


**AMENDED CERTIFICATE OF APPROVAL
 MUNICIPAL AND PRIVATE SEWAGE WORKS**

NUMBER 7829-888JGN

Issue Date: December 20, 2010

The Regional Municipality of Durham
 Post Office Box, No. 623
 Whitby, Ontario
 L1N 6A3

Site Location: Harmony Creek Water Pollution Control Plant
 785 Colonel Sam Drive
 Oshawa City, Regional Municipality of Durham

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

the existing Harmony Creek Water Pollution Control Plant (WPCP), located at 785 Colonel Sam Drive in the City of Oshawa with *Rated Capacity* of 34,100 m³/d, discharging to Lake Ontario, consisting of the following process units:

Preliminary Treatment

- One (1) rectangular aerated grit tank measuring 15.2 m x 6.4 m x 3.7 m Side Water Depth (SWD) having volume of 360 m³ and providing a detention time of 15 minutes at *Average Daily Flow*.
- One (1) mechanical bar screen with an aperture of 12 mm, able to handle a flow of 172,800 m³/d.
- One (1) by-pass screen.

Primary Treatment

- One (1) rectangular primary clarifier measuring 53.6 m x 15.7 m x 3.7 m SWD providing surface area of 842 m².
- 1,200 mm diameter clarifier maintenance pipe.
- Two (2) primary sludge pumps (1 duty, 1 standby) each with a capacity range of 600 to 720 m³/d.

Secondary Treatment

- Two (2) aeration tanks, each with two passes, each pass measuring 50.9 m x 6.1 m x 4.6 m SWD to provide a total aerobic zone of 5,713m³, equipped with diffused air aeration system.
- Two (2) centrifugal blowers each rated at 9,000 Sm³/hr at 55 kPa and one (1) positive displacement blower rated at 3,900 Sm³ hr at 55 kPa.
- Two (2) rectangular secondary clarifiers each measuring 64.0 m x 12.2 m x 3.7 m SWD and each having surface area of 780 m² for a total surface area of 1,560 m².
- Two (2) return sludge pumps (1 duty, 1 standby) each with capacity range of 0 to 19,600 m³/d.
- Two (2) waste sludge pumps (1 duty, 1 standby) with capacity range of 0 to 3,270 m³/d.

Phosphorus removal system

- One (1) chemical storage tank, with a nominal working volume of approximately 75 m³
- Two (2) metering pumps each with a capacity range of 0 to 189 L/hr

Effluent Treatment – Disinfection

- Two (2) chemical storage tanks, each with nominal working volume of approximately 19 m³
- Two (2) metering pumps each with a capacity range of 0 to 91 L/hr

Effluent pipe

- 1,800 mm diameter, approximately 1,240 m long effluent sewer pipe to Lake Ontario

Solids Treatment – Anaerobic Digestion

- Two (2) mesophilic anaerobic sludge digesters each measuring 24.4 m in diameter x 7.9 m SWD and each providing a volume of approximately 3,700 m³, each equipped with a sludge mixing system and sludge heating system.
- Three (3) sludge recirculation pumps, each with a capacity of approximately 2,070 m³/d;
- Three (3) sludge transfer pumps, each with capacity of approximately 1,300 m³/d;

Biosolids Thickening and Storage

- Two (2) biosolids thickening tanks, each measuring 24.4 m in diameter x 7.9 m SWD and each providing a volume of approximately 3,700 m³.
- Two (2) biosolids holding tanks each measuring 9.1 m x 9.1 m x 3.5 m SWD to provide working volume of approximately 290 m³ for a total volume of approximately 580 m³.
- Two (2) sludge transfer pumps (1 duty, 1 standby) each with a capacity of approximately 2,720 m³/d;

Emergency Power

- One (1) 425 kW standby diesel generator

including all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage *Works*;

all in accordance with the following supporting documents:

1. Certificate of Approval No. 3-0870-74-006, dated July 15, 1974, and supporting documents;
2. Certificate of Approval No. 3-1332-81-826, dated October 1, 1982, and supporting documents;
3. Certificate of Approval No. 3-1012-83-846, dated April 24, 1984, and supporting documents;
4. Certificate of Approval No. 3-1778-87-006, dated October 22, 1987, and supporting documents;
5. Certificate of Approval No. 3-1873-87-886, Notice #1, dated December 21, 1995, and supporting documents;
6. Certificate of Approval No. 4467-5LEMSU, dated July 23, 2003, and supporting documents;
7. Certificate of Approval No. 3-1873-87-886, dated March 31, 1988, and Letter of Compliance dated August 5, 1988, and supporting documents;
8. Certificate of Approval No. 3-1873-87-886, Notice #1, dated December 21, 1995, and supporting documents;
9. Certificate of Approval No. 1885-6EQN53, issued on February 6, 2006, and supporting documents;
10. Certificate of Approval No. 1709-6UAHVW, issued on October 25, 2006, and supporting documents;
11. Harmony Creek Water Pollution Control Plant Major Maintenance Works Pre-Design Report - R.V. Anderson

