

LANDFILL GAS PROJECT VERIFICATION REPORT

Verification under the Climate Action Reserve (CAR)

Element Markets, LLC

Anson County Landfill (CAR517)
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John McDougal
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Reporting Period
12/05/2010 to 12/04/2011
Site Visit Date
01/20/2012

Prepared By:

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Greenhouse Gas Verification Division

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Summary

This report presents the findings of the verification assessment of the Anson County Landfill (“the Project”) developed by Element Markets, LLC (“the Project Proponent”). This assessment covers the Anson County Landfill’s greenhouse gas emission reductions reported to the Climate Action Reserve (the Reserve or CAR) for the verification period December 5, 2010 to December 4, 2011. 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 2.1, (October 2009).

The evaluation was undertaken using the Climate Action Reserve Landfill Project Verification Protocol, Version 2.0, (November 2008) 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 Element Markets, LLC. Thus, SCS has verified 23,567 metric tonnes of CO₂e reductions and removals from the Anson County Landfill for the reporting period of December 5, 2010 to December 4, 2011.

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 Element Markets, LLC to undertake the annual project verification of the Anson County Landfill. The project consists of the collection of landfill gas (LFG) from the Anson County Landfill at Polkton, North Carolina, and subsequent destruction through combustion in an open flare. This report covers the verification period of December 5, 2010 to December 4, 2011 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 2.1 (October 14, 2009)
- CAR Landfill Project Verification Protocol Version 2.0 (November 18, 2008)
- Errata and Clarification LPP Version 2.0 (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 **5%**. 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 Anson County Landfill Project is listed on the Climate Action Reserve (CAR) website. Element Markets, LLC selected SCS as their verification body.
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 December 27, 2011.
3. **Introductory Meeting:**
A kickoff meeting was conducted between the verification team and representative of Element Markets, LLC on January 9, 2012. The purpose of the kickoff 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 January 20, 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 Element Markets, LLC Name 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 Element Markets, LLC for review and comment.

10. **Final Report and Statement**

Once Element Markets, LLC approved these documents, SCS uploaded them to the Reserve website for administrative review by CAR. Given a positive review, CAR may register the emissions reductions for the landfill gas project and issue carbon tonnes for a reporting period of December 5, 2010 to December 4, 2011.

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 Tina Sentner, Lead Verifier. The Technical Review was performed by Todd Frank of SCS.

CAR Landfill Project Requirements

SCS verified the Anson County Landfill against the requirements of the Climate Action Reserve Landfill Project Protocols. The following sections detail the most essential aspects of the verification of the Anson County Landfill.

Project Description

The Project collected landfill gas (LFG) from the Anson County Landfill and destroyed it via combustion through an open candlestick flare. The Anson County Landfill is a municipal solid waste landfill located

near Polkton Township, Anson County, North Carolina. The landfill began operation in 2001 and is owned by Chambers Development of North Carolina Inc., (CDNC), a wholly owned subsidiary of Waste Connections, Inc. (WCI). The landfill began accepting waste in 2001 and consists of approximately 134 acres. The design capacity of the landfill was updated in February 2010 to 5.9 million Mg. Final closure of the landfill is estimated to take place in 2050. The landfill is not considered a bioreactor according to the U.S. EPA.

The gas collection and conveyance system consist of wellheads that pull gas from vertical and horizontal wells. The gas from the wellheads is routed via a main header line into the flare skid. The landfill gas is pulled by a blower and passes through various knockout vessels to remove moisture prior to passing through the flow meter en route to the candlestick flare.

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 Polkton, North Carolina; USA SCS conducted a site visit on January 20, 2012 and concluded the project meets this eligibility requirement.

Project Start Date

As stated in the Landfill Gas Reporting 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 2.1, October 14, 2009). The start date is defined as the date at which a qualifying destruction device becomes operational.

