

LANDFILL GAS PROJECT VERIFICATION REPORT

Verification under the Climate Action Reserve (CAR)

Oneida-Herkimer Landfill Ava, NY Project

**Environmental Capital LLC
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Reporting Period

October 1, 2011 to September 30, 2012

Site Visit Date

November 7, 2012

Report Date

January 21, 2013

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Table of Contents

Summary	1
Introduction.....	2
Verification Details	2
Verification Objectives.....	2
Verification Scope and Criteria	2
Level of Assurance	3
Treatment of Materiality	3
Verification Process	3
Verification Summary	3
Verification Team.....	4
CAR Landfill Project Requirements.....	4
Project Description.....	5
Project Eligibility.....	5
Location	5
The GHG Assessment Boundary	8
Review of Project GHG Management Systems.....	8
Quantitative Review of Carbon Reductions and Removals	10
Verification Results.....	13
Recommendation	14
Appendix I	15

Summary

This report presents the findings of the verification assessment of the Oneida-Herkimer Landfill Ava, NY Project (“the Project”) developed by the Oneida-Herkimer Solid Waste Management Authority (“the Project Proponent” or “the Authority”). This assessment covers the Project’s greenhouse gas emission reductions reported to the Climate Action Reserve (the Reserve or CAR) for the verification period October 1, 2011 to September 30, 2012. The verification was undertaken to evaluate the Project Design Document and assess whether the compiled data conforms to the Climate Action Reserve Landfill Project Protocol, Version 3.0, December 2009.

The evaluation was undertaken using the Climate Action Reserve Landfill Project Protocol, Version 3.0, December 2009 as well as the verification methodology developed by SCS for carbon offset projects submitted to the Reserve.

In the course of the verification assessment, the SCS verifiers developed findings which included New Information Requests (NIRs), Non-Conformity Reports (NCRs) and Opportunities for Improvement (OFIs). The findings All New Information Requests and Non-Conformity Reports have been adequately responded to, resulting in their closure.

On the basis of the information provided and the analyses completed, SCS was able to reach a decision on the emissions reduction reported by the Project Proponent to the Climate Action Reserve. SCS verified the adequacy of the information provided in the Project Design Document (“the PDD”), confirming that this document meets the requirements of the Climate Action Reserve standards. Further, SCS was able to reach a positive opinion on the claimed emission reductions and removals presented in the Project Design Document and on the Reserve website by the Oneida-Herkimer Solid Waste Management Authority. Thus, SCS has verified 72,436 metric tons of CO₂e reductions and removals from the Oneida-Herkimer Landfill Ava, NY Project for the reporting period of October 1, 2011 to September 30, 2012.

Introduction

SCS Global Services (SCS), formerly Scientific Certification Systems is a global leader in third-party certification, auditing, testing services, and standards. Established as an independent third-party certification firm in 1984, our goal is to recognize the highest levels of performance in environmental protection and social responsibility in the private and public sectors, and to stimulate continuous improvement in sustainable development. SCS is currently accredited to ISO 14065 for GHG Validation and Verification by the American National Standards Institute (ANSI) and offers verification under the Verified Carbon Standard (VCS) and the Climate Action Reserve (CAR). SCS also offers verification services for the American Carbon Registry (ACR) and the Climate, Community and Biodiversity (CCB) standards.

SCS was commissioned by the Oneida-Herkimer Solid Waste Management Authority to undertake the third annual project verification of the Oneida-Herkimer Landfill Ava, NY Project. The project consists of the collection of landfill gas (LFG) from the Oneida-Herkimer Solid Waste Management Authority Regional Landfill in Ava, NY, and subsequent destruction through combustion in a candlestick flare and an onsite landfill gas to energy facility (LFGTE). This report covers the verification period of October 1, 2011 to September 30, 2012 as a project deliverable into the Climate Action Reserve.

Verification Details

Verification Objectives

The objective of the verification is to:

- Evaluate conformance with the Landfill project as defined in the criteria stated below.
- Determine with a reasonable level of assurance whether the Project has resulted in the GHG emissions reductions and/or removals as stated in the project documents.
- Evaluate the project planning information and documentation including the determination of project eligibility, project design, baseline and project emissions determination, management systems supporting the project, and methodologies employed for the calculation of GHG emission reductions.