Associates Limited, November 2, 2007; and

12. Engineer's Report for the Comprehensive Certificate of Approval for Harmony Creek Water Pollution Control Plant (WPCP), prepared by The Regional Municipality of Durham and R.V. Anderson, dated December 15, 2010.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"*Act*" means the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended;

"*Average Loading*" means the value obtained by multiplying the *Average Concentration* of a contaminant by the *Average Daily Flow* over the same calendar year;

"*Average Daily Flow*" means the cumulative total sewage flow to the sewage works during a calendar year divided by the number of days during which sewage was flowing to the sewage works that year;

"*BOD₅*" (also known as *TBOD₅*) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demand;

"*By-pass*" means any discharge from the *Works* that does undergo disinfection before it is discharged to the environment;

"*CBOD₅*" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

"*Certificate*" means this entire certificate of approval document, issued in accordance with Section 53 of the *Act*, and includes any schedules;

"*Daily Concentration*" means the concentration of a contaminant in the effluent discharged over any single day, as measured by a composite or grab sample, whichever is required;

"*Director*" means any *Ministry* employee appointed by the Minister pursuant to section 5 of the *Act*;

"*District Manager*" means the District Manager of the York-Durham District Office of the Ministry;

"*E. Coli*" refers to the thermally tolerant forms of *Escherichia* that can survive at 44.5 degrees Celsius;

"*Engineer's Report*" refers to the engineering documentation prepared by a Professional Engineer licensed in Ontario, which supports the Operating Envelope and its modifications under a Comprehensive Certificate of Approval;

"*Geometric Mean Density*" is the *n*th root of the product of multiplication of the results of *n* number of samples over the period specified;

"*Ministry*" means the Ontario Ministry of the Environment;

"*Monthly Average Concentration*" means the arithmetic mean of all *Daily Concentrations* of a contaminant in the effluent sampled or measured, or both, during a calendar month;

"*Monthly Average Daily Flow*" means the cumulative total sewage flow to the sewage *works* during a calendar month divided by the number of days during which sewage was flowing to the sewage *works* that month;

"*Monthly Average Loading*" means the value obtained by multiplying the *Monthly Average Concentration* of a contaminant by the *Monthly Average Daily Flow* over the same calendar month;

"*Operating Envelope*" means the limits on the pre-approved Modifications that the Owner may make to the Site without further amendment to the Certificate;

"*Owner*" means The Regional Municipality of Durham and includes its successors and assignees;

"*Peak Flow Rate*" means the maximum rate of sewage flow for which the plant or process unit was designed;

"*Rated Capacity*" means the *Average Daily Flow* for which the *Works* are approved to handle;

"*Regional Director*" means the Regional Director of the Central Region of the Ministry;

"*Source Protection Plan*" means a drinking water source protection plan prepared under the Clean Water Act, 2006;

"*Works*" means the sewage works described in the *Owner's* application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate*.

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

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

(1) The *Owner* shall ensure that any person authorized to carry out work on or operate any aspect of the *Works* is notified of this *Certificate* and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Except as otherwise provided by these Conditions, the *Owner* shall design, build, install, operate and maintain the *Works* in accordance with the description given in this *Certificate*, the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this *Certificate*.

(3) Where there is a conflict between a provision of any submitted document referred to in this *Certificate* and the Conditions of this *Certificate*, the Conditions in this *Certificate* shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(4) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(5) The requirements of this *Certificate* are severable. If any requirement of this *Certificate*, or the application of any requirement of this *Certificate* to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this certificate shall not be affected thereby.

2. CHANGE OF OWNER

(1) The *Owner* shall notify the *District Manager* and the *Director*, in writing, of any of the following changes within thirty (30) days of the change occurring:

(a) change of *Owner*;

(b) change of address of the *Owner*;

(c) change of partners where the *Owner* is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c.B17 shall be included in the notification to the *District Manager*;

(d) change of name of the corporation where the *Owner* is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the *District Manager*;

(2) In the event of any change in ownership of the *Works*, other than a change to a successor municipality, the *Owner* shall notify in writing the succeeding *Owner* of the existence of this *Certificate*, and a copy of such notice shall be forwarded to

the *District Manager* and the *Director*.