The project start date was listed as February 7, 2008, the day the open flare became operational. This date was previously verified in the first reporting period by another verification body period and confirmed again this reporting period by SCS. Element Markets, LLC provided various documents to support the evidence of construction of the landfill gas project such as the permit to construct the GCCS with flare dated Sept. 19, 2007, the LFG Master plan design by SCS Engineers for Anson County Landfill dated Nov. 7, 2007, and lastly the SCS Engineers field notes for start up of the flare dated February 7, 2008. From this evidence we concluded these documents confirmed the project start date of February 7, 2008 as accurate. Lastly, the project was submitted to the CAR on October 28, 2009, which is within the first 12 months following the date of adoption of Version 2.1 of the Landfill Project Protocol.

Crediting Period

The crediting period for landfill projects is 10 years from the project start date. The crediting period for the Anson County Landfill project extends to February 6, 2018. As this reporting period is from December 5, 2010 to December 4, 2011, SCS has concluded that the reporting period verified in this report is within the first crediting period of the Project.

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 following scenario applies to the Anson County Landfill 1. The landfill was not previously collecting and destroying any landfill gas in a qualifying destruction device prior to the project start date.

Through observation during the site visit and interviews with the landfill site manager, there was no evidence of a solar flare or pre-existing destruction devices, nor were pre-existing destruction devices identified on historical project drawings or landfill maps. In addition, SCS reviewed the MSW Permit and subsequent modifications for the landfill gas conveyance and collection systems along with the Title V Permit application for Anson County Landfill and no evidence of a pre-existing destruction device was observed or required of the site. Therefore, SCS concluded the project proponent meets the performance standard threshold under option 1.

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. Element Markets, LLC 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, Element Markets, LLC has conducted a non-methane organic compound (NMOC) Threshold review. The Anson County Landfill is subject to NSPS regulation requiring the facility to conduct Non-Methane Organic Compound (NMOC) emission rate testing. The most recent Tier 2 NMOC Emission Rate Report for Anson County Landfill was conducted on Dec. 15, 2011 with a result of 10.35 Mg/yr NMOC. 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. The landfill is not anticipated to reach or exceed the NMOC threshold limit of 50 Mg/yr until well beyond the crediting period. The next NMOC test is required in December 2016, the NMOC threshold will be reviewed at that time to determine if a gas collection and conveyance system is required.

Lastly, SCS reviewed the Attestation of Voluntary Implementation, signed on January 20, 2012 by an eligible signatory to attest for the Project. Element Markets, LLC 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 Element Markets, LLC dated January 20, 2012 affirming the Project's compliance status throughout the project reporting period of December 5, 2010 to December 4, 2011. During the site visit and desk review activities, SCS reviewed the regulatory review of the Anson County Landfill conducted by the project proponent.

In addition, SCS interviewed the Landfill Management regarding legal and regulatory compliance tracking systems and reviewed recent inspections for the landfill. From a sample of inspections reports reviewed over the reporting period of the project, there were no instances of non compliance observed. Lastly, SCS confirmed the Attestation of Regulatory Compliance was signed by an eligible signatory to attest for the Project. SCS concluded that there is no basis to question the Attestation of Regulatory Compliance for the Project for the reporting period.

Ownership

Chambers Development of North Carolina, Inc. is the owner of the Anson County Landfill. Ownership was confirmed through review of various regulatory permits issued from North Carolina Department of Environmental and Natural Resources as well as review of the legal property descriptions. . As previously noted, Chambers Development of North Carolina, Inc. is a wholly owned subsidiary of Waste Connections, Inc. SCS confirmed Element Markets, LLC 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. SCS reviewed the gas rights agreement between Element Markets, LLC and Waste Connections showing explicit title to the Emission Reduction Credits to Element Markets, LLC. Lastly, SCS reviewed the Attestation of Title signed by the Senior Vice President of Element Markets, LLC dated January 20, 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, Element Markets, LLC, 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.
- 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 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 Mass Flow Meter, Model # 62-9/9500 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. . The instrument was quarterly cleaned and inspected on 02/28/2011, 05/23/2011, 09/06/2011 and 11/17/2011 with the as found/as left and activities performed documented. This meter was last factory calibrated on April 1, 2011 with the standard condition set to 60 deg and 1 atm. The calibration results indicate the instrument was over-reporting approximately 14% since the last field check in December 1, 2010. SCS confirmed that flow was properly scaled to account for this drift in the emission reduction calculations. Lastly, the instrument was field checked within the last 2 months of the reporting period by a third party on November 23, 2011 and found to be operating within protocol tolerances.

