RUBY CANYON ENVIRONMENTAL

Verification Report

CAR621 Kimble Sanitary Landfill Gas Project

Reporting Period: December 28, 2019 – December 27, 2020

Prepared for:

Element Markets

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1.0 Introduction

Element Markets contracted Ruby Canyon Environmental, Inc. (RCE) to perform the verification of the Kimble Sanitary Landfill Gas Project (Project) for the reporting period December 28, 2019 through December 27, 2020 to the Climate Action Reserve (Reserve) Landfill Project Protocol Version 5.0 (Protocol). The Project involves GHG emission reductions from the capture and destruction of landfill gas (LFG) through an open flare at Kimble Sanitary Landfill (Landfill) located in Dover, Ohio with a crediting period of December 28, 2019 to December 27, 2029.

1.1 Project Background & Site Description

Kimble Sanitary Landfill collection system was initially installed in 2009 with 38 vertical gas extraction wells, condensate management structures, and the installation of a blower/flare skid. There are currently a total of 111 active wells at the Project site. Initial testing and commissioning for the flare was completed and the Project came online officially on December 28, 2009. A rental flare skid was used during the first few months of operation and was replaced by a permanent flare skid that became operational on May 4, 2010. In addition, during the site visit, RCE confirmed that the landfill is not a bioreactor and does not add liquid other than leachate in a controlled manner.

The Project Developer is Kimble Company who owns the rights to any greenhouse gas reduction credits relating to the Kimble Sanitary Landfill Project. Element Markets acts as a consultant to Kimble Company.

1.2 Responsible Party

Project Developer: Kimble Company
Carbon Credit Manager: Element Markets Emissions, LLC

1.3 Verification Team

The RCE verification team consisted of the following individuals who were selected based upon verification experience and knowledge of the landfill methane sector.

Lead Verifier: Jessica Stavole
Senior Internal Reviewer: David LaGreca

1.4 Objectives

The goal of the verification activities was to ensure that the claimed GHG emission reductions were complete, consistent, accurate, transparent, and permanent and that the Project was in compliance with the Reserve's project additionality, monitoring, and reporting requirements. Furthermore, the verification activities ensure that the data provided to RCE is well documented and free of any material errors or omissions.

1.5 Scope

The scope of the verification consisted of the following independent and objective activities:

- Review the reporting period's Project Monitoring Plan;
- Review the Project data acquisition and quality control procedures;
- Review the Project's baseline emissions and confirm the baseline and Project boundaries;
- Review the Project's evidence of environmental and regulatory requirements to ensure that the Project is additional;
- Review the Project's emission reduction calculations;
- Review the Project documents and data against the criteria listed in Table 1;

- Issue requests for additional documentation, clarifications, and corrective actions as necessary; and
- Issue a verification report, verification statement, and list of findings to Kimble and the Reserve.

1.6 Verification Criteria

Table 1 – Summary of Verification Criteria

Criteria	Details
Standard of Verification	• The Reserve Landfill Project Protocol Version 5.0 (April 24, 2019) • The Reserve Offset Program Manual (October 23, 2020) • The Reserve Verification Program Manual (February 3, 2021)
Verification Process	The Reserve Verification Program Manual and ISO 14064-3 Specification with guidance for the validation and verification of greenhouse gas assertions
Level of Assurance	Reasonable assurance
Materiality	99% accuracy level (less than 1% error) because total annual emission reductions are greater than 100,000 tCO_2e.

2.0 Verification Activities Summary

The Verification process consisted of the following activities as outlined in the verification plan:

- RCE completed a NOVA/COI form to identify any potential conflict of interest with the Project or Kimble. RCE submitted the NOVA/COI form to the Reserve and the COI assessment revealed no conflicts of interest and the Reserve approved the COI assessment on March 2, 2021.
- RCE held a verification kick-off meeting with Element Markets on April 12, 2021. During the kick-off meeting RCE reviewed the verification objectives and process and the verification schedule, and requested the verification background documents.
- RCE performed a strategic review and risk assessment of the received data and support documents in order to understand the scope and areas of potential risk in the GHG emissions reductions.
- RCE developed a risk-based sampling plan based upon the strategic review and risk assessment. The Lead Verifier used the verification plan and sampling plan throughout the verification and revised these documents as needed based upon additional risk assessments.
- RCE conducted a virtual site visit during the previous reporting period on June 15, 2020. During the site visit RCE performed key personnel interviews; inspected the Project equipment; and observed the onsite GHG management systems and data gathering, monitoring, and handling practices.
- RCE performed a risk-based desktop review of the submitted verification documents. The desktop review included an assessment of the GHG calculation methods and inputs, source data completeness, GHG management and monitoring systems, evidence of regulatory compliance, and record retention practices.
- RCE submitted requests for corrective actions, additional documentation, and clarifications to Kimble and Element Markets throughout the verification.
- RCE's senior internal reviewer conducted a review of the verification sampling, report, and statement.
- RCE issued a final verification report, verification statement, and list of findings.
- RCE held an exit meeting with Element Markets.

3.0 Verification Findings

3.1 Assessment of the GHG Emission Reductions Project Operations

The Project collects LFG from Kimble Sanitary Landfill and destroys it via combustion in an open flare mounted on a flare skid adjacent to the landfill. The LFG collection system pulls LFG using a blower located at the flare skid. Prior to combustion, the LFG is sampled by a continuous methane analyzer and passes through a flow meter. The monitoring equipment records the methane concentration and landfill gas flow on a dry basis.

The LFG collection system was fully operational on December 28, 2009. The collection system includes gas header and collection piping, 111 vertical gas extraction wells, condensate management structures, and a blower/flare skid. Prior to the installation of the project, there were no destruction devices in use at the landfill.

3.2 GHG Project Boundary (sources, sinks and/or reservoirs)

The Protocol designates that CO_2 and CH_4 are the only GHGs included from the baseline and Project activities. The project emissions must be deducted from the baseline emissions in order to calculate GHG emission reductions. The sources, sinks, and reservoirs of GHG emissions reviewed during the verification of the Project are listed in Table 2.

Table 2 – Summary of the Project GHG Sources, Sinks and Reservoirs

Activity	GHG Sources, Sinks & Reservoirs
Baseline	• CH_4 vented to the atmosphere • Percent methane oxidized by soil bacteria. As the landfill is not covered with a synthetic liner, a 10% oxidation factor resulting from natural oxidation by soil bacteria was applied to the baseline emissions
Project	• CH_4 from the incomplete combustion of LFG sent to the flare • CO_2 from the combustion of fossil fuels used during operation and maintenance of the Project activity • CO_2 resulting from the consumption of imported electricity

3.3 Project Eligibility Criteria

The Protocol specifies four eligibility rules that a project must meet in order to register emission reductions with the Reserve: Location, Project Start Date, Additionality, and Regulatory Compliance. Below is a summary of the Reserve eligibility requirements and the Project's compliance to each requirement.

- **Eligibility Rule 1**: Location

  The Project is a U.S.-based landfill located in Dover, Ohio; it therefore meets this eligibility requirement. RCE confirmed this during the site visit.

- **Eligibility Rule 2**: Project Start Date

  The start date is defined as the date on which a qualifying destruction device becomes operational. RCE reviewed and confirmed the project start date of December 28, 2009 during a prior verification.

- **Eligibility Rule 3**: Additionality

Performance Standard Test

Prior to the Project activity, the Landfill did not destroy LFG. RCE confirmed this through the site visit; no evidence was observed that would indicate there was ever a pre-project destruction device. Thus, the Project passes the Performance Standard Test number 2 since it involves the "installation of a new qualifying destruction device at an eligible landfill where landfill gas is currently collected and vented, but has never been destroyed in any manner prior to the project start date".

Legal Requirement Test

During the site visit in 2020, RCE interviewed the Kimble Company landfill personnel about the procedures to ensure that the Project meets environmental compliance requirements and the Regulatory Test. Kimble Company personnel review federal, local, and state regulations to ensure that there is no mandate to collect and combust LFG. RCE determined that the procedures provide adequate awareness of any legal requirements of the Landfill to collect and destroy LFG.

