Private Communal Water and Wastewater Systems

If a Private Communal System is a permitted use, the Private Communal Systems Report will be added as an appendix to the Functional Servicing Report and will be reviewed along with other Regional guidelines in the appendices.

The Private Communal Systems Report helps Region staff assess Private Communal System(s) and any risks that may impact the Region entering into the required Municipal Responsibility Agreement (MRA). Requirements for a MRA continue to exist notwithstanding) any *Planning Act* approval or Minister's Zoning Order (MZO).

Local municipalities and/or external agencies (e.g. Ministry of the Environment, Conservation and Parks) may require additional studies or analysis of specific technical components to support assessment of the proposed communal water or wastewater systems. The Region may also request additional information be provided beyond what is outlined in this Terms of Reference depending on the nature of the proposed development under consideration.

This Terms of Reference and its accompanying Private Communal Water and Wastewater Systems Guideline was endorsed by Regional Council on June 27, 2024.

Private Communal Water and Wastewater Systems

A private communal drinking water system is defined as a privately held system that services six (6) or more year-round private residences. For wastewater, systems with a total daily design sanitary sewage flow of greater than 10,000 L/d servicing more than six (6) year-round residences are considered communal systems.

Private communal water and/or wastewater systems may be appropriate in certain limited circumstances in accordance with the Region's Private Communal Water and Wastewater Guideline (see Appendix A). A private communal system is not permitted in areas where municipal servicing exists and must conform with provincial policies along with policies and land uses under applicable Official Plan(s).

Applicable Legislation

Clean Water Act, 2006
Environmental Assessment Act
Lake Simcoe Protection Act, 2008
Municipal Act, 2001
Ontario Water Resources Act
Safe Drinking Water Act, 2002

Private Communal Water and Wastewater System Report

Who should prepare this report?

A Private Communal System Report must be prepared by the proponent (referred to henceforth as the "Owner"), to articulate how the proposed system(s) meet requirements under the Region's Guideline (Appendix A) and provincial standards. To be considered, a private communal system must be designed by a licensed professional engineer qualified in civil/water resources engineering. All drawings and reports must be stamped, signed, and dated by a professional engineer, licensed in the Province of Ontario.

The Owner shall ensure this report is prepared by qualified professionals with expertise in hydrogeology, ecological, and/or environmental functions and processes. Additional qualified personnel may be required, depending on the system.

Why do we need this report?

The Region has a legislated responsibility under the *Safe Drinking Water Act, 2002, Ontario Water Resources Act* and the *Clean Water Act, 2006* to provide clean, safe, reliable drinking water and manage wastewater responsibly to Region residents. To ensure safe drinking water and wastewater services, design of private communal water and/or wastewater systems must be to the satisfaction of the Region from administrative, environmental, engineering, and financial perspectives. The *Municipal Act, 2001* also requires consent from the Region to construct, maintain or operate a water or sewage system.

All private communal system Owners are required to enter into a legally binding Municipal Responsibility Agreement. The attached Guideline helps ensure systems will be safe and effective in the long term, which is a prerequisite for the Region to enter into a Municipal Responsibility Agreement.

How should this report be prepared?

The process to design, consult on, obtain permits/approvals for, and build a private communal system can be lengthy and implementation timelines will be longer than a typical development connecting to a municipal system. It is recommended that Owners engage York Region Public Works staff at the inception of the process (prior to submission of a *Planning Act* application) to better understand the undertaking. Engagement with Region staff throughout the design process can help accelerate timelines.

York Region Communal Water and Wastewater Guidelines (Appendix A) are to be used by Owners when planning and designing private communal water and wastewater systems and are the Region's minimum requirements for these systems. All proposals must provide sufficient details in the Private Communal System Report for water and/or wastewater systems to allow Regional staff to assess the administrative, environmental, engineering and financial implications of the private communal servicing option being proposed.

Private Communal System Report Requirements

Developments proposing a private communal system(s) must prepare a Private Communal System Report. In the event of a Private Communal System being a permitted use, the Report should be an appendix to the to the Functional Servicing Report as outlined in this Terms of Reference. This report will outline how the proposed system meets requirements outlined in the Private Communal Water and Wastewater Systems Guideline (see Appendix A). Region staff technical assessment of an application shall not proceed until this report and aspects proposed within are deemed satisfactory, in writing by the Region. Notwithstanding any *Planning Act* approvals, a Private Communal Systems Report is required to articulate and address any environmental issues and public safety concerns associated with the proposed system based on this Terms of Reference and its attachments. The Private Communal System Report will also support the Region's process for entering into a Municipal Responsibility Agreement.

Private communal system designs will be reviewed by the Region and/or the Region's representative based on the Region's technical design standards in Appendix B. Designs for both private communal water and wastewater systems are to be provided to the Region for review via the Private Communal Systems Report.

Private Communal System Report Requirements (continued)

The Private Communal Systems Report is to be used to demonstrate how the project achieves requirements in the Guideline under Appendix A, which should include, but not be limited to the following:

- **Description of project:**
  - Number of units services
  - Location of treatment facilities on site.
- **Justification of need for a communal system:**
  - What other servicing options were considered
  - If municipal servicing is planned for the area within the Region's Master Plan, why waiting for municipal servicing is not feasible.
- **Demonstration of lack of environmental harm through appropriate studies:**
  - Hydrogeological reports
  - Master Environmental Servicing Plan
  - Environmental Impact Study (please refer to the Environmental Impact Study Terms of Reference, with scope to be determined through a pre-consultation meeting).
- **Source water protection considerations:**
  - Onus is on Owners to demonstrate via the Report and design of the system that the system does not represent a risk to source water, including but not limited to groundwater sources for municipal wellheads as per the ***Clean Water Act, 2006*** and the applicable Source Protection Plan.
- **Maps, drawings, and engineering details:**
  - Detailed designs must be completed by a professional engineer and drawings developed to a minimum 30% detailed engineering design for the proposed system, refer to Communal Water and Wastewater Design Standards (Appendix B)
  - If multiple sub-systems are proposed an engineering requirement for multiple sub-systems shall be included this engineering details section.
- **Compliance with legislation and design guidelines:**
  - Owners must demonstrate how the proposed system meets legislative, bylaw, and provincial requirements, including water quality standards, effluent criteria, and include confirmation that there will be a provincially certified operator to operate the system
  - A list of significant provincial requirements is included in the resources section below and additional requirements may apply depending on system design being proposed. Owners should consult with Ministry of the Environment, Conservation and Parks to understand these requirements.
- **Alignment with Region technical design standards (Appendix B):**
  - Water treatability study if proposing a water system
  - Confirmation facility can meet effluent requirements for a wastewater system
  - Pre-design, a minimum of 30% design as described in the Communal Water and Wastewater Design Standards (Appendix B) submission outlining the treatment processes and other requirements outlined in the Guidelines
  - Case studies of successful implementation of the proposed system at a similar or larger scale must be provided
  - If proposing a non-traditional system, a rationale must be provided for the alternate approach for the Region's consideration.
- **Capital works plan for long-term management:**
  - Plans must demonstrate long-term capital works considerations and long-term viability of the system.
- **Demonstration of financial viability for the life cycle of the system:**
  - Owners must provide a financial plan for the proposed system in alignment with *O. Reg. 453/07: Financial Plans*. The Region is extending this requirement to wastewater systems to provide a consistent way to demonstrate long-term viability.

Private Communal System Report Requirements (continued)

- **Design considerations for decommissioning and future connection to municipal systems:**
  - Outline system design considerations to allow for connection to a future municipal system in a cost-effective manner.
- **Governance structure for construction and operation of system:**
  - An organizational structure and positions responsible for key responsibilities must be provided for each aspect of the proposed system.
- **Confirmation that pre-consultation process has been initiated with the Ministry of the Environment, Conservation and Parks (MECP) for the system, including a Drinking Water Works Permit (DWWP) and/or Environmental Compliance Approval (ECA), as required:**
  - Evidence of formal engagement with MECP staff
  - Attestation lfrom the Owner acknowledging that an MRA is required as a condition of a plan of subdivision.
- **Confirmation of a planned Condominium Corporation to manage long-term operation:**
  - Attestation that a condominium corporation will be established to administer and pay for long-term operation of the system
  - Attestation that a provincially certified operator will be maintained at all times to operate the system in accordance with legislated requirements.

Private Communal Systems Report Submission:

- A copy of the Functional Servicing Report and Private Communal Systems Report shall be provided to the Region's contact in the Guideline
- If the proposed development is revised, the Owner shall submit an updated Private Communal Systems Report with the attestations updated to reflect the revisions, specifically indicating any changes.

What else should we know?

This Terms of Reference provides a high-level summary of requirements for a Private Communal System to be considered. Applicants should closely review the Guideline in Appendix A to understand requirements as Region staff will assess applications against this Guideline. Submission of this report will be required to support the Municipal Responsibility Agreement development process. In addition, this references but does not include provincial requirements, such as consultation with Indigenous communities under the Environmental Assessment process and any required permits. There will also be additional requirements after the Region and the Owner agree to a design that will be added as conditions on the Site Plan and Plan of Subdivision/Condominium approvals, including the following, but not limited to:

1. **Environmental Assessment**
   Private communal systems servicing residential units may require a Municipal Class Environmental Assessment to be completed, as required under the *Environmental Assessment Act*. Owners will need to determine the type of assessment required in collaboration with Ministry of the Environment, Conservation and Parks. An environmental assessment will also help provide information required under the Private Communal Systems Report.
2. **Municipal Responsibility Agreement (MRA)**
   Private communal systems servicing any residential units require a MRA to be entered into by the municipality and the Owner. Entry into a MRA for a private communal system is at the sole discretion of Council, regardless of any other approvals received.

   An MRA may not be required for systems that solely service employment or industrial uses. However, these systems remain subject to other requirements. Please refer to Appendix A for further detail on these requirements.

   Conditions shall be imposed on the Draft Plan of Subdivision and/or Condominium/Site Plan approval requiring a MRA to be executed with York Region ahead of final approval.

What else should we know? (continued)

3. **Region support for MRA ahead of required Provincial Permits and Approvals**
   The Region agrees to the outlined process found in this Terms of Reference to support Council's direction to enter into an MRA, subject to the Owner obtaining the required Provincial permits and approvals (e.g. DWWP, PTTW, ECA) for the proposed communal water and/or wastewater system prior to Registration of the subdivision/condominium.