Methane content was measured by multiple portable GEM 2000 Gas Analyzers during the verification period. Field calibrations using a gas of known specifications (50% CH₄, 35% CO₂, and 15% balance gas) were observed to be performed and documented on a weekly basis on the GEM2000 to ensure that the devices were measuring accurately. The main analyzer used is a GEM2000 with SN#GM11804. . The main analyzer was factory calibrated on December 10, 2010 by the manufacturer and found to be operating within protocol tolerances. . A backup analyzer with SN#GM12448 was also used for the project and was factory calibrated on April 26, 2010 and found to be operating within protocol tolerances. The project missed the annual calibration of this analyzer during the year 2011. This meter was calibrated again on April 30, 2012 and found to be within protocol tolerances. A variance was obtained by the project proponent from CAR for the missed annual calibration requirement. SCS was able to verify that all the variance requirements were met by the project for the period that the backup analyzer was in service to assure that the meter was operating within 95% accuracy. Further details are noted in the summary of findings.

Temperature and hours of operation are continuously monitored via one thermocouple mounted within the shroud of the candlestick flare. The flare operations were monitored by an electronic system which will automatically initiate a re-start of the system three times and if unsuccessful, the system will shutdown automatically eliminating flow to the flare if the flame is extinguished.

Raw data from the Thermal Mass flow meter instrument and temperature thermocouples was continuously collected every 8 minutes automatically onsite by a data acquisition device called the Yokogawa. The Yokogawa is accessed once a month by a third party consultant on behalf of the project proponent. The Yokogawa records consist of landfill gas flow, corrected to standard temperature and pressure, and temperature every 8 minutes. Monthly reports are generated from the third party consultant by exporting the data directly from the Yokogawa and converting the data into DDS files. The raw data is sent to the project proponent, Element Markets, LLC, for recordkeeping retention and emission reduction calculations. Data is generally stored indefinitely Element Markets, LLC in two

locations; however at a minimum the data is stored for a period of 10 years after the information is generated or 7 years after the last verification.

A project monitoring plan has 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.

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 Element Markets, LLC 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 Monitoring Plan and the calculation spreadsheets were first reviewed for compliance with the Landfill Project Reporting Protocol. The main parameters of Equation #3 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 weekly methane concentration as per equation 5.3. For the period of December 5, 2010 to December 4, 2011, data was electronically aggregated on intervals of eight (8) minutes and totaled 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 deg F. Daily flow is then calculated by summing the flare flow for each 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 internally correct LFG flow to the standard temperature and pressure of the landfill gas of 60 degrees and 1 ATM. Therefore, no further adjustments in the emission reductions were required.

Default Methane Destruction Efficiency for Device (Dei)

The project proponent applied a destruction efficiency of 0.960 for Open flares, as prescribed by the protocol. The project developer has taken an approach of applying a 500 deg F temperature minimum to emission reduction calculations to ensure 96% destruction efficiency of the flare.

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, to account for the uncertainty associated with portable methane monitors, projects must apply a 10% discount factor to the total quantity of methane collected and destroyed. It was verified that measurement readings were weekly and that the 10% discount factor was appropriately applied to emission reductions.

Adjustment to Account for Pre-Project LFG Destruction Device (PRE_{discount})

An adjustment to the project baseline was not necessary as there were no previous pre-project destruction devices for the project.

Total Annual Indirect Carbon Dioxide Emissions from the Consumption of Electricity from the Grid (EL_{CO2}) and Total Annual Carbon Dioxide Emissions from the Destruction of Fossil Fuel (FF_{CO2})

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. Direct CO₂ emissions result from propane used to assist the ignition of the flare and diesel fuel used in onsite equipment. This activity data is taken from purchase invoices and estimates from propane and diesel fuel used. The Emission Factors for electricity, propane and diesel were verified and no material errors were found.

