



Verification Report

Reserve Project ID: CAR592
Morehead Landfill Project

3Degrees Group, Inc.

May 03, 2023

GHD

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Executive Summary

GHD Services Inc. (GHD) was engaged by 3Degrees Group, Inc. (3Degrees) (Technical Consultant) and Advanced Disposal Services Morehead Landfill, Inc. (Project Developer or PD) to conduct greenhouse gas (GHG) offset verification services for the "Morehead Landfill" Project (Project) under the Climate Action Reserve (the Reserve) Voluntary Offset Program. The Project is located in Morehead, Kentucky (Facility or Site). The Reserve Project ID for the Project is CAR592.

The GHG offset verification services were completed for the Project by GHD pursuant to the Reserve Verification Program Manual and corresponding Summary of Changes, dated February 3, 2021 and in accordance with Landfill Project Protocol Version 5.0 (Protocol), dated April 24, 2019 and the Reserve Offset Program Manual dated March 12, 2021 (Program Manual).

This verification covers reported emission reductions claimed by the Project Developer during the reporting period of December 1, 2021 to November 30, 2022.

For the December 1, 2021 to November 30, 2022 reporting period, the Project claimed **60,041 metric tonnes CO₂e** emission reductions in accordance with the Protocol. GHD completed the verification in accordance with the Protocol and Program Manual. The verification was conducted by GHD to a reasonable level of assurance. The verification criteria were selected per the Protocol and associated guidance documents. GHD determined, with a reasonable assurance, that the reported emission reductions are free of offset material misstatement and result in the issuance of a Positive Offset Verification Statement for the emission reductions.

Contents

1.	Introduction	1
2.	Verification Procedures and Methodology	1
2.1	Verification Objective	1
2.2	Verification Standards and Criteria	1
2.3	Verification Team	2
2.3.1	Roles and Responsibilities	2
2.3.2	Team Member Qualifications	2
2.4	Verification Methodology	3
2.4.1	Notification of Verification Activities and COI Form	3
2.4.2	Verification Plan and Project Kick-Off	3
2.4.3	Document Review	4
2.4.4	Site Visit	4
2.4.5	Senior Internal Review	4
2.5	Level of Assurance	4
2.6	Materiality Threshold	4
2.6.1	Quantitative Materiality Threshold	5
2.6.2	Qualitative Materiality Threshold	5
3.	Project Description	5
4.	Eligibility	6
4.1	Location	6
4.2	Project Start Date	6
4.3	Project Crediting Period	6
4.4	Additionality	6
4.4.1	The Performance Standard Test	6
4.4.2	The Legal Requirement Test	7
	Federal Regulations	7
	State and Local Regulations, Ordinances, and Permitting Requirements	7
4.5	Regulatory Compliance	8
4.6	Registration with other Registries	9
5.	Conformance with the Protocol	9
5.1	GHG Assessment Boundary	9
5.2	Quantifying GHG Emission Reductions	9
5.2.1	Baseline Emissions	9
5.2.2	Project Emissions	10
5.3	Project Monitoring	10
5.3.1	Monitoring Requirements	11
5.3.2	Instrument QA/QC	11
5.3.3	Other Monitoring Requirements	14
5.3.4	Data Substitution	15
5.4	Risk Assessment and Evidence Gathering Plan	15

Contents

5.5	Findings and Basis of Opinion	16
5.5.1	Quantitative Materiality Threshold	16
5.5.2	Qualitative Materiality Threshold	16
5.5.3	Findings and Basis of Opinion	17
6.	Verification Statement and Closing	17

Table index

Table 1	Quantitative Materiality Threshold	5
Table 2	Baseline Calculation Parameters	10
Table 3	Instrument Monitoring Requirements	11
Table 4	Instrument QA/QC	11
Table 5	Data Substitutions	15
Table 6	Project Developer GHG Reductions Estimation*	16
Table 7	GHD GHG Reductions Estimation*	16

1. Introduction

GHD Services Inc. (GHD) was engaged by 3Degrees Group, Inc. (3Degrees) (Technical Consultant) and Advanced Disposal Services Morehead Landfill, Inc. (Project Developer or PD) to conduct greenhouse gas (GHG) offset verification services for the "Morehead Landfill" Project (Project) under the Climate Action Reserve's (the Reserve) Voluntary Offset Program. The Project is located in Morehead, Kentucky (Facility or Site). The Reserve Project ID for the Project is CAR592.

The GHG offset verification services were completed for the Project by GHD pursuant to the Reserve Verification Program Manual, dated February 3, 2021, the corresponding summary of changes, and in accordance with the Landfill Project Protocol Version 5.0 (Protocol), dated April 24, 2019.

This verification covers reported emission reductions claimed by the Project Developer during the reporting period of December 1, 2021 to November 30, 2022. The crediting period is from December 3, 2019, to December 2, 2029. GHD is an accredited verification body under the Reserve's Voluntary Offset Program.

2. Verification Procedures and Methodology

2.1 Verification Objective

The objective of the verification is to provide the Project Developer, 3Degrees and the Reserve with an opinion on whether the Project's reporting period contains any material discrepancies and whether the Climate Reserve Tonnes (CRTs) were determined in accordance with the Reserve requirements detailed in the Protocol and Program Manual (as detailed below).

2.2 Verification Standards and Criteria

The verification was conducted to the standards and criteria set out in ISO 14064 and the following documents:

- ISO 14065:2013 Greenhouse Gases – Requirements for greenhouse gas validation and Verification Bodies for use in accreditation or other forms of recognition
- ISO 14064-2:2019 Greenhouse gases – Part 2: Specification with guidance at the project level for quantification and reporting of greenhouse gas emissions and removals, ISO, April 2019 (ISO 14064-2)
- ISO 14064-3:2019 Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions, ISO, April 2019 (ISO 14064-3:2019)
- Reserve Verification Program Manual and corresponding Summary of Changes, Climate Action Reserve, dated February 3, 2021 (Verification Manual)
- Reserve Offset Program Manual, Climate Action Reserve, dated March 12, 2021 (Program Manual)
- Landfill Project Protocol Version 5.0, Climate Action Reserve, dated April 24, 2019 (Protocol)
- Use of Global Warming Potential Values for All Offset Protocols, Climate Action Reserve, dated July 13, 2022 (Policy Memo)

2.3 Verification Team

2.3.1 Roles and Responsibilities

Lead Verifier – Peter Romzick, P. Eng. – Mr. Romzick led the verification and was responsible for development of the verification plan. Mr. Romzick reviewed the risk assessment, recalculation of raw data, data management and draft findings. Mr. Romzick prepared and signed the verification statement and verification report. Peter Romzick replaced Jason Clarke as Lead Verifier for the verification on February 10, 2023.