   Clearance of conditions of the Draft Plan of Subdivision and/or Condominium for registration and/or Site Plan approval will not be granted until the Owner has received the required DWWP/ECA from the Ministry of the Environment, Conservation and Parks (MECP), which will be appended to and form part of the MRA to be signed and executed.
4. **Other Permits and approvals**
   Owners are required to obtain all necessary permits and approvals from regulatory agencies prior to the Region clearing conditions on the Plan of Subdivision and/or Condominium.
5. **Monitoring and inspection**
   Owners will be required to develop and submit an Operating Manual and Emergency Preparedness Plan for the proposed system(s) to ensure safe operation and mitigate risks to public health. Acceptance of the Plan is at the sole discretion of the Region.
6. **Financial surety and reserve fund**
   As a part of executing a MRA, Owners will be required to provide the Region with a financial security for the private communal system(s). Condominium corporations will also be required to fully fund system operating costs and maintain a reserve fund for the system. The reserve fund is held by the Region and the Owner is required to make annual contributions to the reserve fund.
7. **Notification to purchasers of system and costs**
   Owners will be required, in wording satisfactory to York Region, to provide notice to prospective buyers of the private communal system and the long-term financial responsibilities in all offers of purchase and sale for the condominium units. Please refer to Appendix A on what this may include.

What other resources are there?

While not an exhaustive list, the resources below outline some of the primary provincial legislative sources applicable to non-municipal drinking water systems. It is the Owner's sole responsibility to ensure its proposed system complies with all applicable laws.

Key provincial laws and regulations apply to non-municipal drinking water system Owners and operators as set out in:

MECP Design Guidelines for Drinking Water Systems

MECP Design Guidelines for Sewage Works

Municipal Act, 2001

Ontario Regulation 128/04 (Certification Of Drinking Water System Operators And Water Quality Analysts)

Ontario Regulation 169/03 (Ontario Drinking Water Quality Standards)

Ontario Regulation 170/03 (drinking water systems)

Ontario Regulation 205/18 (Municipal Residential Drinking Water Systems in Source Protection Areas)

Ontario Regulation 243/07 (flushing, sampling and testing for lead if schools and daycare facilities will be serviced)

Safe Drinking Water Act, 2002

Clean Water Act, 2006

What other resources are there? (continued)

Key provincial laws and regulations that apply to non-municipal wastewater systems Owners and operators are set out in:

Clean Water Act, 2006

Municipal Act, 2001

Ontario Regulation 129/04

Ontario Water Resources Act

Lake Simcoe Protection Act, 2008

Appendices

Appendix A: York Region Private Communal Water and Wastewater Systems Guideline

Appendix B: Communal Water and Wastewater Design Standards

Appendix C : Groundwater Development and Wellhouse Design Guidelines

About these Terms of Reference

These Terms of Reference were developed as a joint effort with participation by representatives from all York Region municipalities and the Region. The Terms of Reference are in widespread use across the Region, with local requirements added as prescribed by each municipality at the pre-consultation stage.

The need and scope for this study will be decided by a municipality during initial pre-consultation process with input from partner agencies. This pre-consultation process may include:

- Determination if this study is applicable
- Confirmation of criteria within these Terms of Reference that are appropriate for your development project
- Identification of specific technical components that need to be addressed
- Identification of detailed standards to be met

Notes:
If the proposed development is revised, the Owner shall submit an updated Private Communal Systems Report with the attestations updated to reflect the revisions, including specifically indicating any changes.

A peer review of submitted documents and studies may be required. The cost of the peer review will be borne by the applicant.

If any submitted study is incomplete, is authored by an unqualified individual or does not contain adequate analysis, the Private Communal Systems Report will be returned to the applicant to be remedied to the satisfaction of the Region.

Accessible formats or communication supports are available upon request.

APPENDIX A: Private Communal Water and Wastewater Systems Guideline

Approved by York Regional Council on June 27, 2024

Guideline Statement

This guideline was endorsed by Regional Council on June 27, 2024 to establish criteria and an evaluation process for new or expanded private communal water and/or wastewater systems proposed in development applications.

Guideline Application

This guideline applies to any proposed new or expanded private communal water or wastewater system within York Region boundaries that would service residential or mixed-use developments.

This guideline applies to applications for new or expanded systems that have not yet received approval or conditions from the Region. This guideline continues to apply in cases where a Minister's Zoning Order (MZO) is issued. This guideline also helps outline the conditions for the Region to enter into a Municipal Responsibility Agreement (MRA). Notwithstanding any suspension of planning-related provisions under a MZO, the requirement to enter into an MRA remains in effect.

A private communal water system is defined as a privately-held system that is intended to service six (6) or more year-round private residences as defined as non-municipal year-round systems.

A private communal wastewater system is defined as a privately-held system that meets all of the following:
- Intended to service six (6) or more year-round private residences
- Total daily design sanitary sewage flow of greater than 10,000 L/d.

Permissibility of system

A Private communal system is not permitted in areas where municipal servicing exists.

Private communal system must align with permitted uses under the Official Plan of the local municipality where the private communal system will be located. If a proposed private communal system does not align with Official Plans, an Official Plan amendment would be required.

A private communal system will not be considered if it represents a risk to source water under the *Source Protection Plan for the Credit Valley-Toronto and Region-Central Lake Ontario (CTC) Source Protection Region* or the *South Georgian Bay Lake Simcoe Source Protection Plan*, as applicable to the location of the system.

A private communal wastewater system will not be considered if it discharges to a Provincially Significant Wetland or a similar sensitive natural feature.

Purpose

This guideline is to ensure reliability of drinking water and wastewater services by providing criteria for when private communal servicing will be considered and identify system requirements to ensure the protection of public health and the environment. The Region has a legislated responsibility under the ***Safe Drinking Water Act, 2002*** and the ***Clean Water Act, 2006*** to provide clean, safe, reliable drinking water to Region residents.

This guideline articulates how York Region will assess the administrative, environmental, engineering, and financial criteria required for consideration of a private communal system.

Definitions

Condominium Corporation:
A corporation created or continued under the *Condominium Act, 1998, S.O. 1998, c. 19.*

Local Municipal Official Plan: Refers to the current Official Plan of the local municipality where a private communal system will be sited.

MRA: Municipal Responsibility Agreement, refers to agreements outlined under *Ministry Guideline D-5-2*.

Ministry: Ministry of the Environment, Conservation and Parks (MECP), as renamed from time to time, that is responsible for oversight of drinking water and wastewater in Ontario.

Owner: Includes, in respect of a private communal drinking water or wastewater system, every person who is a legal or beneficial owner of all or part of the system. Upon incorporation of a Condominium Corporation, the definition of Owner would apply to the Condominium Corporation.

Private communal wastewater system: A sewage works within the meaning of the *Ontario Water Resources Act* (OWRA) that serves six or more lots or private residences, is not owned by a municipality and subject to Section 53 of the OWRA and require an Environmental Compliance Approval (ECA) issued by the Ministry.

Private communal water system: A non-municipal drinking-water system within the meaning of section 2 of the *Safe Drinking Water Act, 2002* that serves six or more lots or year-round private residences and requires a Drinking Water Works Permit (DWWP) issued by the Ministry.

Public Works Staff: York Region Public Works staff (primarily Infrastructure and Asset Management) staff responsible for consideration and approval of private communal systems.

Region: The Regional Municipality of York.

Regional Official Plan (ROP): Refers to the 2022 York Region Official Plan, as approved by the Ministry of Municipal Affairs and Housing.

Supporting materials: Additional guidance documents, templates, or agreements developed by Region staff to support application of the guideline.

Wellhead protection area: A wellhead protection area is the area around a wellhead where land use activities have the potential to affect the quality and quantity of water that flows into the well as defined in the *MECP Source Protection Information Atlas* and the *Clean Water Act, 2006.*

The Works: The communal water and/or communal wastewater systems and all related buildings and infrastructure.

Description

Guidance and supporting materials

Region staff may develop guidance, templates, or agreements to support application of this guideline (supporting materials). Supporting materials will be appended to this guideline.

Region staff may revise supporting materials from time-to-time to reflect changing legislation, technology, or other conditions without an amendment to this guideline. It is the responsibility of the Owner to ensure applications reflect supporting materials on the date an application is submitted.

No private communal system servicing any multi-lot residential units shall be approved or constructed without an MRA being entered into by the Region and the Owner. Entering into an MRA for a private communal system shall be at the sole discretion of the Region.

An MRA may not be required for systems that solely service employment or industrial uses. However, these systems remain subject to other requirements under this guideline.

Requirement to connect to municipal services

Should municipal servicing be extended to an area serviced by a private communal system, Owners shall be required to connect to the municipal system and decommission the private communal system at no cost to the Region or the local municipality in accordance with timelines set out in the MRA.

Private communal system and associated infrastructure shall be constructed in a manner that will allow for connection to a municipal system if/when municipal services are extended to the area in the future at the Owner's expense.

Requirement for a condominium corporation

Private communal systems will only be considered for developments that will establish a condominium corporation for long-term administration of the system, including eventual decommissioning of the private communal system and connection to municipal systems, should servicing be provided in the area.

Requirements under a Municipal Responsibility Agreement (MRA)

The MRA shall address matters, including but not limited to:

- Reporting obligations to support environmental and other contractual compliance
- Granting of any easements as may be required by the Region
- Obligations of the Condominium Corporation, including the requirement to enter into a Reciprocal Agreement and obligations under Condominium Act
- Insurance and indemnification requirements
- Financial obligations for maintenance, operation and eventual replacement of private communal system
- Contingency plans and other plans as required to meet regulatory requirements
- Decommissioning of private communal systems and connection to municipal systems when municipal water or wastewater services become available at no cost to the Region or local municipality.

Application preparation process

Pre-consultation

Public Works staff can and should be engaged prior to submittal of a Private Communal System Report and continue to be consulted throughout the process (see contact section below).

Application requirements

Owners are to engage the Region under the pre-consultation phase of this process but formal Regional review will not occur until the Private Communal System Report is submitted. In the event of a Private Communal System being a permitted use, the Report shall be an appendix to the Functional Servicing Report and are to be considered in conjunction with other Regional guidelines identified in the appendices.

An application for a Private Communal System cannot proceed until Region staff comments on the Private Communal System Report have been addressed to the satisfaction of the Region.

Further to any *Planning Act* approvals, the Private Communal Systems Report continues to be required to enable the MRA process. In these cases, early submission of a Private Communal Systems Report can help streamline the Region's review and the MRA process to accelerate the approvals process to support the goals of Planning Act tools to build housing faster.

Environmental Assessment

Private communal system servicing any residential units require a Municipal Class Environmental Assessment to be completed, as required under the *Environmental Assessment Act*. Depending on the type of system proposed, either a Schedule B or C assessment may be required. Owners will need to determine the need for and type of assessment required in collaboration with Ministry of the Environment, Conservation and Parks.

