



Verification Report for

EcoSecurities International Limited
Development Authority of the North Country
(DANC) Landfill Gas Destruction Project
Rodman, New York USA

Climate Action Reserve
CAR 398, Fifth Reporting Period

Landfill Project Protocol, Version 3.0

06 August 2011

Report Prepared for

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Summary

EcoSecurities International Limited (EcoSecurities) engaged NSF International Strategic Registrations Ltd. (NSF-ISR) to verify its destruction of landfill gas (LFG) from a project defined in accordance with the requirements of the Climate Action Reserve (“the Reserve”) Landfill Project Protocol, Version 3.0 (December 2, 2009). The project is comprised of a landfill gas collection and combustion system composed of three electricity generators and two flares installed at the Development Authority of the North Country (DANC) Landfill Gas Destruction Project (herein referred to as the “Project”) in Rodman, New York. This is the fifth verification report submitted to the Reserve for the project and covers the period of 1 September 2010 through 27 March 2011.

The project reduced emissions into the atmosphere by 86,934 metric tons CO₂-e.

1. Introduction

1.1 Objective

The objective of this verification audit was to determine, with reasonable assurance, that EcoSecurities had met eligibility requirements and had quantified, monitored, and fairly reported to the Climate Action Reserve its landfill gas emission reductions at the Project landfill in accordance with all applicable requirements of the Climate Action Reserve Landfill Project Protocol v. 3.0.

1.2 Scope

The scope of the engagement included quantification, monitoring and reporting of greenhouse gas project emissions reductions associated with the operation of three electricity generator sets and two backup flares at the Project landfill during the period 1 September 2010 through 27 March 2011.

1.3 Criteria

EcoSecurities implemented its methane emission reduction project in accordance with the requirements of the Climate Action Reserve’s Landfill Project Protocol v. 3.0, the Landfill Project Protocol v. 3.0 Errata and Clarifications (July 11, 2011), and the Climate Action Reserve Program Manual (March 16, 2010). NSF-ISR conducted its verification of the reported emission reductions in accordance with section 8 of the Climate Action Reserve Landfill Project Protocol v. 3.0, the Climate Action Reserve Project Verification Manual (December 20, 2010), and ISO 14064:2006 Part 3, *Greenhouse gases – Specification with guidance for the validation and verification of greenhouse gas assertions*.

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1.4 Materiality

In accordance with the Climate Action Reserve Project Verification Manual, emission reduction reports were considered fairly stated if they varied by no more than 1% from a complete statement of the project's methane emission reductions. Thresholds of materiality defined by Climate Action Reserve Project Verification Manual allowed verifiers of emission reduction reports to consider as immaterial discrepancies of 1% or less.

1.5 Level of Assurance

This engagement was performed at the reasonable level of assurance.

2. Verification Approach

2.1 Team Appointment and COI Review

This verification was performed by John Shideler, NSF-ISR Lead Verifier, and reviewed by Michael DeBusschere. Conflict of Interest inquiries were completed for NSF-ISR, for the verification team, and for the internal reviewer, and a finding of low COI risk was confirmed by the Climate Action Reserve.

2.2 Document Review

The verification team conducted a document review to inform the planning process in advance of performing on-site verification activities. Documents reviewed included: "CRT Monitoring Report, Development Authority of the North Country (DANC) Landfill Gas Destruction Project – CAR 398", "Monitoring Manual for the DANC Landfill Gas Destruction Project," v. 4.2 (April 2011), emission reduction assertions submitted to the Climate Action Reserve, and other project records and data.

2.3 Planning

NSF-ISR's verification approach is risk-based. It draws upon our understanding of risks to fair statement of reported emissions and the operation of controls to reduce such risks. As a result of the document review and preliminary conversations with EcoSecurities personnel in New York, NY, a verification plan and a sampling plan were developed for this engagement.