3. CHANGES IN PROCESSES OR PROCESS MATERIALS

The *Owner* shall give written notice to the District Manager of any plans to change the processes or process materials in the *Owner's* enterprise serviced by the *works* where the change may increase the quantity of the effluent or decrease the quality of the effluent from the *works*, and no such change(s) shall be made unless with the written concurrence or approval of the District Manager.

4. BY-PASSES

(1) Any *By-pass* of sewage from any portion of the *Works* is prohibited, except where:

- (a) it is necessary to avoid loss of life, personal injury, danger to public health or severe property damage;
- (b) the *District Manager* agrees that it is necessary for the purpose of carrying out essential maintenance and the *District Manager* has given prior written acknowledgment of the *by-pass*; or
- (c) the *Regional Director* has given prior written acknowledgment of the *By-pass*.

(2) The *Owner* shall collect at least one (1) grab sample of the *By-pass* and have it analyzed for the parameters outlined in Condition 8 using the protocols in Condition 10.

(3) The *Owner* shall maintain a logbook of all *By-pass* events which shall include, at a minimum, the time, location, duration, quantity of *By-pass*, the authority for *By-pass* pursuant to subsection (1), and the reasons for the occurrence.

5. DESIGN, DEVELOP, BUILD, OPERATE, MODIFY AND MAINTAIN IN ACCORDANCE

(1) Except as otherwise provided for in this Certificate, the *Works* shall be designed, developed, built, operated, modified and maintained in accordance with the conditions of this Certificate, and its Operating Envelope as described in Schedules A and B.

(2) The issuance of, and compliance with, this Certificate does not limit in any way the authority of the Ministry to require certain steps be taken or to require the *Owner* and Operator to furnish any further information related to compliance with this Certificate.

(3) 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.

6. LIMITED OPERATIONAL FLEXIBILITY

(1) The *Owner* may make Modifications to the *Works* and Operation of the *Works* in accordance with the pre-approved limits of the Operating Envelope as described in Schedules A and B of this Certificate, and detailed in the Engineer's Report.

(2) For greater certainty, the following Modifications to the *Works* are permitted as part of the Operating Envelope:

(a) the ability to make Modifications to the *Works* provided that there are no Modifications to the effluent quantity, quality and discharge location;

(b) the ability to make Modifications to the sewage process equipment provided that there are no Modifications of process chemicals / materials and operations that may constitute a change that may alter the intent of operations and may have impacts on sewage *works'* effluent quantity and quality;

(c) the ability to make Modifications to the *Works'* operational procedures as a result of implementing the pre-approved limits of the Operating Envelope; and

(d) the ability to make Modifications to the *Works* that are routine with predictable effects that are environmentally

insignificant, while adhering to subsections 2(a), 2(b) and 2(c).

(3) For greater certainty, the following Modifications to the *Works* are not permitted as part of the Operating Envelope:

- (a) the increase of the rated capacity of the *Works*;
- (b) the expansion or reduction of the catchment area serviced by the stormwater management facility;
- (c) modifications affecting effluent quantity and quality and the location of the discharge;
- (d) modifications to the *Works* that are not part of the Operating Envelope of this Certificate;
- (e) modifications to the *Works* that have requirements under the Ontario Water Resources Act; and
- (f) modifications to the *Works* stipulated in an order by the Ministry.

7. EFFLUENT OBJECTIVES

(1) The *Owners* shall use best efforts to design, construct and operate the *Works* with the objective that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the *Works*.

Table 1 - Effluent Objectives	
Effluent Parameter	Concentration Objective (milligrams per litre unless otherwise indicated)
<i>CBOD₅</i>	15.0
Total Suspended Solids	15.0
Total Phosphorus	1.0
<i>E. Coli</i>	200 organisms/100mL (monthly <i>Geometric Mean Density</i>)
Total Chlorine Residual	0.5 (Maximum Concentration)
Note: Disinfection period is May 15 to October 15 of each year.	

(2) The *Owner* shall use best efforts to:

- (a) maintain the pH of the effluent from the *Works* within the range of 6.0 to 9.5, inclusive, at all times;
- (b) operate the *works* within the *Rated Capacity* of the *Works*;
- (c) ensure that the effluent from the *Works* is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.

(3) The *Owner* shall include in all reports submitted in accordance with Condition 11 a summary of the efforts made and results achieved under this Condition.