Single-system preferred option

Private communal system should be sized to service the proposed development, systems should not be split into multiple sub-systems without a specific engineering requirement to do so.

If the Owner believes that more than one system may be required, rationale must be discussed with Region staff in the pre-consultation stage.

Acceptance or rejection of multiple systems is at the sole discretion of the Region.

Pre-consultation and Private Communal System Report

Private Communal System Report

A Private Communal System Report is required to detail how a proposed communal system meets the requirements outlined in this guideline. Additional detail on this report has been included in the Private Communal System Terms of Reference associated with this Guideline.

In cases where an Official Plan amendment is required, it is recommended that the Private Communal Systems Report be included as a part of amendment application.

In cases where a private communal system is permitted under an official plan, the Functional Servicing Report must include a Private Communal System Report as an appendix.

Justification of need for communal system

The Owner is required to provide a servicing justification within the Private Communal System Report that identifies:

- What other servicing options were considered and why those are not feasible options to service the development (e.g. private wells, private septic systems)
- In the event that municipal servicing is planned for the area in either Public Works' 10-year Capital Plan or the Region's *Water and Wastewater Master Plan*, the servicing justification report will need to justify why the development cannot wait for municipal servicing and a private communal system is the preferred option
- Please note, if municipal servicing exists in the area with capacity to service the development, an application for a private communal system will be rejected.

Engineering

Owners shall retain a qualified Design Engineer, at their sole expense, to design the private communal system(s). Detailed design documentation will be required to be submitted to the Region as a part of the Private Communal System Report.

Design of private communal system(s) and associated infrastructure shall consider and plan for impacts related to inflow and infiltration in both the near and long-term.

Design of private communal system(s) and associated infrastructure shall consider all applicable system design guidelines and standards, including the Region's technical guidance in Appendix B of this guideline.

The Region reserves the right to levy fees to support review of a private communal system, any such fees will be in accordance with the York Region Fees and Charges Bylaw. Owners should contact the Region staff identified in the contact section below for further details.

Consideration of Communal Water and Wastewater Design Standards under Appendix B

Private communal system designs will be reviewed by the Region based on the Region's Communal Water and Wastewater Design Standards included in Appendix B of this Guideline.

Region Communal Water and Wastewater Design Standards for a private communal system shall be considered by Owners when proposing such systems.

Owners are permitted to propose innovative system designs but will be required to demonstrate how an alternate design meets the performance requirements outlined in the Communal Water and Wastewater Design Standards included in the appendix.

Pre-consultation and Private Communal System Report (continued)

Consideration of Communal Water and Wastewater Design Standards under Appendix B (continued)

If an Owner intends to pursue a non-traditional system design, the Region will require the Owner to provide a rationale for pursuing the alternate system design. This must include case studies of where the proposed system design has been built and operated effectively in an environment/climate and scale similar to the proposed project to demonstrate it is a feasible solution.

Acceptance of an alternate system design shall be at the sole discretion of the Region.

Provincial requirements – drinking water

For drinking water system, Owners are required to complete pre-design studies for water source quality and quantity, along with considerations of the multi-barrier approach, as outlined under Section 3.2 of the MECP *Design Guidelines for Drinking Water Systems*.

If a proposed private communal drinking water system falls within a source protection area, as defined under the ***Clean Water Act, 2006,*** as amended, the Owner is required to engage the Source Protection Authority per requirements under *O. Reg. 205/18: Municipal Residential Drinking Water Systems in Source Protection Areas*.

Provincial requirements – wastewater

For private communal wastewater system, Owners are required to complete soil evaluations and assessments of the impacts of discharges on surface water and/or groundwater, as identified under sections 22.4 and 22.5, respectively of MECP *Design Guidelines for Sewage Works*, as updated from time-to-time. A detailed scope of items to be included in these assessments can be found under section 22.6 of the Design Guidelines.

Owners of private communal wastewater systems are required to use results of assessments completed under sections 22.4, 22.5, and 22.6 of the MECP *Design Guidelines for Sewage Works* to develop a detailed design for the system. This design shall also conform to design consideration found under section 22.7 of the Design Guidelines. Although detailed design is not required within the pre-consultation stage, the proponent will need to identify potential designs.

Provincial permit and approval pre-consultation initiated

Owners shall provide proof of a formal engagement with MECP on the process for required Provincial permits and approvals, including, but not limited to a Drinking Water Works Permit and Permit to Take Water for a drinking water system and an Environmental Compliance Approval for a wastewater system within the Private Communal Systems report.

Onus on Owner to demonstrate compliance

Provincial requirements identified above are to provide Owners key considerations when proposing a private communal system but may not include all legislative or agency (e.g. MECP) requirements.

The onus shall be on the Owner to demonstrate how all relevant legislation and guidance from MECP and other approval agencies have been considered (e.g. federal, municipal, conservation authorities) within the Private Communal System Report.

Pre-consultation and Private Communal System Report (continued)

Source water protection

Applicants must demonstrate in the Private Communal Systems Report that their application(s) comply with policies of the applicable source water protection plan.

Region staff are to be engaged in scoping soil and surface water/groundwater assessments to reflect local conditions. Staff may reject an application if they determine the private communal system presents a risk to source water.

This guide does not supersede the role of York Region Water Resources staff under the Ministry's Permit to Take Water process and the ***Clean Water Act, 2006,*** who are engaged to assess impacts on water supplies and/or risks related to well interference.

Source Protection Authority under the ***Clean Water Act, 2006*** or Region staff may apply conditions to the Plan of Subdivision/ Condominium and Site Plan approval to mitigate potential source water impacts.

The onus shall be on the Owner to demonstrate in the Private Communal Systems Report how source water protection risks and plans have been addressed in the design of the system. Acceptance of source water protection measures will be at the sole discretion of the Region's Risk Management Official as defined under the *Clean Water Act, 2006*.

Demonstration of lack of environmental harm

The onus shall be on the Owner to demonstrate that construction and operation of private communal system and associated works do not represent a risk to the natural environment and ecological integrity of surrounding environment in consultation with the Ministry to the satisfaction of the Region.

Approval by Region

Designs for both private communal water and wastewater systems shall be provided to the Region for review via the Private Communal Systems Report. Approvals for systems shall be at the sole discretion of Region staff.

Financial requirements

Owners shall demonstrate to the satisfaction of the Region that the private communal system(s) are financially viable for the duration of the proposed life of the system including user rate estimations to ensure adequate funding through the life cycle of the asset.

Owners of drinking water systems and wastewater systems shall prepare a financial plan in alignment with *O. Reg. 453/07: Financial Plans* to assess costs associated with the system and its long-term operation to be provided in the Private Communal System Report. Although O. Reg. 453/07 is limited to drinking water systems, to create a consistent approach to financial planning, the Region will require the same requirements be followed for wastewater system financial plans.

The Region has the authority to develop standards for financial plans that exceed those in O. Reg. 453/07. Region standards may be updated from time-to-time to provide guidance for completion of these financial plans to support Owners in meeting the satisfaction of the Region. In the event standards and/or guidance are developed, they shall be appended to this guideline and be considered an extension of this guideline. Region standards may be updated from time-to-time to reflect current conditions.

Based on the financial plan, an estimated annual per-unit cost breakdown shall be provided within the Private Communal Systems Report to help assess financial viability of the system.

Pre-consultation and Private Communal System Report (continued)

Financial requirements (continued)

Specific financial requirements will be included within the MRA, this will include, but not be limited to provision of financial security or guarantees (e.g., Letters of Credit, Guarantor Agreement) so sufficient funds are available to fund operation, maintenance, repairs, or any other aspect required for effective operation, should they be required.

The Region is not responsible or liable for any costs incurred by the Owner throughout the private communal system development and approvals process, including in cases where a private communal system is not approved.

Capital works plan

Capital works plans shall be prepared for review in the Private Communal System Report. If, in the opinion of Region staff and advice of external consultants, amendments to the plan are required they will be provided as a part of the review process.

Decommissioning and/or future connections to municipal systems

Private Communal Systems Report must demonstrate how systems will be constructed in a manner that allows for connection to a municipal system, should municipal services be extended to the areas in the future.

If/when municipal services are extended to the area where there is a private communal system, Owners/Corporations shall decommission private communal water and wastewater systems and connect to the municipal system at no cost to the Region or the local municipality, within the timeline determined by the Region.

Governance

Within the Private Communal System Report, the Owner is required to provide the Region with a proposed governance structure for the system identifying key responsibilities for management of each aspect of the system. A final version of the governance structure shall be provided prior to the finalization of the MRA.

Acceptance of Private Communal Systems Report

A proposal for a private communal system should be reviewed by Regional staff prior to deeming the application complete to determine if the proposal is to the satisfaction of the Region in the Private Communal Systems Report. Region staff will notify the Owner in writing when the Region is satisfied with the Private Communal System Report and are prepared to proceed with the application, pending any Region conditions. A satisfactory Private Communal Systems Report supports the Region's MRA process.

Regional Conditions of Draft Plan approval

The Region may impose conditions to the Draft Plan of Subdivision and/or Condominium and Site Plan approval, including but not limited to the need to complete an environmental assessment, develop and enter into an MRA, obtain provincial permits, and any other such requirements the Region deems fit.

Clearance of conditions for Draft Plan of Subdivision and/or Condominium

Conditions on Draft Plan of Subdivision and/or Condominium

The Owner shall demonstrate to the satisfaction of the Region that it has satisfied all conditions applied to the Draft Plan of Subdivision and/or Condominium prior to the registration of the Plan of Subdivision and/or Condominium and Site Plan approval.

Local municipal staff shall engage with Region staff to ensure this has been completed prior to providing Site Plan Approval. In some cases, it may be necessary for the Region to be party to the Site Plan Agreement.

MRA required for all systems servicing residential

No private communal system for either water or wastewater servicing any multi-lot residential units shall be constructed without an Municipal Responsibility Agreement (MRA) being entered into by the Region and the Owner.

Entering into an MRA is at the sole discretion of the Region, regardless of any other approvals received.

Matters related to amendments, arbitration, and termination of the MRA are to be defined under the MRA.

Execution of a MRA shall not proceed until the Region is provided all supporting materials required under the MRA (e.g. finalized governance, monitoring, and inspection plans etc.). Conditions on the Draft Plan of Subdivision and/or Condominium shall not be cleared by Regional or Local Municipal staff until the MRA has been executed.

Region support for MRA ahead of Provincial Permits and Approvals

The Region agrees to the outlined process found in this Guideline and the Terms of Reference to support Council's direction to enter into an MRA, subject to the Owner obtaining the required Provincial permits and approvals (e.g. DWWP, PTTW, ECA) for the proposed communal water and/or wastewater system prior to Registration of the subdivision/condominium.