Verification Scope and Criteria

The scope of the verification is defined as an independent and objective review of the project description document, the project's baseline study, monitoring plan and emissions reductions calculations. The information in these documents is reviewed against the following criteria:

- CAR Landfill Project Reporting Protocol Version 3.0 (December 2009)
- Errata and Clarification LPP Version 3.0 (August 16, 2012)
- CAR Verification Program Manual, December 20, 2010
- CAR Program Manual, October 26, 2011
- All Verification activities carried out by SCS will follow the requirements of ISO 14064-3 (Specification with guidance for the validation and verification of GHG assertions)

Level of Assurance

The level of assurance applied to this verification assessment is Reasonable Assurance as required by the Climate Action Reserve.

Treatment of Materiality

In consideration of the required level of assurance, the needs of the intended user and the requirements of the Climate Action Reserve Program, SCS applied a materiality threshold of 3%. The data reviewed was considered to meet the principles of accuracy, completeness, transparency and is free of material error or omission.

Verification Process

Verification Summary

The verification process consisted of the following:

- 1. Project listed with the Climate Action Reserve:**
The Oneida-Herkimer Landfill Ava, NY Project is listed on the Climate Action Reserve (CAR) website. The Authority selected SCS as their verification body for this reporting period.
- 2. Conflict of Interest Review.**
A Notification of Verification Activities/ Conflict of Interest (NOVA/COI) form was submitted to CAR. The COI assessment was conducted to identify any potential conflicts interests with the verification/project. No conflicts were identified and a determination of low potential for conflict of interest was received from the Climate Action Reserve prior to the commencement of verification activities in a determination letter dated October 9, 2012.
- 3. Introductory Meeting:**
A kick off meeting was conducted between the verification team with Jim Biamonte and Bill Rabbia of the Authority, and project consultants from both Barton & Loguidice, P.C. and Environmental Capital LLC on October 11, 2012. The purpose of the kick off meeting was to review the timeline of audit; confirm verification criteria; determine any changes in the site, sources, GHG management systems or personnel, and to begin gathering information.
- 4. Desk Review**
SCS received and reviewed the Project Design Document, CAR submittals, and supporting documentation to assess initial conformance with the data requirements of the CAR Landfill Project Protocol. A risk assessment was conducted to identify key factors that impact the reported emission reductions and removals. A Verification Plan was created to focus on the critical elements presenting potential risk for errors with the project. The Audit/Verification Plan can be found in Appendix I.
- 5. Site Visit**
Following the desk review, the audit team conducted an on-site audit of the project area on November 7, 2012. The purpose of the site visit is to verify the project equipment, location and eligibility, to review and evaluate the project GHG management systems, data collection and

handling, and emission reduction calculations and procedures in place, and to finalize the risk assessment and sampling plan.

6. Quantitative Review

An assessment of the emission reduction calculation inputs and procedures was performed to review the quantitative analyses undertaken by the Project Proponent to convert the raw inventory data into emission reduction estimates.

7. Findings

Throughout the verification, there is an iterative exchange between SCS and the Project Proponent to gather additional information for review and examination. This exchange includes Findings—New Information Requests (NIR), Non-Conformity Reports (NCR) and Opportunities for Improvement (OFI)—that are issued by SCS to the Project Proponent. The Project Proponent must respond to NIRs and NCRs in order for SCS to render a verification opinion. At this time all Findings have been appropriately addressed by the Authority and subsequently closed by SCS.

8. Draft Report and Statement

This step in the verification process includes a final review of the submitted data, completion of the Verification Report, and drafting of the Verification Statement. A draft Verification Report and Statement are completed based on the results of the verification assessment.

9. Technical Review

The draft report was presented to an SCS lead verifier, independent of the verification, who determined the Verification Statement to be justified given the evidence presented. The Verification Report and Verification Statement were then presented to the Authority for review and comment.

10. Final Report and Statement

Once the Authority approved these documents, SCS uploaded them to the Reserve website for administrative review by CAR. Given a positive review, CAR will register the emissions reductions for the landfill gas project and issue carbon tonnes for a reporting period of October 1, 2011 to September 30, 2012.

11. Exit meeting with client:

The exit meeting entails a review of the verification process, summary of the verification findings and to initiate scheduling for the next verification period.

Verification Team

The verification was undertaken by Rori Cowan, Lead Verifier. The Technical Review was performed by Todd Frank, Director of Southeast Asian Operations of SCS.

CAR Landfill Project Requirements

SCS verified the Oneida-Herkimer Landfill, NY Project against the requirements of the Climate Action Reserve Landfill Project Protocols. The following sections detail the most essential aspects of the verification of the Project.

