



DAVIDSON COUNTY LANDFILL

2024 MONITORING REPORT

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Project title	Davidson County Landfill
Project ID	2414
Monitoring period	01-January-2024 to 31-December-2024
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Most recent date of issue	24-Sept-2025
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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Davidson County Landfill is a municipal solid waste facility operated by Davidson County in Lexington, North Carolina. At the landfill, landfill gas is collected and routed for combustion at one of two devices: a single open flare or an electricity generator set. Both devices are operated by Davidson Gas Producers using landfill gas collected at the Davidson County Landfill. Since the commissioning of the electricity generator set in November 2010, the flare only operates as a backup methane destruction device. The landfill gas collection system consists of 77 vertical wells between the Holly Grove area, Phase 1, and Phase 2. There is a total of 25 wells connected to the leachate cleanout system for a total of 102 wells. The landfill does not re-circulate leachate back into the landfill and is not considered a Bioreactor as defined by U.S. EPA.

The project is located at 220 Davidson County Landfill Road, Lexington, NC, 27292 in Davidson County.

The project is expected to generate GHG emissions reductions by destroying methane from landfill gas via electricity generator set and open flare.

Prior to project start date, landfill gas was vented to the atmosphere.

From 01-01-2024 to 31-12-2024, the project has generated 51,238 tCO2e emissions reductions.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation	14-May-2021	Verra	Ruby Canyon Environmental	N/A
Verification	01-January-2015 – 31-December-2019	Verra	Ruby Canyon Environmental	5
Verification	01-January-2020 – 31-December-2020	Verra	Ruby Canyon Environmental	1
Verification	01-January-2021 – 31-December-2021	Verra	GHD	1
Verification	01-January-2022 – 31-December-2022	Verra	GHD	1

Verification	01-January-2023 – 31-December-2023	Verra	GHD	1
Verification	01-January-2024 – 31-December-2024	Verra	GHD	1

1.3 Sectoral Scope and Project Type

Sectoral scope ¹	1., 13.
Project activity type	Energy Industries (Renewable/non-renewable sources), Waste Handling and Disposal

1.4 Project Proponent

Organization name	Anew Environmental, LLC
Contact person	Lucy Huang
Title	Manager Technical Climate Solutions
Address	3200 Southwest Freeway, Suite 1310, Houston, Texas, 77027
Telephone	858-774-868
Email	lhuan@anewclimate.com

1.5 Other Entities Involved in the Project

Organization name	Davidson County Landfill
Role in the project	Landfill owner and operator
Contact person	Charlie Brushwood
Title	Landfill Project Manager
Address	1242 Old Highway 29, Thomasville, NC 27360
Telephone	336-240-0303

¹ Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

Email	Charlie.brushwood@davidsoncountyNC.gov
Organization name	Davidson Gas Producers
Role in the project	Landfill gas collection system, flare, generator set owner and operator
Contact person	Jessica Martyn
Title	Biomass Asset Manager
Address	400 WCB Detroit, MI 48226
Telephone	734-476-6182
Email	Jessica.martyn@dteenergy.com

1.6 Project Start Date

Project start date	20-May-2009
Justification	This project start date indicates the day the flare for the Project became operational.

1.7 Project Crediting Period

Crediting period	☒ <i>Seven years, twice renewable</i> ☐ <i>Ten years, fixed</i> ☐ <i>Other (state the selected crediting period and justify how it conforms with the VCS Program requirements)</i>
Start and end date of first or fixed crediting period	01-January-2022 to 31-December-2028

1.8 Project Location

The project is located at the Davidson Landfill in Lexington, North Carolina, United States of America. The address is 220 Davidson County Landfill Road, Lexington, North Carolina. The coordinates are 35.836708, -80.173958.

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	N/A	Climate Action Reserve Landfill Project Protocol	6.0

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☒ Yes ☐ No

The project was originally listed and registered under the Climate Action Reserve (CAR) in June of 2009. The full name of the project is “Davidson County Landfill Gas Destruction Project”, and the project is registered as CAR468.