The Landfill has a design capacity above 2.5 million mega grams (Mg) and 2.5 million cubic meters of municipal solid waste. Therefore, the New Source Performance Standard (NSPS) regulation requires the facility to conduct non-methane organic compound (NMOC) emission rate testing. Cornerstone Environmental submitted a report regarding the Tier II test dated March 26, 2020 which indicates that the estimated emission rate for 2020 was 132.98 Mg/year, above the regulatory threshold of 50 MG/yr. RCE concluded that the Kimble Sanitary Landfill is not required to destroy LFG and is not subject to the lower NSPS threshold of 34 MG/yr. Since the NMOC emission rate calculations exceed 50 Mg/yr, Kimble will prepare a GCCS design plan in accordance with the NSPS. The design plan will be submitted within one year of the March 26, 2020 date.

RCE also reviewed the Attestation of Voluntary Implementation form signed after the end of the reporting period and uploaded to the Reserve website which states that the project was implemented and established voluntarily.

- **Eligibility Rule 4**: Regulatory Compliance

  RCE searched the Environmental Protection Agency's Enforcement & Compliance History Online (ECHO) database for notices of violation on June 2, 2021 and found no violations for the 2020 reporting period. RCE also reviewed quarterly correspondence between EPA and Kimble and their annual inspection report. Lastly, RCE confirmed that Kimble Company is following its Monitoring Plan procedures to assure that it passes the Regulatory Test and the Project is in compliance with all federal, state and local regulations. RCE also confirmed signature of the Attestation of Regulatory Compliance after the end of the reporting period, which Element Markets uploaded to the Reserve.

3.4 Ownership of Generated Emission Reductions

RCE reviewed the completed Attestation of Title which states that the Kimble Company owns the emission reduction credits that the Project generates. Presented evidence such as the Designation of Authority and Carbon Credit Management Agreement clearly demonstrate that Kimble Company holds the legal title and exclusive ownership rights of the emission reductions associated with the Project.

3.6 GHG Monitoring and Management Systems

RCE reviewed the data management systems during the site visit and desktop review. RCE completed the majority of the GHG management systems review during the site visit by observing the onsite procedures and interviewing Kimble Company personnel, the Landfill engineer, and third-party personnel. The onsite review included an assessment of the Project data collection, processing, and handling procedures; recordkeeping and data storage; quality control and assurance procedures; record retention systems; and a

field tour of the Project equipment. Dale Lendon, Environmental Technician for Kimble Companies, accompanied Ruby Canyon on the site visit. The desktop review included a detailed review of the Project monitoring plan and its conformance to Protocol requirements. RCE also confirmed that the Project was implemented according to the Monitoring Plan.

During the site visit, RCE observed that the flow meter is installed correctly to allow for laminar flow of landfill gas. The primary project data include the LFG flow to the flare, temperature of the flare, and methane content of the LFG. RCE reviewed documentation to confirm that flow and temperature are measured at standard conditions. A Yokagawa digital data recorder measures LFG flow continuously and records the data in four minute intervals.

A thermocouple installed in the flare housing measures the flare temperature every four minutes. Kimble uses flare temperature to determine whether the flare is operational. A Siemens Ultramat 23 gas analyzer continuously measures the methane content of the landfill gas every four minutes. A Yokagawa digital data recorder measured the methane data when the analyzer was in operation every four minutes.

During the site visit, RCE reviewed the data storage and retention policies and verified they were in conformance with the Protocol requirements and followed the Monitoring Plan. All data are kept for a period of ten years after the information is generated or seven years after the last verification.

3.7 Instrument QA/QC

RCE confirmed that all monitoring equipment was inspected daily and cleaned (if necessary) with the as found/as left condition of the equipment documented per the requirements of the protocol. Quarterly cleanings did take place. APTIM, formerly Chicago Bridge & Iron (CBI), is a Shaw Environmental, Inc. Company. Shaw Environmental designed and engineered the entire Landfill GCCS that was installed in 2009. APTIM has performed the preventative maintenance and quarterly flare calibrations since the onset of the project in 2009 and performed the field checks with the final check for the flow meter occurring at the end of, but no more than two months prior to or after (as written in protocol) the end date of the current reporting period on November 24, 2020.

