



Greenhouse Gas Emission Reduction Verification

for

IGRS Landfill Gas Recovery Project – Thorold, Ontario



FINAL REPORT

Audit Date:

January 20, 2009

Audit Location:

East Quarry Landfill
Niagara Waste Systems Limited
Niagara Falls, Ontario

Audit Report Date:

January 29, 2009

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Objective of Verification

The verification is a systematic, independent and documented ex-post process for the evaluation of a **greenhouse gas assertion** against agreed verification criteria. As such, this document is intended to offer the user a reasonable level of assurance concerning the relevance and reliability (relevance, completeness, consistency, transparency, and accuracy) of the information provided in:

- the *Notice of Creation of Emission Reduction Credits, January 2009* "IGRS - notice of creation - 2008.pdf" (the "**Creation Report**"), and
- the *IGRS – East Landfill, Landfill Gas Recovery Project - Emission Reduction Protocol and Project Document 2008, January 2009 Revision 03 – "IGRS PD 2008 rev.03 01.29.09.pdf"* (the "**Protocol**").

Context

These documents the verification of greenhouse gas emission reductions claimed for the period **January 1, 2008 to December 31, 2008**, as a result of the Greenhouse Gas (GHG) emission reductions achieved by Integrated Gas Recovery Systems (IGRS) at the East Quarry Landfill of Niagara Waste Systems Limited in Niagara Falls, Ontario.

Statement of Opinion

ICF Consulting Canada Incorporated (ICF) has audited the Emissions Reductions claimed in the Creation Report, resulting from the activities defined in the Protocol. The information presented within the Creation Report is the responsibility of the management of IGRS. Our responsibility is to express an opinion on this information based on an audit.

The primary objective of the audit is to provide an independent opinion on the emission reductions of GHGs claimed to result from IGRS's landfill gas emission reduction project at the East Quarry Landfill of Niagara Waste Systems Limited in Thorold, Ontario. To this end, we have examined the accuracy and completeness of current emissions reported and the baseline assumed over the course of the project.

We have planned and performed the audit to confirm the Emission Reductions have been calculated and reported (within the Creation Report) without material misstatement. We employed a materiality threshold of 5% of the total Emission Reductions claimed. The audit includes examination, on a test basis, of evidence supporting the amounts and disclosures in the Creation Report. This audit included a site visit on January 20, 2009 to the landfill gas project where emission reduction activities referred to in the Creation Report have taken place, and where relevant data was collected and examined.

The approach employed by ICF is aimed at confirming emissions estimates and methods used for estimating GHG emissions (direct and indirect) are sound and consistent with established methodologies and data. Undertaking this form of verification for GHG emissions from process sources requires a detailed knowledge of the characteristics of equipment generating GHG emissions, information about abatement equipment, efficiency, and maintenance practices to ensure the equipment is functioning as intended and designed.

Our approach to this verification included:

- An evaluation of data management systems for inventorying GHG emissions including quality assurance and quality control processes;
- A confirmation of the data sources to support the inventory quantification;
- A confirmation of the appropriateness of the GHG emissions reduction inventory;
- A preliminary evaluation of the uncertainty associated with reported activity data and emission factors; and,
- A confirmation of emissions estimates and reductions.

Based on the verification approach of the relevance, completeness, transparency and accuracy of the relevant GHG information as described above, it is the opinion of ICF Consulting Canada Incorporated that:

- The baseline and project emissions estimation methodologies will result in a conservative estimation of emission reductions achieved compared to the baseline.
- The resulting emission reductions are both real and measurable.
- The emission reductions are surplus and represent a reduction not otherwise required by law.
- The emission reductions are verifiable. Activity data relied upon in the quantification of emission reductions is collected, reported, and communicated effectively. The relevant data and records are maintained and protected, demonstrating historic and ongoing conformance to the Protocol.
- IGRS has clear ownership of the emission reductions.

Finally, ICF Consulting Canada Incorporated attests that the Emissions Reductions claimed in the Creation Report and summarized below, occurred as a result of the project activity described in the Protocol during the verification period (January 1, 2008 through December 31, 2008).

Total Emission Reductions	341,179 tonnes CO₂e
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Without limiting the generality of the foregoing, in our opinion:

- IGRS is in possession of all reports, records and data necessary for the calculation of the emission reductions referred to in the Creation Reports and those reports, records and data are complete and accurate in all material aspects;
- The emission reductions referred to in the Creation Reports have been calculated, in all material respects, in accordance with the methodology defined in the Protocol.

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January 29, 2009

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January 29, 2009

GHG Project Description

The following description of the background, methodology and data sources is not intended to be exhaustive, but to provide sufficient background information to support the objectives of this document. The Protocol should be consulted for greater detail regarding the sources of data and methodologies followed.