Verifier – Ben Gerber, MCC – Mr. Gerber developed and revised the verification plan and sample plan, developed a risk assessment, recalculated raw data, reviewed management of data quality and prepared draft findings.

Verifier – Elnaz Senobari Vayghan, E.I.T., M.Sc. – Ms. Vayghan developed and revised the verification plan and sample plan, developed a risk assessment, recalculated raw data, reviewed management of data quality and prepared draft findings.

Senior Internal Reviewer – Michelle Hirst – Ms. Hirst conducted a peer review of the verification plan, risk assessment, verification report and findings.

Lead Verifier – Jason Clarke, P. Eng. – Mr. Clarke led the verification and was responsible for development of the verification plan. Mr. Clarke reviewed the risk assessment, recalculation of raw data, data management and draft findings. Mr. Clarke conducted a Site visit of the facility.

2.3.2 Team Member Qualifications

The team member qualifications are detailed below.

Peter Romzick	Role: Lead Verifier
Professional Summary Mr. Romzick is an Associate of GHD and a senior environmental engineer. Mr. Romzick is a registered professional engineer in the State of Michigan. Mr. Romzick provides environmental consulting services to oil and gas, secondary aluminium, automotive, metal parts coating, coking and chemical processing industries that are focused on Clean Air Act and RCRA Compliance. Mr. Romzick has conducted multi-media environmental compliance audits for numerous facilities across the country. Mr. Romzick's air permitting experience includes New Source Review Permits (NSR), Prevention of Significant Deterioration (PSD), synthetic minor and Title V air permits. Mr. Romzick has experience in preparation of Pollution Incidence Prevention Plans (PIPP), Stormwater Pollution Prevention Plans (SWPP), Annual Air Emissions Reporting in multiple states, Spill Prevention Control and Countermeasures Plan (SPCC), and Risk Management Plans (RMP).	

Jason Clarke	Role: Lead Verifier (Replaced)
Professional Summary Mr. Clarke is a Professional Engineer registered in Ontario and has been with GHD since 2012. Mr. Clarke has practical and facility-specific experience associated with a range of greenhouse gas (GHG) validation and verification activities. Mr. Clarke is also Lead Verifier for the verification of a variety of Ontario based facilities under O. Reg. 452/09 and 390/18. Further, Mr. Clarke has been a validation/verification team member for a variety of GHG Validation and Verification projects registered under ANSI and UNFCCC Clean Development Mechanism (CDM). Mr. Clarke has been involved in the preparation of GHG Validation and Verification plans, issues logs, draft and final validation/verification reports, and findings assessments for various GHG projects associated with the Ontario Ministry of the Environment and Parks (MECP), ANSI, TCR, Massachusetts Department of Environmental Protection (MassDEP), Verra (VCS), and the UNFCCC CDM. Jason also has experience with the internal and external auditing related to GHG Verification and Validation projects in Ontario, Quebec, Alberta, British Columbia, and Massachusetts. Mr. Clarke is an ARB accredited Lead Verifier and Offset Project Specialist for livestock and ODS projects, and a CAR accredited Lead Verifier and Landfill Project Specialist. In addition, Mr. Clarke is a CAR accredited Team Leader under the Climate Forward program.	

Benjamin Gerber	Verification Team Role: Verifier
Professional Summary Mr. Gerber is a Climate Change Specialist and has been with GHD since 2018. Benjamin has practical experience completing greenhouse gas verifications and other GHG consulting work. Ben has been a member on GHG assurance teams for projects registered under a variety of programs and regulations including the Climate Action Reserve's Climate Forward program, Verra's VCS program, the American Carbon Registry, O. Reg. 390/18, the California ARB's cap-and-trade program, the Government of Canada's Output-Based Pricing System and Alberta's Carbon Competitiveness Incentive Regulation. Additionally, Ben has been a team member on teams conducting studies for provincial governments seeking to implement a carbon offset program within their jurisdiction. Ben's breadth of GHG quantification experience has equipped him with a detailed understanding of GHG quantification processes and major emission sources throughout a jurisdiction, while his academic background studying climate change has provided him with a detailed understanding of expected climate impacts, and associated solutions and resiliency measures.	

Elnaz Senobari Vayghan	Verification Team Role: Verifier
Professional Summary Ms. Vayghan is an Air and Climate engineer with GHD based in Vancouver office and is a member of the air and greenhouse gas department. Ms. Vayghan graduated with a Masters degree in Chemical and Petroleum Engineer with specialization in Energy and Environmental Systems from the University of Calgary. Ms. Vayghan has extensive knowledge and experience in GHG quantification and verification in various sectors, including the oil and gas, mining, and material production, and upgrading and refining sectors. Ms. Vayghan has experience being involved in carbon offsets projects and emission reduction projects in oil and gas and land use sector. Ms. Vayghan has been involved with reporting under the Greenhouse Gas Industrial Reporting and Control Act in British Columbia, The Management and Reduction of Greenhouse Gases in Saskatchewan and the Environmental Protection and Enhancement Act (APEA) as well as the Technology Innovation and Emissions Reduction (TIER) regulation in Alberta. Ms. Vayghan also has been involved with federal reports with NPRI, MSAPR, and SGRR.	