The project received credits from June 12th, 2009 until December 31st, 2014. The project was transferred to the Verra Registry and will resume credit generation under the VCS program from January 1st, 2015 until the end of the project’s crediting period December 31, 2028.

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☒ Yes

☐ No

Duke Energy purchases electricity generated from the Project, per the “Renewable Energy Power Purchase Agreement” between Duke Energy Carolinas, LLC and Davidson Gas Producers, LLC. Duke Energy generates Renewable Energy Credits (RECs) from the electricity generated by the Project.

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes

☒ No

1.12 Sustainable Development Contributions

The Project contributes to SDG 11 – Make cities and human settlements inclusive, safe, resilient and sustainable. The project currently captures landfill gas that would otherwise be released into the atmosphere, reducing odors and harmful co-pollutants and improving the quality of life for nearby residents. It also advances local waste management infrastructure, shifting practices toward safer and more sustainable systems. The Project also contributes to SDG 12 – Ensure sustainable consumption and production patterns. Through transparent disclosure of methane capture, and waste management with the Verra program, the project contributes to the global effort to enhance sustainable practices and reporting. Lastly, the Project contributes to SDG 13 – Take urgent action to combat climate change and its impacts. By destroying methane that would have otherwise been leaked to the atmosphere, this project is contributing to limiting global average temperature increase below 2 degrees C above pre-industrial levels.

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	11.0	Improved air quality, reduced local pollution, and better waste management infrastructure	The project positively contributes to SDG 11 by improving local air quality and reducing odor and pollutant exposure through the capture and destruction of landfill gas. It also strengthens waste management infrastructure, supporting safer, healthier, and more sustainable urban communities.	The project currently captures landfill gas that would otherwise be released into the atmosphere, reducing odors and harmful co-pollutants and improving the quality of life for nearby residents. It also advances local waste management infrastructure, shifting practices toward safer and more sustainable systems.	Over its lifetime, the project will deliver lasting community benefits by reducing air pollution and odor nuisances, while also mitigating health and safety risks from uncontrolled methane. By embedding improved waste treatment infrastructure into municipal services, it will strengthen the long-term resilience and sustainability of urban waste management.
2)	12.0	Publicly available reports detailing environmental impact, and supporting documentation	Through transparent disclosure of methane capture, and waste management with the Verra program, the project contributes to the global effort to enhance sustainable practices and reporting.	Current contributions include publicly available reports detailing environmental impact, and supporting documentation.	Lifetime contributions include all the publicly available project documentation over the past several years/vintages.

3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Under this project condition, methane is converted to CO2 through combustion of captured landfill gas which results in measurable greenhouse gas emission reductions	By implementing the active capture of landfill gas for combustion in either the on-site flare or the power generating facility, the Davidson County Landfill Project has prevented the release of 51,238 tonnes of carbon dioxide equivalent into the atmosphere during the monitoring period	Prevented the release of 448,698 tonnes of carbon dioxide equivalent into the atmosphere
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1.13 Commercially Sensitive Information

N/A

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	At validation there was no formal identification of stakeholders and stakeholder consultation was instead conducted through the posting of project documents to the public VCS registry with the monitoring report mentioning that stakeholders can contact DTE or other project proponents through the contact information in the monitoring report. However, the Project also obtained a Solid Waste Operating Permit and Title V Air Permit before initiating the project, and the project must renew the Air Permit preceding major modifications. These permits are managed by the North Carolina Department of Environmental Quality and the US EPA. Before obtaining an Air Permit, EPA requires a 30-day public comment period followed by a 45-day EPA review. The North Carolina Division of Air Quality publicizes the permit and comment period in the local newspaper and online. The public (which is the primary stakeholder) can submit comments via the website. There were no public comments submitted for the Title V Air Permit at the Davidson County Landfill.
Legal or customary tenure/access rights	The landfill is owned and operated by the Davidson County Landfill. Davidson Gas Producers owns and operates the gas collection system included in this Project. There are no conflicting rights over territories and resources.
Stakeholder diversity and changes over time	The Stakeholders would be the residents of Davidson County. Based on the U.S. census, Davidson County is