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

Missing Data Procedures

Missing Data calculation procedures were reviewed for consistency with the Landfill Gas Protocol requirements as part of this verification. Missing Data procedures were not applied to the data in this verification period.

Verification Results

The verification of Anson County Landfill focused on the accurate collection of data and quantification of emission reductions as implemented by Element Markets, LLC in accordance to with the Landfill Project Protocol. 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:

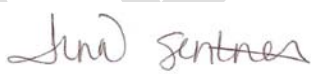
Emissions Verified	December 5-31, 2010	January 1 to December 4, 2011
Baseline Emissions	1,413.34	22,162.36
Project Emissions	0.03	0.39
Project Electricity	0.51	6.08
Pre-Discount	0	0
Total Emissions Reductions (rounded down for conservativeness)	1,412	22,155

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 Anson County Landfill 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.

All non-conformity reports and new information requests were adequately addressed in order to satisfy the standard and issue a positive verification opinion. Please see the List of Findings for a detailed description of the findings.

Recommendation

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

Name and address	Element Markets, LLC 3555 Timmons Lane, Suite 900 Houston, TX 77027
Scope of verification	Emission reductions arising from the capture and destruction of Landfill Gas Methane from : Anson County Landfill Project
Total GHG emissions verified	Dec. 5 to Dec. 31, 2010= 1,412 metric tonnes [CO₂e] Jan. 1 to Dec. 4, 2011= 22,155 metric tonnes [CO₂e]
GHG protocol(s) used for Verification	California Climate Action Registry Landfill Project and Verification Protocols v2.1 , Verification Program Manual (December 20, 2010)
Verification opinion with regard to data quality and materiality	The data are considered to be complete, transparent and free of material error or omission.
Applicable year	The emissions have been calculated from data collected during the period December 5, 2010 to December 4, 2011.
Date of verification	The Verification Statement is to be dated when the technical reviewer accepts the recommendation to issue the statement.
Dated and signed on behalf of the verification body by authorized signatory	 Tina Sentner; October 25, 2012
Dated and signed on behalf of the verification body Technical Reviewer	 Todd Frank, November 16, 2012

ADD AUDIT PLAN

DRAFT



January 9, 2012

RE: Proposed Verification Audit Plan for **Anson County Landfill**

Zach Eyler
Element Markets
3555 Timmons Lane, Suite 900
Houston, TX 77027

Dear Mr. Eyler,

We are very pleased that you have chosen SCS to provide third party verification services of your carbon offset project. The assessment will be performed over the telephone, as a desk review, and at your project site located at:

Chambers Development Municipal Solid Waste Landfill Facility
375 Allied Road, Polkton, NC 28135

on January 20, 2012. Please confirm that this date is still suitable and that relevant staff will be available as needed.

The objectives of our services are to confirm your conformance with the following GHG Protocols:

- CAR Landfill Project Reporting Protocol Version 2.1, (October 2009)
- CAR Landfill Project Verification Protocol V. 2.0 (Nov. 2008)
- Errata_and_Clarification_LPP_V2.1 (October 26, 2011)
- CAR Verification Program Manual (December 20, 2010)
- CAR Program Manual , (October 26, 2011)

The enclosed document describes the agenda and audit plan for our verification services that will guide the procedures for reviewing your emissions documentation and systems. Please confirm that this plan is acceptable to you.

Thank you in advance for your preparation and for the active participation of your staff throughout the audit. We look forward to working with you on this project. If we may be of further assistance, please feel free to contact me at either 951-427-0333 or via e-mail at t.sentner@yahoo.com.

Sincerely,

A handwritten signature in dark ink, appearing to read "Tina Sentner", is written over a light blue horizontal line.

