



SusGlobal Energy[®]
Caring for Earth's Journey™



*Conversion of Georgian Bluffs Anaerobic
Digestion System to Co-Process SSO
streams to 20,000 T/A*

MARCH 2016

AGENDA

1. Executive Summary
2. Background
3. Current Status
4. Overview of SusGlobal
5. Ontario's SSO Processing Market
6. Proposed Solution
7. Floor Layout
8. Debugger and Cleaning System
9. Project Structure
10. Project Economics
11. Forecast Financial Summary
12. Project Cashflows
13. Project Considerations

EXECUTIVE SUMMARY

- ▶ The Georgian Bluffs & Chatsworth Bio-digester Project was built in 2011 as an anaerobic digester that would generate biogas, green energy and revenue.
- ▶ Since inception, the plant has underperformed against expectations and has become a financial drain on the Municipalities. The existing WWTP is greatly underutilized. The project has a FiT to sell power to the grid, but not enough wastewater to generate biogas for the gas engine at a meaningful rate.
- ▶ SusGlobal proposes to add SSO processing to utilize the existing site capacity, plus add a 500kw generator to supply all the power to the site which would increase energy production and revenue generation.
- ▶ SusGlobal would finance the entire cost of the project, estimated at \$7.5M and would collaborate with Maple Reinders who will be the contractor of the project and provide the technology units for SSO processing. The project could be structured under a Build, Own, Operate and Transfer (“BOOT”) contract with the Municipalities with certain payments to the Municipalities.
- ▶ This discussion document intends to continue the ongoing dialogue to explore the potential to collaborate under a Private-Public-Partnership and optimize the potential of this site.

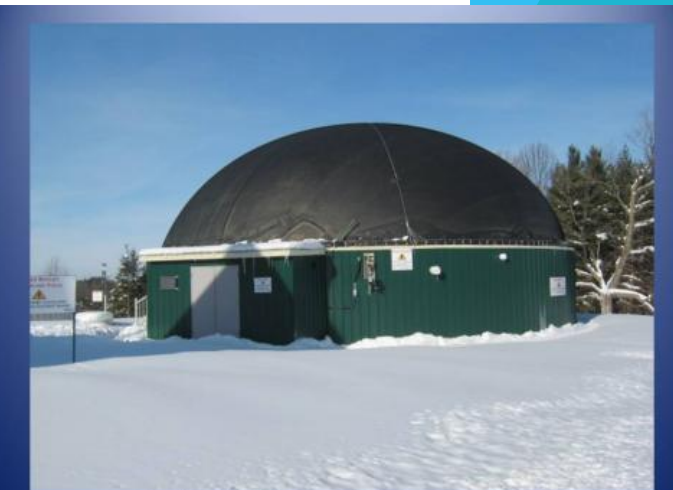
BACKGROUND

The Georgian Bluffs & Chatsworth Biodigester Project has been operating since 2011 and currently operates with the following capacity:

- Capacity for Treatment: 40m³/day of septage plus 5m³/day of organic waste
- Energy Produced from Methane Gas: 100kW expandable to +/- 300kW
- Digester Size: 1,000m³
- Treated Waste Storage: 785m³
- Hydrolizer: 100m³
- Pasteurizer: 2m³
- Project Cost: \$3.8M



2



Georgian Bluffs/Chatsworth Biodigester – 1,000 m³

15

CURRENT STATUS

The facility has a number of operating issues since inception and has unperformed against expectations. Key issues are as follows:

- Current payback period is 15 years against an original estimation of 10 years;
- Current operations fail to optimize revenue generating capacity of existing facilities across all potential streams – power-generation, sewage fees and tipping fees;
- Maintenance & mechanical issues that resulted in less days of in-operation;
- Public opposition due to ongoing complaints of odors and continued expenditures.

The staff of Georgian Bluffs is in the process of investigating the feasibility of implementation of a green bin, organic pick up into the existing curbside program and assess capital upgrades that would be required to support extended initiatives.

Program changes would be implemented by September 30, 2015 upon renewal of existing solid waste and recycling contracts.