2.4 Verification Activities

As a result of its planning process, on 25-26 April 2011 NSF-ISR conducted a site visit of the DANC landfill gas destruction project in Rodman, NY. Verification activities continued off-site in June and July 2011. The nature of verification activities included:

- Verification of the eligibility of the Project to report emission reductions in accordance with the Climate Action Reserve Landfill Project Protocol v. 3.0;

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- Verification of title to the emission reduction credits asserted by the EcoSecurities;
- Verification of the Project's additionality as established through the Legal Requirement Test and the Performance Standard Test;
- Verification of the ongoing compliance of the DANC landfill to regulatory requirements;
- Verification of applicable methane and carbon dioxide emission sources within the project boundary and their quantification as defined by the Climate Action Reserve Landfill Project Protocol v. 3.0;
- Verification of EcoSecurities's and DANC's monitoring of key operational parameters of its landfill gas collection and destruction project;
- Assessment of the capability of EcoSecurities's management system and procedures to produce accurate, reliable, and reproducible data and information;
- Determination of EcoSecurities's conformity in all material respects with the requirements of the Climate Action Reserve Landfill Project Protocol v. 3.0;
- Reviewing the basis for and results achieved from the calculated methane emission reductions from its landfill gas collection and destruction project;
- Selecting locations and processes within the scope of EcoSecurities' landfill gas destruction project to visit based upon an assessment of risks to fair reporting; and
- Visiting the selected work locations and interviewing personnel, observing operations, and reviewing relevant documents and records.

3. Verification Findings

3.1 Project Description

The Development Authority of the North Country operates a municipal solid waste facility in Rodman, NY. This verification report covers the fifth and final reporting period to the Climate Action Reserve under Project CAR 398. The project consists of destruction of LFG by collection using a well field system and subsequent combustion primarily in electricity generator sets with excess LFG combusted in flares. The landfill began accepting waste in 1992 and the collection and combustion system began in late March 2001.

3.2 Eligibility

NSF-ISR considered evidence to establish the eligibility of the Project under the Landfill Project Protocol (LPP) v. 3.0 as described below.

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Location. The Project is located within the United States of America in Rodman, NY. NSF-ISR confirmed the location through site visits in April 2010 and in April 2011.

Project Start Date. The Project was originally listed with another emission reduction registry prior to transferring to the Climate Action Reserve (the Reserve) through a project transfer attestation form dated 26 September 2008. NSF-ISR verified that the project start date was 28 March 2001 through the review of records of the installation and commissioning of the original flare. The project start date thus occurred after 1 January 2001, the earliest date of eligibility for landfill gas projects. From these facts NSF-ISR has concluded that the Project is eligible.

Crediting Period. The crediting period for landfill projects is 10 years from the project start date. The crediting period for the Project extended to 27 March 2011. NSF-ISR has concluded that the reporting period verified in this report is within the crediting period for this Project.

3.3 Additionality

Legal Requirement Test. NSF-ISR reviewed an attestation of voluntary implementation signed by the EcoSecurities on 27 April 2011 for the project reporting period from 1 September 2010 through 27 March 2011. NSF-ISR verified through interviews that the monitoring plan requirement to annually review state, local, and federal landfill gas regulations had been performed. From this evidence NSF-ISR has concluded that project implementation continued to be voluntary.

Performance Standard. The Project's landfill met the performance standard by installing new qualifying destruction devices at an eligible landfill where no previous combustion of landfill gas had occurred prior to the project start date. The installation of the Project's two flares and three electricity generator sets were confirmed by a site visit. NSF-ISR concluded from this evidence that the Project has met the performance standard test.

Regulatory Compliance. The Project landfill was subject to NSPS regulation because it had a solid waste design capacity greater than 2.5 million megagrams or 2.5 million cubic meters. NSF-ISR reviewed the most recent record of Non-Methane Organic Compound (NMOC) emission rates, conducted in October 2006. In that year the calculated NMOC emission rate was 3.62 mg/year. It was not anticipated to exceed 50 mg/year any time in the next five years. NSF-ISR also reviewed the Project's Title V air permit, which has a scheduled validity through 14 August 2011, and the Project's New York Department of Environmental Conservation Part 360 permit (valid through 27 August 2012). Landfill personnel reported one Notice of Violation during the Project reporting period for blowing litter during an inspection that occurred on a particularly windy day. On the date in April 2011 of NSF-ISR's visit, the verifier did not observe any blowing litter. The results of NSF-ISR's regulatory review indicated the landfill remained in material compliance with Federal, State and Local regulations during the reporting period 1 September 2011 through 27 March 2011. NSF-ISR reviewed the Attestation of Regulatory Compliance completed by EcoSecurities on 27 April. On the basis of all evidence reviewed, NSF-ISR has concluded that the Project operated in accordance with applicable regulatory requirements during the reporting period.