Michelle Hirst	Verification Team Role: Senior Internal Reviewer
Professional Summary Ms. Hirst holds a Master of Science in Environmental Governance from the Albert-Ludwig Universität in Germany and a Bachelor of Environmental Science (Hons.) from The University of Newcastle in Australia. Ms. Hirst has held roles in greenhouse gas teams in Germany, Canada, and the USA. Ms. Hirst has over 8-years of experience preparing emission reports, as well as verifying offset projects and emission reports. Her capabilities have involved verifying fugitive emissions, ozone depleting substances, forestry, mine methane capture, and livestock offset projects under the ARB, Climate Action Reserve (CAR), American Carbon Registry (ACR), and Verra (formerly Verified Carbon Standard), as well as verifying emission reports submitted under the British Columbia (BC) Reporting Regulation, Alberta Environment and Parks (AEP) Specified Gas Emitters Regulation (SGER), and Ontario Regulation (O. Reg.) 390/18 in Canada, and corporate emission reports submitted under the Global Reporting Initiative. Ms. Hirst is an ARB accredited Lead Verifier and Offset Project Specialist for livestock, mine methane capture and ODS projects, and a CAR accredited Lead Verifier and Landfill Project Specialist. In addition, Ms. Hirst is accredited by the Climate Action Reserve as a Team Leader in the Climate Forward program.	

2.4 Verification Methodology

2.4.1 Notification of Verification Activities and COI Form

GHD submitted the Notification of Verification Activities and Request for Evaluation for Potential Conflict of Interest (NOVA/COI) form to the Reserve Project Database on November 11, 2022. Approval from the Reserve for verification activities to proceed was provided on December 5, 2022.

2.4.2 Verification Plan and Project Kick-Off

GHD prepared and submitted the Verification Plan on December 15, 2022. The Verification Plan is considered to be a dynamic document that was updated, modified, and adapted to conditions as encountered during the completion of the verification process.

The kick-off call was held on December 15, 2022, and attended by Julie Kelleher (Technical Consultant), Teresa Fukuda (Technical Consultant), Joshua Thompson (Technical Consultant), Jason Clarke (GHD) and Angela Kuttemperoor (GHD).

2.4.3 Document Review

The GHD Project Team's document review during the review process included, but was not limited to, an evaluation of whether:

- The documentation is complete and comprehensive and follows the structure and criteria given in the Program Manual, Protocol, and its associated guidance.
- The GHG emission calculations use conservative assumptions for estimating GHG emissions.
- The GHG information system and its controls are sufficiently robust to minimize the potential for errors, omissions, or misrepresentations.
- The Facility GHG calculations contain any material misstatements.

2.4.4 Site Visit

A Site visit was conducted by Mr. Jason Clarke of GHD on January 11, 2023. As part of the Site visit activities, GHD interviewed Project personnel who understand the Project's operations and inspected data management systems. The following personnel were interviewed throughout the verification process as part of the Site visit activities and to verify Site conditions; Teresa Fukuda (Project Manager at 3Degrees) supporting with data collection, Ron Strube (Corporate Gas Director), Nathan Swan (Gas Operations Manager for the Mid-South Area), Brent Treadway (Site Manager) and Bill Chlebowy (Environmental Manager).

2.4.5 Senior Internal Review

GHD's Senior Internal Reviewer reviewed the Verification Report, Verification Statement, and the List of Findings prior to issuing the Final Verification Report and Verification Statement to the PD or the Reserve.

2.5 Level of Assurance

GHD conducted the verification to a reasonable level of assurance.

2.6 Materiality Threshold

Per the Verification Program Manual, *"A materiality threshold is used to assess an error, omission, or misstatement that may impact the GHG assertion made by a project developer. This threshold is also known as the "minimum quality standard" and differentiates those errors, omissions, or misstatements that are considered by the Reserve to be significant from those that are insignificant."*

The materiality threshold has both a quantitative and qualitative aspect, as outlined below.

2.6.1 Quantitative Materiality Threshold

Table 1 below outlines the quantitative materiality thresholds.

Table 1 Quantitative Materiality Threshold

CRTs Registered over a 12-Month Period	Required Accuracy Level
≤25,000	>95%
>25,000	>97%
>100,000	>99%

As the verification period is 12 months, the quantity of reported CRT's does not require pro-ratio to determine the appropriate quantitative materiality threshold.

The Project falls into the first category outlined above (>25,000 CRTs) therefore the required accuracy level for this verification is greater than 97 percent.

Percent error is defined by the following:

$$\% \text{ Error} = \text{abs}\left(\frac{\text{Stated Reductions} - \text{Verified Reductions}}{\text{Verified Reductions}}\right) \times 100$$

The accuracy level is defined by the following:

$$\text{Accuracy} = 100\% - \% \text{Error}$$

These equations are utilized below in the quantification of the accuracy level of the verification to determine if the Project meets the materiality threshold and be issued a positive Verification Statement.

2.6.2 Qualitative Materiality Threshold

Per the Verification Program Manual, "A qualitative non-conformance occurs when a prescriptive protocol requirement (e.g., metering, monitoring, management systems, record-keeping, etc.) is not met." and "A prescriptive requirement is defined as any specific guidance mandated by the protocol that does not allow for deviation, variance or verifier professional judgement."

All qualitative non-conformances must be corrected for GHD to be able to issue a positive Verification Statement.

3. Project Description

GHD understands 3Degrees is the Technical Consultant, and Advanced Disposal Services Morehead Landfill, Inc. is the Project Developer for the reporting period, however GHD understands that the landfill is currently owned by Waste Management. The Project utilizes the Reserve's *Landfill Project Reporting Protocol, Version 5.0 (April 24, 2019)*.

The landfill gas collection and combustion system (LFGCCS) consist of forty (40) wells (both horizontal and vertical), one open flare, and two 3516 Model 800kW utilization engines. The two utilization engines were a part of a new landfill gas utilization system that went online on October 1, 2019.

No pre-project destruction of methane occurred at the Site. Drilling was completed in April 2009 and installation of laterals and headers were completed in June 2009; however, the system was not brought online until December 3, 2009 (Project Start Date). The Project is not a bioreactor project as the Morehead Landfill is not a bioreactor.

On October 30, 2020, it was announced that Waste Management had acquired Advanced Disposal,¹ which is the parent company of the Project Developer. Advanced Disposal Services Morehead Landfill, Inc. remains the Project Developer and owner of the Project Site for the 2021 and 2022 reporting periods, however they are now a wholly-owned subsidiary of Waste Management instead of Advanced Disposal.

4. Eligibility

The following sections outline how the Project meets the eligibility requirements of the Protocol.