	84.3% White and 10.7% Black, the median household income is \$58,473, and 86.5% of residents have a high school diploma and 20.5% have a bachelor's degree or higher. The makeup of the stakeholder group is not expected to change over time because of this project. https://www.census.gov/quickfacts/fact/table/davidsoncountynorthcarolina/PST045223
Expected changes in well-being	By implementing the active capture of landfill gas for combustion in either the on-site flare or the power generating facility, the Davidson County Landfill Project has prevented the release of many tonnes of carbon dioxide equivalent into the atmosphere.
Location of stakeholders	Davidson County
Location of resources	Residents of Davidson County have access to the landfill to drop off waste but do not own the facility. Davidson County Landfill owns the facility, and Davidson Gas Producers owns the gas collection system.

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	The Project obtained a Solid Waste Operating Permit and Title V Air Permit before initiating the project, and the project must renew the Air Permit preceding major modifications. These permits are managed by the North Carolina Department of Environmental Quality and the US EPA. Before obtaining an Air Permit, EPA requires a 30-day public comment period followed by a 45-day EPA review. The North Carolina Division of Air Quality publicizes the permit and comment period in the local newspaper and online. The public (which is the primary stakeholder) can submit comments via the website. There were no public comments submitted for the Title V Air Permit at the Davidson County Landfill. In addition, as part of ongoing communication, since the monitoring reports are also uploaded to VCS which are public, this further allows for a period where the public can provide ongoing comments throughout the project where
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	they can communicate concerns or notes they feel need to be raised.
Date(s) of stakeholder consultation	Ongoing
Communication of monitored results	The North Carolina Division of Air Quality publicizes the permit and comment period and the VCS monitoring report contains a section that encourages the public to send comments. There have been no comments over the course of this crediting period.
Consultation records	Through email and public commenting forums.
Stakeholder input	No public comments or feedback was provided, therefore, no updates to the project design were necessary or appropriate.

2.1.3 Free, Prior, and Informed Consent

Consent	The project does not affect Indigenous Peoples (IPs), Local Communities (LCs) and customary rights holders, rights to land, territories, and resources. There was no formal stakeholder consultation conducted during validation but Davidson Gas Producers has gone through all legal measures to reside on Davidson County Landfill and implement their gas collecting system.
Outcome of FPIC	The project did not encroach on land or relocate people without consent. The landfill was already existing and owned by the Davidson County. The installation of a gas collection and control system did not affect the land already owned by Davidson County for the landfill.

2.1.4 Grievance Redress Procedure

Grievances received	Resolution and outcome
N/A	Any changes to the landfill and its operations requires a renewal of the Air Permit. These permits which are managed by the North Carolina Department of Environmental Quality and the US EPA requires a 30-day public commenting period followed by a 45-day EPA review.

The North Carolina Division of Air Quality publicizes the permit and comment period in the local newspaper and online. The public (which is the primary stakeholder) can submit comments via the website. There were no grievances identified during the crediting period and during the current reporting period.

2.1.5 Public Comments

Summary of comments received	Actions taken
N/A	No ongoing comments or concerns were submitted during this reporting period.

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

Currently DTE manages and operates 64 innovative energy projects in 16 states and one Canadian province. They have a strong foundation of experienced employees and commitment to innovation and safety.²

2.2.2 Risk assessment

	Risk identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	No risk identified.	No risks have been identified regarding the stakeholders' wellbeing.
Risks to stakeholder participation	No risk identified.	The project activities have not affected stakeholder participation, as there are no associated risks with the project's location in areas where stakeholders have access. The project poses no risks to the social, economic, and cultural diversity among stakeholders.