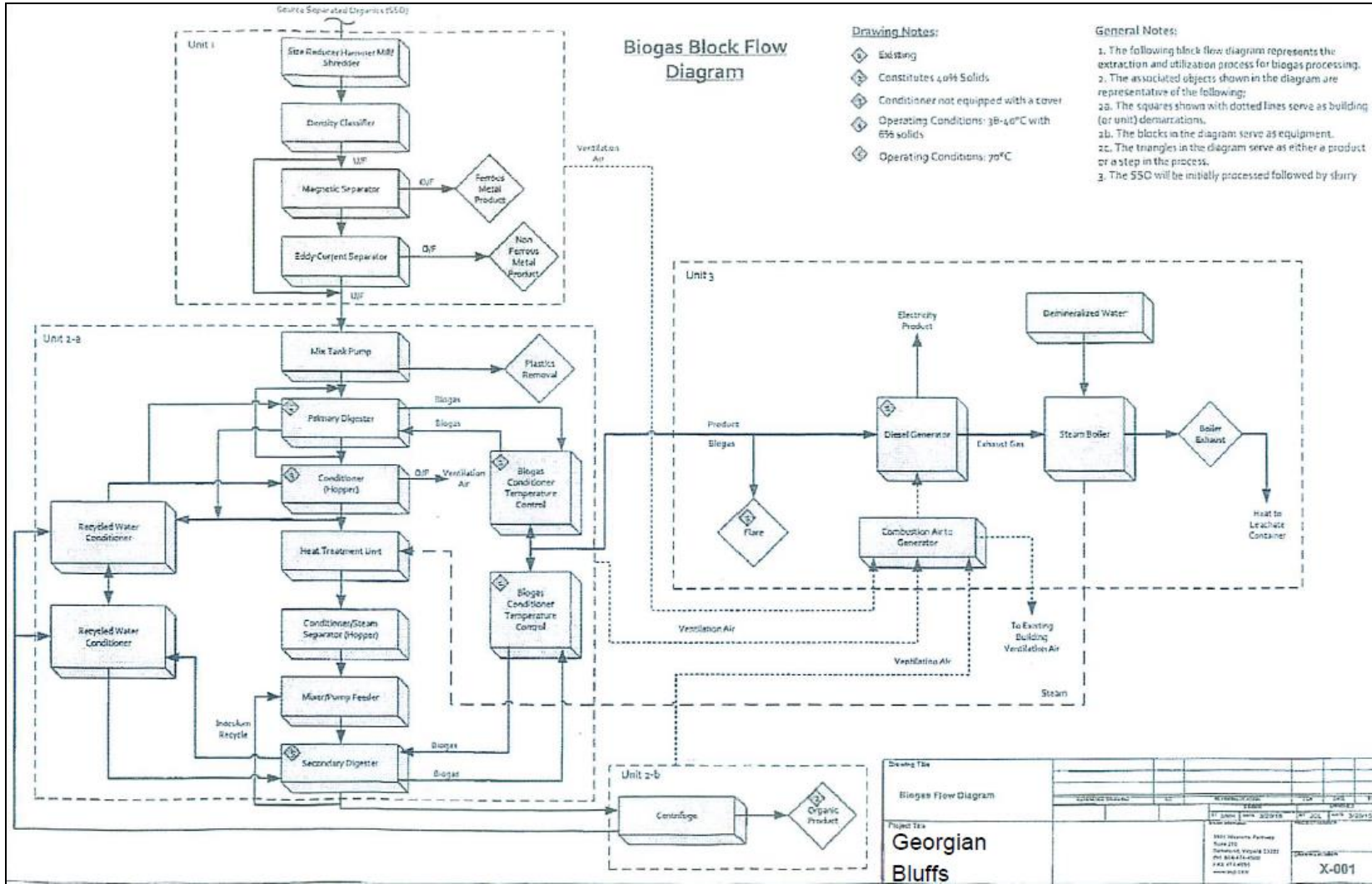
OVERVIEW OF SUSGLOBAL

- Founded by Gerald P. Hamaliuk and Marc M. Hazout in Toronto, Ontario
- Experienced management team with extensive network of relationships within the renewable energy industry;
- Susglobal will leverage their proprietary technology and wealth of experience to provide a full range of services for the conversion of waste to energy including:
 - facilitating a step-by-step approach to allow clients to evaluate and define waste management strategies;
 - execution of proprietary methods (qualitative or quantitative or a combination of both) to evaluate the potential location, technology, and business model options; and
 - start to finish commissioning, execution and ongoing operation of treatment facilities under various private-public partnership models including design, finance, build, own, operate & transfer

