777 Bay Street, 12th Floor
Toronto, Ontario, M5G 2E5

T: 416 585 4234
W: ontario.ca/buildingcode/

777, rue Bay, 12e étage
Toronto, Ontario, M5G 2E5

T: 416 585 4234
W: ontario.ca/buildingcode/

Ontario
Building Materials Evaluation Commission
Commission d'évaluation des matériaux de construction

BMEC AUTHORIZATION: 25-07-425
Eljen™ GSF System

Date of Authorization: **July 30, 2025**
Date of Expiry[1]: **July 30, 2030**

1. Applicant

Eljen Corporation
90 Meadow Road
Windsor, CT
USA, 06095

Tel: 800-444-1359
Web: www.eljen.com

2. Manufacturing Facility

Eljen™ GSF Modules
Eljen Corporation
90 Meadow Road
Windsor, CT
USA 06095

Engineering and Design
Enviro-STEP Technologies
320 du Nickel
Quebec City, Quebec
Canada G2N 2C9

Tel: 877 925-7496
Web: www.enviro-step.ca

3. Authorization

The Eljen™ GSF System primarily consists of a septic tank, an effluent filter, a distribution device, distribution piping, the Eljen™ GSF A-42 modules, an anti-siltation fabric, and a layer of specified sand. The Eljen™ GSF System can be installed in-ground, partially raised, or fully raised.

The Eljen™ GSF System is authorized as a combined treatment and dispersal system. This authorization is not an approval for the use of the Eljen™ GSF System as a

1 This Authorization expires on the date shown. It is the responsibility of Authorization holders to make a complete application considering the time for review and complexity of the new application.

treatment unit, where treatment units are permitted for use with Class 4 sewage systems.

Additional descriptive information is provided in documents supplied by the Applicant which are listed in Appendix A.

Reports and assessments provided by the Applicant demonstrate that if Eljen™ GSF System is manufactured, designed, constructed, installed, operated, and maintained in accordance with the manufacturer's instructions and limitations, and the specific terms and conditions stated in this authorization, the use of the Eljen™ GSF System shall be deemed to not be a contravention of Section 8.6. “Class 4 Sewage System” and Section 8.7. “Leaching Beds” of Division B of the Building Code.

All other requirements pertaining to the manufacture, design, construction, testing, and installation are subject to the requirements of the Building Code, and subject to the following terms and conditions contained below.

4. Specific Terms and Conditions

4.1. General

4.1.1. This Authorization is valid only for Eljen Corporation’s Eljen™ GSF System;

4.2. Definitions

4.2.1. Raised or Partially Raised means a sewage system in which any part of the system is above the natural ground elevation;

4.2.2. Vertical Separation means the depth of unsaturated soil below the system, as measured from the bottom of the Eljen™ GSF System Specified Sand at a minimum of 150 mm below the Eljen™ GSF System A-42 modules, to a limiting layer such as high groundwater table, bedrock, or soil with a percolation time (T) less than 1 min/cm or greater than 50 min/cm; and

4.2.3. Eljen™ GSF System Specified Sand is defined in Section 4.4.7 of this Authorization.

4.3. Installation Requirements

4.3.1. Information required by the Chief Building Official/ Principal Authority as per Sentence 1.3.5.4.(1) of Division C of the Building Code shall be provided prior to the start of construction;

4.3.2. Eljen™ GSF System shall be installed as per the manufacturer’s installation instructions found in the “Eljen™ GSF System, Ontario: Design and Installation Manual”, dated July 2025;

4.3.3. Eljen Corporation's installation manual "Eljen™ GSF System, Ontario: Design and Installation Manual", dated July 2025, shall be placed on site and remain on site during the installation of the Eljen™ GSF System;

4.3.4. No person shall operate Eljen™ GSF System unless the person has entered into an agreement whereby the servicing and maintenance of the Eljen™ GSF System and its related components will be carried out by a person who is authorized by the manufacturer to service and maintain Eljen™ GSF System and who shall:

Inspection

4.3.4.1. Conduct and record at least once during every twelve (12) month period, an inspection and servicing, as specified by the Applicant, Eljen Corporation and Enviro-STEP technologies, "Eljen™ GSF System Maintenance Agreement – Ontario", dated February 2025; and

Testing

4.3.4.2. Test in accordance with the requirements set out in Article 8.9.2.4. "Sampling of Treatment Units" of Division B of the Building Code;

4.3.5. All sampling results must be submitted to the Eljen Corporation. Eljen Corporation shall retain records of the sampling test results for each Eljen™ GSF System received for a period of ten (10) years and shall promptly forward copies of those records to the Principal Authority, when requested.

4.4. System Requirements

4.4.1. There are seven (7) main components to Eljen™ GSF System:

1. Septic tank;
2. Effluent filter;
3. Distribution System;
4. Eljen™ GSF A-42 modules;
5. Anti-Siltation Fabric;
6. Eljen™ Specified Sand; and
7. Sampling device.

4.4.2. The Septic Tank – The Eljen™ GSF System shall be designed to receive septic tank effluent. All raw sewage shall enter into a septic tank sized in accordance with Article 8.2.2.3. "Septic Tanks" of Division B of the Building Code;

4.4.3. The Effluent Filter – An effluent filter, meeting the requirements of Article 8.6.2.1. "Septic Tank Systems" of Division B of the Building Code, shall be connected to the outlet of the septic tank;

4.4.4. The Distribution Device – The distribution system may include a distribution box and flow equalizers, a combination of distribution valve and distribution box, a network of perforated PVC pipe, or a low-pressure distribution system (details provided in design and installation manual);

4.4.5. The Eljen™ GSF A-42 modules

4.4.5.1. The Eljen™ GSF A-42 module consists of a corrugated cuspated plastic core and geotextile fabric shaped as an accordion to form a mattress 1200 mm long x 600 mm wide x 175 mm high;

4.4.5.2. The Eljen™ GSF A-42 modules shall be placed level, end to end, or sloped at up to 1% with the white demarcation line facing up, and form rows:

4.4.5.2.1. Each row of Eljen™ GSF A-42 shall be fed with a perforated PVC pipe centred over the modules, and this pipe shall be secured over the middle of each module using a u-shaped clamp;

4.4.5.2.2. When multiple rows are used, each row of the Eljen™ GSF A-42 modules are to be spaced over the receiving infiltrative surface, subject to:

1) adjustments to ensure minimum clearances are provided in accordance with Table 8.2.1.6.B of Division B of the Building Code and
2) minimum clearance and separation distances provided for the Eljen™ GSF modules as detailed in 4.5.3.2 and 4.5.3.3.; and

4.4.5.2.3. The Eljen™ GSF A-42 modules shall not be cut;

4.4.6. Anti-Siltation Fabric

4.4.6.1. The proprietary anti-siltation fabric shall be spread lengthwise over the perforated PVC pipe, and down the sides of the Eljen™ GSF A-42 modules;

4.4.6.2. The proprietary anti-siltation fabric shall be held in place using the Eljen™ Specified Sand along the sides of the modules;

4.4.6.3. The anti-siltation fabric shall drape vertically over the pipe and must neither block the holes nor be stretched from the top of the pipe to the outside edge of the modules;

4.4.6.4. When modules or a group of modules are placed end to end, with a space in between, the fabric shall be cut and allowed to drape over and protect the ends of modules; and

4.4.7. The Eljen™ System Specified Sand and Imported Sand

4.4.7.1. All Eljen™ GSF System configurations require Eljen Specified Sand to be located below and to the sides of each of the Eljen™ GSF modules, as detailed in 4.4.7.2.;

4.4.7.2. The Specified Sand shall be provided to ensure a minimum of:

4.4.7.2.1. 150 mm under each Eljen™ GSF module;
4.4.7.2.2. 150 mm beside each Eljen™ GSF module;
4.4.7.2.3. 150 mm around the perimeter and end of each row or group of modules;
4.4.7.2.4. be the same height of the Eljen™ GSF modules, and
4.4.7.2.5. meet the sand requirements set out in ASTM C33 “Standard Specification for Concrete Aggregates”, as set out in Table 4.4.7.2.6. below:

Table 4.4.7.2.6.