² <https://www.dtevantage.com/company/>

Working conditions	No risk identified.	The project activities have not raised any concerns or identified risks related to the working conditions.
Safety of women and girls	No risk identified.	No risks have been identified regarding the safety of women and girls due to the implementation of this project.
Safety of minority and marginalized groups, including children	No risk identified.	There are no identified risks concerning the safety of minority and marginalized groups, including children due to the implementation of this project.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	No risk identified.	The project does not emit any hazardous materials or pollutants into water, land, or air. All the gas produced from landfill waste is captured and flared or employed in electricity generation.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified³	Mitigation or preventative measure(s) taken
Discrimination	No risk identified.	Firstly, all workplace rights and labour laws are enforced by the North Carolina Department of Labor (NCDOL), of which DTE follows and abides by. In addition, all parties participating in this project have implemented comprehensive anti-discrimination policies. The DTE website mentions that DTE

³ The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

		provides equal employment opportunities to all individuals and prohibit discrimination on the basis of race, color, sex, sexual orientation, gender identity, age, religion, disability, national origin, citizenship, height, weight, genetic information, marital status, pregnancy, protected veteran status or any other status protected by law. DTE is committed to having a workplace that promotes equal opportunity and is free of discrimination – not only because it is required by law, but also because it is core to their value of acting with integrity and showing respect.
Sexual harassment	No risk identified.	Conduct that creates an abusive or hostile working environment is prohibited by the company. Respect is one of DTE's core values, and harassment does not have a place in the organization. DTE investigates all reported allegations of harassment, discrimination or retaliation
Gender equity in labor and work	No risk identified.	DTE is committed to having a workplace that promotes equal opportunity and is free of discrimination (including discrimination on the basis of gender) – not only because it is required by law, but also because it is core to their value of acting with integrity and showing respect.
Forced labor	No risk identified.	This project does not use victims of forced labor. Work related to the project including flare maintenance and sending meters

		for calibration is conducted by hired staff or technicians qualified to do so.
Child labor	No risk identified.	This project does not use victims of child labor. Work related to the project including flare maintenance and sending meters for calibration is conducted by hired staff or technicians qualified to do so.
Human trafficking	No risk identified.	This project does not use victims of human trafficking. Work related to the project including flare maintenance and sending meters for calibration is conducted by hired staff or technicians qualified to do so.

2.3.2 Human Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	The Project occurs on municipal land so it will not affect the rights of IPs, LCs and customary rights holders.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
No risk identified	The Project does not impact the cultural heritage of Indigenous Peoples as project activities occur on municipal land.

2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	The Project does not affect the property rights of stakeholders. The landfill is owned and operated by Davidson County Landfill and has permitted Davidson Gas Producers to operate a gas collection and control system using landfill

gas collected at the Davidson County Landfill – all of which has no effect on property rights.

2.3.5 Benefit Sharing

Summary of the benefit sharing plan	This section is inapplicable as the Project does not impact property rights, and there have been no contentions concerning entitlements to territories and resources.
Benefit sharing during the monitoring period	N/A

2.4 Ecosystem Health

Risk identified		Mitigation or preventative measure(s) taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	Capturing and combusting LFG will have no negative impact on biodiversity and ecosystem health.
Soil degradation and soil erosion	No risk identified	Capturing and combusting LFG will have no negative impact on soils.
Water consumption and stress	No risk identified	Capturing and combusting LFG will have no negative impact on water consumption.

2.4.1 Rare, Threatened, and Endangered species

N/A

2.4.2 Introduction of species

N/A

2.4.3 Ecosystem conversion

N/A

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

During the reporting period, landfill gas was collected and destroyed at a flare or engine generator set. For this reporting period, emissions reductions from the engine and flare are

reported. Flowrate and methane concentration are measured continuously and used to calculate the emissions reductions. Power output readings from the engine is used to prove operability of the destruction device.

Note, there were short periodic instances the flare and engine were non-operational resulting in less GHG emission reductions and consequently fewer claimed GHG credits. This is a result of maintenance and scheduled shutdowns. Note, the engine was non-operational for approximately 300 hours, and the flare was non-operational for approximately 8000 hours. In these instances, where one device is non-operational, the gas is being routed to the other destruction device. In total, there was approximately 30 hours where the flare and engine were both non-operational.

There have been no changes to the project entities.

