

Town of Southampton
Box 340
201 High Street
Southampton, Ontario
N0H 2T0

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

modifications to the existing Town of Southampton sewage treatment plant located at the northwest side of Edward Street between Louisa Street and Arthur Street in the Township of Saugeen as follows:

1. EXISTING SEWAGE TREATMENT PLANT

Inlet Works

A 0.4m diameter comminutor with a manually raked by-pass screen.

Aeration Tanks

Two (2) oxidation ditches, each with a ditch cross sectional area of approx. 13m^2 , each providing an aeration volume of approx. $1,300\text{m}^3$ (a total aeration volume of $2,600\text{m}^3$), together with one (1) cage rotor, approx. 0.7m dia. and 6m long in each oxidation ditch.

Final Clarifiers

Two (2) rectangular clarifiers, dimensions 4.3m wide x 14.6m long x 3.65m side water depth complete with flow distribution channel to the clarifiers, scum skimming and sludge collection and removal mechanisms, and effluent collection troughs.

Effluent Disinfection

Gas chlorination system for effluent disinfection comprising of chlorine gas cylinders, a chlorinator with a maximum capacity of 182 kg/d and a chlorine contact chamber.

Sludge Digestion and Sludge Storage Facilities

An aerobic sludge digester, Tank No. 1 with dimensions 6.4m x 9.1m x 3.4m having a digester volume of approx. 201m^3 ; two (2) interconnected sludge storage tanks, Tank No. 2 with dimensions 11.7m x 8.84m x 4.16m having an available storage volume of approx. 423m^3 and Tank No. 3 with dimensions 11.7m x 8.2m x 4.16m having an available storage volume of approx. 394m^3 , each equipped with diffusers and associated piping, a mechanical mixer (with provision for the addition a mixer in future), together with two (2) blowers, each having a rated capacity of 802.9 L/s at 101 kPa and 20°C and a discharge pressure of 152.6 kPa, a sludge transfer chamber equipped with two (2) submersible sludge transfer pumps, each rated at 0.92 L/s at a 15.7m TDH, a supernatant chamber equipped with two (2) submersible supernatant pumps, each rated 0.92 L/s at 15.7m TDH.

Phosphorus Removal Facilities

Phosphorus removal facilities consisting of a 22.7m³ capacity chemical storage tank housed with the chemical control room, together with two (2) chemical metering pumps, each capable of feeding upto 1.9 L/s with discharge piping to Manhole 'E' (ahead of the final clarifiers) and alternately to the influent structure.

Outfall Sewer

A 250mm diameter outfall sewer discharging to the Saugeen River.

II. Proposed Expansion and Modifications to the existing Sewage Treatment PlantFinal Clarifiers

Construction of two (2) final rectangular clarifiers with roof cover, each approx. 4.3m x 14.6m x 3.66m SWD, complete with scum skimming, sludge collection and removal mechanism;

Sludge Digestion and Storage Facilities

A two stage aerobic sludge digester (1st stage digester volume of 145m³ and 2nd stage digester volume of 70m³) with a sludge retention time of approx. 30 days, complete with a diffused aeration system, submersible mixers;

A sludge holding tank of dimensions 11m x 6m x 4.1m providing a sludge storage capacity of 270m³, complete with a diffused air system and submersible mixer;

An air blower for the aerobic sludge digester and the sludge storage tank.

Control Building

Expansion to the existing control building to accommodate 125 kW standby diesel engine generator set and fuel storage tank, washrooms, laboratory etc;

Installation of return sludge pumping equipment.

Modification to Existing Aeration Tanks

Construction of a baffle and the installation of submersible mixer in each of the two (2) existing oxidation ditches.

Effluent Disinfection

Decommissioning of the existing effluent disinfection facilities consisting of a gas chlorination system and the installation of ultra-violet (UV) disinfection system together with modifications to the existing chlorine contact chamber.

Miscellaneous Modifications

Modifications to existing sewage works as follows:

- construction of a roof cover to the two (2) existing clarifiers;
- installation of stainless steel slide gates within a concrete chamber to equally distribute effluent from the oxidation ditches to the clarifiers;
- modification to the influent piping and structure to the oxidation ditches;
- replacement of the existing effluent collection troughs in the existing clarifiers with adjustable fibreglass weir troughs;
- installation of control metering and proportional flow sampling devices;

together with associated appurtenances, yard piping, electrical and control systems, heating and ventilation, all in accordance with the Preliminary Engineering Report dated June 1994, prepared by Henderson, Paddon and Associates Limited.