8. EFFLUENT LIMITS

(1) The *Owners* shall operate and maintain the *Workss* such that the concentrations and waste loadings of the materials named below as effluent parameters are not exceeded in the effluent from the *Works*.

Table 2 - Effluent Limits		
Effluent Parameter	Average Concentration (mg / L unless otherwise indicated)	Average Loading* (kg / day unless otherwise indicated)
Column 1	Column 2	Column 3
<i>CBOD₅</i>	25.0	852.5
Total Suspended Solids	25.0	852.5
Total Phosphorus	1.0	34.1

* Based on Average Daily Flow of 34,100 m³/d

Note: Disinfection period is May 15 to October 15 of each year.

(2) For the purposes of determining compliance with and enforcing subsection (1):

- (a) The *Annual Average Concentration* of the *CBOD₅* and Total Suspended Solids parameters named in Column 1 of subsection (1) shall not exceed the corresponding maximum concentration set out in Column 2 of subsection (1);
- (b) The *Monthly Average Concentration* of the Total Phosphorus parameter named in Column 1 of subsection (1) shall not exceed the corresponding maximum concentration set out in Column 2 of subsection (1);
- (c) The *Annual Average Loading* of a parameter named in Column 1 of subsection (1) shall not exceed the corresponding maximum loading as set out in Column 3 of subsection (1);

(3) Notwithstanding subsection (1), the *Owners* shall operate and maintain the *Works* such that the effluent is continuously disinfected during the disinfection period of May 15 to October 15 of each year.

(4) Paragraph (a), (b) and (c) of subsection (2) shall apply upon the issuance of this certificate.

(5) The effluent limit set out in subsection (3) shall apply upon the issuance of this certificate.

(6) Only those monitoring results collected during the corresponding time period shall be used in calculating the *Annual Average Concentration*, *Monthly Average Concentration* and *Annual Average Loading* for this *Certificate*.

9. OPERATION AND MAINTENANCE

(1) The *Owner* shall exercise due diligence in ensuring that, at all times, the *Works* and the related equipment and appurtenances used to achieve compliance with this *Certificate* are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of this *Certificate* and the *Act* and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the *Works*.

(2) The *Owner* shall include, but not necessarily limited to, the following information:

- (a) operating procedures for routine operation of the *Works*;
- (b) inspection programs, including frequency of inspection, for the *Works* and the methods or tests employed to detect when maintenance is necessary;
- (c) repair and maintenance programs, including the frequency of repair and maintenance for the *Works*;
- (d) procedures for the inspection and calibration of monitoring equipment;
- (e) a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the *District Manager*; and

(f) procedures for receiving, responding and recording public complaints, including recording any followup actions taken.

(3) The *Owner* shall maintain the operations manual current and retain a copy at the location of the *Works* for the operational life of the *Works*. Upon request, the *Owner* shall make the manual available to *Ministry* staff.

(4) The *Owner* shall provide for the overall operation of the *Works* with an operator who holds a licence that is applicable to that type of facility and that is of the same class as or higher than the class of the facility in accordance with Ontario Regulation 129/04.

10. EFFLUENT MONITORING AND RECORDING

The *Owner* shall, upon commencement of operation of the *Works*, carry out the following monitoring program:

(1) All samples and measurements taken for the purposes of this *Certificate* are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

(2) For the purposes of this condition, the following definitions apply:

(a) Twice Daily means twice each day;

(b) Weekly means once each week; and

(c) Bi-weekly means once every two weeks;

(3) Samples shall be collected at the following sampling points, at the frequency specified, by means of the specified sample type and analyzed for each parameter listed and all results recorded:

Table 3a - Raw Sewage Monitoring- (Sample Point)		
Parameters	Sample Type	Frequency
<i>BOD</i> ₅	composite	Bi-weekly
COD	composite	Bi-weekly
Total Suspended Solids	composite	Bi-weekly
Total Phosphorus	composite	Bi-weekly
Nitrate plus Nitrite	composite	Bi-weekly
Total Kjeldahl Nitrogen	composite	Bi-weekly

Table 3b - Final Effluent Monitoring- (Sample Point)		
Parameters	Sample Type	Frequency
<i>CBOD₅</i>	composite	Bi-weekly
Total Suspended Solids	composite	Bi-weekly
Total Phosphorus	composite	Bi-weekly
Total (Ammonia + Ammonium) Nitrogen	composite	Bi-weekly
Nitrate plus Nitrite	composite	Bi-weekly
Total Kjeldahl Nitrogen	composite	Bi-weekly
<i>E. Coli</i>	grab	Bi-weekly
pH	grab	Weekly
Temperature	grab	Weekly
Chlorine Residual	grab	Twice Daily

(4) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

(a) the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended from time to time by more recently published editions;

(b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;

(c) the publication "Standard Methods for the Examination of Water and Wastewater" (20th edition), as amended from time to time by more recently published editions;

(d) the Environment Canada publications "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" (July 1990) and "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna*" (July 1990), as amended from time to time by more recently published editions; and

(e) for any parameters not mentioned in the documents referenced in (a) and (b), the written approval of the *District Manager* shall be obtained prior to sampling.