4.1 Location

The Project landfill is located in Morehead, Kentucky, United States, and therefore eligible under the Protocol. GHD verified the location during the Site Visit on January 11, 2023.

4.2 Project Start Date

GHD reviewed the start date requirements for the Project and confirmed that they are in accordance with the Protocol and associated Reserve requirements. GHD notes that prior to the Project start date it was verified that there was no LFGCCS and associated destruction device installed. The landfill began accepting waste in 1974. In 2009 an LFG collection system was installed, and expansions occurred in 2010, 2015 and 2017. Methane was first destroyed in a Project device on December 3, 2009 as evidenced by a flare start-up invoice from Shaw LFG Specialties, LLC who was the flare skid installer and the Verification Report from the initial Project reporting period (December 5, 2009 to March 11, 2011). GHD verified that the Project has been registered with the Reserve from the initial reporting period to the current reporting period.

4.3 Project Crediting Period

The Project is currently within its second ten (10) year crediting period. The crediting began on December 3, 2019 and extends until December 2, 2029. The current reporting period of December 1, 2021, to November 30, 2022 falls within the current Project crediting period.

4.4 Additionality

The following sections demonstrate that GHG reductions are additional to what would have occurred in the absence of a carbon offset market.

4.4.1 The Performance Standard Test

The Project involves the following project activity:

- Installation of a landfill gas collection and control system (LFGCCS) and a new qualifying destruction device at an eligible landfill where landfill gas (LFG) has never been collected and destroyed prior to the project start date.

GHD verified that the landfill did not have a historic LFGCCS prior to the Project start date through interviews with the Project personnel, review of historic documentation (flare start-up invoice), and review of historic aerial photographs of the Project Site. GHD notes that the Project destroys LFG through a flare and, starting on October 1, 2019, two 800kW utilization engines.

As a result, GHD determined that the Project meets the applicable requirements of the Performance Standard Test.

¹ <https://investors.wm.com/news-releases/news-release-details/waste-management-completes-46-billion-acquisition-advanced>.

4.4.2 The Legal Requirement Test

Federal Regulations

There are several United States Environmental Protection Agency (EPA) regulations for municipal solid waste (MSW) landfills that impact eligibility on this Project as part of the Legal Requirement Test, including the following:

- New Source Performance Standards (NSPS) for MSW Landfills, codified in 40 CFR 60 subpart WWW – Targets landfills that commenced construction or made modifications after May 1991
- New Source Performance Standards (NSPS) for MSW Landfills, codified in 40 CFR 60 subpart XXX
- Emission Guidelines (EG) for MSW Landfills, codified in 40 CFR 60 subpart Cc. – Targets existing landfills that commenced construction before May 30, 1991, but accepted waste after November 8, 1987
- Landfill National Emission Standards for Hazardous Air Pollutants (NESHAP), codified in 40 CFR 63 subpart AAAA – Regulates new and existing landfills
- Federal Plan, codified in 40 CFR 62 Subpart OOO

GHD reviewed the Compliance Test Report Determination of Tier 2 Non-methane Organic Compound Concentrations applicable to the Project and prepared by Environmental Information Logistics, LLC dated February 4, 2022. NSPS regulations state that Tier 2 Site-specific NMOC concentration is valid for a period of five years, or until NMOC emissions are estimated to be greater than 50 Mg/year, whichever occurs first. Per the Project's Title V Operating Permit No. V-18-045, NSPS 40 CFR 60 subpart WWW applies to the Project, therefore the NMOC threshold is 50 Mg per year. Based on the information provided and completion of the verification process, GHD understands that the landfill has not been modified, constructed, or reconstructed since July 17, 2014 and therefore the 50 Mg/yr threshold still applies for NMOC emissions. The landfill is currently subject to the 50 Mg/year threshold as required by the Landfill NESHAP (40 CFR 63 Subpart AAAA) and the 34 Mg NMOC/year threshold as required by the Federal Plan – 40 CFR 62 Subpart OOO. GHD confirmed that during the monitoring period the NMOC emissions rate was estimated to be 8.23 Mg/year in 2019, based on the Final Tier 2 Report developed by SCS Engineers dated September 30, 2016 and valid through to 2021. Furthermore, GHD confirmed that during the monitoring period the NMOC emissions rate was estimated to be 9.27 Mg/year in 2021, based on the Final Tier 2 Report developed by Environmental Information Logistics, LLC dated February 4, 2022 and valid through to 2026. The report indicates that the annual NMOC emission rate will remain below 50 Mg/year and 34 Mg/year including 2022. Therefore, a LFGCCS is not required to be installed and operating, therefore, the Site meets the legal requirement test.

The Summary Report for New Source Performance Standards Tier 2 Sampling, Analysis, and Landfill NMOC Emission Estimates states a waste design capacity of 6,984,246 short tons, which equates to 6,336,001 megagrams (Mg), which means the landfill is subject to the NSPS or EG rules.

State and Local Regulations, Ordinances, and Permitting Requirements

GHD reviewed the following Kentucky regulations associated with landfills along with the permits that were associated with the Project:

- 401 KAR 47:030 – Environmental Performance Standards
- 401 KAR 47:120 – Conditions applicable to all solid waste permits
- 401 KAR 48:070 – Design requirements for contained landfills
- 401 KAR 48:090 – Operating requirements for contained landfills

Additional local and state regulations were also reviewed to ensure an exhaustive review was completed. Further details regarding regulatory compliance are provided in the following section.

4.5 Regulatory Compliance

GHD has reviewed the Project Developer's Attestation of Regulatory Compliance for the verification period, which was signed by the PD on December 20, 2022. GHD also reviewed the Attestation of Title and Attestation of Voluntary Implementation for the verification period, both signed on December 20, 2022. GHD verified that each of the forms were uploaded to the Reserve registry for the Project.

GHD verified that the Attestation of Regulatory Compliance, Attestation of Title, and Attestation of Voluntary Implementation have been completed correctly for the verification period of December 1, 2021 to November 30, 2022, and signed by a representative (Eddie McManus, Area Vice President) from Advanced Disposal Services Morehead Landfill, Inc.