Conditions on the Draft Plan of Subdivision and/or Condominium shall not be cleared, nor shall a Site Plan approval be issued until the Owner has received a DWWP/ECA from the Ministry, which will be appended to the MRA prior to it being executed.

Clearance of conditions of the Draft Plan of Subdivision and/or Condominium for registration and/or Site Plan approval will not be granted until the Owner has received the required DWWP/ECA from the Ministry of the Environment, Conservation and Parks (MECP), which will be appended to and form part of the MRA to be signed and executed.

Monitoring and inspection

The Owner is required to develop and submit a proposed monitoring and inspection protocol to ensure safe operation and mitigate risks to public health in the Private Communal System Report. Acceptance of the protocol shall be at the sole discretion of the Region.

Permits and approvals

The Owner is required to obtain all necessary permits and approvals from regulatory agencies prior to the local municipality clearing conditions on the Draft Plan of Subdivision and/or Condominium and issuing a Site Plan approval.

Clearance of conditions for Draft Plan of Subdivision and/or Condominium (continued)

Obligations of Condominium Corporations

If the Owner proposes a private communal system, which is intended to service more than one unit owner, the Condominium Corporation to be created for the development shall be required to enter into a Reciprocal agreement with the Owner for the joint obligations of ownership and proper operation and maintenance of the private communal system(s), pursuant to the terms of the MRA.

Notification to purchasers of system and costs

The Owner shall agree in the MRA as well as in any Plan of Subdivision/Condominium Agreement, Site Plan Agreement as applicable, in wording satisfactory to York Region and the local municipality, to provide for warning clauses in all offers of purchase and sale for the condominium units. This may include, but not be limited to:

- The private communal system is privately owned and operated and is not the responsibility of York Region or the local municipality
- Operating costs to operate the system are the sole responsibility of condominium owners and provide estimated rates as compared to municipal services
- Special levies may be charged against condominium unit owners to correct and/or rectify system deficiencies and malfunctions or for covering shortfalls that may arise from unanticipated or occasional expenses
- Future connection of communal system to Regional infrastructure or local infrastructure will be at the cost of the Condominium Corporation or the individual home owner (however it's resolved per comments above).

Reserve Fund

The Condominium Corporation shall be required to provide the Region with proper and sufficient financial security and annual replacement reserve fund contributions to ensure sufficient funds are available to operate and maintain the communal water and wastewater systems at no expense to its ratepayers outside of the development. This security and reserve fund may be leveraged in the event the Region is the subject of an Order pursuant to the provisions of the *Ontario Water Resources Act*, the *Safe Drinking Water Act, 2002*, or other legislation, or pursuant to the terms of the MRA due to default by the Owner.

The Condominium Corporation/Owner shall retain a Professional Engineer to develop a Capital Works Plan for the private communal system(s), which shall set out the contribution to the Replacement Reserve Fund, maintaining an adequate reserve fund as defined in Sections 93 and 94 of the *Condominium Act* and any requirements under the MRA. The Condominium Corporation shall also maintain adequate reserves to connect to municipal systems and decommission the private communal system at no cost to the Region should municipal services be extended to the area.

If the Region deems the Owner or Condominium Corporation to be in default of its obligations under the MRA, the Region will require the Owner/Condominium corporation to develop a rectification plan and/or draw down on the financial security provided or the Corporation's reserve fund to rectify the issue(s).

Responsibilities

York Region Public Works staff:

Review private communal system(s) reports and documentation as outlined in this guideline and any other supporting materials.

Maintain Communal Water and Wastewater Design Standards required to support this guideline.

Ensure development application(s) meet the terms of this guideline and a MRA is in place prior to clearance of conditions on a Plan of Subdivision and/or Condominium and issuing a Site Plan approval.

Lead engagement with other Regional departments on private communal systems.

York Region Finance staff:

Provide Public Works and Planning staff support on assessing reserves required to ensure the long-term viability of a private communal system and a sufficient financial surety for the Region.

York Region Legal Services staff:

Prepare legal agreements and provide Public Works and Planning staff with legal support to effectively administer requirements under this guideline.

Local municipal Planning staff:

Ensure York Region Public Works staff are engaged at the outset of the planning process on any development that proposes a private communal system as a servicing option.

Refer Owners of any proposed development in an area without municipal servicing to Official Plan requirements and this guideline.

Ensure local municipal planning practices align with guidance under this guideline.

Ensure any developer considering a private communal systems servicing option has completed the requirements under this Guideline to the satisfaction of Region staff and that a MRA is in place prior to registration of a Plan of Subdivision and/or Condominium and issuing a Site Plan approval.

Owner:

Engage with Region staff if development proposes private communal system servicing from the outset of the proposal and ensure that any proposal aligns to requirements under this guideline.

Provide a Functional Servicing report and Private Communal Systems Report and any other documentation required by this guideline or its appendices.

Enter into an MRA with the Region if there are any residential servicing component for the private communal system.

Obtain all permits and DWWPs/ECAs required for the system

Compliance

The Owner and/or Condominium Corporation shall be solely responsible for ensuring that all aspects of a private communal system comply with provincial and federal legislation, policies, and guidelines along with municipal bylaws and Region requirements defined in this guideline and appendices and align with provincial and municipal land use plans.

All proposed private communal systems must fully comply with the current Official Plans.

The Owner, at its own expense, shall be responsible for obtaining, holding, maintaining and complying with any approvals for the works required by the Ministry, Region, local municipality, conservation authority, or any other approval agency.

The Owner shall ensure an operator for the system is maintained at all times that is certified to operate the system under the Safe Drinking Water Act, 2002 and Ontario Water Resources Act, as applicable. It is the Owner's responsibility to comply with Ministry requirements in operating a drinking water or wastewater system.

If the Region deems the Owner or Condominium Corporation to be in default of its obligations under the MRA or that there is a possible health or environmental hazard, the Region will require the Owner/Corporation to develop a rectification plan and implement actions until the default is rectified on a full-cost recovery basis at the Owner or Corporation's cost.

For drinking water systems, Owners shall demonstrate their designs achieve MECP design guidelines, including, but not limited to: *Design Guidelines for Drinking Water Systems*, *Design Guidelines for Sewage Works*, *B-7 guidelines for systems that discharge to groundwater* and B-1-1 guidelines for systems that discharge to surface water, as updated from time-to-time.

Every Owner and operator of a private wastewater system must ensure that it has an Environmental Compliance Approval in place and maintains compliance with this approval at all times.

Reference

In addition to requirements of this guideline, key provincial laws and regulations that apply to non-municipal drinking water system owners and operators are set out in:

- *Safe Drinking Water Act, 2002*
- *Ontario Regulation 128/04* (Certification Of Drinking Water System Operators And Water Quality Analysts)
- *Ontario Regulation 169/03* (Ontario Drinking Water Quality Standards)
- *Ontario Regulation 170/03* (drinking water systems)
- *Ontario Regulation 243/07* (flushing, sampling and testing for lead if schools and daycare facilities will be serviced)

Key provincial laws and regulations that apply to non-municipal wastewater systems owners and operators are set out in:

- *Clean Water Act, 2006*
- *Lake Simcoe Protection Act, 2008*
- *Ontario Regulation 129/04*
- *Ontario Water Resources Act*

Appendices

- **Appendix B:** Communal Water and Wastewater Design Standards
- **Appendix C:** Groundwater Development and Wellhouse Design Guidelines

Contact

Project Manager, Capacity Monitoring and Development Review, Public Works

APPENDIX B: Communal Water and Wastewater Design Standards

Version 2 | March 5, 2025 | Approved Final Document

Communal Water and Wastewater Design Standards are a controlled document that will be periodically updated and are available upon request. Please contact developmentservices@york.ca, attention: Program Manager Water and Wastewater Service Planning and Agreements to obtain a copy.

Note:

This is a CONTROLLED document. Any documents appearing in paper or PDF form should be checked against the on-line file version prior to use.

Notice: Hard copies or PDFs of this document must be used for reference purposes only.

York file number 15788720 is the current version of the document.
Best efforts will be made to update the online version in the Private Communal Systems Terms of Reference in a timely manner.

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1.0 Introduction

Communal water and wastewater systems provide services to clusters of residences and businesses in development areas that cannot be connected to municipal systems.

Communal systems are designed, implemented, and paid for by proponents while the operation and maintenance are the responsibility of the residents. Communal water and wastewater systems are subject to regulatory requirements defined in permits issued by the Ministry of Environment, Conservation and Parks (MECP). However, if public health/safety issues arise due to poor management or operation of the communal systems, York Region (the Region) may be required by the Ministry to assume responsibility for them (MECP, 2015). To mitigate these risks, the Region is establishing minimum design guidelines for communal water and wastewater systems. Furthermore, the proponent and the Region will be required to enter a Municipal Responsibility Agreement (MRA) as a condition for MECP approvals for the communal system(s). The MRA outlines the responsibilities of the proponent and to ensure there is a capital reserve fund for long-term operation and maintenance of the facilities. Requirements and more details pertaining to the MRA can be found in the Private Communal Water and Wastewater Systems Guideline.

This document outlines the minimum requirements for the design of water and wastewater communal systems within York Region, to be used by the local area municipalities and proponents when planning and designing communal systems. These design guidelines are reflective of MECP requirements and applicable York Region's standards. However, they are less prescriptive than the requirements set for York Region's own water and wastewater facilities, accounting for the size and complexity of communal systems.

This document is divided into two main sections, one for water systems and one for wastewater systems. For the purposes of this document, a communal water system is a non-municipal year-round residential system as defined in O. Reg. 170/03. A communal wastewater system is defined as a non-municipal treatment facility with a capacity greater than 10,000 L/d, subject to the requirements of the Ontario Water Resources Act (OWRA) and the Environmental Protection Act (EPA).

2.0 Communal Water Systems Design Standards

2.1 Water Quality Requirements

This section of the document summarizes treatment objectives that must be met when designing a Communal Drinking Water System within York Region. Communal Drinking Water Systems typically utilize groundwater as a raw water source. Therefore, this standard focuses on the requirements for groundwater-based communal water systems.

Communal water systems must be designed to meet the current requirements defined in the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines (Ontario, 2006)and the Guidelines for Canadian Drinking Water Quality (Health Canada, 2022), or as updated from time to time, where applicable as summarized in **Table 1** on the following page. It is the responsibility of the User(s) to ensure that the latest version of standards and guidelines are used in the design of a communal system.