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3.4 Ownership

NSF-ISR reviewed the Attestation of Title dated 27 April 2011 concerning ownership of landfill gas emission reduction credits and found it free from apparent defect. EcoSecurities International Limited of Dublin, Ireland, is the Project Developer. In previous verifications, NSF-ISR confirmed EcoSecurities' ownership of the Project's generated emission reduction credits by reviewing the emission reduction purchase agreement between the Development Authority of the North Country and EcoSecurities. This agreement demonstrated that EcoSecurities held legal title and exclusive ownership rights of the emission reductions associated with the project during the current verification crediting period.

3.5 Project Boundaries and Emission Sources

The Project included all emission sources from the operation of the landfill gas collection system to the ultimate destruction of the landfill gas at electricity generator sets. The Project maintained two flares, a 12-inch flare and a 6-inch flare. The former was used to combust landfill gas when the generator sets were out of service. The latter flare was used to combust excess gas that was not needed by the three generator sets when they operated. The location of all flow meters is sufficient to determine flow to each individual destruction device:

- 1) the gas analyzer is located upstream of the bifurcation of flows to individual devices;
- 2) the main flow meter, referred to as Flow meter 3, is upstream of the generator plant and 6" flare;
- 3) the other two flow meters are located prior to each of the two flares, referred to as Flow meter 1 to the 12" flare and Flow meter 2 to the 6" flare.

The sources of GHG emissions reviewed in the Project are as follows.

GHG sources, sinks, and reservoirs associated with the baseline scenario:

- CH₄ vented to the atmosphere.
- CO₂ from the oxidation of CH₄ by soil bacteria. As the landfill is not entirely covered with a synthetic liner, the Landfill Project Protocol v. 3.0 assumption that 10 percent of the methane produced would be naturally oxidized by soil bacteria has been applied.

The GHG sources, sinks, and reservoirs associated with the Project:

- CH₄ from the incomplete combustion of CH₄ in the electricity generator sets and flares, calculated using default values provided in the Protocol.
- CO₂ from the combustion of fossil fuels used during operation and maintenance activities for the project activity.
- CO₂ resulting from the consumption of imported electricity.

All gases have been converted to CO₂ equivalents.

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3.6 Performance Against Project Protocol/Methodology

The Project was implemented in conformity with the Climate Action Reserve Landfill Project Protocol v. 3.0. In this section of the report, NSF-ISR reviews the evidence it has considered in reaching conclusions about the performance of the landfill with respect to operations and maintenance activities required by the applicable protocol.

Monitoring Flow and Methane Concentration. The Project measured the flow of landfill gas at three locations using a Veris Verabar flow sensor connected to an ABB pressure transmitter and LFG temperature sensor. Methane concentration was measured using a Siemens Ultramat 23 gas analyzer. Flare temperatures were monitored with thermocouples. All flow meters automatically standardized flow for temperature and pressure and NSF-ISR confirmed that no emission reductions resulting from the flare were reported in the event the flare sensors did not indicate flame presence (a temperature of at least 500°F).

NSF-ISR reviewed calibration records for three flow meters and the methane gas analyzer from 27 December 2010 and 25 March 2011. Records for all four instruments demonstrated that they were found to be performing within specification with no adjustments necessary. Inspection and cleaning and tightening of contacts were included as part of the calibration procedure.

NSF-ISR did find that the wrong internal pipe diameter was used in the equations used to interpret data from the 6-inch flare flowmeter. This likely occurred when the flare was relocated in early 2010 using new piping of the same nominal diameter, but slightly different internal diameter. Upon inquiry, records showed that the internal pipe diameter of the pipe now in use was 4.026 inches and not the 3.97 inches entered in the pipe flow algorithm when the original pipe was installed. The new pipe, therefore, was 1.4% larger in diameter than the equation accounted for. The relationship between gas flow and pipe diameter is not strictly linear, but the difference provides an approximate indication of the amount of error attributable to measurements of gas flow to this flare. Because the error caused underreporting of gas flow by approximately 1.4%, and because the 6-inch flare accounted for only 26.4% of the total landfill gas destroyed during the project reporting period, the underreporting error was in the range of 0.37%. The error was thus not material, and moreover, the Reserve no longer requires corrective action for underreporting errors.