The following permits were provided to GHD for review:

- Kentucky Pollutant Discharge Elimination System (KPDES) Permit No. KY0094749, valid from April 1, 2021 to March 31, 2026
- Title V Operating Permit No. V-18-045 issued May 16, 2019 and expires on May 16, 2024 (landfill and flare)
- Title V Operating Permit No. V-18-025 issued September 5, 2018 and expires on September 5, 2023 (engines)
- Morehead Utility Plant Board Industrial User Permit No. 002-21, valid from April 1, 2021 to March 31, 2022
- Morehead Utility Plant Board Industrial User Permit No. 002 21, valid from April 1, 2022 to March 31, 2023
- Kentucky Energy and Environment Cabinet Department for Environmental Protection Division of Waste Management, Solid Waste Permit No. SW10300007, valid from July 1, 2017 to June 30, 2022
- Kentucky Energy and Environment Cabinet Department for Environmental Protection Division of Waste Management, Solid Waste Permit No. SW10300007, valid from July 1, 2022 to June 30, 2027

In addition to confirming regulatory compliance at the state level, GHD performed a search of the US Environmental Protection Agency Enforcement and Compliance History Online (ECHO) database on February 2, 2023 for the reporting period and identified there were multiple "Other Violation" tags noted under Quarterly Noncompliance Report History pertaining to the Clean Water Act (CWA), Kentucky Pollution Discharge Elimination System (KPDES) Permit Number KY0094749, throughout the reporting period. GHD confirmed that these violations were on-going since the Notice of Violation (NOV) observed by Kentucky Department of Environmental Quality (KDEP), Division of Water for storm water discharges on September 27, 2019 and issued to Morehead Landfill on October 3, 2019 as listed on the ECHO database. The violations are regarding multiple stormwater pollutant type exceedances associated with the Clean Water Act (e.g., total suspended solids and iron) and were on-going until the pollutant concentrations returned to be below the permitted discharge limits.

GHD reviewed the ECHO database again on April 22, 2023 and identified that for Permit No. KY0094749 under the CWA, the violation status changed to "No violation identified" for the period of October 1, 2022 to December 31, 2022. Therefore, the Site returned to compliance near the end of the reporting period for the Project, which ended on November 30, 2022. Upon discussion with the Technical Consultant and documentation provided by the Project Developer, it is understood that the violations were addressed through the following actions:

- *A Plan of Action and Schedule of Implementation Response to Notice of Violation (NOV)* letter was submitted to the Kentucky Department of Environmental Protection – Division of Enforcement by Advanced Disposal on July 7, 2020 as a response to notice of violations received by the Site dated May 14, 2020, which was of similar nature to the original September 27, 2019 Notice of Violation and regarding stormwater exceedances. Corrective actions that the Site has taken include and are not limited to expanding the size of the stormwater pond to increase retention time, adding seeding to establish vegetation, etc. The KDEP acknowledged that the corrective actions were going to be and have been implemented by Morehead landfill.

The Site received a NOV under the Clean Air Act (CAA) Permit Number KY0000002120500048 relating to an odour exceedance on August 30, 2022 as listed on the ECHO database. GHD reviewed the NOV and confirmed with Morehead landfill that the NOV was related to 9 KDEP inspections of the Site being done, during which odour was confirmed at a single sample point with the nasal ranger. GHD reviewed Advanced Disposal Services Morehead

Landfill, Inc.'s response dated September 30, 2022 to the KDEP, Division for Air Quality regarding the NOV which described the lack of evidence substantiating the non-compliance which related to an odor detected outside the landfill property. The response further detailed the extent of measures taken by Morehead Landfill with respect to minimizing odors, primarily through the installation of additional LFG collection infrastructure at the Site, and details a request for the NOV to be rescinded based on the above. GHD reviewed the US EPA ECHO database on March 3, 2023 and again on April 22, 2023 and observed that no non-compliances under the CAA Permit Number KY0000002120500048 were shown any time within or outside the reporting period. GHD reached out to the KDEP for further details on the violation, but did not receive a response.

The Site received a NOV observed October 28, 2022 and issued October 31, 2022 from KDEP, Division of Waste Management for Permit Number SW10300007 relating to operational issues at the landfill including inadequate cover and improper seeding observed at the landfill. GHD understands that Morehead Landfill implemented improvements and images were sent to KDEP to demonstrate compliance. The outstanding issues were cited in a subsequent NOV, observed by KDEP, Division of Waste Management on December 2, 2022 and issued to the Site on December 13, 2022. GHD understands that Morehead Landfill submitted a response to the NOV in January 2023 and held an Administrative Conference with Enforcement, during which the Site accepted a civil penalty and are currently awaiting a draft Agreed Order. GHD notes that the second NOV issued falls outside the reporting period, however was a continuation of the NOV issued during the reporting period. GHD understand that neither of the solid waste violations are related to the Site's LFG collection system.

GHD confirms that there are no components of the Project that have a direct impact on surface water effluent, odor exceedances or the above mentioned operational issues at the landfill, therefore the violations identified, do not fall within the boundary of the Project and associated compliance. As the violations are not Significant Non-compliances (SNCs) or Reportable Non-compliances (RNCs), the violations reviewed also do not warrant EPA/state review.

Through review of the provided permits, the ECHO database review, and discussions held during the Site visit, GHD can confirm that the Project met the regulatory compliance requirements associated with the Project.

4.6 Registration with other Registries

GHD performed an internet search of the American Carbon Registry (ACR), the Verified Carbon Standard/Verra (VCS), the Gold Standard (GS), and the Social Carbon project databases and confirmed that the Project is not currently registered in any other carbon offset registry or program. GHD notes that this type of project activity can only be registered under the above noted programs based on the Project type and location.

5. Conformance with the Protocol

5.1 GHG Assessment Boundary

GHD understands the GHG assessment boundary for the Project must conform to Table 4.1 of the Protocol. During the Site visit and the document review, GHD confirmed that all sources, sinks, and reservoirs included in Table 4.1 of the Protocol were accounted for and quantified in the GHG emission reduction calculations.

5.2 Quantifying GHG Emission Reductions

5.2.1 Baseline Emissions

Baseline emissions include the following:

- Emissions from waste breakdown in landfill (CH₄)
- Emissions from project LFG destruction – open flare (calculated in reference to destruction efficiency) (CH₄)

- Emissions from project LFG destruction – lean-burn internal combustion engines (calculated in reference to destruction efficiency) (CH₄)

Table 2 below outlines the calculation parameters used in the calculation of the baseline emissions.

