Verification Report for
CommonWealth New Bedford Energy, LLC
Greater New Bedford LFG Utilization Project
Dartmouth, Massachusetts

Voluntary Carbon Standard 2007.1

Verification Period: January 1 through June 30, 2010

September 8, 2010

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Report Title:	**Approved by:**
Verification Report for the Greater New Bedford LFG Utilization Project	Jay Wintergreen
Client:	**Project Title:**
CommonWealth Resource Management Corporation	Greater New Bedford LFG Utilization Project
Summary:	
The Greater New Bedford LFG Utilization Project voluntarily captures and destroys methane from the Crapo Hill Landfill, a landfill owned and operated by the Greater New Bedford Regional Refuse Management District in Dartmouth, Massachusetts. The verification process consists of the independent third-party assessment of the project design and emission reduction assertion against the criteria stated in the Voluntary Carbon Standard 2007.1 (VCS), approved CDM Methodology ACM0001 (Version 9.1), and the validated Project Design Document (PDD). The Project claims emission reductions of 52,406 metric tons CO2e for the verification period of January 1 through June 30, 2010. In summary, First Environment is reasonably assured that the Greater New Bedford LFG Utilization Project meets all relevant VCS 2007.1 requirements and correctly applies the CDM Methodology ACM0001 (Version 9.1).	
Work carried out by:	**Number of pages:**
Iris Caldwell Heather Moore Jeff Daley	10

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1. Introduction

This report is provided to CommonWealth New Bedford Energy LLC (CNBE), a wholly owned subsidiary of CommonWealth Resource Management Corporation (CRMC), as a deliverable of the Voluntary Carbon Standard 2007.1 (VCS) project verification process for the Greater New Bedford LFG Utilization Project (the Project) in Dartmouth, Massachusetts. This report covers the verification of greenhouse gas (GHG) emission reductions from the destruction of landfill gas (LFG) in four Caterpillar engine generators for the period from January 1 through June 30, 2010. First Environment, Inc. (First Environment) completed the verification in September 2010.

1.1 Objective

The purpose of this verification was, through review of appropriate evidence, to establish that:

- the Project conforms to the requirements of the verification criteria discussed in Section 1.2; and
- the data reported are accurate, complete, consistent, transparent, and free of material error or omission.

1.2 Scope and Criteria

The Project creates emission reductions, expressed in metric tones of carbon dioxide equivalents (CO_2e), resulting from the destruction of LFG methane which would otherwise have been emitted directly to the atmosphere. Emission reductions are submitted for verification as part of the Voluntary Carbon Standard (VCS) 2007.1 project registration process.

The Project's emissions reductions have been quantified in accordance with the CDM Methodology ACM0001, *Consolidated baseline and monitoring methodology for landfill gas project activities*, Version 9.1. First Environment conducted the validation of the Project's approach, as outlined in the final Project Design Documentation (PDD) dated December 2005 with additional supplements dated December 2007 and December 23, 2008, and approved it in a validation report submitted to CRMC in December 30, 2008. First Environment used the VCS 2007.1, validated PDD, and the CDM Methodology ACM0001 (Version 9.1) as the basis for this verification. The verification covers the time period of January 1 through June 30, 2010. A material misstatement is defined as a difference of five percent of the total reported emissions reductions. Qualitative non-conformities with VCS 2007.1, the validated PDD, and CDM Methodology ACM0001 (Version 9.1) are also considered material during the verification process.

1.3 VCS Project Description

The Project voluntarily captures and destroys LFG methane from the Crapo Hill Landfill located west of Samuel Barnet Boulevard in the northeast portion of the Town of Dartmouth, Massachusetts (latitude and longitude are 41° 43' 28.12" N and 70° 59' 04.82" W, respectively). The Project captures LFG from the expanded active collection system and destroys it either via four Caterpillar 3516 engine-generator sets or a back-up open flare. During the current reporting period, the open flare did not operate.

The PDD provides additional details regarding the Site and gas collection system.

1.4 Level of Assurance

First Environment and CRMC have agreed that a reasonable level of assurance be applied for the Project.

2. Methodology

To review the Project's GHG information, the following verification process was used:

- conflict of interest review;
- selection of Audit Team;
- kick-off meeting with CRMC contacts;
- review of the PDD;
- development of the verification plan and sampling plan;
- site visit focusing on control procedures around data collection;
- review and evaluation of raw data and calculations for period under review;
- follow-up interaction with CRMC contact for corrective action or supplemental data as needed; and
- final statement and report development.

The verification process was utilized to gain an understanding of the Project's emission sources and reductions, to evaluate and verify the collection and handling of data, the calculations that lead to the results, and the means for reporting the associated data and results.

Conflict of Interest Review

Prior to beginning any verification project, First Environment conducts an evaluation to identify any potential conflicts of interest associated with the Project. No potential conflicts were found for this Project.