Table 1: Communal System Water Quality Requirements

Parameter	Design Target	Maximum Acceptable Concentration	Aesthetic Objective/ Operational Guideline (AO/OG)	Comment
Algal Toxins	Microcystins-LR ≤0.0015 mg/L	Microcystins-LR ≤0.0015 mg/L	N/A	For surface water and GUDI sources (Ontario, 2006)
Ammonia	≤0.05 mg/L as nitrogen	N/A	N/A	Recommendation to prevent nitrification in the distribution system (Health Canada, 2022)
Colour	≤5 TCU	N/A	≤5 TCU (AO)	Per ODWQS (Ontario, 2006)
Dissolved Organic Carbon (DOC)	≤5 mg/L	N/A	≤5 mg/L(AO)	Per ODWQS (Ontario, 2006)
Escherichia coli (E. coli)	Not detectable	Not detectable	N/A	Per ODWQS (Ontario, 2006)
Fluoride	≤1.0 mg/L	≤ 1.5 mg/L	N/A	Per ODWQS (Ontario, 2006). This refers to naturally occurring fluoride. Addition of fluoride is not required unless mandated by the Ministry of Health
Free Chlorine (Primary Disinfection)	Minimum concentration to achieve required CT requirements	N/A	N/A	GUDI and non-GUDI sources have different CT requirements, refer to Disinfection Section below.
Free Chlorine (Secondary Disinfection)	1.0 to 1.5 mg/L in finished water leaving treatment facilities. To be assessed on a case-by-case basis.	≤4.0 mg/L	N/A	Per ODWQS (Ontario, 2006). A minimum 0.05 mg/L residual to be maintained in the distribution system (MECP, 2021)

Table 1: Communal System Water Quality Requirements (continued)

Parameter	Design Target	Maximum Acceptable Concentration	Aesthetic Objective/ Operational Guideline (AO/OG)	Comment
Chloramines as Combined Chlorine (Secondary Disinfection)	1.8 to 2.0 mg/L in finished water leaving treatment facilities. To be assessed on a case-by-case basis.	≤3.0 mg/L	N/A	MAC per ODWQS (Ontario, 2006). A minimum 0.25 mg/L residual to be maintained in the distribution system (MECP, 2021). Per Health Canada Guidelines (Health Canada, 2020), suggested best operational practices for a chloramine residual are 2 mg/L leaving the treatment plant and greater than 1.5 mg/L at all monitoring points in the distribution system.
Hardness (as $CaCO_3$)	<100 mg/L	N/A	80 to 100 mg/L (OG)	Per ODWQS (Ontario, 2006). Groundwater sources with hardness greater than 500 mg/L are not acceptable for water supply (Ontario, 2006)
Iron	<0.15 mg/L (where removal treatment required)	N/A	≤ 0.3 mg/L (AO)	Per ODWQS (Ontario, 2006). Treatment for removal is required at levels >0.6 mg/L and recommended at levels above 0.3mg/L. Sequestration will be considered on a case-by-case basis

Table 1: Communal System Water Quality Requirements (continued)

Parameter	Design Target	Maximum Acceptable Concentration	Aesthetic Objective/ Operational Guideline (AO/OG)	Comment
Manganese	<0.02 mg/L (where removal treatment required)	≤0.12 mg/L (Health Canada, 2022)	≤ 0.02 mg/L (AO) (Health Canada, 2022)	Treatment for removal is required at levels > 0.075 mg/L and recommended at levels above 0.02mg/L. Sequestration will be considered on a case-by-case basis
Methane	<3 L/m^3	N/A	≤ 3 L/m^3 (AO)	Per ODWQS (Ontario, 2006). Treatment, blending or a new/ alternate source required at levels >18L/m^3
Nitrate (as N)	≤10 mg/L	≤10 mg/L	N/A	Per ODWQS (Ontario, 2006)
Nitrite (as N)	≤1 mg/L	≤1 mg/L	N/A	Per ODWQS (Ontario, 2006)
pH	6.5 – 8.5	N/A	6.5 – 8.5 (OG)	Per ODWQS (Ontario, 2006)
Sodium	≤200 mg/L	N/A	≤ 200 mg/L (AO)	Per ODWQS (Ontario, 2006). The local Medical Officer of Health shall be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets
Sulphides	≤0.05 mg/L	N/A	≤ 0.05 mg/L (AO)	Per ODWQS (Ontario, 2006) AO for taste and odour

Table 1: Communal System Water Quality Requirements (continued)

Parameter	Design Target	Maximum Acceptable Concentration	Aesthetic Objective/ Operational Guideline (AO/OG)	Comment
Total Coliforms	Not detectable	Not detectable	N/A	Per ODWQS (Ontario, 2006)
Total Haloacetic Acids	≤60 µg/L	≤80 µg/L (RAA)	N/A	Per ODWQS (Ontario, 2006). Total Haloacetic Acids includes monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, bromoacetic acid and dibromoacetic acid
Total Trihalomethanes	≤80 µg/L	≤100 µg/L (RAA)	N/A	Per ODWQS (Ontario, 2006) for MAC in distribution system samples [1]
Turbidity (Groundwater)	≤ 1.0 NTU in finished water ≤ 5 NTU at point of consumption	≤ 1 NTU (GUDI wells providing filtration)	≤ 5 NTU (AO) at point of consumption	ODWQS Aesthetic Objective Guide to minimizing sediment build-up in the distribution system and adverse water quality indicator for systems providing filtration Ontario Regulation 170/03 prescribes turbidity as an adverse result if the drinking-water system is required to provide filtration, and a result indicates that turbidity exceeds 1 NTU

[1] Expressed as a running annual average of quarterly samples measured at a point reflecting the maximum residence time in the distribution system.

2.2 Applicable Standards and Guidelines

Communal drinking water systems must meet relevant requirements set forth by the National Sanitation Foundation (NSF), the American Water Works Association (AWWA) and the American National Standards Institute (ANSI). **Table 2** below lists Standards relevant to drinking water systems. The list below is not comprehensive. It is the proponent's responsibility to ensure that all applicable standards are met.

Table 2: Typical Standards and Guidelines Requirements

Standard Name	Reference
Water Softener Standards	NSF/ANSI 44
Filtration System Standards	NSF/ANSI 42, 53 and 401
Ultraviolet Microbiological Water Treatment Systems	NSF/ANSI 55
Drinking Water System Components – Health Effects	NSF/ANSI/CAN 61
Drinking Water Treatment Chemicals – Health Effects	NSF/ANSI/CAN 60
Drinking Water System Components - Lead Content	NSF/ANSI/CAN 372
Health Effects Evaluation and Criteria for Chemicals in Drinking Water	NSF/ANSI/CAN 600
Disinfecting Water Mains	AWWA C651
Disinfection of Water Storage Facilities	AWWA C652
Disinfection of Water Treatment Plants	AWWA C653
Disinfection of Wells	AWWA C654
Water Wells	AWWA A100-20

Notes:

1. The most current material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution ("ANSI") shall be provided and made available for each material used in the operation of the drinking water system that comes into contact with water within the system. Materials that do not apply in this case are as follows:
   a. Water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC, fibre and/or steel wire reinforced cement pipe or high-density polyethylene (HDPE)
   b. Articles made from stainless steel, glass, HDPE or Teflon®
   c. Cement mortar for watermain lining and for water contacting surfaces of concrete structures made from washed aggregates and Portland cement.

2.2 Applicable Standards and Guidelines (continued)

2.2.1 Removal of Dissolved Gases

Water sources with significant concentrations of dissolved gases must be avoided. Treatment methods for removal of dissolved gases in source water, such as methane and hydrogen sulphide, which result in the emissions of contaminated air into the environment must comply with the Environmental Protection Act and require a MECP Certificate of Approval (Air) for these emissions. Suitable gas detectors to be provided. The requirements of current regulations must be met.

Treatment methods for removal of naturally occurring ammonia may include breakpoint chlorination or biological filtration. This can be assessed following sufficient bench scale and/or pilot scale testing to confirm the treatment approach.

Refer to the US Department of the Interior, Office of Surface Mining - Technical Measures for the Investigation and Mitigation of Fugitive Methane Hazards in Areas of Coal Mining, 2001 for methods to remove dissolved methane.

Relevant current regulations and guidelines include (but are not limited to) O. Reg. 127/01 Airborne Contaminants Discharge Monitoring and Reporting; O. Reg. 419/05 Air Pollution – Local Air Quality; O. Reg. 524/98 Certificate of Approval Exemptions – Air; and R.R.O. 1990 Reg. 337 Ambient Air Quality Criteria. It is the responsibility of the proponent to ensure that the latest version of relevant legislation is referenced.

2.3 Approvals and Permits

The proponent is responsible to apply for any approvals, agreements and/or permits required by the Regional Municipality of York, the local municipality, the MECP, the conservation authority and any other relevant regulatory agency. Approvals and permits required include but are not limited to those listed in **Table 3.**

Table 3: Communal Water System Requirements, Approvals and Permits

Regulatory Entity	Applicable Approval
MECP	System registration within 30 days of beginning operations. System registration letter from the MECP including Drinking Water System number (DWS#) and category. PTTW – Permit To Take Water
Municipality	Building Permit Site Plan Approval
Regional Municipality of York	Municipal Responsibility Agreement (MRA) Source Water Protection Permit
Conservation Authority	Conservation authority permit (TRCA/LSRCA)
Other	TSSA, ESA permits, NAV Canada

2.3 Approvals and Permits (continued)

Although not explicitly required by the MECP as a condition for water system approvals, it is recommended that the proponent conduct indigenous consultation prior to the submission of approval applications. The indigenous communities in the vicinity of the development area may require additional studies to be completed, including an archeological assessment. It should be noted that indigenous consultation is a pre-requisite for wastewater system approvals. See **Section 3.2.1**.

2.4 Design Criteria

The proponent is responsible to estimate (with justification) the design flows, peaking factors, and diurnal patterns to be used for sizing of the water treatment system. The proponent shall rely on data from similar systems in Ontario to estimate per capita water demands. In the absence of data, the proponent shall use the design criteria defined in the local municipality's design standards and those included in the MECP Design Guidelines (MECP, 2008).

Sound engineering practice requires the treatment plant and treated water storage systems to be sized to meet the greater of the two design demand volumes:

- Maximum Day Demand Flow + Fire Protection, if fire protection is provided
- Peak Hour Demand

For minimum fire flow values, refer to local municipality design standards/guidelines.

Table 4 and **Table 5** below shows the peaking factors to be used to establish design demand values.

