
Effluent Management Report

Toronto Zoo Anaerobic
Digester

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1.0 Introduction

1.1 Purpose

This report is prepared in partial fulfillment of Regulation 359/09 made under the Green Energy and Economy Act, for the approval of the Class 3 Anaerobic Digester located at the Toronto Zoo. Table 1 of the Regulation mandates the preparation of this report to set out: “the quality and quantity of all sewage that is expected to be produced by or at the renewable energy generation facility.” The project has received a FIT contract Number F-003038-BIG-211-203.

1.2 Location

The location of the 500kW facility is as shown on Appendix 1. The project is located east of Meadowvale Road., south of the access road to the former landfill site.

1.3 Existing use

The Zoo’s manure and organic waste is currently composted on the site of the proposed digester. This operation will cease when the digester is in operation.

2.0 Sewage Production

The proposed anaerobic digester facility does not contain a washroom and therefore there will be no sewage produced on the site. The site will only be staffed several hours per day when it is operational and will not require a permanent washroom. Should the need for a washroom occur in the future, a portable toilet will be placed on the site and any waste produced will be disposed of by contractor.

3.0 Digestate Production

The digestion of organic materials results in the production of digestate, a valuable organic fertilizer. The subject anaerobic digester will produce approximately 12,500 cubic meters of liquid digestate per year as well as 2,000 tonnes of separated solids. The solids will be bagged offsite by a contractor and sold as an organic compost. The liquid digestate will be sold to local farmers for land application as a fertilizer. The site has sufficient storage to accommodate 6 months production of liquid digestate.

4.0 Rain Water Management

Currently the surface of the site is a compacted clay liner that was put in place as part of the compost facility construction. As a result of this impervious layer, runoff from the site to the shallow pond in the northeast corner of the site is estimated at about 95%.

When construction is complete approximately 50% of the impervious site will remain. This area will be topsoiled and seeded which will improve water retention in the area. Approximately 20% of the remaining area will be covered with structures and 10% will be driveway. The remaining areas will be topsoiled and seeded.

The two storage tanks are open and will retain all rainfall and the majority of the building roof water will be captured and re-used. The storage vessels are designed to contain approximately 6 months production of digestate which allows ample opportunity for field application. Experience indicates that evaporation is approximately equal to rainfall in these conditions. The majority of the roof water from the control building will be captured in an 8000 l underground tank and used for general wash purposes. In addition the site will be properly graded, topsoiled and seeded thus increasing rainwater infiltration over the current compacted soil within the compost facility. As a result storm water management is not required. Surface drainage will continue to be directed to the pond located in the northeasterly corner of the site.

Description	Per Cent of Area	Runoff co-efficient
Topsoil on previous compost area	50%	90
Driveway	10%	90
Structures	10%	100
Structures no runoff	10%	0
Open	20%	20

The resulting weighted average of the runoff co-efficient for the entire property is 78. This suggests that the total runoff from the site will be reduced by 18%.

5.0 Mitigation Measures

As no sewage is produced on the site no mitigation measures are required. The existing site is currently surrounded by an earthen berm and contains a shallow pond. These were constructed as part of the existing compost operation and no changes are proposed. As a result there will be no opportunity for silt to leave the site and construction activities will be enclosed by the existing berms. All disturbed areas will be seeded when construction is complete. The site plan is attached as appendix 2.

Appendix 1

Project Location Plan

Appendix 2

Site Plan