(5) The measurement frequencies specified in subsection (2) in respect to any parameter are minimum requirements which may be modified by the *District Manager* in writing from time to time.

(6) The *Owner* shall install and maintain continuous flow measuring devices, to measure the flowrate of the effluent from the *Works* with an accuracy to within plus or minus 15 per cent (+/- 15%) of the actual flowrate for the entire design range of the flow measuring device, and record the flowrate on a continuous basis.

(7) The *Owner* shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this *Certificate*.

11. REPORTING

(1) Ten (10) days prior to the date of a planned *By-pass* being conducted pursuant to Condition 4 and as soon as possible for an unplanned *By-pass*, the *Owner* shall notify the *District Manager* (in writing) of the pending start date, in addition to an assessment of the potential adverse effects on the environment and the duration of the *By-pass*.

(2) The *Owner* shall report to the *District Manager* or designate, any exceedence of any parameter specified in Condition 8

orally, as soon as reasonably possible, and in writing within seven (7) days of the exceedence.

(3) In addition to the obligations under Part X of the Environmental Protection Act, the *Owner* shall, within 10 working days of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the *District Manager* describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

(4) The *Owner* shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to *Ministry* staff.

(5) The *Owner* shall prepare, and submit to the *District Manager*, a performance report, on an annual basis, within ninety (90) days following the end of the period being reported upon. The annual reports shall be submitted to cover successive annual periods. The reports shall contain, but shall not be limited to, the following information:

- (a) a summary and interpretation of all monitoring data and a comparison to the effluent limits, including an overview of the success and adequacy of the *Works*;
- (b) a description of any operating problems encountered and corrective actions taken;
- (c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the *Works*;
- (d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;
- (e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;
- (f) a summary of the pre-approved activities that have been implemented, as per the Operating Envelope of Schedules A and B;
- (g) a description of efforts made and results achieved in meeting the Effluent Objectives;
- (h) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;
- (i) a summary of any complaints received during the reporting period and any steps taken to address the complaints;
- (j) a summary of all *By-pass*, spill or abnormal discharge events; and
- (k) any other information the *District Manager* requires from time to time.

(6) The *Owner* shall prepare, and submit to the *District Manager* and Director a bi-annual report commencing two (2) years after issuance of this Certificate and every two (2) years thereafter, or commencing with the second performance report noted in subsection 5 after the issuance of this Certificate, and every two (2) years thereafter. The bi-annual report shall contain:

- (a) a summary of the pre-approved activities that have been implemented, as per the Operating Envelope of Schedules A and B;
- (b) a copy of all the Notices of Planned Modifications to the Sewage Works as per Schedule A and B;
- (c) a copy of the written approval provided from the Ministry for those Notices related to Schedule B activities; and
- (d) an Engineer's Report with an updated Operating Envelope section describing changes to the pre-approved works (Table B.1 of this Certificate), if needed. If an Engineer's Report is submitted, the Owner shall submit an application to amend the Certificate.

12. SCOPE OF APPROVAL GRANTED

(1) The approval granted by this certificate is based upon a review of the *Works* in the context of its effect on the environment, its process performance and principles of sanitary and chemical engineering.

(2) The approval granted by this certificate also included the review of the sewage works under the Operating Envelope, however, these Operating Envelope works are approved in principle, and its implementation, construction and operation are subject to complying with Conditions 5 and 6 of this Certificate to ensure compliance with the provisions of the *Ontario Water Resources Act*. Prior to the commencement of construction of any part of the pre-approved sewage works in the Operating Envelope, the Director and the District Manager will have the opportunity to review detailed design drawings, specifications and an Engineer's Report confirming that the detailed design calculations for the Operating Envelope sewage works are in line with that of the Works described in Schedules A and B of this Certificate, and provide assurance that the proposed *works* comply with the Ministry's requirements.

