

**ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER 5263-BRWP8N

Issue Date: August 6, 2020

Orion Eco Solutions Inc.  
4 Cardico Drive  
Gormley, Ontario  
L0H 1G0

**Site Location:** 94 Vibert Road  
Oliver Paipoonge Municipality, District of Thunder Bay

*You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:*

A facility that converts woodchips into diesel oil, consisting of the following processes and support units:

- one (1) woodchips dryer with a maximum throughput of 13,300 kilograms per hour equipped with a emission control unit consisting of two cyclones in parallel and a wet scrubber, discharging to the air at a maximum volumetric flow rate of 4.32 cubic metres per second, at a temperature of 25 degrees Celsius, through a stack (A-001/A) having an exit diameter of 0.55 metre, extending 14.02 metres above grade;
- one (1) shredding line with a maximum throughput of 17,500 kilograms of woodchips per hour equipped with an emission control unit consisting of two cyclones in parallel and a wet scrubber, discharging to the air at a maximum volumetric flow rate of 6.39 cubic metres per second, at a temperature of 25 degrees Celsius, through a stack (A-001/B) having an exit diameter of 0.65 metre, extending 14.02 metres above grade;
- two (2) natural gas fired boilers, each having a maximum heat input rating of 1,370,000 kilojoules per hour, discharging to the air at a volumetric flow rate of 0.22 cubic metre per second through a single stack (A-005) having an exit diameter of 0.15 metre in diameter, extending 5.49 metres above the roof and 15.85 metres above grade;
- two (2) natural gas fired power generators, each with a maximum power output of 460 kilowatts, each discharging to the air at a flow rate of 0.63 cubic metre per second, through individual stacks (A-003/A and A-003/B) each having an exit diameter of 0.20 metre, extending 14.02 metres above grade;
- two (2) natural gas fired thermal oxidizers, controlling emissions from the

conversion process, each with a maximum thermal input of 10.8 million kilojoules per hour, each equipped with a selective non-catalytic reduction system for nitrogen oxide control. Exhaust from each unit passes through a heat recovery system followed by a dry scrubbing system consisting of a venturi scrubber, a neutralizing agent and a fabric filter before discharging to the air at a volumetric flow rate of 3.93 cubic metres per second through individual stacks (A-002/A and A-002/B) each having an exit diameter of 0.48 metre, extending 15.85 metres above grade;

- one (1) activated carbon adsorption unit, for relief of overpressure inside the conversion process, exhausting to the exhaust of thermal oxidizer D-003/B upstream of the dry scrubbing system;

all in accordance with the Environmental Compliance Approval Application submitted by Orion Eco Solutions Inc., dated August 18, 2019 and signed by Eugene Garritano, Owner and all supporting information associated with the application including the Emission Summary and Dispersion Modelling Report provided by GHD Limited, dated August 16, 2019 and signed by Matthew Griffin, additional information provided by Matthew Griffin in emails dated January 20, 2020 and April 28, 2020 and in a memo dated March 20, 2020, additional information provided in an email from Ugo Carnevale on July 9, 2020 and the Acoustic Assessment Report provided by GHD Limited, dated August 16, 2019 and signed by Matthew Griffin.

*For the purpose of this environmental compliance approval, the following definitions apply:*

1. "*Activated Carbon Adsorption Unit*" means the activated carbon adsorption unit described in the *Company's* application, this *Approval* and in the supporting documentation submitted with the application, to the extent approved by this *Approval*;
2. "*Approval*" means this Environmental Compliance Approval, including the application and supporting documentation listed above;
3. "*Company*" means Orion Eco Solutions Inc., that is responsible for the construction or operation of the *Facility* and includes any successors and assigns;
4. "*District Manager*" means the District Manager of the appropriate local district office of the *Ministry*, where the *Facility* is geographically located;
5. "*EPA*" means the Environmental Protection Act, R.S.O. 1990, c.E.19, as amended ;
6. "*Equipment*" means the equipment and processes described in the *Company's*

application, this *Approval* and in the supporting documentation submitted with the application, to the extent approved by this *Approval*;