Audit Team

First Environment's Audit Team consisted of the following individuals who were selected based on their verification experience, as well as familiarity with landfill operations:

Iris Caldwell – Lead Verifier
Heather Moore – Verifier
Jeff Daley – Verifier
Jay Wintergreen – Internal Reviewer

Audit Kick-off

The verification audit was initiated with a kick-off conference call on July 23, 2010 between First Environment and the primary CRMC contact, Thomas Yeransian. The communication focused on confirming the verification scope, objectives, criteria, schedule, and the data required for the verification.

Project Design Document Review

The Audit Team reviewed the PDD as a basis for developing the verification plan.

Development of the Verification Plan

The Audit Team formally documented its verification plan as well as determined the data-sampling plan. The verification plan was developed based on discussion of key elements of the verification process during the kick-off meeting. CRMC was afforded the opportunity to comment on key elements of the plan for verification. Based on items discussed and agreed upon with CRMC, the plan identified the First Environment team members, project level of assurance, materiality threshold, and standards of evaluation and reporting for the verification. It also provided an outline of the verification process, established project deliverables, and presented a data-sampling plan designed to review all project elements in areas of high risk, inaccuracy, or non-conformance. The plan was provided to CRMC on July 26, 2010.

Site Visit

First Environment performed a site visit on August 12, 2009 as part of the previous verification process. The site visit included review of site operations, data collection processes and information management systems, as well as interviews with key project personnel. CRMC confirmed that no significant operational or data management changes had occurred since the site visit; therefore, a repeat site visit for this verification period was deemed unnecessary.

Emissions Reduction Data and Calculation Assessment

This assessment used information and insights gained during the previous steps to evaluate the collected data and reported emissions reduction quantities and identify if either contained material or immaterial misstatements.

Corrective Actions and Supplemental Information

No corrective action or clarification requests were issued for this verification period.

Verification Reporting

Verification reporting, represented by this report, documents the verification process and identifies its findings and results. Verification reporting consists of this report and a separate deed of representation to be submitted to VCSA.

3. Verification Findings

3.1 Remaining Issues, Including Any Material Discrepancy, From Previous Validation

There are no remaining issues or material discrepancies from the validation.

3.2 Project Implementation

The Project is implemented according to the description provided in the validated PDD. The Greater New Bedford Regional Refuse Management District (the District) voluntarily installed the initial active LFG collection system, which became operational in early 2000. The system was expanded aggressively in 2002 in anticipation of the development of an electric generating facility that became operational in October 2005. The Audit Team previously confirmed the Project's start date. Emission reductions are only claimed for LFG collected from the expanded active collection system from January 1, 2002 onwards and destructed in the electric generating facility and flare. No data and/or variables presented in the monitoring report differ from those stated in the validated PDD.

The Crapo Hill Landfill is owned and operated by the District. CNBE wholly owns all environmental attributes associated with LFG destruction for the Project per an agreement with the District in December 2003. First Environment reviewed this agreement to confirm ownership of the environmental attributes associated with the Project.

First Environment previously verified emission reduction credits from this Project for both the Chicago Climate Exchange (CCX) and Environmental Resources Trust (ERT) for crediting periods January 1, 2003 through December 31, 2008; for GE-AES for crediting periods January 1, 2007 through December 31, 2008; and for VCS for crediting period January 1, 2009 through December 31, 2009. GHG emission reduction credits that have not been verified under VCS have been registered with the American Carbon Registry (formerly ERT); and all transactions involving the sale, retirement, or transfer of these GHG credits from CRMC to another party (e.g., to the CCX) are recorded there. GHG emission reduction credits from January 1 through December 31, 2009 have been registered with VCS. Similarly, on behalf of CNBE, CRMC provided First Environment with an attestation that emission reduction credits over the current verification period will only be registered with a VCS registry.

3.3 Completeness of Monitoring

The Audit Team discussed the following topics with site staff during the site visit on August 12, 2009, performed during the previous verification of the Project, and confirmed the information during the current verification process:

- the data collection process to generate reports, and
- internal documents and protocols that set guidelines for the data collection process.

The information gathered during these discussions was used to assess the Project's management systems and its controls for sources of potential errors and omissions. The primary aspects of the Project's monitoring plan are described below.

LFG flow conveyed to the four engines and the open flare is monitored continuously using two separate orifice plate flow meters, one upstream of the four engines and the second upstream of the flare. Since the back-up flare did not operate during this verification period, all LFG flow was monitored by the flow meter located at the engines. The flow meter measures the volumetric flow on a wet basis and records the cumulative standard cubic feet (scf) of LFG at hourly and daily intervals via the supervisory control and data acquisition (SCADA) system. The totalized flow to the engines is automatically corrected to 68°F and one atmosphere of pressure. Flow data are archived daily and stored off site to provide assurance that the records will be available for the lifetime of the project.

Periodic flow checks were performed on the flow meter upstream of the engines using a pitot tube and a Dwyer Mark II manometer. First Environment reviewed evidence that flow checks were performed on January 6, 2010; February 17, 2010; March 25, 2010; May 18, 2010; and June 11, 2010. The flow checks indicated that the meter was operating accurately.

