section,

"available" means, in reference to a document, that it is present at or immediately accessible from the site of a drinking water system, whether in paper or electronic format;

"distribution system", "drinking water system", "raw water" and "raw water supply" have the same meaning as in the *Safe Drinking Water Act, 2002*;

"Drinking Water Systems Regulation" means Ontario Regulation 170/03 (drinking water systems) made under the *Safe Drinking Water Act, 2002*;

"operational check equipment" means equipment installed in a drinking water system, or portable equipment present at the site of a drinking water system, for the purpose of carrying out,

(a) operational checks, sampling and testing under Schedule 6 to the Drinking Water Systems Regulation, and

(b) the maintenance and operational checks under Schedules 8 and 9 to that regulation.

O. Reg. 91/14, s. 3.

(2) The following are prescribed as performance standards with respect to the assessment of a drinking water system and the preparation of an engineering evaluation report on a drinking water system under Schedule 21 to the Drinking Water Systems Regulation by a holder of a licence, temporary licence or limited licence:

1. Subject to paragraph 17, the holder shall complete and deliver the report in a timely manner that gives the owner of the drinking water system a reasonable opportunity to meet the timing requirements set out in Schedule 21 to the Drinking Water Systems Regulation.
2. The holder shall ensure that the report contains all of the information that section 21-5 of Schedule 21 to the Drinking Water Systems Regulation requires in order for the report to comply with that section.
3. The information and opinions that the holder provides in the report shall be based on observations made during one or more visits to the drinking water system by the holder or by a person under his or her supervision, and the holder shall include in the report,
   i. the date of every visit to the drinking water system for the purposes of preparing the report by the holder or by a person under his or her supervision,
   ii. in each case, the name of the person who visited the drinking water system, and
   iii. in the case of a visit by a person under the holder's supervision, the person's title and relationship to the holder.
4. The holder shall determine and identify the location of the raw water supply for the drinking water system and shall provide as part of the report,
   i. an indication as to whether the source of the raw water supply is ground water, surface water, or a combination of the two,
   ii. a site plan showing,
      A. the boundary of the drinking water system, any significant topographic features within those boundaries, and an indication of site grading that may impact on the source of the raw water supply,
      B. the location of all parts of the drinking water system used for the collection, storage and treatment of raw water, and
      C. the distribution system used for distributing treated water to users of the drinking water system, and
   iii. the information described in paragraph 5 or 6 or both, as the circumstances require.
5. If any part of the source of the raw water supply is ground water, the holder shall,

i. include in the site plan the location of any wells that form part of the drinking water system and the location of any known water courses, drains, septic tanks, tile fields and any other structures that may affect the quality of the well water, and

ii. a description of the physical characteristics of each well that forms part of the drinking water system including, if available, a copy of the well record, and an indication of whether any of the wells obtains water from a raw water supply that was determined for the purposes of section 2 of the Drinking Water Systems Regulation to be ground water that is under the direct influence of surface water.

6. If any part of the source of the raw water supply is surface water, the holder shall state the name of the surface water body.

7. The holder shall provide in the report a description of the drinking water system, which shall include, at a minimum,

i. an estimate of the number of persons served by the drinking water system,

ii. a schematic diagram of any treatment process used in the drinking water system for the purpose of meeting the requirements of Schedule 2 to the Drinking Water Systems Regulation, and

iii. a list of all water treatment equipment and operational check equipment installed in the drinking water system.

8. The opinion that the holder provides for the purposes of subclause 21-5 (b)(i) of Schedule 21 to the Drinking Water Systems Regulation respecting whether all equipment required in order to ensure compliance with Schedule 2 to that regulation is being provided, shall be with respect to all expected flow conditions and quality variations.

9. In addition to the opinions required to be included in the report by section 21-5 of Schedule 21 to the Drinking Water Systems Regulation, the holder shall provide in the report his or her opinion regarding,

i. the reliability of the water treatment equipment and operational check equipment listed under subparagraph 7 iii and whether there are any redundancies in or observable problems with it, and

ii. the operating conditions that must be maintained for the water treatment equipment listed under subparagraph 7 iii in order to ensure that the requirements of Schedule 2 to the Drinking Water Systems Regulation are met.

10. The holder shall,

i. list in the report all equipment installed or used at the drinking water system, including water treatment equipment and operational check equipment listed under subparagraph 7 iii, that requires periodic maintenance, and

ii. review the relevant maintenance records and maintenance schedules that are available for the equipment listed under subparagraph i, and give his or her opinion as to,

A. whether the equipment has been inspected, tested, replaced and calibrated at the frequency recommended by the equipment manufacturer,

B. if the equipment manufacturer does not recommend a maintenance schedule, whether the existing maintenance schedule for inspection, testing, replacement and calibration of the equipment would provide for reliable operation of the drinking water system, and

C. whether the equipment is being inspected, tested, replaced and calibrated so that the drinking water system is in compliance with the applicable requirements set out in Schedules 2, 6, 8 and 9 to the Drinking Water Systems Regulation.

11. The holder shall provide reasons for the opinions required to be provided by paragraphs 8, 9 and 10, along with the technical and other information he or she relied on in reaching those opinions.