7. "*Exhausted*" means the capacity of the activated carbon bed to adsorb contaminant emissions is reached, and the *Activated Carbon Adsorption Unit* is no longer able to effectively reduce emissions;
8. "*Facility*" means the entire operation located on the property where the *Equipment* is located;
9. "*Manager*" means the Manager, Technology Standards Section, Technical Assessment and Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Technology Standards Section, Technical Assessment and Standards Development Branch, as those duties relate to the conditions of this *Approval*;
10. "*Manual*" means a document or a set of documents that provide written instructions to staff of the *Company*;
11. "*Ministry*" means the ministry of the government of Ontario responsible for the *EPA* and includes all officials, employees or other persons acting on its behalf;
12. "*O. Reg. 419/05*" means Ontario Regulation 419/05, Air Pollution – Local Air Quality, as amended;
13. "*Organic Matter*" means organic matter having carbon content expressed as equivalent methane;
14. "*Power Generators*" means the natural gas-fired power generators, exhausting through stacks A-003/A and A-003/B described in the *Company's* application, this *Approval* and in the supporting documentation submitted with the application, to the extent approved by this *Approval*;
15. "*Pre-Test Plan*" means a plan for the *Source Testing* including the information required in Section 1.1 of the *Source Testing Code*;
16. "*Publication NPC-300*" means the *Ministry* Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", August 2013, as amended;
17. "*Source Testing*" means sampling and testing to measure emissions resulting from operating the equipment under conditions which yield the worst case emissions, as practically possible, within the approved operating range of the equipment and satisfies paragraph 1 of subsection 11(1) of *O. Reg. 419/05*, as determined in consultation with the *Manager*;
18. "*Source Testing Code*" means the *Source Testing Code*, dated June 2010, prepared by the *Ministry*, as amended;
19. "*Test Contaminants*" means the contaminants listed in Schedule C; and

20. "*Thermal Oxidizers*" means the natural gas-fired thermal oxidizers, exhausting through stacks A-002/A and A-002/B described in the *Company's* application, this *Approval* and in the supporting documentation submitted with the application, to the extent approved by this *Approval*.

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

## TERMS AND CONDITIONS

### 1. PERFORMANCE REQUIREMENTS

1. The *Company* shall operate each of the *Thermal Oxidizers* in such a manner that:
  - a. The combustion chamber shall be preheated to a minimum of 960 degrees Celsius prior to introducing the emissions for destruction.
  - b. The temperature in the combustion chamber, is maintained at a minimum of 960 degrees Celsius at all times, when the *Thermal Oxidizer* is in operation.
  - c. The residence time of the combustion gases in the combustion chamber of the *Thermal Oxidizer* shall not be less than 3.0 second at a temperature of 960 degrees Celsius minimum.
  - d. The concentration of *Organic Matter* in the flue gas of the *Thermal Oxidizer*, being an average of ten measurements taken at approximately one minute intervals, shall not be greater than 100 parts per million by volume, measured on an undiluted basis.
2. The *Company* shall ensure that the *Power Generators* are designed and operated to comply, at all times during normal operating conditions, except during start-up and shutdown, with the following performance requirements:
  - a. The emissions of nitrogen oxides in the gases emitted from the exhaust stack of each *Power Generator* are not greater than the applicable limit specified in Schedule A.

### 2. OPERATION AND MAINTENANCE

1. The *Company* shall ensure that the *Equipment* is properly operated and maintained at all times. The *Company* shall:
  - a. prepare, before commencement of operation of the *Equipment*, and update, as necessary, a *Manual* outlining the operating procedures and

- a maintenance program for the *Equipment*, including:
- i. routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the *Equipment* suppliers;
  - ii. emergency procedures, including spill clean-up procedures;
  - iii. procedures for any record keeping activities relating to operation and maintenance of the *Equipment*;
  - iv. all appropriate measures to minimize noise and odorous emissions from all potential sources;
  - v. the frequency of inspection and replacement of the filter material in the *Equipment*; and
  - vi. the frequency of inspection and replacement of the activated carbon in the *Activated Carbon Adsorption Unit*;
- b. implement the recommendations of the *Manual*.