The current Kurz flow meter (Model Number 454FTB-WGF) and gas analyzer had been in situ calibrated by APTIM on 3/23/2020, 6/29/2020, 8/27/2020, and 11/24/2020. All as found and as left conditions documented a percent error within the Protocol stipulated threshold of +/- five percent error. APTIM is a certified third-party calibration service and calibrated the flow meter according to manufacturer guidelines. The manufacturer recommends that the flow meter be calibrated every 18 months. Siemens recommends that the Ultramat 23 be calibrated with calibration gas every 12 months. APTIM calibrated the Ultramat 23 during the reporting period using system calibration gas which exceeds this requirement.

3.8 Assessment of GHG Emission Reductions Calculations

RCE reviewed the emission reduction calculations assessment, Project assumptions, raw data inputs, and accuracy of calculations. RCE first assessed the completeness of the raw data and how the data is transferred to the calculation spreadsheet. Next, the Lead Verifier reviewed the formulas and raw data inputs for accuracy and compliance with the Protocol. RCE sampled selections of data and recalculated the methane destroyed by the Project and compared these values to Element Market's values in their assertion spreadsheet. RCE also reviewed the check built into the spreadsheet that totalizes flow only at times when the flare is operational (thermocouple readings greater than 500°F).

RCE confirmed that Element Markets applied the default destruction efficiency of 96 percent to the data because the destruction device is an open flare and a 10 percent discount for the oxidation of methane by soil bacteria because the entire landfill does not incorporate a synthetic liner as part of the final cap system.

RCE reviewed assumptions and calculations for Project emissions from purchased electricity and propane, confirmed that the Project Developer applied appropriate emission and conversion factors, and reviewed the use of Protocol equations for Project emissions in the GHG assertion.

RCE's review involved recalculation of LFG flow, checking that percent methane was correctly applied, checking and recalculating project fossil fuel use, and confirming correct use of conversion factors. RCE checked all calculations against the Project Developer's assertion with percent differences noted. There were no instances of data substitution during this reporting period. The difference between RCE's and Element Market's emission reductions was non-material.

4.0 Verification Results

Element Markets provided sufficient documentation of its emission reductions, data collection procedures, and monitoring and quality control procedures. The verification process focused on verifying the emission reductions claimed and the source data used by Element Markets to quantify the emission reductions in accordance with the Reserve Landfill Project Protocol Version 5.0. The following is a summary of the verification results.

The Project reported emission reductions of **196,074** metric tons CO_2e for the current reporting period. The emission reductions verified are listed below in Table 3. Emission reductions increased approximately 25% from the 2019 reporting period as additional wells were drilled in 2019 and 2020 totaling 111 wells online, up from 99 wells the previous reporting period. In addition, some wells were watered-in resulting in the installation of pumps to de-water, increasing the flow. Blow vacuum also increased by approximately four inches.

During the verification process, RCE made requests for corrective actions, additional documentation, and clarifications as necessary to complete the verification. Kimble and Element Markets sufficiently addressed all requests. The details of these requests are documented in RCE's List of Findings provided to the Reserve and Element Markets.

5.0 Conclusion

RCE conducted a risk-based analysis of the CAR621 Kimble Sanitary Landfill Gas Project GHG assertion including a strategic review of the Project data and evidence. Based upon the processes and procedures and the evidence collected, RCE concludes that the GHG assertion is a fair representation of the Project emission reductions resulting from the capture and utilization of LFG during the reporting period December 28, 2019 through December 27, 2020 and can be considered:

- In conformance with the Reserve Landfill Project Protocol, Version 5.0,
- Without material discrepancy, and
- Verified to a reasonable level of assurance.

The verified emission reductions are listed in Table 3.

Table 3 - Emission Reductions Verified for December 28, 2019 through December 27, 2020

Year	Baseline Emissions CO_2e (tonnes)	Project Emissions CO_2e (tonnes)	Emission Reductions CO_2e (tonnes)
2019	2,324	0	2,324
2020	193,808	58	193,750

Note: Due to rounding, individual values might not equal totals and values are not representative of raw data used in the emission reductions calculation.

Lead Verifier Signature

Jessica Stavole

Senior Internal Reviewer Signature

David LaGreca