Project Description

The Oneida-Herkimer Solid Waste Management Authority (OHSWMA) Regional Landfill is located in Ava, New York and is owned and operated by the Oneida-Herkimer Solid Waste Management Authority, a publically owned regional waste authority. The Landfill is approximately 23.5 acres in area and is permitted to accept approximately 312,000 tons of municipal solid waste (MSW) annually. The Landfill initially began accepting waste in 2006 and is currently comprised of three cells (Cells 1, 2 & 3). Cell 1 is approximately 9 acres and began accepting waste on October 24, 2006, Cell 2 is approximately 7.1 acres and began accepting waste in 2007, and Cell 3 is approximately 7 acres and began accepting waste in July 2010. The Landfill accepts MSW, construction and demolition (C&D) debris, asbestos waste, industrial waste (including sludge), ash, sewage treatment plant sludge, and petroleum contaminated soil. The Landfill currently has over 1.0 million tons of waste in place.

In the spring of 2010, OHSWMA installed the first phase of the landfill gas (LFG) collection and control system (GCCS) at the Landfill. The GCCS currently consists of thirty vertical LFG extraction wells and eleven horizontal LFG extraction wells, which are connected via a common header line. The captured LFG is directed to a flare system where it is combusted on-site in a John Zink Co. open utility flare, model ZEF-0825 (Flare). A Thermal Instruments Co. Model 62-9 mass flow meter (SN 2010175) is utilized to measure LFG flow directed to the Flare on a continuous basis. Methane concentration is also measured continuously with a Siemens Ultramat Model 23, located at the flare inlet. Flame presence and temperature at the flare stack is measured continuously with two type K thermocouples. Methane, flow, and flame temperature data are recorded at 1-minute intervals in a Yokagawa model FX1012 digital recorder. For the purpose of quantifying emission reductions, the Project only quantifies methane flow recorded when the flare combustion temperature is recorded at or above 500 degrees Fahrenheit.

Beginning in April 2012, collected landfill gas was also conveyed to the Waste Management Renewable Energy (WMRE) Facility. The WMRE landfill gas to energy facility is located on a leased parcel of land adjacent to the flare skid. The WMRE LFGTE facility is separately owned, operated and permitted from the OHSWMA Regional Landfill facility and landfill gas flare station. OHSWMA and WMRE have a site lease and landfill gas purchase agreement in place that specifies that OHSWMA retains ownership of carbon credits associated with the voluntary destruction of methane in landfill gas. The landfill gas to energy facility is permitted for up to three (3) Caterpillar® G3520C lean burn, landfill gas fueled reciprocating internal combustion (IC) engine generator sets. Engine 1 became operational in April 2012. Future engines 2 and 3 will be commissioned upon availability of landfill gas for operation. Flaring of landfill gas is used as an alternate control method during periods when the engines are down for periodic maintenance, as well as parallel control when excess landfill gas is collected beyond the capacity of the installed engines.

Project Eligibility

There are three eligibility rules the Project must meet in order to register reductions with the Climate Action Reserve.

Location

The project is a U.S. based landfill located in the town of Ava, NY, USA and therefore meets this eligibility requirement.

Project Start Date

As stated in the Landfill Gas Project Protocol, pre-existing projects must have a start date on or after January 1, 2001 and must be listed with the Reserve twelve months from the effective date of the protocol (LFG Reporting Protocol Version 3.0, December 2009). The start date is defined as the date at which a qualifying destruction device first continuously destroys landfill gas.

The Authority listed the Project on the Climate Action Reserve website in 2010. The Project's listing indicated the Project Proponent began installation of the landfill gas collection and conveyance system (GCCS) on July 1, 2010 and began flaring gas on July 15, 2010. The Authority provided various documents to support the evidence of construction of the landfill gas project such as the monitoring plan, the previous 2 verification reports, and a letter from Barton & Loguidice, P.C. certifying the initial startup of the first phase of the LFG project dated September 27, 2010, which did not include the WMRE LFGTE facility at that point. These documents confirmed the project start date of July 15, 2010 and the Project is within its ten year crediting period.

Additionality

Project Proponents must indicate that reductions are above and beyond business as usual. In order to do so, the Project must pass a Performance Standard test and the Legal Requirement test.

Performance Standard

For the Performance Standard test, a project developer may meet eligibility under three possible performance threshold scenarios. The below scenario applies to the Oneida Herkimer Solid Landfill Ava, NY Project.