3.2 Deviations

3.2.1 Methodology Deviations

Not applicable

3.2.2 Project Description Deviations

With the new CAR U.S. Landfill Protocol V6.0 being published, the project has updated to apply this version as opposed to the V5.0 listed in the initial project description.

3.3 Grouped Projects

Not applicable

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	Destruction Efficiency of flare and engines
Data unit	%
Description	Destruction efficiency of the qualifying destruction device
Source of data	Default value outlined in protocol

Value applied	Open flare: 96% / Engine generator set: 93.6%
Justification of choice of data or description of measurement methods and procedures applied	Per the Title V Air Permit, the gas is destroyed in an open flare, so the open flare default value has been applied. The gas is also destroyed in the engine generator, so the lean-burn internal combustion engine default value has been applied.
Purpose of Data	Calculation of baseline scenario
Comments	N/A

4.2 Data and Parameters Monitored

Data / Parameter	Flowrate of landfill gas
Data unit	scfm
Description	Flowrate of landfill gas delivered to qualifying destruction device at 60 degrees F and 1 atm
Source of data	Measured continuously by project flowmeter and recorded
Description of measurement methods and procedures to be applied	Flowrate is measured continuously by 2 flowmeters (one for flare and one for engine) and recorded every 15 minutes or less by an Emerson ROCLINK 809
Frequency of monitoring/recording	Continuously recorded at least every 15 minutes
Value monitored	Average flowrate is approximately 99.35 scfm for the flare, and 454.17 scfm for the engine.
Monitoring equipment	Engine Flowmeter – Fisher RSP1C – SN: 4691177 Flare Flowmeter - Fisher RSP1C – SN: 4691608
QA/QC procedures to be applied	All flowmeters are calibrated annually by a third party per manufacturer's guidance. As found, as left and percent drift are measured and recorded.
Purpose of the data	Calculation of baseline emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	Methane Concentration
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Data unit	Scf CH4 / scf LFG (%)
Description	Methane fraction of landfill gas destroyed
Source of data	Continuous gas analyzer
Description of measurement methods and procedures to be applied	Methane concentration is measured continuously using a gas analyzer and recorded every 15 minutes or less by an Emerson ROCLINK 809.
Frequency of monitoring/recording	Continuously recorded at least every 15 minutes
Value applied	Average methane concentration is approximately 47.28% for the flare, and 46.16% for the engine.
Monitoring equipment	Gas analyzer - Siemens Ultramat 23 - SN:N1-AG-902
QA/QC procedures to be applied	Gas analyzer is calibrated annually by a third party per manufacturer's guidance. As found, as left and percent drift are measured and recorded.
Purpose of data	Calculation of baseline emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	Thermocouple Temperature
Data unit	Degrees F
Description	Temperature of flare during destruction of methane gas
Source of data	Thermocouple
Description of measurement methods and procedures to be applied	Temperature of the flare is measured continuously using the flare thermocouple and recorded every 15 minutes or less by an Emerson ROCLINK 809.
Frequency of monitoring/recording	Continuously recorded at least every 15 minutes
Value applied	Thermocouple temperature consistently above 500 degrees F
Monitoring equipment	Flare thermocouple

QA/QC procedures to be applied	Thermocouple is monitored and cleaned as necessary.
Purpose of data	Prove operationality of the flare
Operational activity	As noted above, the thermocouple temperature confirms the operationality of the flare. In addition, the site includes all necessary operable safety shut off valves and procedures in place.
Calculation method	N/A
Comments	N/A

Data / Parameter	Power Generation
Data unit	kWh
Description	Power generation from engine generator set
Source of data	Power purchase reports from Duke Energy
Description of measurement methods and procedures to be applied	Methane is destroyed in generator engine located at the Davidson Landfill, and the power is purchased by Duke Energy. Duke records the kWh purchased and provides DTE with report of kWh every 15 minutes.
Frequency of monitoring/recording	kWh recorded every 15 minutes
Value applied	Average kWh output is approximately at 1314.85 kWh
Monitoring equipment	Power generation is measured from meters at Duke Energy and is also measured with the Emerson ROCLINK 809
QA/QC procedures to be applied	Equipment is subject to Duke's standard operating procedures
Purpose of data	Prove operationality of the engines
Operational activity	As noted above, the recorded power data being generated by the engine indicates the generator set is in fact operational.
Calculation method	N/A
Comments	N/A