Eljen™ GSF Specified Sand Requirements *Excerpt from ASTM C33 “Standard Specification for Concrete Aggregates”*		
Sieve Size	**Sieve Square Opening**	**Specification % Passing**
0.375”	9.5 mm	100.0
#4	4.75 mm	95.0 – 100.0
#8	2.36 mm	80.0 – 100.0
#16	1.18 mm	50.0 – 85.0
#30	600 µm	25.0 – 60.0
#50	300 µm	5.0 – 30.0
#100	150 µm	0.0 – 10.0
#200	75 µm	0.0 – 5.0
Request a sieve analysis from the material supplier to confirm that the system sand meets the specifications requirements listed above		

4.4.7.3. Following installation of the Specified Sand for each row of the Eljen™ GSF modules, imported sand or Specified Sand must be used to fill in the area between the rows of the Eljen™ GSF modules (c/w Specified Sand as per above Item 4.4.7.2.), to cover the complete dispersal surface / Absorption Bed area. The thickness of imported sand / Specified Sand between the rows of the Eljen™ GSF modules / Specified Sand shall be a minimum of 330 mm;

4.4.7.4. The imported sand must meet all the following requirements:

4.4.7.4.1. A percolation time in the range of 6 to 10 min / cm;
4.4.7.4.2. Not have more than 5% fines passing a 0.074 mm (#200) sieve;

4.4.7.5. For each Eljen™ GSF system project, the system installer is to receive a copy of the sieve analysis and Specified Sand analyzer results, and sieve analysis for the imported sand (if used), and these results are to be available upon request to the Principal Authority and the operator (homeowner);

4.4.8. The sampling device shall be as described in “Eljen™ GSF System, Ontario: Design and Installation Manual”, dated July 2025;

4.5. Design Requirements

4.5.1. *Vertical Separation*

4.5.1.1. The percolation time (T) of the native soil shall determine the minimum vertical distance from the bottom of the Eljen™ GSF Specified Sand to the high ground water table, bedrock, or soil with a percolation time (T) less than 1 min/cm or greater than 50 min/cm:

4.5.1.1.1. if T is less than or equal to 6 min/cm, or greater than 50 min/cm, then the vertical separation distance shall be at least 600 mm; or

4.5.1.1.2. if T is greater than 6 min/cm, or less than or equal to 50 min/cm, then the vertical separation shall be at least 450 mm;

4.5.2. *Number of Eljen™ GSF A-42 Modules Required*

4.5.2.1. Each Eljen™ GSF A-42 Module has the capacity to treat 95 L per day;

4.5.2.2. The formula to determine the number of Eljen™ GSF modules required is: Q/95;

Where:

Q is the total daily design sanitary sewage flow in litres; and

4.5.2.3. The number of Eljen™ GSF modules must be rounded up at all times.

4.5.3. *Modules Spacing Requirements*

4.5.3.1. The Eljen™ GSF A-42 modules shall be spaced using the following criteria:

4.5.3.1.1. The modules shall be placed with the white demarcation line up;

4.5.3.1.2. The modules are distributed within the Dispersal / Absorption Bed, subject to:

1) adjustments to ensure minimum clearances are provided in accordance with Article 8.2.1.6 of Division B of the Building Code;
2) minimum clearance and separation distances provided for the Eljen™ GSF Modules as detailed in 4.5.3.2. and 4.5.3.3.;
3) where there is a distance of greater than 3 m to the edge of the dispersal bed, the base cut shall be excavated to provide a 2% slope away from the adjacent module row;