Scenario 3: The landfill was previously collecting and destroying landfill gas using a non-qualifying destruction device (passive solar flares) prior to the earliest allowable project start date, the project is additional if the Installation of a new qualifying destruction device and only the landfill gas destroyed beyond that resulting from the pre-project collection and destruction system is considered additional.

As the Landfill's passive, portable flares only operated 5 months prior to the active gas collection and control system installation and operation coming online; the facility conducted pre-project monitoring and calculation of the quantity of landfill gas and methane fraction of landfill gas that was destroyed by the passive flares. Pre-project monitoring was conducted in accordance to the OHSWMA Passive Flare LFG Monitoring Plan, which can be found in the Project's Monitoring Plan. Additionally, the audit team verified the existence and use of these passive solar flares during the site visit via reconnaissance and interviews with Kyle Williams of Barton & Loguidice, P.C. personnel.

Legal Requirements

For the Legal Requirements Test, Project Proponents must ensure that emission reductions achieved by the Project would not have occurred in the baseline case due to federal, state, or local regulations.

A regulatory review of the Project and the landfill were conducted by the audit team. The results of the regulatory review indicated the landfill is in compliance with Federal, State and Local regulations. There are no laws, statutes, regulations, court orders, environmental mitigation agreements, permitting conditions, or other legally binding mandates requiring the destruction of landfill gas.

The Authority has also developed a procedure in the monitoring plan to ascertain and demonstrate that the project at all times passes the legal requirements test at all times.

In addition, the Authority has conducted a non-methane organic compound (NMOC) Threshold review. The Landfill is not subject to NSPS regulation, but the facility does conduct Non-Methane Organic Compound (NMOC) emission rate testing. The most recent Tier 2 NMOC Emission Rate Report for the Oneida-Herkimer Solid Waste Management Authority Regional Landfill was conducted in 2011 with an NMOC result of 5.79 Mg/yr and 7.02 Mg/yr in 2012. This is below the 50 Mg/yr threshold and therefore the landfill is not required to install a gas collection and conveyance system during the reporting period. During the next Tier II test, due in 2014, the NMOC threshold will be reviewed to determine if a gas collection and conveyance system is required.

Lastly, SCS reviewed the Attestation of Voluntary Implementation, signed on October 17, 2012 by an eligible signatory to attest for the Project. The Authority has affirmed that the Project was established and implemented voluntarily and continues to operate as such. Based on this evidence, SCS concludes the Project passes the legal requirements test.

Regulatory Compliance

SCS reviewed the Attestation of Regulatory Compliance submitted by the Authority dated October 17, 2012 affirming the Project's compliance status throughout the project reporting period. During the site reconnaissance and desk review activities, SCS was able to confirm to a reasonable level of assurance that the Project is in compliance with local, state and Federal regulations and had no material regulatory non-conformance events. SCS reviewed the EPA's Enforcement & Compliance History Online (ECHO) website, the New York State Department of Environmental Conservation's website, and the Title V Compliance Certification Forms for the reporting period. There were no violations noted throughout the reporting period and the certifications indicated that the landfills had been in continuous compliance with all applicable requirements of the permit. During the site visit, SCS interviewed Landfill personnel regarding regulatory compliance for the destruction devices operated by the Authority and found no instances of non-compliance. Lastly, SCS confirmed the Attestation of Regulatory Compliance was signed by an eligible signatory to attest for the Project.

Ownership

The Authority is the owner of the Oneida-Herkimer Solid Waste Management Authority Regional Landfill. Ownership was confirmed through review of various regulatory permits issued from the New York State Department of Environmental Conservation (NYSDEC) as well as review of the legal property descriptions. Though the landfill and gas collection wells are owned and operated by the Authority, the LFGTE facility and associated destruction devices are owned and operated by Waste Management Renewable Energy, LLC. SCS confirmed that the Authority retains full, legal, and beneficial title to the carbon offset credits being issued as a result of the collection and combustion of methane at the landfill facility by reviewing a redacted *Landfill Gas and Facilities Site Lease and Landfill Gas Purchase Agreement*. Lastly, SCS reviewed the Attestation of Title signed by the Authority's Executive Director dated October 17, 2012 concerning ownership of landfill gas emission reduction credits for the reporting period. This document asserts that the project applicant has legal rights to any emission reduction credits to be issued by the Climate Action Reserve. From this evidence, SCS has concluded that the project developer, the Authority, is entitled to receive the emission reduction credits that may be issued by the Climate Action Reserve for methane destroyed during this project period.

