

CLOSURE OF THE BRITANNIA SANITARY LANDFILL SITE – IS IT THE END OR JUST THE BEGINNING?

**2004 NATO/CCMS
Pilot Study on Prevention and
Remediation in Selected Industrial Sectors**

**Cardiff, Wales
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The Britannia Sanitary Landfill Site

- Located in south central Canada in the Province of Ontario



The Britannia Sanitary Landfill Site



- **Approximately 200 acres**
- **Located in the City of Mississauga, Region of Peel**
- **Region of Peel: population of 1 million**

The Britannia Hills Golf Course

What Makes Britannia Hills Unique?

- **Partnership between City of Mississauga and Region of Peel**
- **Operation of golf course and landfill gas power generation facility on a common property**

Closure & Transition of the Britannia Sanitary Landfill



From Landfill to Golf Greens 1980 - 1992



- **Britannia Opened in 1980**
- **Planned to close in 1992**
- **Golf course design created for end-use of landfill**

Planning the Course 1992 - 1997



Planning the Course 1992 - 1997



Building the Course 1997 - 1999

Challenges to building a golf course at Britannia:



- **Environmental**
- **Health & Safety**
- **Region of Peel requirements regarding the final cap**

Opening the Course -1999



- **May 1999**
- **Partnership with Mississauga, golf course operator**
- **1999: Received awards from municipal associations**



Beyond 2000: Britannia Hills and Britannia Landfill Site



Conclusion:

- **Landfill and recreation can be compatible when planned carefully and constructed**

Beyond 2000: Britannia Hills and Britannia Landfill Site

The Golf Course and the Landfill Site



- The Landfill was closed June 30, 2002 after 22 years of operation

Britannia Hills: Phase II

- **Peel is embarking on exciting new initiatives**
- **Britannia Hills Phase II, a championship 27 hole golf course**



Britannia Hills: Phase II

Peel needed to do three things:

- 1. Conduct a market and financial analysis**
- 2. Negotiate agreement with City of Mississauga for construction and operation of Britannia Hills: Phase II**
- 3. Relocate public waste and recycling drop off facilities**



Britannia Hills: Phase II

- **Market analysis showed strong support. In Ontario, 2.1 million golfing participants. Britannia Hills is well located.**
- **Financial analysis indicated 11% return on capital investment by year 5.**
- **Total capital investment of \$13,135,000**
- **\$3,135,000 for Phase I**
- **\$10,000,000 for Phase II**

Britannia Hills: Phase II

- **A very important component of Phase II expansion was the development of management agreement with City of Mississauga to construct and operate the facility**
- **Discussions based on five negotiating principles**

Britannia Hills Phase II

- 1. Equal partners. Will share equally rewards and risks (exception for environmental)**
- 2. Partnership Agreement must provide “win-win” for both parties**
- 3. Mississauga must receive a return for its management expertise**
- 4. The Region must receive financial recognition for the capital investment**
- 5. Creation of a reserve fund. Equal contributions from net profit. Reserve to fund all future capital expenses**

Britannia Hills Phase II

Financial Projections

	<u>2005</u>	<u>2006</u>	<u>2007</u>
Revenue	\$2.4M	\$2.9M	\$3.3M
Costs	(2.1M)	(2.2M)	(2.2M)
Profit	0.3M	0.7M	1.1M
Total Rounds	43,000	48,000	53,000
18 Hole	28,000	29,000	30,000

Britannia Hills: Phase II

\$10,000,000 Capital Cost broken down:

- **Golf Course Construction: \$3.5 million**
- **Building Construction: \$4.0 million**
- **Equipment Purchases: \$0.9 million**
- **“Grow In”, permits, etc: \$1.6 million**

Britannia Hills Phase II

Resulting Contract between Peel and City of Mississauga:

- A 99 year management and operating agreement
- Equal split of net revenues until Peel's capital repaid. City then retains 100% revenue and responsibility for all costs – maintenance, recapitalization and course operations
- City assumes control of reserve fund. To be maintained through revenues
- City agrees to lease the land for construction of the new community recycling center (CRC) for period of up to 99 years at \$2.00 per annum