You are hereby notified that this approval is issued subject to the following terms and conditions outlined below:

TERMS AND CONDITIONS

GENERAL

1. For the purpose of this Certificate of Approval:
 - a. "the Director" means any Ministry employee appointed by the Minister pursuant to Section 5 of the Ontario Water Resources Act;
 - b. "the Regional Director" means the Regional Director of the Southwestern Region of the Ministry of Environment and Energy;
 - c. "the District Manager" means the District Manager of the Owen Sound District Office of the Ministry of Environment and Energy's Southwestern Region;
 - d. "Certificate" means a Certificate of Approval issued in accordance with Section 53 of the Ontario Water Resources Act;
 - e. "Ministry" means the Ministry of Environment and Energy for the Province of Ontario;
 - f. "Owner" means Town of Southampton and includes its successors and assignees;

- g. "operating authority" means the Owner or the designated agent of the Owner;
- h. "average flow" means the total flow to the sewage works during the period of operation upon which the report is based, divided by the number of days in the period;
- i. "average monthly concentration" is the arithmetic mean of the concentrations of all daily discharges sampled or measured, or both, during the period of one month;
- j. "average annual concentration" is the arithmetic mean of the average monthly concentrations taken within a period of twelve (12) consecutive months;
- k. "average monthly or annual loading" is the value obtain by multiplying the average monthly or annual concentration with the average flow over the same period of time;
- l. "24 hour composite sample" means a sample collected over a time period of 24 consecutive hours. The sample shall be made up of at least 24 discrete samples taken approximately one hour apart with the volume of each sample being proportional to the sewage flow at the time the discrete sample is taken;
- m. "weekly sample" means a sample collected on a rotating day and time schedule within a one (1) week period to satisfactorily reflect the overall performance of the sewage works under all operating flow conditions;
- n. "grab sample" means an individual sample of sufficient size collected at a randomly selected time;
- o. "works" means the facility described in the application, this certificate and in the supporting documentation, to the extent approved by this certificate;
- p. "BOD₅" means five day carboneous biochemical oxygen demand measured in an unfiltered sample;
- q. "E Coli" refers to the thermally tolerant forms of Escherichia that can survive at 44.5 degrees Celsius;
- r. "geometric mean density" is the running geometric mean density for the sample results covering the period specified;
- s. "kg/d" means kilogram(s) per day;
- t. "kPa" means kilopascal(s);
- u. "kW" means kilowatt(s);

- v. "L/s" means litre(s) per second;
- w. "L/d" means litre(s) per day;
- x. "L/hour" means litre(s) per hour;
- y. "m" means metre(s);
- z. "mm" means millimetre(s);
- aa. "m²" means square metre(s);
- bb. "m³" means cubic metre(s);
- cc. "m³/d" means cubic metre(s) per day;
- dd. "mg/L" means milligram(s) per litre;

2. Requirements specified in this Certificate are minimum requirements under Section 53 of the Ontario Water Resources Act, and do not abrogate the need to take all steps to avoid violating the provisions of applicable legislation.
3. The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstances, is held invalid, the application of such requirement to other circumstances and the remainder of the Certificate shall not be affected thereby.
4. The Owner must ensure compliance with all the terms and conditions of this Certificate. Any non-compliance constitutes a violation of the Ontario Water Resources Act and is grounds for enforcement.
5. The Owner shall furnish to the Regional Director any information which the Regional Director may request pursuant to Section 60 of the Ontario Water Resources Act, and copies of any records required to be kept by this Certificate.
6. The Owner must forthwith on request allow Ministry authorized representatives including provincial officers to carry out inspections authorized by Sections 15, 15(2) or 15(3) of the Ontario Water Resources Act, Sections 156, 157 and 158 of the Environmental Protection Act or Sections 19 or 20 of the Pesticides Act of any place, other than any room actually used as a dwelling to which this Certificate of Approval relates.
7. The Owner shall take all reasonable steps to minimize any adverse impact to surface or ground waters resulting from non-compliance with the effluent requirements specified in this Certificate including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in non-compliance.

8. The Owner shall prepare and make available for inspection by the Ministry employees, upon request, a complete set of drawings within six (6) months of commissioning of the sewage works which drawings shall show the sewage works as constructed at that time.

A complete set of "as constructed drawings", incorporating any amendments made from time to time, shall be kept by the Owner at the Control Building of the sewage works as long as the sewage works is kept in operation.

9. The Owner shall notify the Director and the Regional Director in writing of any of the following changes within thirty (30) days of the change occurring:

- a. change of Owner or operating authority or both;
- b. change of address or address of the new Owner.