Tina Sentner
Lead Verifier

Audit Plan/ Agenda
CAR Verification Landfill Project

Project Name:	Anson County Landfill
Site Visit Address:	Chambers Development Municipal Solid Waste Landfill Facility 375 Allied Road, Polkton, NC 28135
Audit Objective:	To confirm that the management system has been maintained 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 and are fairly stated.
Audit Criteria:	CAR Landfill Project Reporting Protocol Version 2.1, October 2009 CAR Landfill Project Verification Protocol V. 2.0 (Nov. 2008) Errata_and_Clarification_LPP_V2.1 (Oct. 26, 2011) CAR Verification Program Manual (December 20, 2010) CAR Program Manual , (October 26, 2011)
Audit Team	Lead Verifier: Tina Sentner, Qualified CAR Landfill Lead Verifier Technical Review: Todd Frank, Qualified CAR Landfill Lead Verifier
Level of Assurance	Reasonable
Materiality	3%

ARRIVAL DAY

Date	Time	Description	Comments
Jan 19-2012.	9:30 pm	Audit Arrives.	GSO, Greensboro, NC
	9:30 pm	Travel to hotel	Hampton Inn, Ammerbele

DAY 1 - AUDIT

Date	Time	Description	Comments
DAY 1 – January, 20 th .	8:00 am	Leave hotel for landfill site	
	09:00	Arrive On Site and setup	
	09:15 09:45	<u>Opening Meeting:</u> • Introduction: Brief explanation of the verification procedure (by SCS); • Brief review and presentation of project and personnel. Project staff is encouraged to participate and explain their roles. • Confirmation of the planned agenda.	Project's personnel and SCS Team.
	09:45 11:00	<u>GHG Management Systems review:</u> Review GHG managements implemented for the project for the following: • Data gathering, handling, and management procedures (<i>i.e. information of how LFG flow monitored and maintained, how destruction data handled and stored, what are the inputs/outputs, and any security procedures</i>) • Staff training and competencies • Review Project Quality Control and Quality assurance procedures applied to all processes. <i>Please refer to Annex I of this audit plan in order to have all documents requested available.</i>	Please make sure that all staff, employees, and operators related to the project activity are available on site.
	11:00 12:00	<u>Site Inspection:</u> • Observe the physical delineation of the project boundary. • Checking of various equipment described in the PDD to actual field conditions (meters, knockout vessels, blowers, flare, data recorder, etc) • Interviews with landfill employees and project developer's staff. • Obtain a sample of the raw data from data logger .	Please provide a layout of the site indicating the location of project activity equipment and meters in order to facilitate audit inspection.
	12:00 12:45	<u>Lunch</u> Please provide a light working lunch	

Date	Time	Description	Comments
	12:45-2:00	<u>Review Project Eligibility</u> • Ownership (any changes since last verification) • Legal review by project • Regulatory review –inspection reports, NOVs, etc for the landfill and project. • Cross check monitoring plan/report and data to other sources (i.e. log books, inventories, purchase records, calibration certificates, OEM documents, etc...)	Please confirm if the company can provide an office or meeting room where the auditor(s) can review the documentation.
	2:00-2:30	<u>Auditor Review time</u>	
	2:30-3:00	<u>Closing meeting –</u> • Discussion on findings and observations raised during site visit • Next steps	.
	3:00	Auditor Departs	

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 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 each audit day.
- 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.

Annex I

The following documents will be required for the verification of the Landfill project. In accordance to Landfill Project Reporting Protocol (Section: Record Keeping) the project developer should have the following information available at the time of the verification¹:

- Files showing the calculation and formula applied for the estimation of the emission reductions (this should include records of LFG flow data, gas stream gases concentration, temperature of the flare and so forth);
- Copies of all solid waste, air, water and land use permits. Notices of violations (NOVs), and any administrative or legal consent orders dating back at least 3 years prior to the project start date, and for each subsequent year of project operation;
- Project developer attestation of compliance with regulatory requirements relating to the landfill gas project;
- Collection and control device information (commissioning certificates, installation dates, equipment list, etc)
- LFG flow meter information (most recent calibration certificate, model number, serial number, manufacturer's calibration procedures)
- Gas analyzer information (most recent calibration certificate, model number, serial number, manufacturer's calibration procedures)
- Temperature meters information;
- Destruction device information such as Owner Equipment manuals, drawings, specifications.
- Electricity meters information (most recent calibration certificate, model number, serial number, manufacturer's calibration procedures)
- Proof of start date of the project activity.
- Training records for staff/personnel/contractors
- Any direct use agreements between project developer and the end user of the landfill gas
- Fossil Fuel use records such as invoices, inventory records, estimates, etc...
- Utility invoices as pertains to the project.