Data / Parameter	Fossil Fuel Usage
Data unit	Pounds of propane, gallons of gasoline, and gallons of diesel
Description	Fossil fuel used for project activity
Source of data	Operating records recorded by the operations team
Description of measurement methods and procedures to be applied	DTE maintains records of fossil fuel used for project activity where the usage volumes are logged by the operator
Frequency of monitoring/recording	Summarized once per reporting period but noted throughout the reporting period as equipment is filled
Value applied	2024 propane = 40 pounds/year 2024 gasoline = 23 gallons/year 2024 diesel = 5 gallons/year
Monitoring equipment	Operator recordings of volumes filled into the equipment
QA/QC procedures to be applied	Data is reviewed as it is received to ensure that the appropriate data has been sent, any gaps in data are understood, no erroneous information is utilized, and that all systems are running as expected.
Purpose of data	Calculation of project emissions (propane is used for flare pilot operation, while gasoline and diesel are related to general engine operation).
Calculation method	N/A
Comments	N/A

Data / Parameter	All relevant permits and regulatory documents
Data unit	N/A
Description	Tier 2 Reports, Title V permits, operating permits
Source of data	Landfill staff and regulatory agencies
Description of measurement methods and procedures to be applied	N/A

Frequency of monitoring/recording	Annually
Value applied	N/A
Monitoring equipment	N/A
QA/QC procedures to be applied	Review by Anew Environmental
Purpose of data	Demonstrate regulatory compliance
Calculation method	N/A
Comments	N/A

Data / Parameter	GWP
Data unit	tCO ₂ /tCH ₄
Description	Global Warming Potential for Methane
Source of data	IPCC Fifth Assessment Reports
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value applied	28
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of baseline emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	OX
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Data unit	unitless
Description	Factor for the oxidation of methane by soil bacteria
Source of data	Default value in Landfill Protocol V6.0
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value applied	0.1
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of baseline emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	EF _{FF}
Data unit	kgCO ₂ /gal propane
Description	Emission factor for propane
Source of data	Default value in Landfill Protocol V6.0
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value applied	5.72
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A

Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	EF _{FF}
Data unit	kgCO ₂ /gal gasoline
Description	Emission factor for gasoline
Source of data	Default value in Landfill Protocol V6.0
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value applied	8.778
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	EF _{FF}
Data unit	kgCO ₂ /gal diesel
Description	Emission factor for diesel
Source of data	Default value in Landfill Protocol V6.0
Description of measurement methods and procedures to be applied	N/A

Frequency of monitoring/recording	N/A
Value applied	10.206
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	EF _{EL}
Data unit	lbsCO ₂ /MWH
Description	CO ₂ emission factor for electricity used
Source of data	eGRID 2024 database – SRVC region
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value applied	593.40
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	ER
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Data unit	tCO2e
Description	Total Emissions Reductions
Source of data	Calculated
Description of measurement methods and procedures to be applied	Calculated using equation 5.1 in protocol
Frequency of monitoring/recording	N/A
Value applied	2024-51,238
Monitoring equipment	N/A
QA/QC procedures to be applied	The initial emission reduction calculations are completed by the Project Manager for the Davidson LFG project. Anew has internal procedures in place to check the accuracy of the calculations with additional Anew staff reviewing all aspects of the calculations including reviewing raw data from Anew's internal database, methane readings, excel formulas/functions and electricity/fossil fuel use. After review by Anew staff, any errors or changes are noted, and the calculations are then reviewed again for the final time by the Project Manager.
Purpose of data	Calculation of emissions reductions
Calculation method	See Section 5.0
Comments	N/A

Data / Parameter	BE
Data unit	tCO2e
Description	Baseline Emissions
Source of data	Calculated