Table 2 *Baseline Calculation Parameters*

Calculation Parameters	Value Applied	Justification
DF Discount Factor	0.1 (Weekly)	Methane monitoring is weekly throughout the monitoring period
Oxidation Discount Factor	0.1	No synthetic liner, per the Protocol and based on Project conditions
Open Flare	0.96	Per the Protocol (Table B.2)
Lean-Burn Internal Combustion Engine	0.936	Per the Protocol (Table B.2)

5.2.2 Project Emissions

Project emissions include the following:

- Emissions from gas collection system:
 - Pilot fuel and operation (propane and electricity, respectively) (CO₂e)

GHD confirmed the consumption values were appropriate through review of the procedure utilized for estimating fuel usage and internal data management, and ensured the calculations were performed in accordance with the Protocol

5.3 Project Monitoring

GHD has reviewed the Monitoring Plan developed by the Technical Consultant which outlines the monitoring and reporting responsibilities for the Project.

LFG flow to the destruction devices (flare and engines) is continuously monitored every two minutes. For the flare, temperature data is measured continuously by two thermocouples. LFG flow is monitored via two Thermal Instruments Company (TIC) Model 62-9/9500P flow meters to monitor flow at the engines (SN. 2019573) and flare (SN.2020414).

Rental TIC Model 62 9/9500P flow meters (SN. L19022 and L14075) were used when the flow meters were out for calibration from December 22, 2021 – January 31, 2022. All flow meters correct for temperature and pressure by normalizing the flow to 60 degrees Fahrenheit and 1 atm. The standard temperature and pressure required by the Protocol is 60 degrees Fahrenheit and 1 atm, therefore the data correction using Equation 5.2 of the Protocol is not required in the emission reduction calculations to meet the Protocol requirements.

Flow data to the destruction devices is collected from a Yokogawa data recorder. The data is downloaded by Site staff monthly and provided to the Technical Consultant on a monthly basis.

Through the reporting period, two portable gas analyzer units, Elkins Earthworks Envisions100 and Envisions200 (SN. 1101004B and SN. 1909206B) respectively, were used to obtain the methane concentrations on a weekly basis. GHD verified that methane monitoring device is detailed in the Monitoring Plan. A discount factor of 0.1 was applied to the emission reduction calculations as a result of the weekly methane measurements. Emission reductions were only calculated for weeks in which methane measurements were taken with the exception of data substitutions, where possible. 10 data substitutions were made during the reporting period and are further detailed in Section 5.3.4. No invoices for propane consumption were retained for the monitoring period. A conservative assumption of 3 tanks of propane (25 gallons each) were assumed to be consumed during the reporting period based on the maximum capacity of tanks on-Site. Given that there is limited downtime related to the flare and only minor amounts of propane are required as a pilot fuel, GHD determined that the assumption of 3 tanks of propane consumed was conservative.

5.3.1 Monitoring Requirements

The Project Proponent collects the following monitoring data for the Site pursuant to Table 6.1 of the Protocol. Calculated or reference parameters specified in Table 6.1 of the Protocol were determined and used at the frequency specified based on operating data records. Table 3 outlines the instrument monitoring requirements for the Project:

Table 3 *Instrument Monitoring Requirements*

Instrument	Unit	Measurement Frequency	Measurement Temperature and Pressure	Operating Parameters
Flow Meter (engine)	Thermal Instruments Company (TIC) 62-9/9500P flow meter (SN. 2019573)	Measured continuously, recorded every 2 minutes	60°F and 1 atm	Engine run time
Flow Meter (flare)	Thermal Instruments Company (TIC) 62-9/9500P flow meter (SN. 2020414)	Measured continuously, recorded every 2 minutes	60°F and 1 atm	Thermocouple readings >500°F
Portable Gas Analyzer	Envision ENV100 (SN. 1101004B)	Measured weekly	N/A	N/A
Portable Gas Analyzer	Envision ENV200 (SN. 1909206B)	Measured weekly	N/A	N/A

5.3.2 Instrument QA/QC

Table 4 below outlines the monitoring instruments for the project, the model and serial numbers, the relevant dates of manufacturer calibrations, and the field checks performed on the instruments throughout the reporting period.

Table 4 *Instrument QA/QC*

Instrument, Model, and SN.	Date of Calibration	Field Checks
Methane Analyzer (Portable) Envision ENV100 SN. 1101004B	The Envision Operator's Manual states the gas analyzer should be returned to the factory at a minimum once per year for inspection and factory calibration. The monitoring plan identifies calibration by a certified calibration service annually with a field check and calibration for accuracy performed within the last 2 months of each reporting period. This is the primary portable gas analyzer that is used. The gas analyzer was calibrated annually. The meter was calibrated by Elkins Earthworks (third-party) on February 11, 2021 (pre-reporting period) and February 1, 2022. As found/as left conditions were recorded and found to be within $\pm 1\%$. The monthly MCC reports indicate that field checks are conducted near weekly for methane analyzer 1101004B. This includes end-of-reporting period field checks which occurred within two months of the end of the reporting periods on November 7, 2022, November 18, 2022, November 21, 2022 and November 30, 2022.	The Project Proponent noted that analyzers are cleaned and inspected on a monthly basis by third-party Monitoring Control and Compliance, Inc. (MCC). The monthly reports provided by MCC provide details of the measurements taken by MCC during each monthly event which represent the completion of the inspections throughout the reporting period. The monthly reports document the following: – Field calibrated prior to use – Gas quality recorded