12. The holder shall attach to the report,
    i. a list of all available manuals and similar information relevant to the operation and maintenance of the water treatment equipment and operational check equipment listed under subparagraph 10 i, and
    ii. a list of the water treatment equipment and operational check equipment listed under that subparagraph for which such manuals or information are not available.
13. In preparing the maintenance schedule referred to under clause 21-5 (d) of Schedule 21 to the Drinking Water Systems Regulation, the holder shall, subject to paragraph 14, base the maintenance schedule on the applicable maintenance schedules contained in the manuals and information referred to in subparagraph 12 i.
14. If a maintenance schedule for a piece of equipment is not available, or if the holder is of the opinion that the available maintenance schedule would not provide for the reliable operation of the drinking water system or ensure compliance with the applicable requirements of Schedules 2, 6, 8 and 9 to the Drinking Water Systems Regulation, the holder shall develop a maintenance schedule for the equipment that would, if followed, provide for such operation and compliance.
15. If the holder determines that water treatment equipment or operational check equipment at a drinking water system may be bypassed, or discovers any other problem with the drinking water system that, in his or her opinion, may lead to improperly treated water being delivered to users of the drinking water system but does not constitute a failure to comply with Schedule 2, 6, 8 or 9 to the Drinking Water Systems Regulation, he or she shall include in the report a description of the problem, together with recommendations that would rectify the problem or mitigate risks associated with it.
16. If at any time during the assessment of the drinking water system or the preparation of the report the holder determines that the drinking water system does not comply with a requirement in Schedule 2, 6, 8 or 9 to the Drinking Water Systems Regulation and that the lack of compliance may lead to improperly treated water being delivered to users of the drinking water system, he or she shall immediately inform the owner of the drinking water system in writing of the fact, identifying those provisions of the Drinking Water Systems Regulation with which the drinking water system does not comply and the problems that need to be resolved, and recommending changes that would bring the drinking water system into compliance.
17. If the holder makes the determination described in paragraph 16, the holder shall not complete the report, subject to paragraph 18.
18. If the owner of the drinking water system notifies the holder in writing that the changes recommended under paragraph 16 have been made, the holder shall review the changes, and if, in the holder's opinion, the altered drinking water system is in compliance with Schedules 2, 6, 8 and 9 to the Drinking Water Systems Regulation, the holder shall complete the report.
19. On completing a report, the holder shall promptly sign and give to the owner of the drinking water system a declaration, in the form provided for the purpose by the Ministry of the Environment, containing the opinion of the holder that is required to be provided for the purposes of clause 21-5 (b) of Schedule 21 to the Drinking Water Systems Regulation.
    O. Reg. 91/14, s. 3.

Source: Ontario Regulation 260/08, Performance Standards, made under the *Professional Engineers Act*, R.S.O. 1990, Chapter P. 28.

Appendix 2. Amendment and Revision Submission Form

Guideline:

Statement of proposed amendment or revision:

Reason:

Submitted by: _____ Date: _____

Mail: Professional Engineers Ontario
101-40 Sheppard Avenue West
Toronto ON M2N 6K9

Attention: Standards and Guidelines Coordinator

Fax: (416) 224-1579 or (800) 268-0496

Email: practice-standards@peo.on.ca

Appendix 3. PEO Professional Practice Guidelines

1. Acoustical Engineering Services in Land-Use Planning (1998)
2. Acting as Contract Employees (2001)
3. Acting as Independent Contractors (2001)
4. Acting Under the Drainage Act (1988)
5. Building Projects Using Manufacturer-Designed Systems & Components (1999)
6. Commissioning Work in Buildings (1992)
7. Communications Services (1993)
8. Conducting a Practice Review (2014)
9. Developing Software for Safety Critical Engineering Applications (2013)
10. Engineering Evaluation Reports for Drinking Water Systems (2014)
11. Engineering Services to Municipalities (1986)
12. Environmental Site Assessment, Remediation and Management (1996)
13. General Review of Construction as Required by the Ontario Building Code (2008)
14. Geotechnical Engineering Services (1993)
15. Human Rights in Professional Practice (2009)
16. Land Development/Redevelopment Engineering Services (1994)
17. Mechanical and Electrical Engineering Services in Buildings (1997)
18. Professional Engineer as an Expert Witness (2011)
19. Professional Engineering Practice (2012)
20. Project Management Services (1991)
21. Reports for Pre-Start Health and Safety Reviews (2001)
22. Reports on Mineral Properties (2002)
23. Reviewing Work Prepared by Another Professional Engineer (2011)
24. Roads, Bridges and Associated Facilities (1995)
25. Selection of Engineering Services (1998)
26. Services for Demolition of Buildings and Other Structures (2011)
27. Solid Waste Management (1993)
28. Structural Engineering Services in Buildings (1995)
29. Temporary Works (1993)
30. Transportation and Traffic Engineering (1994)
31. Use of Agreements between Client and Engineer for Professional Engineering Services (including sample agreement) (2000)
32. Use of Computer Software Tools Affecting Public Safety or Welfare (1993)
33. Use of the Professional Engineer's Seal (2008)
34. Using Software-Based Engineering Tools (2011)

Performance Standards

1. Design of Certain Buildings (2014)
2. General Review of Construction of a Building (2008)
3. General Review of Demolition and Demolition Plans (2008)
4. Engineering Evaluation Reports under *Safe Drinking Water Act, 2002* (Drinking Water Systems) (2014)
5. Environmental Site Assessment Reports (2014)

Professional Engineers
Ontario

40 Sheppard Avenue West, Suite 101
Toronto, ON M2N 6K9

Tel: 416 224-1100 or 1-800-339-3716
Fax: 416 224-1579 or 1-800-268-0496

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