Description of measurement methods and procedures to be applied	Calculated using equation 5.3 in protocol (In the quantification spreadsheet, this is the summation of cells G15 and G13 in flare and engine respectively; 2,055+49,294)
Frequency of monitoring/recording	N/A
Value applied	2024-51,349
Monitoring equipment	N/A
QA/QC procedures to be applied	The initial emission reduction calculations are completed by the Project Manager for the Davidson LFG project. Anew has internal procedures in place to check the accuracy of the calculations with additional Anew staff reviewing all aspects of the calculations including reviewing raw data from Anew's internal database, methane readings, excel formulas/functions and electricity/fossil fuel use. After review by Anew staff, any errors or changes are noted, and the calculations are then reviewed again for the final time by the Project Manager.
Purpose of data	Calculation of baseline emissions
Calculation method	See Section 5.0
Comments	N/A

Data / Parameter	PE
Data unit	tCO2e
Description	Project Emissions
Source of data	Calculated
Description of measurement methods and procedures to be applied	Calculated using equation 5.9 in protocol
Frequency of monitoring/recording	N/A
Value applied	2024-111

Monitoring equipment	N/A
QA/QC procedures to be applied	The initial emission reduction calculations are completed by the Project Manager for the Davidson LFG project. Anew has internal procedures in place to check the accuracy of the calculations with additional Anew staff reviewing all aspects of the calculations including reviewing raw data from Anew's internal database, methane readings, excel formulas/functions and electricity/fossil fuel use. After review by Anew staff, any errors or changes are noted, and the calculations are then reviewed again for the final time by the Project Manager.
Purpose of data	Calculation of project emissions
Calculation method	See Section 5.0
Comments	N/A

Data / Parameter	LFG _{adjusted}
Data unit	scf
Description	Adjusted volume of LFG fed to the flare and engine
Source of data	Calculated from continuous flowrate (scfm)
Description of measurement methods and procedures to be applied	Calculated using equation 5.2 in protocol
Frequency of monitoring/recording	N/A
Value applied	Yearly Totals 2024-9,299,109 to flare 2024- 236,093,814 to engine
Monitoring equipment	N/A
QA/QC procedures to be applied	The initial emission reduction calculations are completed by the Project Manager for the Davidson LFG project. Anew has internal procedures in place to check the accuracy of the calculations with additional Anew staff reviewing all aspects of the

	calculations including reviewing raw data from Anew's internal database, methane readings, excel formulas/functions and electricity/fossil fuel use. After review by Anew staff, any errors or changes are noted, and the calculations are then reviewed again for the final time by the Project Manager.
Purpose of data	Calculation of baseline emissions
Calculation method	See equation 5.2 in protocol
Comments	N/A

Data / Parameter	CH ₄ Dest _{PR}
Data unit	tCH ₄
Description	Total methane destroyed by the project LFC gas collection and destruction system during the reporting period
Source of data	Calculated
Description of measurement methods and procedures to be applied	Calculated using equation 5.4 in protocol
Frequency of monitoring/recording	N/A
Value applied	Yearly Totals 2024-2,038
Monitoring equipment	N/A
QA/QC procedures to be applied	The initial emission reduction calculations are completed by the Project Manager for the Davidson LFG project. Anew has internal procedures in place to check the accuracy of the calculations with additional Anew staff reviewing all aspects of the calculations including reviewing raw data from Anew's internal database, methane readings, excel formulas/functions and electricity/fossil fuel use. After review by Anew staff, any errors or changes are noted, and the calculations are then reviewed again for the final time by the Project Manager.