Britannia Hills Phase II

Phase II concept includes:

- **18 hole championship course**
- **9 hole short course and training academy for juniors and new golfers**
 - **Who knows may be even the next Mike Weir?**
- **Double ended driving range**
- **12,000 sq. ft. clubhouse with banquet facilities for 250 guests**



Britannia Hills Phase II

Britannia Landfill Gas Project

- **Currently LFG collected through leachate collection system and flared on site to control odours**
- **The Region was happy with the existing situation**
- **Landfill Gas Development Industry and Federal Government not happy**

Landfill Gas Project Definition

1. The Region was not interested in investing any funds into the project
2. The Region would fully cooperate in the development of the project
3. The successful proponent would be required to take over the existing components in operation at the site
4. The project was not an environmental remediation program

Landfill Gas Project Definition

4. The project to take a back seat to the development of the golf course
 - In no way could it impact the construction, operation, or the future development opportunities of the golf course
5. Greenhouse gas credits generated were to be kept by Region and not sold on the open market

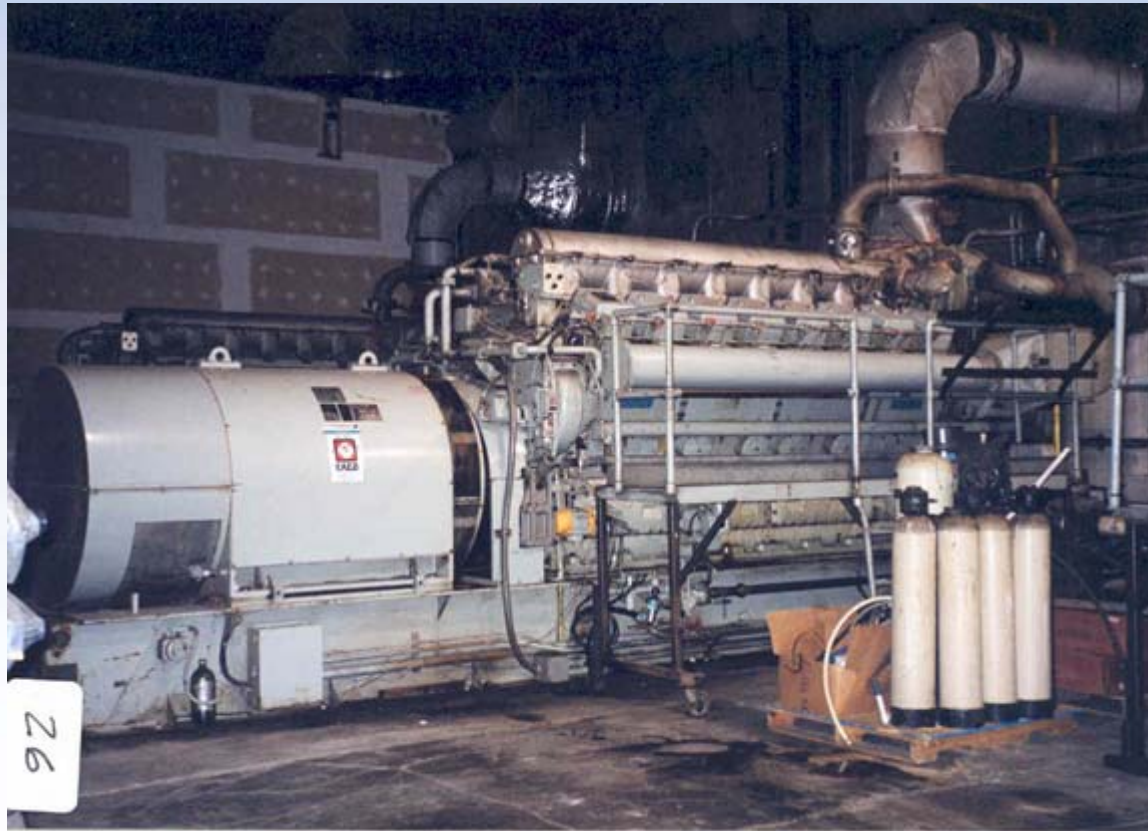


Britannia Landfill Gas Project

Peel issued 2 Stage Proposal for a Design/Build Gas-to-Energy System

- Stage 1: Identify proponents. Resulted in eight submissions
- Stage 2: Invite detailed submissions for evaluation.
 - All submissions received proposed electrical generation to be fed into the Ontario Hydro power grid at approximately \$70 per MWH.
- Award – GRS Comcor Environmental Ltd.
 - To build their plant off site