Instrument, Model, and SN.	Date of Calibration	Field Checks
Methane Analyzer (Portable) Envision ENV200 SN. 1909206B	The Envision Operator's Manual states the gas analyzer should be returned to the factory at a minimum once per year for inspection and factory calibration. The monitoring plan identifies calibration by a certified calibration service annually with a field check and calibration for accuracy performed within the last 2 months of each reporting period. This is the back-up portable gas analyzer that is only used on occasion. The gas analyzer was calibrated annually. The meter was calibrated by Elkins Earthworks (third-party) on December 18, 2020 (pre-reporting period) and December 8, 2021. As found/as left conditions were recorded and found to be within $\pm 1\%$. The end-of-reporting field check took place on December 29, 2022. As found/as left conditions were recorded and found to be within $\pm 1\%$. This analyzer was not used during the reporting period.	
Flow Meter Thermal Instruments Company (TIC) 62-9/9500P flow meter (SN. 2020414)	Thermal Instrument Company (TIC) recommends calibration every 12 to 18 months. The monitoring plan identifies calibration by a certified calibration service every 18 months or every 2 years, with quarterly pitot tube checks with a field check and calibration for accuracy performed within the last 2 months of each reporting period. The meter was calibrated by TIC on January 6, 2021 (pre-reporting period) and January 12, 2022 to within $\pm 1\%$. The field check performed on January 27, 2023 took place within two months of the end of the reporting period.	It is noted in Monitoring Plan that the flow meter is cleaned and inspected with logs detailing the cleaning and inspection details (date, time, name of technician, condition of device before inspection and cleaning, all procedures of inspection and cleaning performed, and condition as left). The monthly reports provided by MCC provide details of the measurements taken by MCC during each monthly event which represent the completion of the inspections throughout the reporting period.

Instrument, Model, and SN.	Date of Calibration	Field Checks
Flow Meter Thermal Instruments Company (TIC) 62-9/9500P flow meter (SN. 2019573)	Thermal Instrument Company (TIC) recommends calibration every 12 to 18 months. The monitoring plan identifies calibration by a certified calibration service every 18 months or every 2 years, with quarterly pitot tube checks with a field check and calibration for accuracy performed within the last 2 months of each reporting period. The meter was calibrated by TIC on January 8, 2021(pre-reporting period) and January 13, 2022. The end-of-reporting period field check was performed on February 1, 2023. As the end-of-reporting period field check occurred 1 day after the end of the two-month window within the end of the reporting period (January 31, 2023), a variance request was submitted to the Reserve and approved on March 13, 2023. The Reserve permits Morehead to use the February 1, 2023 calibration as the end-of reporting period field check for this meter under the following conditions as stated in the variance approval: – The verifier confirms that the calibration certificates from February 1, 2023 for the flow meter was within the $\pm 5\%$ accuracy threshold. – The verifier confirms that the monitoring plan specifies an appropriate flow meter calibration schedule to ensure that future reporting periods will meet protocol monitoring requirements. – The verifier confirms that all other QA/QC requirements have been met. GHD reviewed the as-found values for the calibration conducted for meter 2019573 on February 1, 2023 and confirmed that it was within $\pm 5\%$ for all flow ranges expected at the landfill. GHD reviewed the as-left values and confirmed that the meter was calibrated to $\pm 1\%$. GHD confirmed that the monitoring plan includes an appropriate calibration schedule for the flow meter to ensure that future reporting periods meet protocol monitoring requirements. GHD confirmed that all other QA/QC requirements have been met as the 2022 calibration was conducted appropriately and that cleaning and inspection procedures were carried out.	The monthly MCC reports document the following: – O&M activities completed throughout the month including compliance related issues and recommendations for improvement. – Flare inlet pitot tube flow measurements (flow check).
Flow Meter (rental) Thermal Instruments Company (TIC) 62 9/9500P flow meter (SN. L9022)	Thermal Instrument Company (TIC) recommends calibration every 12 to 18 months. The monitoring plan identifies calibration by a certified calibration service every 18 months or every 2 years, with quarterly pitot tube checks with a field check and calibration for accuracy performed within the last 2 months of each reporting period. The meter was calibrated by TIC on December 08, 2022 to within $\pm 1\%$. The meter was used from December 22, 2021 – January 31, 2022.	

Instrument, Model, and SN.	Date of Calibration	Field Checks
Flow Meter (rental) Thermal Instruments Company (TIC) 62 9/9500P flow meter (SN. L14075)	Thermal Instrument Company (TIC) recommends calibration every 12 to 18 months. The monitoring plan identifies calibration by a certified calibration service every 18 months or every 2 years, with quarterly pitot tube checks with a field check and calibration for accuracy performed within the last 2 months of each reporting period. The meter was calibrated by TIC on December 08, 2022 to within $\pm 1\%$. The meter was used from December 22, 2021 – January 31, 2022.	

GHD confirmed that the information presented above is consistent with the monitoring procedure presented in the Monitoring Plan. The Monitoring Plan was updated on October 21, 2021 to include alternative flow meter calibration requirements from the manufacturer recommended calibration every 18 months at a minimum. The Technical Consultant provided e-mail evidence from the flow meter manufacturer (dated October 15, 2021) that with proper pitot tube measurements, two years between calibration events is acceptable if pitot tube checks are conducted quarterly. Nonetheless, flow meter calibrations were performed annually by TIC.

The Monitoring Plan was also updated to exclude the FCI flow meter used during the previous reporting period, and to include the ENV200 1909206B back-up methane analyzer, however this analyzer was not used during the current reporting period.

GHD reviewed the historic and current calibration details of all flow meters and methane analyzers used during the reporting period along with the results of the field checks and determined that all meters were within tolerance during the reporting period. It was determined that the calibration frequencies as outlined in the Monitoring Plan for all equipment used was consistent with the operating manual recommendations. Through review of calibration documentation, it was determined that calibration activities took place in accordance with the Monitoring Plan. All calibration activities were conducted as scheduled with the exception of flow meter (SN. 2019573) for which GHD confirmed the conditions of the approved variance request.

5.3.3 Other Monitoring Requirements

GHD reviewed the Monitoring Plan for the Project and did not identify any issues.

Electronic records of continuous methane fraction, flow data and flare temperature (as a proxy for flare operating hours) are initially stored in the memory of the data logger and downloaded monthly and stored for the long-term on the local office servers of the Project Proponent and Technical Consultant. All records related to flow data, factory calibrations, field checks, and general maintenance, service, and repair are maintained on Site for at least 7 years and are also sent to the Technical Consultant on a semi-annual basis where they are maintained on internal and online servers for at least 7 years. The Project Developer has confirmed all information required by the Protocol will be retained for a period of 10 years after the information is generated or 7 years after the last verification in accordance with the Protocol.