OPERATION AND MAINTENANCE

10. In order to assure continuous compliance with the effluent criteria set out in Condition No. 11 and generally all other terms and conditions of this Certificate, the Owner shall ensure compliance with the following Operation and Maintenance Conditions:

- a. The Owner shall ensure that at all times, the sewage works and related equipment and appurtenances which are installed or used to achieve compliance with this Certificate are properly operated and maintained. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training and adequate laboratory and process controls.
- b. The Owner shall ensure that contingency plans and procedures are established and adequate equipment and materials are available for dealing with emergency, upset conditions and equipment breakdowns in the sewage works, and spills or overflows of raw, partly treated sewage, sludge and chemicals into or out of the sewage works to prevent or minimize unacceptable gas and odour emissions or liquid discharges or both into the natural environment.
- c. The Owner shall establish notification procedures to be used to contact the Regional Director and other relevant authorities in the case of an emergency situation and the measures taken to deal with it.
- d. The Owner shall prepare an operations and maintenance manual prior to the commencement of regular operation of the sewage works and upon request shall make the manual available for inspection by Ministry personnel and shall upon request furnish a copy to the Ministry.

- e. The Owner shall establish complaint procedures for receiving and responding to complaints including a reporting system which records what steps were taken to determine the cause of complaint and corresponding measures taken to alleviate the cause and prevent its recurrence.

PERFORMANCE

11. Effluent Objectives

- a. The Owner shall design, construct and operate the sewage treatment works with the objective that the concentrations and loadings of the materials named below are achieved. The Director may review and amend the Certificate if the objectives are not met:

<u>Effluent Parameter</u>	<u>Average Annual Concentration (mg/L)</u>	<u>Average Annual Loading (kg/d)</u>
BOD ₅	20	60.8
Suspended Solids	20	60.8
Total Phosphorus as P	0.5*	1.5

(* The objective for Total Phosphorus as P shall be based on "average monthly concentrations".)

- b. The geometric mean density of E. Coli in effluent should not exceed 150 organisms per 100 ml for any calendar month.

12. Non-Compliance

- a. The sewage treatment plant shall be operated in such a manner and with such facilities that the concentrations and loadings of the materials named below as effluent parameters shall not be exceeded in the effluent from the plant. Any exceedance constitutes non-compliance with this Certificate.

<u>Effluent Parameter</u>	<u>Average Annual Concentration (mg/L)</u>	<u>Average Annual Loading (kg/d)</u>
BOD ₅	25	76.1
Suspended Solids	25	76.1
Total Phosphorus as P	1*	3

(*The non-compliance limit for Total Phosphorus as "P" shall be based on "average monthly concentrations".)

- b. The geometric mean density of E Coli in the effluent shall not exceed 200 organisms per 100 ml for any calendar month. Any exceedance constitutes non-compliance with this Certificate.
- 13. a. The sewage works has been approved to treat sewage at an average flow of 3,042 m³/d and a peak flow rate of 6,084 m³/d.
- b. For the purposes of this Certificate and Subsection 107 (3) of the Ontario Water Resources Act, the introduction of sewage flows in excess of the peak flow rate shown in subsection (a) is not approved under this Certificate.
- c. For the purposes of this Certificate and Subsection 107 (3) of the Ontario Water Resources Act, the introduction of sewage flows in excess of the average daily flow shown in subsection (a) for any consecutive period of time greater than one year is not approved under this Certificate.
- d. The Owner shall install, maintain and operate a sufficient number of flow measurement devices, calibrated at regular intervals not exceeding one year to ensure their accuracy to within plus or minus 5% of the full scale reading of the measuring devices, in order to measure:
 - i. the quantity of sewage being conveyed to and through the sewage treatment plant;
 - ii. the quantity of untreated sewage being bypassed to the disinfection facility.
- e. The flow data generated in accordance with subsection (d) above shall be deemed to be conclusive for the purposes of determining compliance with and enforcing this Certificate.
- 14. a. Any diversion of flow from any portion of the sewage works is prohibited, except:
 - i. when sewage flow is in excess of the peak flow rate specified in Condition No. 13 (a), or
 - ii. where it is unavoidable in preventing loss of life, danger to public health, personal injury or severe property damage, or
 - iii. where it is necessary for the purpose of essential maintenance of the sewage works to ensure their efficient operation, provided that the effluent requirements set out in Condition No. 11 will not be exceeded and the District Manager has given a prior written approval for the bypass, or
 - iv. where the Regional Director has specifically approved it in writing.

b.The Owner shall notify the District Manager:

i.for planned bypasses, at least 10 days prior to the date of the bypass or otherwise on the earliest date possible;

ii.for unplanned bypasses, forthwith;

iii.the notice in either case shall include information with respect to the anticipated adverse effects on the natural environment and the duration of the bypass.

c.The Owner shall record the time, location, duration and estimated quantity of each bypass event along with the reasons for the event.