4.5.3.2. The module rows shall be spaced a minimum of 300 mm, calculated side to side;

4.5.3.3. The module rows shall start and finish with a minimum separation of 150 mm of Specified Sand; and

4.5.3.4. The modules may be placed on an angle to follow site contours;

4.5.4. *Dispersal / Absorption Bed Surface (A) – In-ground, partially raised, or above ground*

4.5.4.1. The area to be covered by the specified sand / imported sand in the Eljen™ GSF system shall be equal or larger than the area determined by the formula:

$$A = QT/400$$

Where:

A is the area of contact in m_2;
T is the percolation time of the underlying native soil in min/cm to a maximum of 50; and
Q is the total daily design sanitary sewage flow in litres; and

4.5.4.1.1. All Eljen™ GSF System designs shall meet the minimum spacing requirements of 4.5.3. above;

4.5.4.1.2. Where the area determined using QT/400 is larger than that required by the minimum spacing required by 4.5.3. above, the Eljen™ GSF modules can be distributed over the area of the Dispersal / Absorption Bed subject to meeting the requirements of 4.5.3.2.;

4.5.4.1.3. The Dispersal / Absorption Bed surface shall have the long dimension perpendicular to the direction in which effluent entering the soil will move horizontally; and

4.5.4.1.4. When the native soil has a T greater than 50 min/cm, the Eljen™ GSF System shall be raised;

4.5.5. *Other*

4.5.5.1. The Eljen™ GSF System shall be designed, installed, constructed, operated, and maintained using these criteria:

4.5.5.1.1. Eljen™ GSF System shall not be installed in an area where the original ground has a slope greater than 25%;

4.5.5.1.2. Where the Eljen™ GSF System is fed by gravity, each row shall not exceed a maximum length of 18 m;

4.5.5.1.3. Where the Eljen™ GSF System is fed by low pressure system, each row shall not exceed a maximum length of 30 m;

4.5.5.1.4. All Eljen™ GSF Systems shall be vented as per the “Eljen™ GSF System, Ontario: Design and Installation Manual”, dated July 2025;

4.5.5.1.5. Except when used with a “Low Pressure Distribution System”, Eljen™ GSF Systems that are dosed by pumping shall use a velocity reducer located ahead of the standard distribution box or surge box. On a system that is fed strictly by gravity, only the use of surge boxes is permitted;

4.5.5.1.6. The Eljen™ GSF System shall have a sampling device, for the purpose of sampling effluent, and it shall be installed as described in the “Eljen™ GSF System, Ontario: Design and Installation Manual”, dated July 2025;

4.5.5.1.7. The site shall be protected from erosion by proper grading, mulching, seeding, and runoff control;

4.5.5.1.8. No reduction in size of the Eljen™ GSF System shall be permitted with the use of a treatment device beyond that of a septic tank;

4.5.5.1.9. The Eljen™ GSF System, measured from the centre of the pipes, shall meet the setback requirements outlined in Article 8.2.1.4 of Division B, of the Building Code;

4.5.5.1.10. The distances set out in column 2 of Table 8.2.1.6.B of Division B of the Building Code shall be increased by twice the height that the absorption bed is raised above the original grade; and

4.5.5.1.11. The distribution pipe in the Eljen™ GSF system are to be provided with a means of detection as detailed in Article 8.7.2.2 and Table 8.2.1.6.B of Division B of the Building Code.

5. General Conditions

5.1. The use of the Eljen™ GSF system as described in Section 3. and the Specific Terms and Conditions set out in Section 4. must comply with:

(a) the *Building Code Act, 1992,* (the “Act”) as amended or re-enacted,
(b) except as specifically authorized herein, the Building Code as amended or remade, and
(c) all other applicable legislation.