GHD confirmed the following personnel were properly trained for their roles:

- Ms. Julie Kelleher – Individual responsible for managing and reporting GHG emissions
- Ms. Teresa Fukuda – Individual responsible for managing and reporting GHG emissions

GHD also reviewed the third-parties that performed the calibration checks for the flow meters and methane analyzers (TIC, Elkin Earthworks, and MCC) and determined that they were competent to be performing the associated calibrations, monitoring, and inspections, as applicable.

5.3.4 Data Substitution

GHD confirmed that all data substitutions adhered to the requirements and methods presented in Appendix D of the Protocol. Information regarding the data substitutions is presented in Table 5 below. Data substitutions are only permissible when two monitoring parameters corroborate proper function of the destruction device. Flow data was substituted for 10 time periods during the reporting periods. No methane concentration data was substituted for the reporting period. The substitutions were only performed for one consecutive missing weekly measurement.

Table 5 *Data Substitutions*

Parameter	Missing Data Period	Duration of Missing Data	Substitution Methodology	Two Monitored Parameters Corroborating Proper Functioning
Flow rate to Engine	2021/12/21 09:48:00 - 2021/12/21 10:04:00	less than 6 hours	average of the four hours immediately before and following the outage	Methane concentration rates during the data gap consistent with normal operation. Generation by engines.
	2021/12/22 12:34:00 - 2021/12/22 13:20:00	less than 6 hours	average of the four hours immediately before and following the outage	
	2022/01/31 11:44:00 - 2022/01/31 12:36:00	less than 6 hours	average of the four hours immediately before and following the outage	
	2022/06/17 13:34:00 - 2022/06/17 17:42:00	less than 6 hours	average of the four hours immediately before and following the outage	
	2022/08/23 14:16:00 - 15:18:00	less than 6 hours	average of the four hours immediately before and following the outage	
	2022/09/08 10:00:00 - 2022/09/08 10:02:00	less than 6 hours	average of the four hours immediately before and following the outage	
	2022/10/20 15:32:00 - 16:58:00	less than 6 hours	average of the four hours immediately before and following the outage	
	2022/11/18 09:22:00 - 2022/11/18 12:16:00	less than 6 hours	average of the four hours immediately before and following the outage	
Flow rate to Flare	2021/12/21 09:48:00 - 2021/12/21 10:04:00	less than 6 hours	average of the four hours immediately before and following the outage	Methane concentration rates during the data gap consistent with normal operation. – Thermocouple readings.
	2022/09/08 10:00:00 - 2022/09/08 10:02:00	less than 6 hours	average of the four hours immediately before and following the outage	

5.4 Risk Assessment and Evidence Gathering Plan

GHD developed a risk assessment to determine risk and magnitude of potential errors, omissions, or misrepresentations. The final risk assessment was revised, as needed, throughout the verification and is presented in the Final Verification Plan.

GHD developed an Evidence Gathering Plan for internal use at the outset of the verification which determined the course of the verification. The final evidence gathering plan was revised, as needed, through the verification. GHD performed a complete recalculation of the Project emission reductions based on the received data and information.

5.5 Findings and Basis of Opinion

5.5.1 Quantitative Materiality Threshold

Table 6 and Table 7 below outline the Project Developer's and GHD's GHG Reductions Estimation, respectively.

Table 6 *Project Developer GHG Reductions Estimation**

Vintage	Baseline Emissions	Project Emissions	GHG Reductions/Removals (CRTs)
2021	4,010	8	4,001
2022	<u>56,132</u>	<u>92</u>	<u>56,040</u>
Total	<u>60,141</u>	<u>100</u>	<u>60,041</u>

*Vintage numbers have been appropriately rounded. Total emissions were calculated using the vintage numbers pre-rounding.

Table 7 *GHD GHG Reductions Estimation**

Vintage	Baseline Emissions	Project Emissions	GHG Reductions/Removals (CRTs)
2021	4,010	8	4,001
2022	<u>56,132</u>	<u>92</u>	<u>56,040</u>
Total	<u>60,141</u>	<u>100</u>	<u>60,041</u>

* Vintage numbers have been appropriately rounded. Total emissions were calculated using the vintage numbers pre-rounding.

The required accuracy level for this verification is greater than 97 percent. Percent error is defined by the following:

$$\% \text{ Error} = \text{abs}\left(\frac{\text{Stated Reductions} - \text{Verified Reductions}}{\text{Verified Reductions}}\right) \times 100$$

The accuracy level is defined by the following:

$$\text{Accuracy} = 100\% - \% \text{ Error}$$

Based on GHD's verified reduction and the stated reductions, the percent error and accuracy level for the Project is as follows:

$$\% \text{ Error} = \text{abs}\left(\frac{60,041 - 60,041}{60,041}\right) \times 100$$

$$\text{Accuracy} = 100\% - 0.00\% = 100\%$$

Therefore, the Project meets the quantitative materiality threshold and be issued a positive Verification Statement.

5.5.2 Qualitative Materiality Threshold

GHD did not identify qualitative material misstatements associated with the Monitoring Report.

5.5.3 Findings and Basis of Opinion

Based on the findings discussed above, GHD will be issuing a positive verification statement. In issuing a Positive Verification Statement, GHD asserts the following:

- The Project meets all eligibility requirements
- The Project was conducted in accordance with all monitoring and record-keeping requirements
- There is no existing material non-conformances or misstatements in the reported data

6. Verification Statement and Closing

For the December 1, 2021 to November 30, 2022 reporting period, the Project claimed total **60,041 metric tonnes CO₂e** of GHG reductions in accordance with the Protocol. GHD completed the verification in accordance with the Protocol. GHD completed the verification of the Monitoring Report in accordance with ISO 14064-3:2019. GHD completed the work to provide a reasonable level of assurance. The verification criteria were selected per the Protocol, and associated guidance documents. GHD determined with a reasonable assurance that the reported emission reductions are free of an offset material misstatement and resulted Positive Offset Verification Statement for emission reductions.

The Offset Verification Statement will be submitted to the Reserve, in alignment with this Verification Report.

All of Which is Respectfully Submitted,

GHD



Pete Romzick, Lead Verifier



Michelle Hirst, Senior Internal Reviewer



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