Schedule A

Operating Envelope A

1.0 The *Owner* shall prepare and keep with this Certificate a Notice of Planned Modifications to the Sewage Works (form enclosed) prior to making Modifications to the *Works*. At a minimum the notification shall include the following:

1.1 a detail description of the change to the *Works* and/or operations of the *Works* including confirmation that the proposed Modifications comply with Condition 6 of this Certificate;

1.2 updated versions of, or amendments to, all relevant technical documents required by this Certificate that are affected by the Modification as applicable, e.g. updated Site Plan drawing, Engineer's Report, the emergency and spill prevention plan, a contingency plan, a document control record that tracks all changes that were made to the documents, etc.; and

1.3 a statement signed by the *Owner* and a Professional Engineer declaring that the Modifications made to the *Works* are done so that the proposed Modifications are:

(a) in accordance with the Operating Envelope as described in Table A.1.

(b) consistent with MOE Design Guidelines, industry's best management practices, are not likely to result in an adverse effect to the environment or human health.

(c) in compliance with the Environmental Assessment Act and have completed the municipal planning process.

2.0 If the Modifications made to the *Works* require an amendment to the Emergency Response, Spill Reporting and Contingency Plan, the *Owner* shall provide a copy of the amended plan for approval to the local fire services authority prior to instituting the Modifications. A copy of the amended plan must be forwarded to the District Manager.

Table A.1. Operating Envelope A

No.	Pre-Approved Activity (*)
1.	Normal/Emergency operational activities (**)
2.	Alter pumping capacity by adding or replacing equipment where new equipment is located within an existing sewage treatment plant site, where the facility rated capacity is not exceeded and while maintaining the existing flow process and/or treatment train.
3.	Install chemical or other process equipment for operational or maintenance purposes at existing sewage treatment facility
4.	Replace traditional materials in an existing watercourse or in slope stability works with material of equal or better properties, at substantially the same location and for the same purpose
5.	Expansion of the buffer zone between a lagoon facility or land treatment area and adjacent uses where the buffer zone is entirely on the proponent's land
6.	Expansion of lagoon storage capacity on existing lagoons with the purpose to facilitate operation and maintenance work provided that existing sewage treatment plant rated capacity is not exceeded and where no land acquisition is required
7.	Expand, improve or modify existing patrol yards, equipment and material storage facilities, administrative buildings, maintenance facilities and parking lots for service vehicles, where no land acquisition is required
8.	Roadside ditches, culverts and other such incidental stormwater works constructed solely for the purpose of servicing municipal road works
9.	Installation or replacement of standby power equipment where new equipment is located within an existing building or where mobile structures are used where there is no potential to generating contact stormwater and have no effect on stormwater runoff
10.	Installation of automation and control equipment, SCADA systems

(*) The sewage works design meeting the design objectives contained within the Ministry of the Environment publication "Design Guidelines for Sewage Works 2008, as amended.

(**) Normal or emergency operational activities may include, but are not limited to, the following:

- modify, repair, reconstruct existing facilities to provide operational, maintenance or other improvements such as reducing odour, insulating buildings to reduce noise levels and conserve energy, landscaping
- on-going maintenance activities
- installation of new service connections, catch basins and appurtenances from existing sewers
- maintenance and/or minor improvements to grounds and structures
- addition of minor buildings, sheds and equipment and materials storage areas
- repairs, cleaning, renovations or replacement of sewage treatment facilities, pumping plant equipment or outfalls
- cleaning, relining, repairs and renovations to existing sewage collection system

Schedule B

Operating Envelope – B

1.0 The *Owner* shall provide a copy of a Notice of Planned Modifications to the Sewage Works (form enclosed) to the District Manager and Director at least thirty (30) days prior to making Modifications to the *Works*. At a minimum the notification shall include the following:

1.1 a detail description of the change to the *Works* and/or operations of the *Works* including confirmation that the proposed Modifications comply with Condition 6 of this Certificate, and an assessment of the anticipated environmental effects of the Modifications;

1.2 updated versions of, or amendments to, all relevant technical documents required by this Certificate that are affected by the Modification as applicable, e.g. updated Site Plan drawing, Engineer's Report, the emergency and spill prevention plan, a contingency plan, a document control record that tracks all changes that were made to the documents, etc.; and

1.3 a statement signed by the *Owner* and an Independent Professional Engineer declaring that the Modifications made to the *Works* are done so that the proposed Modifications are:

- (a) in accordance with the Operating Envelope as described in Table B.1
- (b) consistent with MOE Design Guidelines, industry's best management practices, are not likely to result in an adverse effect
- (c) in compliance with the Environmental Assessment Act and have completed the municipal planning process.