The GHG Assessment Boundary

The Project includes all emission sources from the operation of the landfill gas collection system to the ultimate destruction of the landfill gas. The sources of GHG emissions reviewed include:

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

- CH₄ vented to the atmosphere.
- CH₄ destroyed in the Passive Flare.
- CO₂ from the oxidation of CH₄ by soil bacteria. As the landfills are not covered with a synthetic liner, the CAR Landfill Project Reporting Protocol 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 are:

- Un-combusted CH₄ from Landfill gas in the internal combustion engines and flare.
- 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.

The gases reviewed include CO₂ and CH₄. All gases are converted to CO₂ equivalents.

Review of Project GHG Management Systems

During the site visit, a review of the Project's greenhouse gas management systems was detailed with the Project Proponent. This review included a detailed look at the Project's data handling and processing procedures, recordkeeping and data storage, and the quality control and assurance procedures. The following is the result of this review:

The primary data gathered for the Project is landfill gas flow, pressure, temperature and methane content of the landfill gas. A Thermal Instruments Flow Meter continuously monitors flow after the blower and a knockout prior to combustion in to the destruction device. The position of the flow meter is adequate to ensure laminar flow. This meter was factory calibrated prior on June 3, 2011 and again on August 17, 2012 with the standard condition set to 60 deg and 1 atm. The Authority maintains 2 identical flow meters, and the second was factory calibrated on October 7, 2011 and installed on September 13, 2012. The instruments are factory calibrated every 18 months at a minimum. They are field inspected quarterly by landfill personnel, and annually field inspected by a third-party no more than 2 months prior to the end of the reporting period. The calibration results for this reporting period were reviewed for this verification period and indicate the instrument is reporting accurate data per calibration records and the OHSWMA Regional Landfill *Flow Check Table*, dated September 2012.

The LFGTE facility utilizes an ABB Totalflow Model XRC6400 flow computer to monitor LFG flow with the standard condition set to 60 deg and 1 atm. The flow computer is field inspected, cleaned and checked for accuracy on a quarterly basis by qualified WMRE personnel. The computer records the LFG flow to the internal combustion engine in operation at the facility.

The Landfill continuously measures methane content using a Siemens Ultramat 23 gas analyzer, but also maintains a Landtec GEM 200 portable IR Gas analyzer as a secondary means of monitoring methane content, should the Project need it. The Siemens analyzer is field checked quarterly and annually inspected by Liberty Engineering no more than 2 months prior to the end of the reporting period. All quarterly inspections were within the 5% threshold. The Landtec Gem is field calibrated prior to taking field measurements and factory calibrated every 6 months, per the manufacturer's recommendation.

The LFGTE facility employs an ABB Totalflow NGC8203 gas chromatograph to measure the methane concentration. The gas chromatograph was factory calibrated prior to installation and automated calibrations are performed weekly using certified gases. The analyzer is field checked quarterly and records of analyzer calibration are kept onsite.

A thermocouple is used to monitor the temperature within the flare stack in order to detect the presence of a flame and determine the operating hours of the flare. Flare temperature is recorded by the Yokogawa on a continuous basis (at least one data point every 15 minutes). Data files are transferred to an onsite computer for emission reduction calculations. In accordance with the CAR Landfill Project Protocol Version 3.0, landfill gas flow rates for corresponding temperature readings below 500 degrees Fahrenheit are discounted to zero flow for the purpose of emission reduction calculations.

During periods of scheduled and unscheduled flare shutdowns, a valve is automatically closed that prevents the flow of landfill gas to the flare until flare startup. The system is designed to prevent landfill gas from flowing through the flare uncombusted, and any gas flow that has been recorded by the flare flow meter is destroyed by the flare.

Flare temperature, methane concentration and the LFG flow are continuously recorded by a Yokogawa FX100 digital data recorder every minute for the flare. This data is stored on a compact flash drive and is downloaded weekly by landfill personnel. Data is then transferred to the site computer, sent to Barton & Loguidice, P.C. personnel, which is additionally backed up on a separate server located in Utica, NY. The data is then compiled monthly in an Excel spreadsheet. Raw data is maintained in a digital format.

Landfill gas flow to the WMRE LFGTE facility is metered by WMRE equipment at the plant and a data logging system continuously records the methane concentration. A data logging system continuously records the flow rate. System software is used to generate reports of system operating parameters including totalized landfill gas flow volume adjusted for standard temperature and pressure. Reports of daily totalized landfill gas flow and average daily methane concentration are generated by WMRE staff and provided to landfill personnel. WMRE also maintains records of LFGTE downtime and operational hours of each engine and provide a summary report to landfill personnel on a monthly basis.

