



**CONESTOGA-ROVERS
& ASSOCIATES**

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December 9, 2011

Reference No. 046254

Director
Ontario Ministry of the Environment
Environmental Assessment and Approvals Branch
2 St. Clair Avenue West
Floor 12A
Toronto, ON M4V 1L5

Dear Sir or Madam:

Re: Project Description Report
Woolwich Bio-En Inc., Elmira, Ontario

Conestoga-Rovers & Associates (CRA) provides this letter, on behalf of Woolwich Bio-En Inc. (Bio-En), to meet the requirements of the Project Description Report as outlined in the Ontario Ministry of the Environment's (MOE's) Renewable Energy Approval (REA) Regulation (O.Reg. 359/09). A Site Location Map showing the project location and the land within 300 metres (m) is attached as Figure 1. A Site Location Plan showing the project on a larger scale is attached as Figure 1A.

Bio-En plans to develop and operate a biogas co-generation facility at 40 Martin's Lane (Plan 58R-14363, Lot 18, Part 9) in Elmira, Ontario (Facility). Elmira is located in the Township of Woolwich, in the Region of Waterloo in Southern Ontario. The property at 40 Martin's Lane will be leased from Marbro Capital Limited. This property is zoned for industrial uses, however, it is currently being used for agricultural purposes. The proposed Facility will be classified as a Class 3 Anaerobic Digestion (AD) Facility as defined in Section 3 of O. Reg. 359/09. The proposed Facility will generate 2.85 MW of electricity and 3.02 MW of heat from the biogas produced from a variety of organic materials.

Biomass Feed Stock Discussion

The Facility will receive a maximum 70,000 tonnes per year (on average, 1,346 tonnes per week to a maximum of 750 tonnes per day) of feedstocks from a variety of sources. The average weekly requirement of materials will vary depending on the dry matter content (DM) and calorie density of the feed stock.

Organics to be processed at the Proposed Facility include, but are not limited to:



Organics from food processing facilities, grocery stores, food distribution companies, bakeries, confectionary processing facilities, dairies and facilities that process dairy products, fruit and vegetable processing facilities, cereal and grain processing facilities, oil seed processing facilities, snack food processing facilities, snack food manufacturing facilities, breweries and distillers grain, wineries, alcoholic and non-alcoholic beverage manufacturing facilities, fruit and vegetable packing facilities, milling facilities, kitchen waste, livestock, aquaculture, and paunch manure, glycerol and by-products from ethanol, biodiesel, breweries, and distillery plants, fats, oil, and grease (FOG), of plant and animal origin, and accompanying food residuals collected from grease interceptors and / or grease traps at food production, food processing and / or food wholesale and retail facilities, renewable energy crops (i.e., corn silage), herbaceous plant waste from greenhouse, nurseries, garden centers & flower shops, and aquatic plants, organic solids skimmed from a dissolved air flotation (DAF) tank from wastewater for the production of animal or plant-based materials or from the production of any other food for human or animal consumption, spent grain soluble (SGS) from ethanol, breweries and distillers plant and source separated organics (SSO). These feedstocks may be received as a liquid or a solid.

Construction Overview

The construction of this Facility will involve extending Martin's Lane and constructing an on-site road for truck traffic at the Facility. Fill will be obtained from the North side of the property, as the elevation of the North side is higher than at the South side of the property. Additional fill will be obtained through the construction company as required. The construction company will dispose of any soil piles remaining after the construction period. Detailed fill and spoils requirements have not been completed at this time, as the detailed design has not been completed for the Facility. During construction, the spoil and fill piles will be placed to help reduce erosion.

Facility Overview

The proposed Facility will include two buildings, operations and processing. The operations building will house the reciprocating engines and other equipment to perform facility operations and control. The process building will receive organic materials and will contain equipment to prepare and blend the organic material prior to being fed into the anaerobic digestion equipment. The Facility will be equipped with a control system including alarms and pressure relief valves to ensure the safe operation of the Facility and to minimize the risk of process disruption. The Facility will be fenced and locked to ensure that trespassers do not enter the site and tamper with equipment.



The Facility will utilize three pre-treatment tanks, two main digester tanks and one secondary digester and repository tank to generate biogas. The biogas will be combusted in reciprocating engines to produce renewable heat and power. The Facility will be equipped with a back-up flare to process biogas when required (e.g., engine maintenance).

Power Generation and Start Up Fuel Requirements

Power will be generated by using biogas to run two reciprocating engines whose output shafts are connected to an electrical generator. The generator will be connected to an indoor electrical substation next to the room where the generators are located. The normal power distribution is supplied from Waterloo North Hydro, via overhead 27.6 kV feeder and will be connected to the substation. The overhead feeder is extended from the street and brought into the facility ending at a dip pole close to the substation and connected to the transformer through fusible disconnect.

Anaerobic Digestion requires the fermentation process to operate at approximately 40°C for optimal gas production. Once the plant is in operation, the heat required to bring the feedstock to fermentation temperature is supplied by the heat generated by the engines. On plant start-up, there is no gas to run the engines, so start-up heat (start-up boiler) must be supplied until there is sufficient gas production to run the engines. At this point, the system would be self-sustaining with no further need for the start-up boiler. This start-up period ranges from four to eight weeks. A natural gas line that will be connected to an existing service at Martin's Lane and will run along the West and North sides of the property to connect the Operations Building and will provide fuel to the engine during the start-up period.