NSF-ISR reviewed Excel spreadsheet files provided by EcoSecurities and checked their formulae to ensure that they accurately reported raw data exported from the data logger in accordance with the Reserve's rules for data monitoring. No issues were found. EcoSecurities did provide a letter from the Reserve stating that the Reserve accepted continuous flow weighted average methane concentration in place of the protocol requirement that LFG flow and concentration measurements be aggregated daily.

Synthetic Liner. The Project had not installed a synthetic liner over its cover system; therefore a default 10% methane soil oxidation factor was applied to the baseline scenario.

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3.7 Project Management System

Management System. NSF-ISR verified the Project's management system during document review and during the on-site visits to the Project in April 2010 and April 2011. NSF-ISR had interviewed DANC executive management in April 2010 and operating managers in April 2011. NSF-ISR found a strong control environment for the project, including information management, authorizations for key activities, management reviews, and recordkeeping. NSF-ISR's review of management system capabilities encompassed the following elements:

- Definition and maintenance of an appropriate control environment by the Development Authority of the North Country (DANC) landfill management and personnel;
- Training and competence of landfill project managers and operating personnel, including contractors;
- Identification and management of legal requirements related to landfill operations;
- Identification and maintenance of records required by the landfill project;
- Landfill site and gas collection and combustion equipment specifications;
- Quantification methods and calculations of project emissions;
- Checking and corrective action mechanisms.

In summary, NSF-ISR determined through interviews and observations that the management system of the Project was adequate to support compliance with the Reserve's requirements for project management.

3.8 Calculation of GHG Emission Reductions

NSF-ISR verified that the Project had calculated emission reductions correctly, that appropriate equations were used, and that project emissions were quantified from records. The quantification of project emissions was based upon evidence of fossil fuel consumption (propane as supplemental fuel for the flare and back-up heating at the landfill gas-to-energy facility, and diesel for back-up generators), and indirect CO₂ emissions from the supplemental use of electricity in the grid. NSF-ISR determined project emissions accounted for approximately 0.03% of project emission reductions.

3.9 Corrective Action Requests/Recommendations

NSF-ISR issued a number of corrective action requests and made recommendations to Project management during the verification process. All material issues were resolved. Details on the corrective actions and clarifications requested are provided to the project developer and to the Reserve in a List of Findings, a private document.

3.10 Approved Variances or Deviations

No variances from Protocol requirements were requested by the Project during the present reporting period.

4. Verification Results

4.1 Verification Team Recommendation

Emission Reductions, Vintage 2010		Metric tons CO ₂ -e
Project baseline		52,024
- Project emissions		20
- Project adjustments: Deduction for prior destruction of CH ₄		N/A
= Net project emission reductions/removals		52,004

Emission Reductions, Vintage 2011		Metric tons CO ₂ -e
Project baseline		34,955
- Project emissions		25
- Project adjustments: Deduction for prior destruction of CH ₄		N/A
= Net project emission reductions/removals		34,930

4.2 Verification Audit Summary

Project Developer	EcoSecurities International Limited
Project Location	Rodman, NY, USA
Project Type	Landfill gas destruction
Project Period	1 September 2010 through 27 March 2011
Protocol/Methodology	Climate Action Reserve Landfill Project Protocol, version 3.0
Emissions/Removals Verified	Vintage 2010: 52,004 Vintage 2011: 34,930
Verification Conclusion	Based upon the verification activities described above, NSF-ISR has concluded with reasonable assurance that EcoSecurities International Limited's reported 2010 and 2011 vintage emission reductions of 52,004 vintage 2010 metric tons CO ₂ -e and 34,930 vintage 2011 metric tons CO ₂ -e reported to the Climate Action Reserve for the period 1 September 2010 through March 27, 2011, are, in all material respects, fairly stated.
Lead Verifier	 John C. Shideler, 06 August 2011

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Internal Reviewer	 Michael T. DeBusschere, August 07, 2011
<i>This verification statement is valid when signed and dated by an NSF-ISR internal reviewer.</i>	