2.0 Notwithstanding Subsection 1.0, the *Owner* will be able to proceed with implementation of the proposed *works* contained in the notification after either of the following occurs:

2.1 Upon receipt of the District Manager and Director's written approval to the proposed *works*; or

2.2 Thirty (30) days after the notification is received by the District Manager and the Director, if no response has been issued by the District Manager or the Director.

3.0 If the Modifications made to the *Works* require an amendment to the Emergency Response, Spill Reporting and Contingency Plan, the *Owner* shall provide a copy of the amended plan for approval to the local fire services authority prior to instituting the Modifications. A copy of the amended plan must be forwarded to the District Manager.

Table B.1. Operating Envelope B

	Pre-Approved Activity (*)
4.1 Secondary Treatment	
4.1.1	Replacement of air diffusion equipment in aeration tanks The existing aeration system for Plant 2 consists of coarse bubble diffusers with an air supply system consisting of both concrete pressure pipe and cast iron pipe. Since the concrete pressure pipe has been leaking significantly and requires replacement, it has been decided that the coarse bubble air diffusers should be replaced with fine bubble diffusers as part of the maintenance project. This will improve treatment efficiency and result in operational cost savings. The new fine bubble diffusers could be of the ceramic dome-type with gas cleaning system, or the membrane or tube-type.
4.1.2	Replacement of air blower(s) The existing aeration system for Plant 2 includes 3 blowers: 2 x 186.5 kW (250 hp) centrifugal and 1 x 186.5 kW positive displacement. While it appears, on preliminary review, that one of the 186.5 kW centrifugal blowers will be sufficient to feed the fine bubble diffusers and satisfy the oxygen demand of the wastewater, it is possible that on further review, a blower of a different capacity may be optimal. This may necessitate the replacement of one or both centrifugal blowers. The positive displacement blower is old and has reached the end of its useful service life and should be replaced. It is of lesser capacity than the centrifugal blowers but would provide back-up capacity to those units. Also, in future, it may be useful to replace the positive displacement blower with a similarly-sized centrifugal blower to provide additional redundancy for the other two centrifugal blowers.
4.2 Effluent Treatment – Disinfection	
4.2.1	Installation of Chlorine Contact tank The existing effluent disinfection system utilizes the plant effluent sewer pipe to provide contact time for the disinfection process. To satisfy MOE Guideline requirements of 15 minutes of contact time at peak flow and/or 30 minutes of contact time at average flow, a 900 m³ (based on peak flow) contact time volume will be required. Since the plant will have to provide de-chlorination in order to satisfy an effluent requirement of total residual chlorine TRC that is less than or equal to 0.02 mg/L, a new chlorine contact tank with chlorination and de-chlorination facilities is proposed to be built within the plant's property.
4.3 Solids Treatment – Anaerobic Digestion	

4.3.1	Modifications to Digester Mixing System The existing solids treatment system includes 2 digesters: Primary Digester No. 1 (southerly digester) constructed in 1989 and Primary Digester No. 2 (northerly digester) constructed in 1970. Primary Digester No. 2 has been retrofitted with a hydraulic mixing system which is operating satisfactorily. Primary Digester No. 1 was constructed with draft tube-type mechanical mixers that have reached the end of their useful service life. Since it is intended to operate this digester as a secondary digester in future, the draft tube mixers will be decommissioned.
4.3.2	Upgrades to digester gas piping network and digester gas treatment system The digester gas systems are subject to the requirements of CSA/CGA B105 Digester Gas Code standards. These standards are being updated and will soon be published as CSA Standard B149.6. The existing digester gas systems must be modified to comply with these standards. The required modifications could include: ■ Provision of continuous water flow drip traps; ■ Improved ventilation in hazardous/classified areas and around sludge sampling sinks; ■ Provision of water-primed traps for floor drains in hazardous/classified areas; ■ Improved seals on doorways into hazardous/classified areas; ■ Improved sloping of digester gas piping towards drip traps; ■ Modifications to gas detection alarm systems; ■ Replacement of the waste gas burner.
4.3.3	Demolition of Biosolids Thickening, Storage and Truck Loading Tanks The existing biosolids handling system consists of 2 thickening tanks, 2 storage tanks and a biosolids loadout facility. The two thickening tanks were formerly sludge digesters for Plant 1. The two storage tanks and loadout facility allow thickened, digested biosolids to be loaded onto trucks for transportation for off-site disposal. These facilities would be demolished in conjunction with the demolition of Plant 1, once the Plant 2 digesters have been modified and new storage tanks and loadout facility are constructed on the Plant 2 site.