The daily electricity production (kWh) from the LFGTE facility is recorded by WMRE personnel and reported to landfill personnel on the WMRE LFGTE facility *Operating Report*. The operating reports are sent to the Landfill Operations Manager by WMRE staff. Procedures for planned and unplanned shutdowns of the LFGTE facility are identified in the WMRE Operations and Maintenance Manual.

A project design document and monitoring plan have been created for the Project. The contents of the monitoring plan were thoroughly reviewed and observed to meet the requirements of the Landfill Gas Project Protocol. The monitoring plan records are kept for a minimum of ten years when the

information is first generated or seven years after the last verification as noted in the OHSWMA Regional Landfill Monitoring Plan, Revision No. 2, dated November 2012.

Quantitative Review of Carbon Reductions and Removals

SCS devoted a portion of the verification assessment to the review of the manner and propriety by which the Authority quantified their net GHG reductions and removals. This assessment included a review of the baseline determination, review of project assumptions, raw data inputs and accuracy of calculations. The formulas and raw data inputs used to determine emission reduction calculations as described in the Project Design Document and the calculation spread sheets were first reviewed for compliance with the Landfill Project Reporting Protocol. The main parameters of Equation 5.1 were verified as follows:

Total Annual Methane Emissions Destroyed By The Project Landfill Gas Collection And Destruction System (CH_4 Dest_{PR})

The amount of methane destroyed is calculated from the continuously metered landfill gas flow data and the daily methane concentration as per equation 5.4. During the reporting period, data was recorded every minute and aggregated every 15 minutes, then totalized on a daily basis for the purpose of the calculations of emissions reductions. The main monitored parameters needed to calculate the amount of methane destroyed are:

$LFG_{i,t}$ = total quantity of landfill gas fed to the destruction device and
 $PR_{CH_4\ i,t}$ = the average methane fraction of the landfill gas in time interval t as measured

Flare flow is first adjusted for low temperature by voiding the flow for any period when the flare temperature is below the threshold of 500 degree F. Daily flow is then calculated by summing the flare flow for each recorded interval period to produce a daily total. The incremental methane destroyed flow is calculated based on average methane concentration by the daily total of landfill gas with temperature and pressure taken into consideration. Total daily destroyed methane is carried forward into further calculations for the flare to determine emission reductions for the project

Adjustment For Landfill Gas Flow Metering Equipment For Temperature And Pressure

The project flow meters automatically correct for the standard temperature and pressure of the landfill gas. No additional calculations were necessary.

Default Methane Destruction Efficiency For Device (Dei)

The value applied was 0.960 for the candlestick flare, and 0.936 for the lean-burn IC engine, as prescribed by the protocol. The project developer has taken an approach of applying a 500 degree F temperature minimum to emission reduction calculations to ensure the given destruction efficiency for the respective destruction device.

Factor For The Oxidation Of Methane By Soil Bacteria (OX)

The project does not incorporate a synthetic liner in its cover system; therefore a 10% methane soil oxidation factor was applied to the baseline scenario.

Discount Factor To Account For Uncertainties Associated With The Project Monitoring Equipment (DF)

As per the methodology, DF equals zero if using continuous methane monitor with no missing data and all calibration tests are within a 5% margin of error. It was verified that measurement readings are continuous and that calibration certificates indicated that instruments were within the thresholds for permissible error (see section above: Review of Project GHG Management Systems).

Adjustment To Account For Pre-Project LFG Destruction Device ($PRE_{discount}$)

An adjustment to the project baseline was necessary due to the installation of a pre-project destruction device. The Landfill operated and monitored five (5) Solar Spark CF-5 portable flares. Since the landfill's passive, portable flares were operating prior to the project start date, the facility conducted pre-project monitoring and calculation of the quantity of landfill gas and methane fraction of landfill gas that is destroyed by the passive flares. The deduction was applied through the non-qualifying pre-project discount calculation provided in the protocol and the CAR January 3, 2011 Erratum. The emission reductions from the pre-project baseline were incorporated into the calculations appropriately.

Total Annual Indirect Carbon Dioxide Emissions From The Consumption Of Electricity From The Grid (EL_{CO_2}) and Total Annual Carbon Dioxide Emissions From The Destruction Of Fossil Fuel (FF_{CO_2})

CO₂ emissions result from consumption of electricity to power project equipment and activity data for this source was tracked by reviewing utility invoices from the power supplier. The Emission Factors for electricity, propane and gasoline were verified and no material errors were found.