¹ If the client has already provided some of the documents listed above, please indicate so.



Scientific Certification Systems (SCS) Verification Plan

Scope of Services

SCS proposes to conduct the verification of greenhouse gas emission reductions from **Anson County Landfill** for **Element Markets, LLC**. against the requirements of the Climate Action Reserve. The project involves the capture and destruction of landfill gas through an open flare. The scope of the project entails the following parameters:

Period Covered: The period of GHG data and information for emission reductions subject to this review is **December 5, 2010 to December 4, 2011**.

Geographical boundaries: Project location-.**375 Allied Road, Polkton, NC 28135**

Project boundaries: The project includes all emission sources from the operation of the landfill gas collection system to the ultimate destruction of the landfill gas in a flare.

Greenhouse gases included in review: Emission Reductions resulting from the capture and destruction of landfill gas methane via an open flare. Gases reviewed include [CO₂, CH₄]. All gases converted to CO₂ equivalents.

Sources of GHG emissions reviewed:

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 CCAR Landfill Project Reporting Protocol assumption that 10 percent of the methane produced would be naturally oxidized by soil bacteria.

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

- CO₂ from the combustion of CH₄ in an open 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.

Verification Objectives

The objective of the verification is:

- Evaluate conformance with the Landfill project as defined in the criteria stated below.
- Determine with a reasonable level of assurance whether the GHG 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 Criteria

SCS shall conduct the verification assessment of the project and project documentation against the following criteria:

CAR Landfill Project Reporting Protocol Version 2.1, October 2009
CAR Landfill Project Verification Protocol V. 2.0 (Nov. 2008)
Errata_and_Clarification_LPP_V2.1 (Oct 26, 2011)
CAR Verification Program Manual (December 20, 2010)
CAR Program Manual, (October 26, 2011)

Level of Assurance

Client and SCS agree that SCS will perform the core verification activities to a **Reasonable Level** of assurance as required by the Climate Action Reserve. Reasonable assurance allows SCS the ability to “verify without qualification” and attest to the accuracy of the number of CRTs being issued to the project.

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 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 95% accuracy.

Methodology for on-site control systems review:

Site visit, interviews with **Chambers Development Municipal Solid Waste Landfill and Element Markets** presentation of project, review of GHG Management Systems in place.

Methodologies for data testing and crosschecking:

Desk and site review of data, interviews with ES Maple Hill Landfill personnel, data vouching, check data from spreadsheets or monitoring data back to their original sources, perform re-computing and review all relevant physical and documentary evidence to check that inspections and calibrations were completed etc...

Methods for quantitative and qualitative analysis:

Desk and site verification activities, risk-based analysis, interviews with **Chambers Development Municipal Solid Waste Landfill and Element Markets** Project personnel, data vouching, and re-calculation of a sample set of data- to be further determined in sample plan.

Auditor/ Audit Team:

Roles of Audit Team (and accompanying persons):

Lead Auditor:	Tina Sentner; Landfill Contract Lead Auditor Qualified CAR Landfill Project Lead Verifier Responsibilities include conduct verification activities, issue findings, write verification report and issue verification opinion.
Technical Reviewer:	Todd Frank; GHG Program Manager GHG Program Associate, SCS Qualified SCS GHG verifier Responsibilities include conduct verification activities and issue findings.
Expert:	To Be Determined if needed-Landfill Contractor for SCS Responsibilities include provide technical interpretation and assistance with Landfill verification as needed.