2. The *Company* shall ensure that the activated carbon in the *Activated Carbon Adsorption Unit* is replaced before it is *Exhausted*.

### 3. CONTINUOUS MONITORING

1. The *Company* shall install, conduct and maintain a program to continuously monitor temperature in the combustion chamber of each *Thermal Oxidizer*. The continuous monitoring systems shall be equipped with continuous recording devices and shall comply with the requirements outlined in the attached Schedule B.

### 4. SOURCE TESTING

1. The *Company* shall perform *Source Testing*, in accordance with the procedures outlined in Schedule D to determine the rate of emission of the *Test Contaminants* from one of the *Thermal Oxidizers*.
2. The *Company* shall perform *Source Testing* in accordance with the procedures outlined in the attached Schedule D, to determine the rate of emission of the nitrogen oxides from each of the *Power Generators* exhausts.

### 5. RECORD RETENTION

1. The *Company* shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this *Approval*, and make these records available for review by staff of the *Ministry* upon request. The *Company* shall retain:

- a. all records on the maintenance, repair and inspection of the *Equipment*; and
- b. all records of any environmental complaints, including:
  - i. a description, time and date of each incident to which the complaint relates;
  - ii. wind direction at the time of the incident to which the complaint relates; and
  - iii. a description of the measures taken to address the cause of the incident to which the complaint relates and to prevent a similar occurrence in the future.

## 6. NOTIFICATION OF COMPLAINTS

1. The *Company* shall notify the *District Manager*, in writing, of each environmental complaint within two (2) business days of the complaint. The notification shall include:
  - a. a description of the nature of the complaint; and
  - b. the time and date of the incident to which the complaint relates.

## 7. NOISE

1. The *Company* shall, at all times, ensure that the noise emissions from the *Facility* comply with the limits set out in *Ministry Publication NPC-300*.
2. The *Company* shall ensure that the truck movements are limited to one (1) truck movement per sixty (60) minutes during the period of 7:00 PM to 7:00 AM.

# SCHEDULE A

## Emission Limits

Equipment	Parameter	Limit
<i>Power Generators</i>	Nitrogen Oxides	0.4 kilograms per Megawatt-hour

(1) "Nitrogen oxides" means oxides of nitrogen, including nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>).

## **SCHEDULE B**

### **Continuous Temperature Monitoring and Recording System Requirements**

**PARAMETER:** Temperature

**LOCATION:**

The sample point for the continuous temperature monitoring and recording system shall be located at a location where the measurements are representative of the minimum temperature of the gases leaving the combustion chamber of the *Thermal Oxidizers*.

**PERFORMANCE:**

The continuous temperature monitoring and recording system shall meet the following minimum performance specifications for the following parameters:

Type: shielded "K" type thermocouple, or equivalent

Accuracy:  $\pm 1.5$  percent of the minimum gas temperature

**DATA RECORDER:**

The data recorder must be capable of registering continuously the measurement of the monitoring system without a significant loss of accuracy and with a time resolution of one (1) minute or better.

**RELIABILITY:**

The monitoring system shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

## **SCHEDULE C**

### ***Test Contaminants***

1. Total Suspended Particulate Matter
2. Nitrogen Oxides reported as nitrogen dioxide as per *O. Reg. 419/05*
3. Sulphur Dioxide