This Facility has been designed to mitigate and minimize potential impacts to the environment. The following areas of potential environmental impact have been identified:

Air, Noise and Odour

The Facility is expected to emit air contaminants including products of combustion, volatile organic compounds and potentially odour. The Facility is being designed with state of the art emissions control equipment (biofilter) to mitigate the potential emissions of air contaminants and odour from activities including: organic unloading, processing and digestate loading.

In the event of engine malfunction, maintenance, or excess biogas being produced, the Facility will be equipped with a back-up flare capable of combusting 100 percent of the biogas generated.



The Facility will be unloading incoming organic material indoors to minimize the generation of odour and litter at the Facility. In order to further reduce potential litter, all solids-hauling trucks will remain tarped until the material is unloaded inside the building.

The Facility has undertaken an air study in accordance with requirement 6 of Table 1 in O.Reg. 359/09. This study meets the requirements of an Emissions Summary and Dispersion Modelling (ESDM) report outlined in O. Reg. 419/05 including compliance with applicable MOE Point of Impingement criteria under O. Reg. 419/05.

Potential emissions of odour generated from the incoming organics or from the operations of the digestion equipment will be mitigated with a biofilter. The Facility will install a membrane over the digesters with a permeation of less than 200 cm³/m²/day/bar which exceeds the permeation criteria of 500 cm³/m²/day/bar recommended in O.Reg. 359/09. In addition, all incoming organics will be unloaded indoors and the air from the buildings will be treated with a biofilter that will reduce potential odour impacts. The Facility is designed to meet the MOE's Guideline of less than 1 odour unit (OU) at a sensitive receptor. An Odour Study Report was prepared for the facility and has been submitted in support of the REA application as required by O.Reg. 359/09.

The Facility will have potential emissions of noise to the environment. The main sources of noise will be the cogeneration units and the on-site truck traffic. The cogeneration will be equipped with noise mitigation equipment to reduce the emissions of noise as required. The Facility has been designed to mitigate potential impacts resulting from noise emissions and will comply with the applicable MOE noise criteria in Section 9 of the Environmental Protection Act. The Facility has undertaken a noise study to ensure that the Facility will comply with the MOE noise criteria. The noise study has been prepared in accordance with Appendix A of the MOE publication entitled "Basic Comprehensive Certificates of Approval (Air) - Users Guide", dated March 2011 as outlined in requirement 8 of Table 1 in O. Reg. 359/09.

Water and Soil

The Facility has undertaken a hydrogeological assessment for the purposes of the REA Application. This study investigated the suitability of the site with respect to the hydro-geological features of the site including the groundwater (hydrology) and soil (geotechnical) characteristics. This study was prepared in accordance with requirement 7 of Table 1 in O. Reg. 359/09 and is submitted with the REA Application.



Surface Water

The Facility has prepared a surface water assessment report for the purposes of the REA Application. This study investigated the potential for effects to the surface water. The surface water assessment has been prepared according to requirement 11 in Table 1 of O.Reg. 359/09. The site will be sloped to ensure proper drainage to a storm water management pond.

The Facility has been sited outside of any set backs outlined in Sections 39 and 40 of O.Reg. 359/09, therefore, a water body study is not required. An assessment addressing the requirements of Sections 29 to 31 of O.Reg. 359/09 has been summarized in the surface water assessment report.

The Facility is not intending to discharge process water. Bio-En is intending to remove water used from the process as liquid digestate that will be used as a soil amendment or as a fertilizer. The Facility is planning to recycle a great deal of the water required for the process. The Facility will have a toilet and shower that will be discharged to the sanitary sewer with the approval of the Municipality. The Facility's effluent management plan has been prepared in accordance with requirement 5 of Table 1 in O. Reg. 359/09.

The Facility may obtain additional process water as required from the Municipality depending on the agreement reached. The proposed Facility's anticipated water takings has been presented in the Facility's Design and Operations Report as required in Section 4 of Table 1 in O. Reg. 359/09.

The pre-treatment, main digester, secondary digester and repository tanks at the Facility are being designed with a live load factor of 1.5 in order minimize the risk of leaks, spills, and contamination to the ground water and soil.

Siltation and Erosion During Construction

During the construction of this Facility, fencing will be placed around the construction site as there may be a potential for siltation or erosion of the site. In addition, spoil and fill piles will be placed to help reduce erosion.

Natural Heritage

The Facility has undertaken a natural heritage assessment in support of the REA Application to ensure the construction and operation of the Facility do not have an impact on any provincially significant natural features or any species at risk. The natural heritage assessment for this



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facility was prepared to fulfill the requirements of Sections 24 to 28 of O.Reg. 359/09. This assessment was submitted to the MNR and cleared in March 2010.

Archaeological and Heritage

The Facility has undertaken an archaeological assessment and a heritage screening as part of the REA Application in order to ensure that the construction and operation of the Facility do not have the potential to impact any archaeological or heritage resources. The archaeological assessment and heritage screening for this facility have been prepared to fulfill the requirements of Sections 19 to 22 of O. Reg. 359/09. The archeological assessment has been submitted to the Ontario Ministry of Culture and was cleared on June 22, 2010. The heritage assessment has been submitted to the Ontario Ministry of Culture and was cleared on December 20, 2010.

The Facility is not expected to have impact to any environmentally or culturally sensitive areas.

The Facility has been designed to mitigate potential environmental impacts and will comply with applicable MOE criteria.

Should you have any questions on the above, please do not hesitate to contact us.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

John Ferguson, P. Eng.

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Encl.