Table 4: Peaking Factors – Water Systems with less than 500 people (MECP, 2008)

Population	Night Minimum	Maximum Day Factor	Peak Hour Factor
30	0.1	9.5	14.3
150	0.1	4.9	7.4
300	0.2	3.6	5.4
450	0.3	3.0	4.5
500	0.4	2.9	4.3

2.4 Design Criteria (continued)

Table 5: Peaking Factors – Water Systems with greater than 500 people (MECP, 2008)

Population	Night Minimum	Maximum Day Factor	Peak Hour Factor
500 to 1000	0.4	2.75	4.13
1001 to 2000	0.45	2.50	3.75
2001 to 3000	0.45	2.25	3.38

2.5 Submittals

To ensure that the communal water system meets all regulatory and design criteria, the proponent is responsible for submitting documentation to the Region at several stages of the design process, as outlined in the sections below.

2.5.1: Treatability Study

The proponent shall conduct a Microbiological Water Quality Evaluation, Treatability Study and Treatment Process Evaluation. The Treatability study shall be based on data analysis of water samples from the proposed water source to determine the source characteristics. A temporary pump can be installed in a drilled well to confirm capacity at the time water quality samples are taken. The samples shall be for the parameters listed in the ODWS.

For groundwater sources, the proponent shall comply with the requirements of the MECP's Terms of Reference and Technical Support Document for Determination of Minimum Treatment for Municipal Residential Drinking Water Systems Using Subsurface Raw Water Supplies. A study, as outlined the Region's Groundwater Development and Wellhouse Design Guideline, is required to demonstrate the target aquifer is not under nor potentially under the influence of surface water (GUDI).

For raw waters with high concentrations of ammonia, nitrates, heavy metals, methane, etc., the Region may require a pilot test of the proposed treatment to demonstrate reliable performance.

2.5 Submittals (continued)

2.5.2: Pre-Design (30% Design)

For groundwater sources, proponents will follow the steps outlined in the Region's *Groundwater Development and Wellhouse Design Guideline* see **Appendix C.**

The proponent must submit a Pre-Design Report during the 30% design stage. The general requirements for the Pre-Design Report are listed below:

1. Classify the raw water supply as a groundwater or a surface water source
2. Identify the location of the source water
3. For drinking water systems with groundwater sources, provide a description of the physical characteristics of the well
4. Determine whether the well is a ground water under the direct influence of surface water (GUDI)
5. Provide a raw water characterization of the source water
6. Identify the required legislated treatment equipment as per Schedule 2 of the Drinking Water Systems Regulation applicable for the type of source water.
7. Identify the classification of drinking water system.
8. Provide a description of the drinking water system, including schematic drawings of the treatment process and specification of main treatment equipment and include important treatment equipment information.
9. Provide a description of the features incorporated in the design to ensure system reliability under normal, maintenance, and emergency operating conditions.
10. Describe operational and maintenance, monitoring and compliance reporting requirements.
11. This submission shall include draft Permit Applications including associated reporting and supporting technical documentation.

As part of the Pre-Design Report submission, the proponent must include the following drawings:

- Conceptual Layout
- Building & Architectural Design
- Structural Design
- Building Mechanical Design
- Electrical Design
- Process Design
- Process Flow Diagrams, Hydraulic Profiles, Process and Instrumentation Diagrams
- Ancillary Systems
- Well Design, Well Details and Well Records

2.5 Submittals (continued)

2.5.3: 90% Detailed Design

This submission shall include an updated Design Brief, engineering specifications, draft Process Control Narrative, and draft Operations and Maintenance Manual, and the drawings listed in **Table 6**, as applicable.

Table 6: Required Drawings for 90% Detailed Design Submission - Communal Water Systems

Disipline	Required Drawings
General	• Drawings List • Site Survey • Site Plan • Site Service Connections • Fire Protection System Site Plan and Schematic
Architectural	• Site and Building Renderings • Exterior Details • Floor Plans, Elevations and Cross Sections • Building Layout Plans • Process Equipment Locations/Orientation • Details
Structural	• Foundation Detail • Roof Design • Details
Civil	• Grading, drainage and stormwater management • Landscaping including Tree/Shrub Planting Details • Construction Staging • Yard piping including watermains • Erosion and Sediment Control
Mechanical	• Equipment Schematics • Lifting Equipment, as required • HVAC System

2.5 Submittals (continued)

2.5.3: 90% Detailed Design (continued)

Table 6: Required Drawings for 90% Detailed Design Submission - Communal Water Systems (continued)

Disipline	Required Drawings
Electrical	• Single Line Diagrams • Site Power Supply/Distribution • Single-line MCC Drawings • Control Schematics • Electrical Enclosures
Process	• Process Flow Diagrams • Hydraulic Profile
Instrumentation & Control (I & C)	• I & C Legend • Process & Instrumentation Diagrams • SCADA Network Architecture • I & C Details
Utility Coordination	• Updated Base Plan • Utility Drawings • Relocation Plans
Property Requirements	• Property Plan • Legal Survey

2.5.4: Final Submissions

Upon commissioning of the system, the Proponent shall provide the following:

- As-built drawings, O&M manuals, Process Control Narratives, shop drawings and final design reports
- Permits and approvals
- Asset Management Plan and Spare Parts List
- Contact information for the Operating Authority staff retained for Operation of Proposed System
- Details on frequency of sludge/residuals hauling from site and contingency plans

2.6 Water Treatment Plant Design

Plant processes shall be designed to provide adequate redundancy relying on the concept of firm capacity. Refer to MECP guidelines for the definition of firm capacity applicable to various treatment processes.

2.6.1: Treatment Requirements

An assessment of the chemical quality and microbial safety of the source of raw water must be completed in accordance with the requirements of the ***Ontario Drinking Water Quality Regulation*** (O. Reg. 169/03), the ***Drinking Water Systems Regulation*** (O. Reg. 170/03) under the ***Clean Water Act***, as well as the ***Procedure for Disinfection of Drinking Water in Ontario*** (MECP, 2021) adopted under O. Reg. 170/03.

In addition, a hydrogeological assessment shall be conducted to determine whether a groundwater source is under direct influence of surface water (GUDI). The hydrogeological assessment must be performed in accordance with the MECPs ***Terms of Reference (ToR)*** for the ***Determination of Minimum Treatment for Municipal Residential Drinking Water Systems Using Subsurface Raw Water Supplies***, which is proposed to replace the existing ***Terms of Reference for Hydrogeological Study to Examine Groundwater Sources Potentially under the Direct Influence of Surface Water*** (MECP, 2001). The hydrogeological assessment shall classify the groundwater source per the updated source water category classification and determine the minimum treatment requirements, as defined in **Table 7** below.

Table 7: Source Water Categories and Minimum Treatment Requirements

Source Water Category		Minimum Required Treatment Level	
Existing Term per MECP, 2001	Updated Term per Draft Revised TOR	Disinfection	Particulate Removal
Groundwater	Category 1	4-log virus or as mandated by the current version of the Procedure for Disinfection of Drinking Water in Ontario	None
Groundwater Under the Direct Influence of Surface Water (GUDI) With Effective Filtration	Category 2	4-log virus 3-log *Giardia* spp. cysts 2-log *Cryptosporidium* spp. oocysts or as mandated by the current version of the Procedure for Disinfection of Drinking Water in Ontario	None
GUDI	Category 3	4-log virus 3-log *Giardia* spp. cysts 2-log *Cryptosporidium* spp. oocysts or as mandated by the current version of the Procedure for Disinfection of Drinking Water in Ontario	Chemically Assisted Filtration (CAF)

2.6 Water Treatment Plant Design (continued)

2.6.1: Treatment Requirements (continued)

Table 7: Source Water Categories and Minimum Treatment Requirements (continued)

Source Water Category		Minimum Required Treatment Level	
GUDI	Category 3E	4-log virus 3-log *Giardia* spp. cysts 2-log *Cryptosporidium* spp. oocysts or as mandated by the current version of the Procedure for Disinfection of Drinking Water in Ontario	Approved alternative to CAF

The Region of York has outlined several key steps in the planning and design process for a Production Well. These are described in the Region's Groundwater Development and Wellhouse Design Guideline included in Appendix C.

The well system must be designed to include firm capacity (i.e., a spare well) per MECP guidelines (MECP, 2008).

2.6.2: Disinfection Requirements

Communal systems must be designed to meet the requirements outlined in Section 5.9 –Disinfection of the MECP guidelines (MECP, 2008), and the ***Procedure for Disinfection of Drinking Water in Ontario*** (MECP, 2021). **Table 8** lists acceptable primary and secondary disinfection methods.

Groundwater may contain a significant concentration of naturally occurring ammonia. Disinfection systems using chlorine for primary disinfection must be designed to provide breakpoint chlorination and provide a minimum of 15 minutes of effective contact time within the chlorine contact tank. CT calculations for the design of chlorine contact tanks shall assume no more than 0.75 mg/L free chlorine residual exiting the contact tank such that chlorine contact tanks are sized to meet disinfection requirements under variable residual conditions including start up or minor process upsets. Careful consideration must be given to the potential for formation of disinfection by-products (such as THMs and HAAs), potential taste and odour issues and nitrification in the distribution system.

Disinfectant must also consider the potential for disinfection by-product formation and their maximum acceptable concentrations as defined in **Table 1**.

2.6 Water Treatment Plant Design (continued)

2.6.2: Disinfection Requirements (continued)

Disinfection systems shall be designed with redundancy such that the treatment system can remain in operation during process shutdowns for maintenance activities. Full redundancy based on the concept of firm capacity (capacity with the largest unit out of service) shall be provided. Redundancy shall be provided for all equipment and devices required for disinfection. The design shall also incorporate chlorine contact tank (CCT) redundancy. The CCT should include at least two chambers or tanks that can be isolated to allow one chamber or tank to be taken offline for maintenance while being able to supply at least average day demands.

Table 8: Acceptable Disinfection Methods

Disinfection Type	Acceptable Option No. 1	Acceptable Option No. 2
Primary Disinfectant	Free chlorine using sodium hypochlorite or chlorine gas	UV Irradiation – provided it satisfies the requirements set in MECP Disinfection Procedure (MECP, 2021). UV would need to be in conjunction with chlorine for GUDI and surface water sources.
Secondary Disinfectants	Free chlorine using sodium hypochlorite or chlorine gas*	Monochloramine

*Design of the facility must meet Ministry of Labour and Ministry of Environment and Climate Change regulations and guidelines. Design of the gaseous chemical feed systems must be in compliance with O. Reg. 220/01 Boilers and Pressure Vessels where applicable. Gas chlorination systems shall be designed in accordance with the recommendations of the Chlorine Institute. Owner shall be responsible for registering the design (where applicable) in accordance with O. Reg. 220/01. Owner shall consider design incorporating use of safe chemicals and make recommendations based on risk analysis and rationale (if any) for additional expenditures for using safer chemicals from a health and safety and environmental protection standpoint.