## **SCHEDULE D**

## Source Testing Procedures

1. The *Company* shall submit, at least sixty (60) days prior to the scheduled date of the *Source Testing* to the *Manager* a *Pre-Test Plan* for the *Source Testing* required under this *Approval*. The *Company* shall finalize the *Pre-Test Plan* in consultation with the *Manager*.
2. The *Company* shall not commence the *Source Testing* required under this *Approval* until the *Manager* has approved the *Pre-Test Plan*.
3. The *Company* shall complete the *Source Testing* not later than three months (3) after the commencement of operation of the *Thermal Oxidizers* or the *Power Generators*, as applicable, or three (3) months after the *Manager* has approved the *Pre-Test Plan*, whichever occurs later. The *Source Testing* at the *Power Generators* shall be repeated every two (2) calendar years thereafter.
4. The *Company* shall notify the *Manager*, the *District Manager* and the *Director* in writing of the location, date and time of any impending *Source Testing* required by this *Approval*, at least fifteen (15) days prior to the *Source Testing*.
5. The *Company* shall submit a report (electronic format) on the *Source Testing* to the *Manager*, the *District Manager* and the *Director* not later than three (3) months after completing the *Source Testing*. The report shall be in the format described in the *Source Testing Code*, and shall also include, but not be limited to:
  - a. an executive summary;
  - b. an identification of the applicable North American Industry Classification System code (NAICS) for the *Facility*;
  - c. records of operating conditions at the time of *Source Testing*, including but not limited to the following:
    - a. production data and equipment operating rate as a percentage of maximum capacity;
    - b. *Facility*/process information related to the operation of the *Thermal Oxidizer* and *Power Generators*;
  - d. results of *Source Testing*, including the emission rate, emission concentration, and relevant emission factor of the *Test Contaminants* from the *Thermal Oxidizer* or nitrogen oxide from the *Power Generators*, as applicable; and
  - e. a tabular comparison of *Source Testing* results for the *Thermal*



*Oxidizer or the Power Generators, as applicable and Test Contaminants to original emission estimates described in the Company's application and the ESDM Report.*

6. The *Director* may not accept the results of the *Source Testing* if:
  - a. the *Source Testing Code* or the requirements of the *Manager* were not followed;
  - b. the *Company* did not notify the *Manager*, the *District Manager* and *Director* of the *Source Testing*; or
  - c. the *Company* failed to provide a complete report on the *Source Testing*.
7. If the *Director* does not accept the results of the *Source Testing*, the *Director* may require re-testing. If re-testing is required, the *Pre-Test Plan* strategies need to be revised and submitted to the *Manager* for approval. The actions taken to minimize the possibility of the *Source Testing* results not being accepted by the *Director* must be noted in the revision.
8. If the *Source Testing* results are higher than the emission estimates in the *Company's ESDM Report*, the *Company* shall update their *ESDM Report* in accordance with Section 26 of *O. Reg. 419/05* with the results from the *Source Testing* report and make these records available for review by staff of the *Ministry* upon request.
9. The *District Manager* may not require subsequent *Source Testing* for the *Power Generators* or relax the frequency of subsequent *Source Testing* if the results of the *Source Testing* indicate that the environmental impact from nitrogen oxides are insignificant.

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

1. Condition No. 1 is included to provide minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the *Equipment*.
2. Condition No. 2 is included to emphasize that the *Equipment* must be maintained and operated according to a procedure that will result in compliance with the *EPA*, the *Regulations* and this *Approval*.
3. Conditions No. 3 and 4 are included to require the *Company* to gather accurate information so that compliance with the operating requirements of this *Approval* can be verified.

4. Condition No. 5 is included to require the *Company* to keep records and to provide information to staff of the *Ministry* so that compliance with the *EPA*, the Regulations and this *Approval* can be verified.
5. Condition No. 6 is included to require the *Company* to notify staff of the *Ministry* so as to assist the *Ministry* with the review of the site's compliance.
6. Condition No. 7 is included to provide the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the *Facility*.

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me, the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of Rights, 1993, the Minister of the Environment, Conservation and Parks, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Minister of the Environment, Conservation and Parks will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

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

*The Notice should also include:*

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

*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, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Minister of the Environment, Conservation and Parks 777 Bay Street, 5th Floor Toronto, Ontario M7A 2J3	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment, Conservation and Parks 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5
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**\* Further information on the Environmental Review Tribunal's requirements for an appeal**

can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

*This instrument is subject to Section 38 of the Environmental Bill of Rights, 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at <https://ero.ontario.ca/>, you can determine when the leave to appeal period ends.*

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 6th day of August,  
2020

Rudolf Wan, P.Eng.  
Director  
appointed for the purposes of Part  
II.1 of the *Environmental Protection  
Act*

KS/  
c: District Manager, MECP Thunder Bay - District  
Matthew Griffin, GHD Limited