MONITORING AND REPORTING

15.The operating authority shall carry out and maintain a routine sampling and analysis program as outlined in the Ministry Policy No. 08-06. Adequate number of samplers shall be installed and the sampling locations shall be established to the satisfaction of the District Manager:

a.24 hour composite samples of the final effluent from the plant shall be collected at least monthly and analyzed for at least the following parameters:

BOD₅

Suspended Solids
Free Ammonia as Nitrogen
Total Kjeldahl Nitrogen
Nitrite
Nitrate
Total Phosphorous

pH

Alkalinity

b.Grab sample of the final effluent shall be collected at least monthly and analyzed for E Coli.

c.24 hour composite samples of the raw sewage shall be collected at least monthly and analyzed for at least the following parameters:

BOD₅

Suspended Solids
Total Kjeldahl Nitrogen
Total Phosphorous
Alkalinity

d.If the Owner monitors any of the parameters required under this section more frequently than specified, the analytical results of all such samples, both required and additional, shall be included in the reports to be submitted under Condition Nos. 16 and 17 of this Certificate.

e.Following review of any analytical results or any of the reports required by Condition No. 17 of this Certificate, the District Manager may alter the frequencies and locations of sampling and parameters for analysis required by this condition.

16.Analytical results from Condition No. 15 shall be reported by such means and frequency as requested by the District Manager.

17.The Owner shall prepare and submit a performance report to the Regional Director on an annual basis, and the submission shall be made no later than 90 days following the end of each calender year. The first such report shall cover the period from the commencement of operation of the works until the end of the calender year in which the works is operated. The reports shall contain, but shall not be limited to, the following information in a format acceptable to the District Manager:

a.a summary of all monitory and compliance reports submitted in the reporting period, including an overview of the success and adequacy of the sewage treatment program;

b.a comprehensive interpretation of all monitoring data and analytical data collected relative to the works during the reporting period and a comparison to the effluent quality and quantity criteria described in sections 11 and 12;

c.a summary of any effluent quality assurance or control measures undertaken during the reporting period;

d.a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the works;

e.a description of any operating problems encountered and corrective actions taken during the reporting period;

f.a summary of any proposed alteration, extension or replacement in the process or operation of the works to be completed over the next reporting period which may require approval under the Ontario Water Resources Act;

g.a tabulation of the volume of sludge generated in the reporting period and an outline of anticipated volumes to be generated over the next reporting period;

- h. an outline of the sludge handling methods and disposal areas to be utilized over the next reporting period;
 - i. an evaluation of the calibration and maintenance procedures conducted on all monitoring equipment;
 - j. an evaluation for the need for modifications to the works to improve performance and reliability and to minimize upsets and bypasses.
18. No portion of the proposed expansion and modifications to the existing sewage treatment facilities shall be constructed and no tenders for construction accepted on any portion of the works until final plans, specifications and supporting data are submitted to and approved by the Director.

The reasons for the imposition of these terms and conditions are as follows:

- 1. Condition No. 1 is included to define terms used in the Certificate.
- 2. Condition No. 2 is included to emphasize that the issuance of the approval does not diminish the duty of the Owner to use all reasonable care in the construction, maintenance and operation of the sewage works, including a duty to mitigate any adverse impacts resulting from any action which results in non-compliance with this Certificate of Approval.
- 3. Condition Nos. 3 and 4 are included to clarify that the requirements as set out in this Certificate are severable and that non-compliance with the conditions constitutes a violation of the Ontario Water Resources Act.
- 4. Condition No. 5 is included to allow the Regional Director to obtain the necessary information related to the construction, operation and maintenance of the sewage works.
- 5. Condition Nos. 6 and 7 are included to clarify the Owner's responsibilities pertaining to the mitigation of adverse impacts in case of non-compliance with the effluent requirements.
- 6. Condition Nos. 8 and 9 are included to ensure that the Ministry Records are kept up to date with respect to the works and to ensure that subsequent owners are made aware of this Certificate.
- 7. Condition No. 10 is imposed to ensure that the sewage works are properly operated and maintained and that the operating staff are equipped to deal with contingency and/or emergency situations.

8. Condition Nos. 11, 12 and 13 are imposed to minimize the environmental impact to the receiver and to protect water quality, fish and other aquatic life in the receiving watercourse.