ONTARIO'S SSO PROCESSING MARKET

	Units	Totals	Breakdown by Technology			Breakdown by Ownership			Breakdown by Acceptable Feedstock	
			Aerobic Composting	Anaerobic Digestion	Other	Public	Private	Public/Private Partnership	Narrow SSO and Leaf & Yard	Broad SSO and Leaf & Yard
Organics processing facilities in operation	Number of facilities	15	14	1	0	6	9	0	11	4
Existing approved/constructed capacity of organics processing facilities in operation	input tonnes/year	651,500	626,500	25,000	0	189,000	462,500	0	424,000	227,500
Utilized capacity of organics processing facilities in operation	input tonnes/year	574,800	549,800	25,000	0	189,000	385,800	0	369,600	205,200
Remaining capacity of organics processing facilities in operation	input tonnes/year	76,700	76,700	0	0	0	76,700	0	54,400	22,300
Organics processing facilities planned/pending*	Number of facilities	6	4	2	0	3	3	0	Acceptable feedstock breakdown not known	
Anticipated capacity of planned/pending organics processing facilities*	input tonnes/year	190,000	105,000	85,000	0	100,000	90,000	0	Acceptable feedstock breakdown not known	
Existing organics processing facilities not in service	Number of facilities	1	0	1	0	0	1	0	0	1
Design capacity of existing organics processing facilities not in service	input tonnes/year	120,000	0	120,000	0	0	120,000	0	0	120,000

PROPOSED SOLUTION



Drawing Notes:

- ◊ Existing
- ◊ Constitutes 40% Solids
- ◊ Conditioner not equipped with a cover
- ◊ Operating Conditions: 38-40°C with 65% solids
- ◊ Operating Conditions: 70°C

General Notes:

1. The following block flow diagram represents the extraction and utilization process for biogas processing.
2. The associated objects shown in the diagram are representative of the following:
 - 2a. The squares shown with dotted lines serve as building (or unit) demarcations.
 - 2b. The blocks in the diagram serve as equipment.
 - 2c. The triangles in the diagram serve as either a product or a step in the process.
 - 2d. The SSC will be initially processed followed by slurry.

Biogas Flow Diagram							
Project No:	Revision:	Date:	By:	Check:	Scale:	Sheet No.:	Total Sheets:
Georgian Bluffs		1001 Veterans Parkway Suite 210 Marietta, Georgia 30067 404.875.1400 404.875.1405 www.gbc.com		X-001			

PROPOSED SOLUTION (CONT'D)

To supplement the ongoing initiatives of the Municipalities, SusGlobal proposes the following:

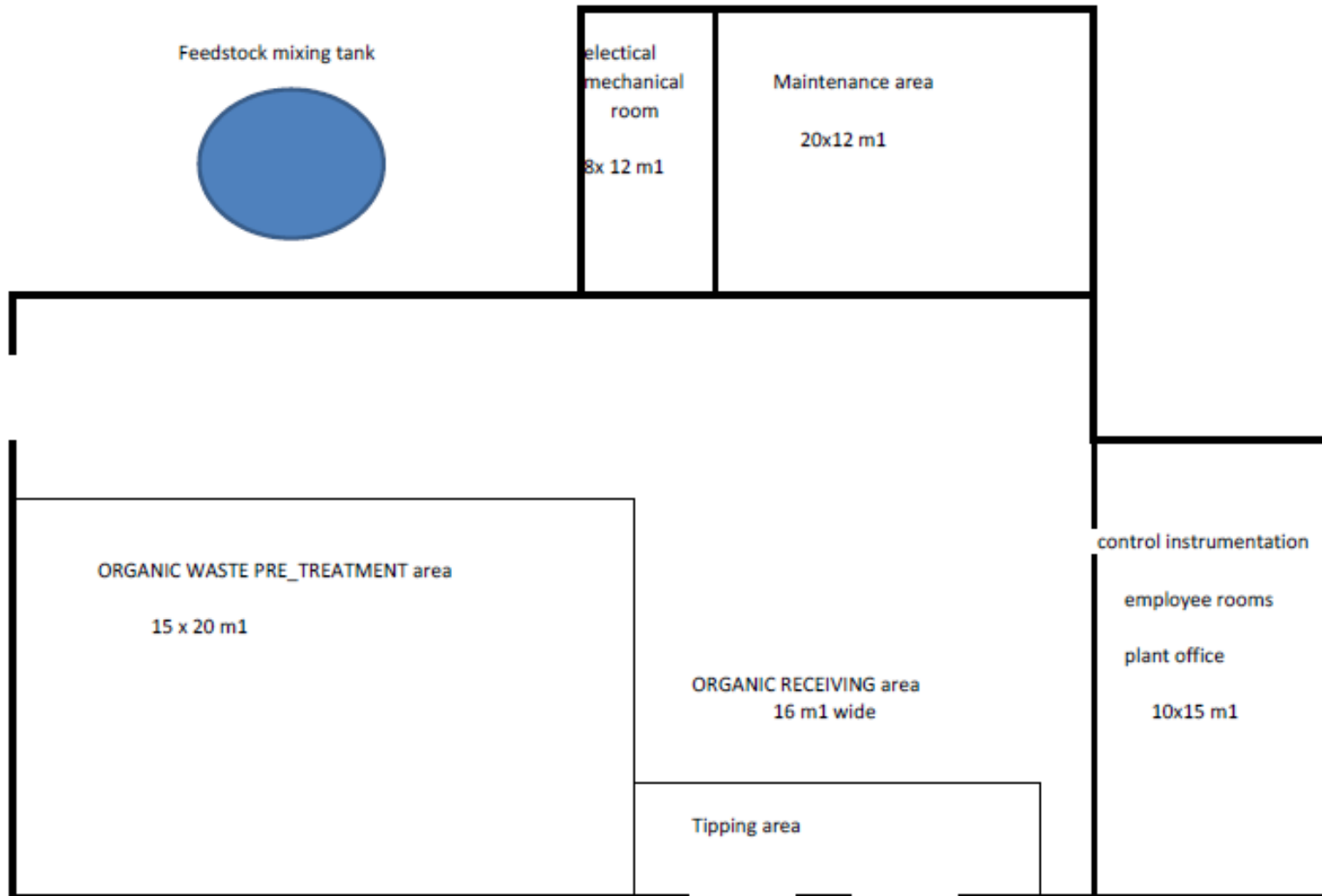
- ▶ SSO receiving, debagger, plastic removal and cleaning and send pulped food wastes to holding tank (for 20,000 t/a SSO);
- ▶ Modify existing digester for higher solids digestion, if necessary;
- ▶ Install heat treatment system for digestate from the existing digester;
- ▶ Convert the smaller biosolids holding tank to a secondary digester operating under thermophilic conditions;
- ▶ Install biosolids handling of secondary digester as Class A fertilizer for hay field applications;
- ▶ Connect the secondary digester to the biogas system and install a second 100 kW genset for internal power and heat use;
- ▶ Install heat recovery system from the genset exhausts to generate steam for the heat treating process;
- ▶ Add an administration office and change room/washroom.

As a Phase 2 to the project, SusGlobal will invest in the technology to convert the waste plastics from the front end SSO debagger to be converted to diesel locally.

FACILITY LAYOUT

20,000 tonne/year Organic Kitchen waste Receiving and Pretreatment Facility footprint

Bldg foot print +/- 1200 m² (12,700 sft)



DEBAGGER AND CLEANING SYSTEM



PROJECT STRUCTURE

We would propose to structure the project as a Build, Own, Operate, Transfer contract whereby:

- ▶ Municipalities contribute existing site, with an historical cost of \$4M; and SusGlobal contributes financing of \$7.5M for the development of the SSO processing.
- ▶ \$200k payable to Municipalities annually, after 1st year of full operations
- ▶ After 25 years, ownership of the facility reverts wholly to the Municipalities
- ▶ Post transfer of ownership, SusGlobal will have the right to an Operations & Maintenance contract for a further 5 years
- ▶ Environmental responsibilities, including wastewater quality will be the responsibility of the Joint Venture

PROJECT ECONOMICS

Source Separated Organics

- Capacity: 20,000 t/a
- Rejected yield 23.00%
- Retained yield 77.00%

Tipping Fee: \$100/ton

Biogas Production

- Yield-m³/t: 120
- Electrical Production-kWh/m³: 2

Revenues & Operating costs

- Revenues estimated at \$800k in 2017 and \$3.1M annually from 2018+
- Costs to operate facility at \$670k/annually, on average