2.6 Water Treatment Plant Design (continued)

2.6.3: Site Selection

Site selection shall consider the following factors, as per Section 3.7 of the MECP guidelines (MECP, 2008) summarized below:

- Separation distance from residential areas or other non-compatible land uses
- Noise and odour considerations
- Optimum location of the plant with respect to the location of the raw water source and the area to be serviced
- Susceptibility of the site to flooding
- Suitability of subsurface and soil conditions
- Minimizing adverse environmental impact both during construction and operation of the facility
- If constructing adjacent to a shoreline, suitable measures would be necessary to prevent erosion and to protect Sstructures from potential wave action or ice-piling
- Waste disposal considerations

For groundwater sources, the following should be considered when selecting the preferred site:

1. Results from preliminary stepped-rate hydraulic testing and water quality sampling
2. Estimated thickness of water bearing formation, the relative transmissivity of the water bearing formation, and available drawdown, and groundwater quality suitability for potable supply
3. Source Water Protection considerations, suitability of the property size for associated infrastructure needs and degree of potential interference that a production well may have on existing wells screened in different aquifers as well as with environmental sensitive areas

The well site for the treatment facility must be selected such that that no significant drinking water threats are created. Groundwater vulnerability mapping and threats evaluation shall be conducted in accordance with the Technical Rules as prescribed by the *Clean Water Act, 2006*. The property should be treated as if the entire site has a vulnerability score of 10 as defined in the Act.

2.6.4: Residuals Management

The proponent is responsible to ensure that the waste and residuals produced from processes such as sedimentation, filtration, backwash, and/or iron & manganese removal as well as startup, are to be disposed of in line with MECP Guidelines. If there is no Communal Wastewater System or Sanitary Sewer that can be connected to, the proponent must consider options for the residuals to be stored on site for intermittent hauling. Other options include:

- Disposal to Sanitary Sewer –Disposal to a sanitary sewer must take into account the effluent quality and the available capacity of the wastewater system.
- Land application when permitted
- Disposal at Regional Water Resource Recovery Facility – The proponent must provide effluent flow and quality data to obtain approval.

These options require residuals to be treated so that they are suitable for application/disposal subject to the Region's approval and meeting all applicable regulatory requirements.

2.6 Water Treatment Plant Design (continued)

2.6.5: Reservoirs and Elevated Tanks

The proponent is responsible to ensure that there is sufficient treated water storage to provide redundancy and security of supply. **Table 9** shall be used to determine the treated water storage volume required for the communal water system if fire protection is provided.

Storage Volume = A + B + C

Table 9: Storage Volume Requirements

Variable	Definition	Description
A	Fire Storage	The volume required for fire fighting as defined by the Fire Underwriter's Survey Guidelines.
B	Balancing Storage	The storage required to meet the diurnal variation of the maximum day condition, equal to 25% Maximum Day Demand.
C	Emergency Storage	The additional volume for emergency event (prolonged power loss, watermain breaks, other unexpected events) – 25% of A + B

When fire protection is not provided, the following formula shall be used:

Storage Volume = 0.25 ·MDD + 0.4 ·ADD

When fire protection is provided, the proponent can consider pumped storage or elevated storage. Elevated storage shall be sized such that they can supply, in combination with the pumps at the treatment plant, enough flow and pressure to meet maximum day demands plus fire flows for the fire duration.

The maximum variation between high and low levels in elevated tanks shall be such that the normal pressures in the distribution system do not go above 700 kPa (100 psi) nor below 275 kPa (40 psi) during normal demand periods. The normal operating pressure in water distribution systems shall generally be in the range of 350 kPa to 480 kPa (50 to 70 psi) under maximum daily flow. Pressures as low as 140 kPa (20 psi) may be acceptable when fire demands are experienced in conjunction with maximum day consumption rates. When static pressures exceed 700 kPa (100 psi), pressure reducing devices shall be provided on mains or service connections in the distribution system. (MECP, 2008).

Refer to **Section 2.4** for the approach to determine fire flows. As a minimum, elevated tanks (if provided) shall be sized to provide sufficient balancing storage to reduce pumping between 7 AM to 7 PM during average day demand conditions.

If an inground/onground reservoir is provided, the pumping system shall be sized to supply the full range of water demands efficiently and reliably in the system. The system shall be sized to provide firm capacity (with the largest pump out of service) to meet maximum day plus fire demands (if fire protection is provided) or peak hour demands, whichever is greater.

2.6 Water Treatment Plant Design (continued)

2.6.5: Reservoirs and Elevated Tanks (continued)

Sizing of treated water storage shall take into consideration the requirements to maintain acceptable chlorine residuals in the reservoir/elevated tank. Care shall be taken to avoid oversizing and/or providing provisions for chlorine addition at the reservoir/elevated tank. The sizing of storage capacity shall be balanced with the risk of disinfection by-products formation. Provision for re-circulation/mixing shall be provided, as well as the ability to dose chlorine to maintain residuals in the reservoirs/elevated tanks.

2.6.6: Treated Water Pumping

The proponent is to ensure that the treated water pumps have firm capacity (with the largest pump out of service) to meet the water demand requirements under all operating conditions as described in **Section 2.4**. The proponent shall follow all applicable design guidelines and regulatory requirements.

If inground/onground reservoirs are provided, the pumps shall be sized to meet maximum day demands plus fire flows, if applicable. The use of jockey pumps is recommended to improve operating efficiency during low flow conditions.

2.6.7: Standby Power

Emergency power will be provided by a permanent generator set. Standby power shall be sized to supply all treatment process equipment and facility lighting.

Fuel provisions for the standby power shall be provided at minimum for 48 for emergency circumstances.

Standby power systems to be designed in accordance with TSSA requirements.

2.6.8: Monitoring and Controls

The communal water system must be designed for automatic operation so the system can be controlled and monitored with minimal operator intervention. The system shall incorporate an alarm system, with automatic shutdown and interlocks in the case of failure of critical processes to prevent unsafe operation and to prevent avoid the production and/or distribution of inadequately treated water. The communal system must include provisions for safe and reliable operation under emergency, maintenance or abnormal circumstances.

To ensure the integrity of the communal water treatment system, a security system must be installed. Designers should reference industry standards to ensure adequate security, including cyber security, measures are in place.

2.7 Watermain Design

Watermain design shall follow local municipality's design standards and MECP design guidelines.

3.0 Communal Wastewater Design Standards

3.1: Treatment Requirements

3.11: Effluent Criteria

The proponent is responsible to ensure that the communal wastewater system meets the effluent criteria set forth by the MECP through an Environmental Compliance Approval (ECA). Effluent objectives and limits are dependent on the receiving water effluent is being discharged to and are set at the discretion of the MECP. **Table 10** below shows surface and subsurface effluent objectives for BOD5, Total Suspended Solids (TSS), Total Phosphorus (TP), and Total Ammonia Nitrogen (TAN), Total Inorganic Nitrogen (TIN), pH level, and E. coli typically set for communal wastewater systems. It should be noted, however, that discharge objectives and limits will be defined by the MECP subject to the findings of an assimilative capacity study.

Table 10 shows typical effluent design objectives.

Table 10: Typical effluent objectives for WWTPs with surface and subsurface discharge

Constituent	Surface Discharge Objectives (mg/L)	Subsurface Discharge Objectives (mg/L)
BOD_5	5	5
TSS	5	5
TP	0.2[a]	0.5
TAN	0.3 (summer)[a] 1.0 winter	-[a]
TIN/TN	-[a]	4.0[b]
pH	6.5 to 8.5	6.5 to 8.5
E. coli	100	-

Notes:
a) To be confirmed based on an assimilative capacity study
b) To be confirmed based on maintaining a maximum concentration of 2.5 mg/L in groundwater at the property boundary

3.1: Treatment Requirements (continued)

3.11: Effluent Criteria (continued)

Table 11 shows typical effluent design limits.

Table 11: Typical effluent limits for WWTPs with surface and subsurface discharge

Constituent	Surface Discharge Objectives (mg/L)	Subsurface Discharge Objectives (mg/L)
BOD_5	10	10
TSS	10	10
TP	0.3[c]	1.0
TAN	0.5 (summer)[c] 2.0 winter	-[c]
TIN/TN	-[c]	5.0[d]
pH	6.0 to 9.5	6.0 to 9.5
E. coli	200	-

Notes:
c) To be confirmed based on an assimilative capacity study
d) To be confirmed based on maintaining a maximum concentration of 2.5 mg/L in groundwater at the property boundary

3.2 Approval and Permits

The proponent is responsible to apply for any approvals and permits required by the Regional Municipality of York, the local municipality, the MECP, the conservation authority and any other relevant regulatory agency. Approvals and permits required include but are not limited to those listed in **Table 12**.

3.2: Approval and Permits (continued)

Table 12: Communal Wastewater System Requirements, Approvals and Permits

Level of Requirement	Applicable Approval
Approval	Environmental Compliance Approval (ECA) for both Sewage Works and Air & Noise from the MECP
Municipality	Building Permit Site Plan Approval
Regional Municipality of York	Municipal Responsibility Agreement (MRA) Source Water Protection Permit
Conservation Authority	Conservation authority permit
Other	TSSA, ESA permits

3.2.1: Environmental Compliance Approval Application

MECP requires the following be completed by the Proponent prior to submitting an ECA application for a communal wastewater system:

1. Pre-Submission Consultation Meeting
2. Proof of Indigenous Consultation
3. Municipal Responsibility Agreement (MRA) with York Region

3.2.2: Pre-Submission Consultation Meeting

A pre-submission consultation meeting requested by the proponent is to be held with the MECP local district office prior to submitting an ECA application. The purpose of the meeting is to discuss any possible environmental and public health impact of the proposed wastewater system on the surrounding area.

The proponent shall facilitate a meeting with the Region and the local municipality in preparation for the meeting with the MECP.

Following the meeting, effluent criteria will be defined by the MECP based on the type of discharge (subsurface vs. surface) and the location of wastewater system. Technical studies and assessments to be completed as part of the application will be assigned by the MECP. Possible studies required may include but are not limited to:

- Surface Water/Groundwater Impact Assessments
- Environmental Impact Study
- Agricultural Impact Assessment (if applicable)
- Hydrogeological Assessments
- Assimilative Capacity Studies
- Aquatic Impact Studies
- Air and Noise Studies

3.2: Approval and Permits (continued)

3.2.2: Pre-Submission Consultation Meeting (continued)

Studies and assessments that may be required in support of the ECA application depend on the proposed wastewater system's proximity to environmental features, current or potential drinking water supplies, and residents. For example, if a subsurface discharge is proposed via a leaching bed, which is close to a surface water body, the studies required for a surface water discharge would be required.