1.0 Background

In March of 2002, Integrated Gas Recovery Services Inc. (IGRS) commenced operation of a facility for the collection, capture and recovery of landfill gas (LFG) originating at the East Landfill (the "Landfill") pursuant to a March 1, 2002 dated lease agreement with Niagara Waste Systems Limited (NWS). In exchange for a royalty payment to NWS, IGRS has the right, but not the obligation to recover, flare or resell the LFG. All right, title and interest in the LFG remains with NWS until such time as the LFG enters the LFG collection system. Once collected, IGRS assumes all right, title and interest in the LFG.

At the facility, IGRS cleans, dehydrates and compresses the recovered LFG and then transmits the processed LFG through two pipelines (which are owned and operated by Enbridge Gas Distribution Inc. (EGD) to the Abitibi Consolidated Recycled Paper Mill at Thorold, Ontario (Mill) located on Allanburg Road. Pursuant to a November 16, 2000-dated agreement with Abitibi Consolidated Inc., and an amending agreement dated July 27, 2007, IGRS has the right but not the obligation to deliver processed LFG to a point of delivery that is located on Mill property. At this location, processed LFG gas is conveyed to one of two boilers located in the mill's steam plant where it is combusted in conjunction with natural gas provided via Ontario's normal distribution network, to achieve the target blended heat rate that Abitibi sets to ensure compliance with its boiler operating and product quality objectives.

IGRS maintains a back-up, controlled and enclosed flaring station at the Landfill for safety purposes. Any gas which is not distributed to Abitibi is flared, including under upset conditions, ensuring no venting of LFG to atmosphere.

As a result of the consumption of the LFG in Abitibi's boilers, there is a reduction in consumption of natural gas at the Abitibi Mill. As such, there is an offset achieved from the reduction in natural gas production, processing and consumption. The quantity of emission reductions achieved is directly correlated to the volume of natural gas, which would have been required to meet the same heat load as provided by the LFG.

It is further noted that any Emission Reduction Credits resulting from the displacement of natural gas with LFG have not been calculated and are therefore not claimed for 2008.

2.0 Methodology

The calculation methodology of the emission reductions in the Protocol follows the guidance provided in the documents entitled: "*Landfill Gas Capture and Combustion Quantification Protocol*" released by Environment Canada in 2004 and the "*Draft Quantification Protocol for Landfill Gas Capture and Combustion*" released by Environment Canada in 2006.

2.1 Baseline

Reductions are calculated from a theoretical baseline of the emissions that would have been emitted from the continued venting of the LFG to the atmosphere at the Landfill.

3.0 Quantification of Emission Reductions

$$\text{Emission Reductions}_{\text{Destruction}} = \text{Baseline Emissions}_{\text{Destruction}} - \text{Project Emissions}_{\text{Destruction}}$$

These terms are quantified using the following equations:

$$\text{Baseline Emissions}_{\text{Destruction}} = \text{Mass of CH}_4 \times \text{Methane Global Warming Potential}$$

$$\text{Project Emissions}_{\text{Destruction}} = \text{total kWh consumed at the facility} \times \text{Ontario grid sourced electricity factor}$$

Project emissions result from the incremental use of electricity due to the project activity; these are calculated by multiplying the total consumption of electricity by a grid intensity factor. Carbon dioxide resulting from the combustion of the landfill is considered biogenic, and as such, these emissions are part of the carbon cycle and are not included in the quantification of the project emissions. Emissions from the propane pilot for the flare system were estimated and determined to be immaterial – less than 0.1% of the emission reductions achieved.

Destruction efficiencies for the flare and boiler were applied as appropriate to determine the mass of methane combusted. The mass of methane destroyed was then multiplied by the global warming potential of methane (21) to calculate the baseline emissions in units of carbon dioxide equivalent.

4.0 Monitoring and Measurement

Enbridge Consumers Gas (ECG) maintains the gas flow meter at the Mill which serves as the primary metering station for emission reduction claims related to utilization of the landfill gas. The flow meter is a Daniels Orifice Meter, series #316ss, Company # DCPO1-404, and is calibrated quarterly by Enbridge Consumer Gas personnel.

IGRS monitors methane content of the LFG at the LFG plant. The gas analysis equipment is Siemens Ultramat23. It is calibrated quarterly.

At times when the ECG meter was unavailable, the LFG plant metering station was utilized. The LFG plant metering station data was compared with past Mill metering station data to ensure that the claims are comparable to Mill metering station data, if it had been available. The flow meter is a FCI ST98 Flexmaster, and it is calibrated on a quarterly basis.

LFG sent to the flare at the plant is metered using the LFG plant metering station using a separate FCI ST98 Flexmaster flow meter, which is calibrated on a quarterly basis.

5.0 Uncertainty Analysis

The uncertainty involved in the application is primarily a function of the precision of the sampling equipment. The flow data is collected at the orifice plate type flow meter, used for billing. The meter is deemed to be correct when, upon inspection and examination by Enbridge, the error in measurement is found to be less than 2%. Similarly, the meter measuring methane content is also accurate within 2%. Emission intensity and combustion efficiency factors are considered accurate and precise by definition.