(*) Extracted from the Comprehensive Certificate of Approval Engineer's Report.

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

1. Condition 1 is imposed to ensure that the *Works* are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the *Certificate* and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the *Owners* their responsibility to notify any person they authorized to carry out work pursuant to this *Certificate* the existence of this *Certificate*.
2. Condition 2 is included to ensure that the *Ministry* records are kept accurate and current with respect to the approved *works* and to ensure that subsequent owners of the *Works* are made aware of the *Certificate* and continue to operate the *Works* in compliance with it.
3. Condition 3 is included to ensure that the *works* is operated in accordance with the information submitted by the *Owner* relating to the process and materials which are served by the *works*, and to ensure that any contemplated changes in them which could potentially affect the characteristics of effluent from the *works* will be properly reviewed and approved.
4. Condition 4 is included to indicate that by-passes of untreated sewage to the receiving watercourse is prohibited, save in certain limited circumstances where the failure to *By-pass* could result in greater injury to the public interest than the *By-pass* itself where a *By-pass* will not violate the approved effluent requirements, or where the *By-pass* can be limited or otherwise mitigated by handling it in accordance with an approved contingency plan. The notification and documentation requirements allow the *Ministry* to take action in an informed manner and will ensure the *Owner* is aware of the extent and frequency of *By-pass* events.

5. Conditions 5, and 6 are to ensure that the *Works* are operated in accordance with the application and supporting documentation submitted by the *Owner*, and not in a manner which the Director has not been asked to consider. These conditions are also included due to the pre-approval nature of the Operating Envelope as described in Schedules A and B and as contained in the Engineer's Report. The Director has only approved the *works* in principle, and this condition will ensure that, in accordance with the provisions of the *Ontario Water Resources Act*, prior to the commencement of construction of any part of the *works*, the Director will have the opportunity to review detailed design drawings and specifications and a Professional Engineer has reviewed the proposed modifications as per the Schedules A and B and attesting that the detailed design calculations for the sewage *works* are in line with that of the *works* described in Schedules A and B of this Certificate, and provide assurance that the proposed *works* comply with the Ministry's requirements stipulated in the terms and conditions of the Certificate, MOE policies, guidelines, and industry engineering standards and best management practices.

6. Condition 7 is imposed to establish non-enforceable effluent quality objectives which the *Owner* is obligated to use best efforts to strive towards on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs and before the compliance limits of Condition 8 are exceeded.

7. Condition 8 is imposed to ensure that the effluent discharged from the *Works* to the Lake Ontario meets the *Ministry's* effluent quality requirements thus minimizing environmental impact on the receiver and to protect water quality, fish and other aquatic life in the receiving water body.

8. Condition 9 is included to require that the *Works* be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the *Owner* and made available to the *Ministry*. Such a manual is an integral part of the operation of the *Works*. Its compilation and use should assist the *Owner* in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for *Ministry* staff when reviewing the *Owner's* operation of the *works*.

9. Condition 10 is included to enable the *Owner* to evaluate and demonstrate the performance of the *Works*, on a continual basis, so that the *Works* are properly operated and maintained at a level which is consistent with the design objectives and effluent limits specified in the *Certificate* and that the *Works* does not cause any impairment to the receiving watercourse.

10. Condition 11 is included to provide a performance record for future references, to ensure that the *Ministry* is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this *Certificate*, so that the *Ministry* can work with the *Owner* in resolving any problems in a timely manner.

11. Condition 12 is included due to the provisional nature of the supporting documentation submitted by the *Owner* with the application for approval pertaining the proposed *works* under Schedules A and B. The Director has only approved the *works* in principle, and this condition will ensure that, in accordance with the provisions of the *Ontario Water Resources Act*, prior to the commencement of construction of any part of the *works*, the Ministry will have the opportunity to review detailed design drawings, specifications and an engineer's report containing detailed design calculations for that portion of the *works* under Schedule B. This, along with provisions for Schedule A will determine the proposed *works'* capability to comply with the Ministry's requirements stipulated in the terms and conditions of the Certificate.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 3-1012-83-846, dated April 24, 1984, and No. 1709-6UAHVW issued on October 25, 2006.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. 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 works are located;

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

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

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

DATED AT TORONTO this 20th day of December, 2010

Ian Parrott, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

ET/
c: District Manager, MOE York-Durham
Peter Takaoka, P.Eng., R.V. Anderson