The effluent criteria relating to BOD₅ and Suspended Solids are being imposed to minimize adverse effects of oxygen demanding material on dissolved oxygen concentration in the receiving waters.

The effluent criteria related to Total Phosphorous concentrations comply with the policy of the Ministry of the Environment and Energy to reduce nutrient loadings to the receiving watercourse, so as to minimize the nuisance growth of aquatic plants and algae.

9. Condition Nos. 14, 15, 16 and 17 are imposed to require the Owner to demonstrate on a continual basis that the quality and quantity of the effluent from the approved works is consistent with the design objectives and effluent limits specified in the certificate and that the approved works does not cause any impairment to the receiving watercourse.

10. Condition No. 18 is imposed to make the Owner aware that the Director approves in principle the proposed expansion and modifications to the existing sewage treatment facilities and is of the opinion that they may be carried out on the basis of sound engineering and environmental principles, notwithstanding that sufficient detailed designs of the works have not been submitted to the Director for a final technical determination.

This Certificate of Approval revokes and replaces Certificate of Approval No. 3-1216-88-916 dated August 15, 1991.

You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

- 1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;**
- 2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.**

The Notice should also include:

- 3. The name of the appellant;**
- 4. The address of the appellant;**
- 5. The Certificate of Approval number;**
- 6. The date of the Certificate of Approval;**
- 7. The name of the Director;**
- 8. The municipality within which the sewage works are located;**

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

**The Secretary,
Environmental Appeal Board,
112 St. Clair Avenue West,
Suite 502,
Toronto, Ontario.
M4V 1H3**

AND

**The Director,
Section 53, Ontario Water Resources Act,
Ministry of Environment and Energy,
250 Davisville Avenue, 3rd Floor,
Toronto, Ontario.
M4S 1H2**

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 25th day of July, 1994

W. Gregson, P. Eng.
Director
Section 53
Ontario Water Resources Act

HV/fn

Attn: -Mr. R. Brown, Clerk, Town of Southampton
cc: -Ms. L. White, Clerk, Township of Saugeen
-District Manager, MOEE Owen Sound District Office
-Mr. M. Ross Slaughter, P. Eng., Henderson, Paddon & Associates
-Mr. E. Sexsmith, OCWA



NOTICE OF AMENDMENT

TO: Town of Southampton
Box 340
201 High Street
Southampton, Ontario
N0H 2L0

You are hereby notified that the approval issued to you under Certificate of Approval No. 3-1216-88-916 dated August 15, 1991 is hereby amended to include the following:

Condition No. 12 (1) of Certificate of Approval No. 3-1216-88-916 dated August 15, 1991 is hereby amended as follows:

12. The operating authority shall carry out and maintain a routine sampling and analysis program as outlined below. Adequate number of samplers shall be installed and the sampling locations shall be established to the satisfaction of the District Officer.

(1) Bi-weekly samples of the raw sewage and final effluent from the plant shall be collected and analyzed for at least the following parameters:

BOD₅ Total Phosphorous
 Suspended Solids
Ammonia
Alkalinity

Reason

On the original Certificate of Approval No. 3-1216-88-916, Condition No. 12 (1) incorrectly stated that "Bi-weekly samples of the raw sewage and final effluent from the plant shall be collected at least weekly". Bi-weekly is defined by Condition 1 (xii) of Certificate of Approval No. 3-1216-88-916.

This Notice shall constitute part of the approval issued under Certificate of Approval No. 3-1216-88-916 dated August 15, 1991.

You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

- 1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;**
- 2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.**

The Notice should also include:

- 3. The name of the appellant;
- 4. The address of the appellant;
- 5. The Certificate of Approval number;
- 6. The date of the Certificate of Approval;
- 7. The name of the Director;
- 8. The municipality within which the sewage works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

**The Secretary,
Environmental Appeal Board,
112 St. Clair Avenue West,
Suite 502,
Toronto, Ontario.
M4V 1N3**

**AND
Toronto, Ontario.**

**The Director,
Section 53, Ontario Water Resources Act,
Ministry of the Environment,
250 Davisville Avenue, 3rd Floor,
M4S 1H2**

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 13th day of August, 1992.

W. Gregson, P. Eng.
Director
Section 53
Ontario Water Resources Act

JC/nk

Att:-Mr. W. R. Smith, Clerk, Town of Southampton
c.c:-Mr. B. D. Murray, Clerk, Township of Saugeen
-Mr. L. E. Czarnecki, P. Eng. - Proctor & Redfern Ltd.
-Mr. R. M. Bell, M.O.E., Utility Operations - London
-Mr. D. A. McTavish, M.O.E. SW., Reg. Dir.