The proponent must demonstrate that the proposed wastewater system is able to meet effluent quality limits set by the MECP.

3.2.3: Proof of Indigenous Consultation

The proponent must conduct indigenous consultation prior to the submission of an ECA application. The indigenous communities in the vicinity of the development area may require additional studies to be completed, including an archeological assessment. The MECP will determine whether further efforts are required prior to submitting an ECA application.

3.2.4: Municipality Responsibility Agreement

As a condition to approve a communal wastewater system, the Region will be requested by the MECP to enter into a legal Municipal Responsibility Agreement (MRA) with the developer/proponent. The MRA shall include provisions for operation and maintenance of the communal system, the action(s) to be undertaken by the Region in the event of default, and the provision of up-front secured costs.

3.2.5: Design Criteria

The proponent is responsible to estimate design flows, peaking factors, and diurnal patterns that will be used for sizing of the wastewater treatment plant. The proponent shall rely on data from similar systems in Ontario to estimate per capita wastewater flows. In the absence of data, the proponent shall use the design criteria defined in the local municipality's design standards and those included in the MECP Sewage Works Guidelines (MECP, 2008).

Design flows shall take into consideration potential infiltration and inflow in the collection system and residuals produced as part of the water treatment process.

The wastewater design criteria shall be consistent to those adopted for the communal water system (if applicable).

3.3: Submittals

To ensure that the communal wastewater system meets all regulatory and design criteria, the proponent is responsible in submitting documentation to the Region at several stages of the design process, as outlined in the sections below.

3.3: Submittals (continued)

3.3.1: Pre-Design (30% Design)

The proponent shall prepare a Pre-Design Report/Design Brief describing the design of the communal wastewater treatment system. The Report shall include but not be limited to:

1. Design influent flow rates and characteristics
2. Discharge location and characterization of receiving water body including an Assimilative Capacity Study
3. Design effluent criteria
4. A description of the wastewater treatment system, including schematic drawings of the treatment process and specification of main treatment equipment and include important treatment equipment information.
5. Provide a description of the features incorporated in the design to ensure system reliability under normal, maintenance, and emergency operating conditions.
6. Describe operational and maintenance, monitoring and compliance reporting requirements.
7. This submission shall include draft Permit Applications including associated reporting and supporting technical documentation.

As part of the submission, the proponent must include the following drawings:

- Conceptual Layout
- Building & Architectural Design
- Structural Design
- Building Mechanical Design
- Electrical Design
- Process Design
- Process Flow Diagrams, Hydraulic Profiles, Process and Instrumentation Diagrams
- Ancillary Systems

3.3.2: 90% Detailed Design

This submission shall include an updated Design Brief, engineering specifications, draft Process Control Narrative, and draft Operations and Maintenance Manual, and the drawings listed in **Table 13**, as applicable.

3.3: Submittals (continued)

3.3.2: 90% Detailed Design (continued)

Table 13: Required Drawings for 90% Detailed Design Submission - Communal Wastewater Systems

Disipline	Required Drawings
General	• Drawings List • Site Survey • Site Plan • Site Service Connections • Fire Protection System Site Plan and Schematic
Architectural	• Site and Building Renderings • Exterior Details • Floor Plans, Elevations and Cross Sections • Building Layout Plans • Process Equipment Locations/Orientation • Details
Structural	• Foundation Detail • Roof Design • Details
Civil	• Grading, drainage and stormwater management • Landscaping including Tree/Shrub Planting Details • Construction Staging • Yard piping including sewers and forcemains • Erosion and Sediment Control
Mechanical	• Equipment Schematics • Lifting Equipment, as required • HVAC System

3.3: Submittals (continued)

3.3.2: 90% Detailed Design (continued)

Table 13: Required Drawings for 90% Detailed Design Submission - Communal Wastewater Systems (cont.)

Disipline	Required Drawings
Electrical	• Single Line Diagrams • Site Power Supply/Distribution • Single-line MCC Drawings • Control Schematics • Electrical Enclosures
Process	• Process Flow Diagrams • Hydraulic Profile
Instrumentation & Control (I & C)	• I & C Legend • Process & Instrumentation Diagrams • SCADA Network Architecture • I & C Details
Utility Coordination	• Updated Base Plan • Utility Drawings • Relocation Plans
Property Requirements	• Property Plan • Legal Survey

3.3.3: Final Submissions

Upon commissioning of the system, the Proponent shall provide the following:

- As-built drawings, O&M manuals, Process Control Narratives, shop drawings and final design reports
- Asset Management Plan and Spare Parts List
- Permits and Approvals
- Contact information for the Operating Authority staff retained for Operation of Proposed System
- Details on frequency of sludge hauling from site and contingency plans

3.3: Submittals (continued)

3.3.4: Collection System

The collection system that will convey wastewater to the treatment plant must be designed with the regulations of the municipality where the system will be built.

3.3.5: Wastewater Treatment Design

At a minimum, the treatment plant must incorporate the following treatment processes:

- Screening
- Grit Removal
- Chemically Assisted Secondary Treatment
- Disinfection
- Sludge Storage and Management

Treatment process requirements shall be defined based on the effluent design objectives. Therefore, in some cases filtration may be required. All treatment processes are to be designed in full conformance with MECP guidelines.

The wastewater treatment plant processes shall be designed to provide adequate redundancy relying on the concept of firm capacity to avoid bypass events. The wastewater facility shall be designed with redundancy such that the treatment system can remain in operation during process shutdowns for maintenance activities.

Table 14 provides the firm capacity design basis that shall be used for sizing of the various treatment processes.

Table 14: Firm Capacity Design Basis for Various Wastewater Processes

Process	Firm Capacity Design Basis	Comments
Influent Pumping Stations	Peak Instantaneous Flow	As per MECP Guidelines (MECP, 2008)
Screening	Peak Instantaneous Flow	As per MECP Guidelines (MECP, 2008)
Grit Removal	Peak Hourly Flow	As per MECP Guidelines (MECP, 2008)
Equalization (if applicable)	Peak Hourly Flow and Maximum Day	Volume required to attenuate flows from peak hourly flows to maximum day for a period of at least 2 hours at a minimum
Aeration - with nitrification	Average Daily BOD5 loading (based on Average Daily Flow), Peak Daily TKN Loading (based on Peak Daily Flow)	As per MECP Guidelines (MECP, 2008). When sizing aeration systems, oxygen recovery through denitrification can be considered only for systems designed to denitrify.

3.3: Submittals (continued)

3.3.5: Wastewater Treatment Design (continued)

Table 14: Firm Capacity Design Basis for Various Wastewater Processes (continued)

Process	Firm Capacity Design Basis	Comments
Secondary Clarifiers (if applicable)	Target Surface Overflow Rate and Solids Loading Rate at Peak Hour Flow Design Peak Hourly Flow, Peak Daily Solids Loading	As per MECP Guidelines (MECP, 2008)
Filtration	Peak Hourly Flow (if no equalization is provided), Maximum Day Flow (if equalization is provided)	As per MECP Guidelines (MECP, 2008)
Disinfection	Peak Hourly Flow (if no equalization is provided), Maximum Day Flow (if equalization is provided)	As per MECP Guidelines (MECP, 2008)
Outfall (if applicable)	Peak Instantaneous Flow	As per MECP Guidelines (MECP, 2008)
Infiltration System (if applicable)	Peak Hourly Flow (if no equalization is provided), Maximum Day Flow (if equalization is provided)	Section 8 of the Ontario Building Code
Aerated Sludge Storage	Maximum Monthly Mass Loading and Flow Rates	Sufficient storage shall be provided to account for sludge haulage restrictions. If sludge cannot be hauled year-round, MECP Guidelines for stabilization and storage apply.

3.3: Submittals (continued)

3.3.6: Site Selection

Site selection shall consider the following factors as applicable, per section 8.1 of MECP's Guidelines (MECP, 2008):

- The wastewater treatment plant shall be at least 250 m away from drinking water sources, surface water intakes and groundwater wells
- Adequacy of separation from residential areas or other non-compatible land uses
- Noise and odour considerations
- Optimum location of the plant with regard to the location of the receiving water body and the area to be serviced
- Susceptibility of the site to flooding
- Minimizing adverse environmental impact both during construction and operation of the facility
- Assimilation capacity of receiving water body
- Suitability of site with respect to access to receiving body of water or other means of treated sewage effluent disposal
- Acceptability of site with respect to sludge disposal/utilization options on site or access to areas off site
- If constructing adjacent to a shoreline, suitable measures would be necessary to prevent erosion and to protect structures from potential wave action or ice-piling

3.3.7: Solids Management

The communal wastewater treatment system shall include sufficient sludge storage capacity. It is the proponent's responsibility to add a truck loading facility for the easy access for periodic hauling off-site. At minimum, the solids storage facility shall be designed to hold 1-week worth of sludge. The proponent is responsible for contracting a sludge hauling firm to transport and adequately dispose of sludge.

The design should include provisions to thicken the sludge to reduce the volume to be hauled away.

3.3.8: Standby Power

A permanent standby power generator shall be provided. Standby power shall be connected to all critical process equipment and facility lighting.

Fuel provisions for the standby power shall be provided at minimum for 48 hours for emergency circumstances.

Standby power systems to be designed in accordance with TSSA requirements.

3.3.9: Monitoring and Controls

The communal water system must be designed for automatic operation so the system can be controlled and monitored with minimal operator intervention. The system shall incorporate an alarm system, with automatic shutdown and interlocks in the case of failure of critical processes to prevent unsafe operation and to prevent avoid the production and/or distribution of inadequately treated water. The communal system must include provisions for safe and reliable operation under emergency, maintenance or abnormal circumstances.

To ensure the integrity of the communal water treatment system, a security system must be installed.

3.3: Submittals (continued)

3.3.10: Odour Control

To minimize the impact of the communal wastewater systems odours to residents, an odour control system shall be provided. An Emission Summary and Dispersion Modelling (ESDM) report shall be completed documenting appropriate odour control measures to be incorporated in the design.

3.3.11: Site Security

To ensure the integrity of the communal water treatment system, a security system shall be installed.

4.0 References

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APPENDIX C: Groundwater Development and Wellhouse Design Guidelines

Note:

Appendix C is currently in draft form and is available upon request. Please contact developmentservices@york.ca, attention: Program Manager Water and Wastewater Service Planning and Agreements at to obtain a copy, if required for the proposed development as outlined in these technical standards.

A finalized version of the Groundwater Development and Wellhouse Design will be added to this document once finalized.