Britannia Landfill Gas Project



Ontario Hydro Will Not Purchase the Power

Britannia Landfill Gas Project

- **Proposal to Ontario Clean Water Agency**
 - Combine power from the landfill and their on-site generators and sell electricity to local utility
- **Too expensive, but unanimous enthusiasm for concept**
- **Market identified – Lakeview Waste Water Treatment Plant**
- **Lakeview is owned by the Region and operated under contract by the Ontario Clean Water Agency**

Aerial View of the Lakeview Sewage Treatment Plant



Britannia Landfill Gas Project

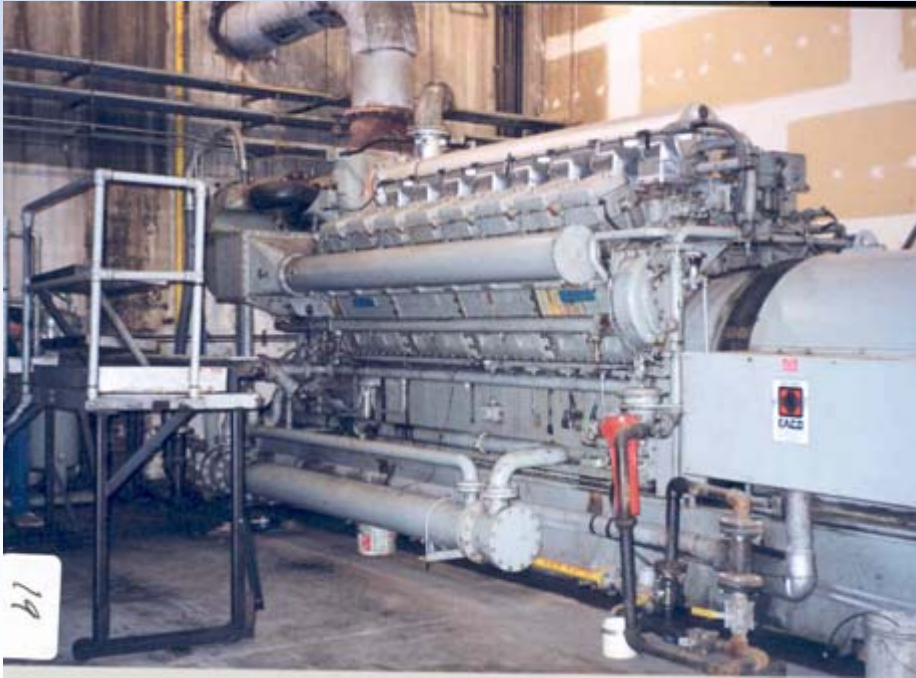
Agreement reached for 20 year period:

- **GRS-Comcor forms partnership with Integrated Municipal Services to create a new company- IGRS**
- **Region guarantees IGRS \$69/MWh for 5 years. Adjusted by CPI over remaining 15 years**
 - **Annual premium of \$315,000 based on Utility prices of \$55.06/MWh for first 10 years**

Britannia Landfill Gas Project

- **Royalties (\$3.45/MWh) paid to the Region. Effective price \$65.55/MWh for first 5 years**
- **After 10 years capital repaid, IGRS drops price by \$9.99/MWh**

Britannia Landfill Gas Project



- The gas will be combusted in three Superior Cooper 16 cylinder, 13,200 cubic-inch turbocharged engines rated at 1875 kW each
- The engines were built in 1986 for landfill gas service and are equipped with hospital grade mufflers
- This equipment was successfully permitted for operation in the U.S.A. on landfill gas and was imported to Canada for reuse

Beyond 2000: Britannia Hills and Britannia Landfill Site

Public Works Region of Peel

***“To be recognized as the Industry Leader
in Public Works”***