FORECAST FINANCIAL SUMMARY

	2017	2018	2019	2020	2021+
REVENUES					
Tipping Fee-Gross	\$500,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
Electrical Production	92,800	371,250	371,250	371,250	371,250
Digested Sludge and GHG Offsets	150,000	570,000	570,000	570,000	830,000
Sunset Strip wastewater and sewage	35,600	142,500	142,500	142,500	142,500
Total	\$778,400	\$3,083,750	\$3,083,750	\$3,083,750	\$3,343,750
OPERATING COSTS					
Salaries & Expenses	\$72,000	\$288,000	\$288,000	\$288,000	\$288,000
Maintenance, lab analysis & fuel	20,000	80,000	80,000	80,000	80,000
Chemicals	30,000	120,000	120,000	120,000	120,000
Electrical Overhead	- 23,250	- 93,000	- 93,000	- 93,000	- 93,000
Other-major repairs and start-up (incl 2016)	525,000	-	-	50,000	300,000
Total Operating Expenses	670,250	581,000	581,000	631,000	881,000
EBITDA	1,081,150	2,502,750	2,502,750	2,452,750	2,462,750

PROJECT CASH FLOWS

Project IRR for Georgian Bluffs is estimated at 19.80% based on the following:

- Project cash flows up to 2021 are presented in the table below. Cash flows will vary, increasing as debt is repaid;
- Estimated fair market value of assets contributed by the Municipalities of \$2.0M (based on the \$4.0M of historical costs);
- Estimated fair market value of assets returned to Municipalities of \$2.0M at end of the contract (including the \$7.5M contributed by SusGlobal)

	2017	2018	2019	2020	2021+
Net Income before taxes and municipality payment	(624,318)	1,597,729	1,597,729	\$1,547,729	\$1,557,729
Municipality payment	(77,843)	(200,000)	(200,000)	(200,000)	(200,000)
Add back depreciation	57,500	230,000	230,000	230,000	230,000
Project Cash Flows	\$(644,661)	\$1,627,729	\$1,627,729	\$1,577,729	\$1,587,729

PROJECT CONSIDERATIONS

Consideration	Requirements
Siting:	<ul style="list-style-type: none"> ▪ Site selection/confirmation ▪ Zoning and site plan approvals
Funding:	<ul style="list-style-type: none"> ▪ Land acquisition, Construction financing ▪ Operation and maintenance costs
	<ul style="list-style-type: none"> ▪ Preservation of asset value ▪ Control and management of revenue
Project communications:	<ul style="list-style-type: none"> ▪ Stakeholder consultations, Public and political relations
Engineering:	<ul style="list-style-type: none"> ▪ Pre-engineering investigations Regulatory approvals ▪ Infrastructure, utilities, site preparation, Facilities and equipment ▪ Environmental mitigations ▪ Design drawings and specifications, Operating Plans
Procurement:	<ul style="list-style-type: none"> ▪ Requests for Expressions of Interest (i.e. market intelligence) ▪ Pre-qualifications, Tendering/proposal processes ▪ Preparation and execution of contracts, Negotiations and contract renewals
Construction:	<ul style="list-style-type: none"> ▪ Contract administration, Health and Safety, Quality Management ▪ Earthworks and Roadways, Structures ▪ Equipment, Electrical, Finishes
Service delivery:	<ul style="list-style-type: none"> ▪ Secure and manage inputs, Personnel management, Staff health and safety, Facility operations ▪ Liaison with regulatory agencies and public stakeholders, Marketing of outputs to realize revenue ▪ Financial management and reporting requirements, Preventive maintenance and repairs
Closeout:	<ul style="list-style-type: none"> ▪ Facility decommissioning and recovery of remaining asset value



SusGlobal Energy®
Caring for Earth's Journey™

Address

200 Davenport Road,
Toronto ON M5R 1J2,
Canada

Phone: 416.223.8500

Toll Free: 866.512.SESG (7374)

Facsimile: 416.223.8507

Email: info@susglobalenergy.com

www.susglobalenergy.com

A Carbon Neutral Company