Methane concentration is measured continuously on a wet basis using a California Analytical Instrument 602P Digital non-dispersive infrared (NDIR) analyzer and recorded by the SCADA system. The NDIR analyzer was calibrated at least weekly. First Environment reviewed the results of all weekly calibrations, which indicated that the NDIR analyzer was operating accurately. Additionally, engine operations are governed by the NDIR analyzer readings. If methane concentrations are too rich or lean, the engines' performance will be

compromised and noted by the operator. If this occurs, the NDIR analyzer will be recalibrated. This provides an additional level of confidence regarding the accuracy of the methane analysis.

The data collection and record keeping procedures utilized for the Project were found to be consistent with those outlined in the monitoring plan described in the validated PDD and meet the requirements of ACM0001 (Version 9.1).

3.4 Accuracy of Emission Reduction Calculations

Emission reductions are calculated ex-post using the approach indicated in ACM0001 (Version 9.1) and the validated PDD.

Emission reduction calculations for the verification period were reviewed to ensure accuracy in the formulas used and the raw data used as input. The formulas were tested and found to be consistent with the calculations described in ACM0001 (Version 9.1) and the validated PDD.

Project monitoring data were used to calculate the amount of methane destroyed by the project activity. The SCADA system is programmed to calculate the methane gas flow in units of MMBtu using standardized gas flow, methane concentration, the gross heat content (higher heating value) of methane, and the current temperature and pressure. CRMC converted the MMBtus to total methane gas flow (in scf), for the purpose of calculating emission reductions, using the gross heat content of methane.

The Project does not import electricity nor consume fossil fuels; therefore, there are no associated project emissions. Per the PDD, the destruction efficiency of the electric generating unit is 100 percent.

The quantity of methane destroyed from the District's initial active collection system was subtracted from the total methane destroyed during this verification period, as specified in the validated PDD. Emission reductions were aggregated monthly.

The verification process focused on the evaluation of quantification spreadsheets to ensure that they were consistent with the formulas described in ACM0001 (Version 9.1) and the validated PDD. Copies of the raw data used in the calculations, including flow and methane content, were compared with the values used in the final calculations and tested for transcription or mathematical errors. The Audit Team compared copies of the hourly raw data to the daily summary reports to ensure accuracy and consistency. The calculations for the entire period were reviewed as well to determine whether they were free of material misstatement. The Audit Team performed an independent recalculation of the emission reductions from the verification period using the daily raw data from SCADA. All calculation methods and emission factors used to determine emission reductions were consistent with those outlined in the validated PDD. The Audit Team noted minor transcription errors, but they had an immaterial impact on the overall emissions reduction assertion.

3.5 Quality of Evidence to Determine Emission Reductions

CRMC provided adequate documentation for the emissions estimates as well as its management systems around the data collection process. Evidence included records of flow checks and gas analyzer calibrations and electronic data associated with gas flow and methane content monitoring.

Evidence provided is consistent with the requirements of ACM0001 (Version 9.1) and the validated PDD and meets generally accepted evidentiary standards for best practice in GHG accounting.

3.6 Management and Operational System

CRMC has adequate management and operational systems in place with respect to monitoring and reporting, as determined through observation during the initial site visit and desktop review of project documentation. Records of the raw data and calibrations are recorded by the SCADA system and the monitoring system is designed to trigger alarms when parameters fall outside a specified range. Additionally, the records are sent to CRMC for analysis, quality control, and emission reduction calculations.

4. Verification conclusion

First Environment was retained to provide verification services for the Project's GHG emission reductions assertion based on the following fundamentals:

- *Level of assurance:* Reasonable assurance;
- *Objectives of verification:* To assure project conformance with the Voluntary Carbon Standard 2007.1 and UNFCCC's ACM0001 (Version 9.1);
- *Verification criteria*: Voluntary Carbon Standard 2007.1, CDM Methodology ACM0001 (Version 9.1), and validated PDD;
- *Definition of materiality:* Misstatements of more than five percent of the GHG reduction assertion and qualitative non-conformities with the validated PDD are considered material;
- *Scope, including:*
    - *Boundaries of the assertion:* Crapo Hill landfill operations;
    - *The physical infrastructure, facilities, and activities within the assertion:* Landfill gas collection and destruction operations;
    - *GHG sources, sinks, and reservoirs included within the assertion:* Methane emission reductions expressed as carbon dioxide-equivalents; and
    - *The time period for the assertion:* January 1 through June 30, 2010.

Based on the assessments performed and the historical evidence collected, First Environment concludes with a reasonable level of assurance that the emissions reductions of the Project resulting from the capture and combustion of methane gas for the period of January 1 through June 30, 2010 are:

- consistent with the VCS PDD of December 2005 (with supplements);
- in conformance with the Voluntary Carbon Standard 2007.1 and the CDM methodology ACM0001 (Version 9.1);
- without material discrepancy; and
- meeting the minimum level of accuracy of at least 95 percent.

Verified results show:

Reporting Period: January 1, 2010 through June 30, 2010	
Baseline Emissions (tCO_2-e)	52,406
Project Emissions (tCO_2-e)	0
Emissions Reductions (tCO_2-e)	**52,406**

5. Verifier Signature

Iris Caldwell
Engineer II

6. Internal Reviewer Signature

James Wintergreen
Senior Associate