Project emission deductions for the reporting period include propane usage at the flare skid (flare skid pilot light), electricity usage at the flare skid, electricity usage at the LFGTE facility, and non-qualifying destruction of passive flares prior to the start of the project.

The landfill maintains two (2) 20 pound (4.7 gallon) propane tanks. One tank was utilized during the reporting period, and one new tank was purchased but not completely used. As a conservative estimate, the capacity of two (2) tanks (9.4 gallons) was used to quantify the deduction associated with propane usage. Electricity usage at the flare skid is included with usage for the leachate load out and onsite pumping facility and is based on billing records from the utility.

Electricity usage at the LFGTE facility is provided by Waste Management and is based on a parasitic electricity load for the facility.

Project emissions consisting of indirect emissions from electricity and direct emissions from propane and gasoline use are subtracted from the total amount of methane destroyed. The values are presented in the final Calculation Spreadsheets for the verification period.

It should be noted that the verified project emissions and the reported emissions were over reported, however when recalculating the Project's emission reductions, the reported emission reductions were well within the materiality threshold.

Missing Data/Data Substitution Procedures

Missing Data calculation procedures were reviewed for consistency with the Landfill Gas Protocol requirements as part of this verification. Data substitution procedures were applied to the data in this

verification period in 5 instances where the methane analyzer malfunctioned. The substitution methodologies were verified during the desk review of the emission reduction calculations and found to be in conformance with the Protocol.

Verification Results

The verification of the Oneida Herkimer Landfill Ava, NY Project focused on the accurate collection of data and quantification of emission reductions as implemented by the Authority in accordance to with the Landfill Project Protocol, Version 3.0. A sample set of raw flow data (consisting of landfill gas flow, and temperature) and methane concentration was selected and reviewed in order to identify material misstatements due to transcription mistakes, mathematical errors or malfunction of instruments.

The following provides a summary of the verification results (all emissions listed are in metric tonnes CO₂e). Please note that the values in the table are a summary with significant figures shortened for the purpose of providing an overview.

Emissions Verified	2011	2012	Total
Baseline Emissions	19,462	58,385	77,847
Project Emissions	30	89	118
Pre-Discount	1,323	3,970	5,293
Total Emissions Reductions	18,109	54,327	72,436

Throughout the verification process, SCS made several supplemental documentation requests in the form of New Information requests, Non Conformances and Opportunities for Improvements. These requests provided clarification regarding the project. The Findings from the verification of the Project Name are compiled in a separate “List of Findings” and are available under separate cover. The List of Findings is only shared between the Project Proponent and verifier and is not publicly available.

During this verification, non-conformity reports were issued; new information requests and opportunities for improvement were identified. All non-conformity reports and new information requests were adequately addressed in order to satisfy the standard and issue a positive verification opinion. A private List of Findings was created for the client with a detailed description of the findings.

Recommendation

The Lead Verifier recommends that SCS Global Services issue a verification opinion for the following:

Name & Address	Oneida Herkimer Solid Waste Management Authority 7044 State Rte 294, Boonville, NY 13309, USA
Scope of Verification	The project involves the capture and destruction of landfill gas through 1 candlestick flare and the gas to energy facility.
Reporting Period	October 1, 2011 to September 30, 2012
Total GHG Emission Reductions Verified	72,436 metric tonnes CO ₂ e
GHG Protocol(s) Used for Verification	CAR Landfill Project Reporting Protocol Version 3.0 (December 2009) Errata and Clarification LPP Version 3.0 (August 16, 2012) CAR Program Manual (October 2011) CAR Verification Program Manual (December 2010) Principles of ISO 14064-2:2006 Greenhouse Gases – Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emissions reductions or removals.
Lead Verifier's Approval	 Rori Cowan, January 8, 2013
Technical Reviewer's Approval	 Todd Frank, January 21, 2013
Date of Verification	January 21, 2013