5.2. A copy of this Authorization shall accompany each application for a building permit and shall be maintained on the site of the construction with the building permit.

5.3. The Applicant specified in Section 1. shall promptly notify the BMEC of:

(a) the failure of the Applicant to comply with any of the Specific Terms and Conditions set out in Section 4.,
(b) the failure of the material, system or building design that is the subject matter of this Authorization to
    i. comply with any of the Specific Terms and Conditions set out in Section 4., or
    ii. provide a satisfactory level of performance in situ, or
(c) the occurrence of any of the events described in General Conditions 5.4.(a), (b), or (e).

5.4. The BMEC may amend or revoke this Authorization at any time on its own initiative, or at the request of the Applicant specified in Section 1. Without restricting the foregoing, the BMEC may amend or revoke this Authorization where it determines that:

(a) any change has been made to:
    (i) the name of the Applicant specified in Section 1.,
    (ii) the address or other contact name information of the Applicant specified in Section 1.,
    (iii) the ownership of the Applicant specified in Section 2.,
    (iv) the manufacturing facilities specified in Section 2,
    (v) the material, system, or building design that is the subject matter of this Authorization, or
    (vi) a test method relevant to this Authorization,

(b) the Applicant has failed to comply with any of the terms and conditions set out in this Authorization,
(c) in the opinion of the BMEC, the use of the material, system or building design authorized herein provides an unsatisfactory level of performance in situ,
(d) in the opinion of the BMEC, amendment or revocation of the Authorization is appropriate on the basis of potential danger to public health and safety,
(e) the *Act* or Building Code has been amended, re-enacted or remade in a manner relevant to this Authorization,
(f) this Authorization was issued on mistaken, false or incorrect information, or
(g) a revision of an editorial nature is appropriate.

Dated at Toronto this 30th of July 2025

BUILDING MATERIALS EVALUATION COMMISSION

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CHAIR, BUILDING MATERIALS EVALUATION COMMISSION

attached – “Appendix A – Supporting Information

Appendix A – Supporting Information

The following is a list of the documents that were submitted and reviewed, but were not limited to:

1. Application letter, Enviro-STEP Technologies Inc., “Eljen GSF BMEC Authorization Application, dated April 7, 2025;
2. Application, Eljen Corporation, “Building Materials Evaluation Commission Application: The Eljen GSF System” as amended;
3. BNQ 3680-600 report, NSF International, “Onsite Residential Wastewater Treatment Technologies- BNQ 3680-600“, dated March 28, 2025;
4. Description report, Eljen Corporation, “Eljen GSF System – Combined Onsite Wastewater Treatment and Dispersal System”, dated March 2020;
5. Design and Installation Manual, Eljen Corporation, “Eljen GSF Combined Treatment and Dispersal System Ontario Design and Installation Manual Model-A42”, dated July 2025;
6. Engineer’s report, Gunnell Engineering Ltd., “Building Material Evaluation Commission Application for the Eljen GSF System Gunnell Engineering Ltd. Overview and Cover Letter, Our File No: D3808” dated April 10, 2025;
7. Field Sampling, Eljen Corporation, “ELJEN GSF Field Sampling Summary”, dated February 2025;
8. Final Report, NSF International, “NSF/ANSI Standard 40 – Residential Wastewater Treatment Systems” dated August 2015;
9. Listing, NSF International, “NSF/ANSI 40 Residential Wastewater Treatment Systems”, dated December 4, 2024;
10. Maintenance agreement, Eljen Corporation, “Ontario Maintenance agreement”, dated April 2025;
11. Maintenance procedure, Eljen Corporation, “Eljen GSF System Maintenance Procedure”, dated version 2025;
12. Owner’s Manual, Eljen Corporation, “Septic System Owner’s Manual”, dated April 2025;
13. Testing Report, Massachusetts Alternative Septic System Test Center, “Onsite Wastewater Technology Testing Report”, dated January 2014.