Appendix I

Car Landfill Gas Project Verification Audit Agenda

Environmental Capital LLC
Oneida Herkimer Landfill Ava, NY

Time	Process, Department or Function	Comments
November 7, 2012		
10:00 am	Opening Meeting (To be held at the offices of the Oneida-Herkimer Solid Waste Management Authority in Boonville, NY)	
10:15 am	Introductions ▪ Presentation of SCS Global Services (the company and the audit team) ▪ Discussion of ISO Accreditation ▪ Brief explanation of the verification procedure and process ▪ Presentation of project by client personnel ▪ Review and finalize the audit itinerary	
10:30 am	Review Project Eligibility ▪ Eligibility Review ▪ Regulatory review ▪ Project Compliance Review and procedures for ongoing compliance	Please confirm if the company can provide an office or meeting room where the auditor(s) can review the documentation
11:00 am	Site Inspection Inspection to include but not limited to the following: ▪ Safety Briefing ▪ Field review of physical delineation of the project boundary including the gas to energy facility ▪ Cross check of equipment described in the Project design documents ▪ Interviews with landfill employees and project developer's staff ▪ Visual inspection and confirmation of how the monitoring plan and practices have been implemented ▪ Monitoring report discussions	Please provide a layout of the site indicating the location of project activity equipment and meters in order to facilitate audit inspection. Please ensure that all staff, employees, and operators related to the CAR project activity are available on site.
12:00pm	Lunch – Please provide a light working lunch	

Time	Process, Department or Function	Comments
1:00 pm	GHG Management Systems & Document Review - Data gathering, handling, and management procedures - Staff training and competencies - Project Quality Control and Quality assurance procedures - Cross check monitoring plan/report and data to other sources (i.e. log books, inventories, purchase records, calibration certificates, OEM documents, etc...)	Please refer to Appendix I of this audit plan in order to have all documents requested available for review.
2:00 pm	Inventory Verification Review emission reduction spreadsheets including review of calculations and assumptions made in determining the GHG data and assertions. Begin sampling of data.	
3:00 pm	Auditor Internal Review The audit team will review notes and questions internally	
4:00 pm	Closing Meeting Wrap-up and summary, including presentation of preliminary findings	SCS Team and Project Personnel
4:30 pm	Adjourn	

Notes to Client:

- Times are approximate and will be confirmed at the opening meeting prior to commencement of the audit. SCS auditors reserve the right to change or add to the elements listed before or during the audit depending on the results of the on-site investigation
- A private place for preparation, review and conferencing is requested for the auditor's use
- Please provide a light working lunch on-site during the site visit
- Your contract and Verification Plan with SCS is an integral part of this audit plan and details confidentiality arrangements, verification objectives, criteria and scope, information on follow up activities and any special reporting requirements in addition to the complaints and appeals process

Verification Audit Plan

Scope of Services	Oneida-Herkimer Landfill Ava, NY Project
Geographical Boundary	7044 State Rte 294, Boonville, NY 13309, USA
Physical Boundary	The project involves the capture and destruction of landfill gas through 1 candlestick flare and the gas to energy facility.
Reporting Period	October 1, 2011 to September 30, 2012
GHG Included in Review	Emission Reductions resulting from the capture and destruction of landfill gas methane via an open flare. Gases reviewed include CO ₂ and CH ₄ . All gases should be converted to CO ₂ equivalents.
Sources of GHG Emissions	The GHG sources, sinks, and reservoirs associated with the baseline scenario are: ▪ CH₄ vented to the atmosphere. ▪ CO₂ from the oxidation of CH₄ by soil bacteria. As the landfill is not covered with a synthetic liner, the CAR Landfill Project Reporting Protocol assumption that 10% of the methane produced would be naturally oxidized by soil bacteria has been applied. The GHG sources, sinks, and reservoirs associated with the project are: ▪ Un-combusted CH₄ from Landfill gas in the flare. ▪ 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.
Audit Objective	To confirm that the management system has been established and implemented in accordance with the requirements of the audit criteria. To verify the accuracy of the estimation of the emission reductions claimed for the selected period.
Verification Criteria	CAR Landfill Project Reporting Protocol Version 3.0 (December 2009) Errata and Clarification LPP Version 3.0 (August 16, 2012) CAR Program Manual (October 26, 2011) CAR Verification Program Manual (December 2010) Principles of ISO 14064-2:2006 Greenhouse Gases – Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emissions reductions or removals.

Level of Assurance	SCS will perform the core verification activities to a Reasonable Level of assurance as required by the Climate Action Reserve for each project. Reasonable assurance allows SCS the ability to “verify without qualification” and attest to the accuracy of the number of CRTs being issued to each project.
Materiality	SCS will apply a materiality threshold of 3%; meaning, the reported emissions submitted to the Reserve must be free of material misstatements, achieving a level of at least 97% accuracy for each project based on the number of tonnes claimed at the time of verification.
Audit Team	Lead Verifier: Rori Cowan, Qualified CAR Landfill Lead Verifier Technical Review: Todd Frank, Qualified CAR Landfill Lead Verifier