Purpose of data	Calculation of baseline emissions
Calculation method	See equation 5.4 in protocol
Comments	N/A

Data / Parameter	Q
Data unit	Scf CH4
Description	Total quantity of landfill methane sent to destruction device during the reporting period
Source of data	Calculated
Description of measurement methods and procedures to be applied	Calculated using equation 5.4 in protocol
Frequency of monitoring/recording	N/A
Value applied	Yearly Totals 2024-113,246,442
Monitoring equipment	N/A
QA/QC procedures to be applied	The initial emission reduction calculations are completed by the Project Manager for the Davidson LFG project. Anew has internal procedures in place to check the accuracy of the calculations with additional Anew staff reviewing all aspects of the calculations including reviewing raw data from Anew's internal database, methane readings, excel formulas/functions and electricity/fossil fuel use. After review by Anew staff, any errors or changes are noted, and the calculations are then reviewed again for the final time by the Project Manager.
Purpose of data	Calculation of baseline emissions
Calculation method	See equation 5.4 in protocol
Comments	N/A

Data / Parameter	FF _{CO2}
Data unit	tCO ₂
Description	Total carbon dioxide emissions from the combustion of fossil fuels during the reporting period
Source of data	Calculated
Description of measurement methods and procedures to be applied	Calculated using equation 5.10 in protocol
Frequency of monitoring/recording	N/A
Value applied	Yearly Totals 2024-0.31
Monitoring equipment	N/A
QA/QC procedures to be applied	The initial emission reduction calculations are completed by the Project Manager for the Davidson LFG project. Anew has internal procedures in place to check the accuracy of the calculations with additional Anew staff reviewing all aspects of the calculations including reviewing raw data from Anew's internal database, methane readings, excel formulas/functions and electricity/fossil fuel use. After review by Anew staff, any errors or changes are noted, and the calculations are then reviewed again for the final time by the Project Manager.
Purpose of data	Calculation of project emissions
Calculation method	See equation 5.10 in protocol
Comments	N/A

Data / Parameter	EL _{CO2}
Data unit	tCO ₂
Description	Total carbon dioxide emissions from the consumption of electricity from the grid during the reporting period

Source of data	Calculated from elec consumption records
Description of measurement methods and procedures to be applied	Calculated using equation 5.11 in protocol
Frequency of monitoring/recording	N/A
Value applied	Yearly Totals 2024-110.97
Monitoring equipment	N/A
QA/QC procedures to be applied	The initial emission reduction calculations are completed by the Project Manager for the Davidson LFG project. Anew has internal procedures in place to check the accuracy of the calculations with additional Anew staff reviewing all aspects of the calculations including reviewing raw data from Anew's internal database, methane readings, excel formulas/functions and electricity/fossil fuel use. After review by Anew staff, any errors or changes are noted, and the calculations are then reviewed again for the final time by the Project Manager.
Purpose of data	Calculation of project emissions
Calculation method	See equation 5.11 in protocol
Comments	N/A

Data / Parameter	EL _{PR}
Data unit	MWh
Description	Total electricity consumed by the project landfill gas collection and destruction system during the reporting period
Source of data	Monthly electricity bills
Description of measurement methods and procedures to be applied	Summed from utility bills provided by landfill operator

Frequency of monitoring/recording	Monthly
Value applied	Yearly Totals 2024-412
Monitoring equipment	Electricity meter
QA/QC procedures to be applied	The initial emission reduction calculations are completed by the Project Manager for the Davidson LFG project. Anew has internal procedures in place to check the accuracy of the calculations with additional Anew staff reviewing all aspects of the calculations including reviewing raw data from Anew's internal database, methane readings, excel formulas/functions and electricity/fossil fuel use. After review by Anew staff, any errors or changes are noted, and the calculations are then reviewed again for the final time by the Project Manager.
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

4.3 Monitoring Plan

4.3.1 Monitoring & Reporting

Project data is recorded continuously by two flowmeters (one for flow to engine generator set, one for flow to flare) and a continuous gas analyzer. The operability of the flare and engine are monitored continuously by a thermocouple reading and kWh reading respectively. The engine and flare flow data are measured and recorded by a SCADA system that includes a PLC. The data is then automatically transferred to an Emerson ROCLINK 809 (ROC) along with the power generation data. The flow and other data is saved on a server running Rockwell Software FactoryTalk Historian. After five years, the Historian data storage used will be evaluated. If storage space is a concern, older data files will be moved to file storage servers in DTE data center.

In 2021 until project conclusion, the data will be downloaded monthly and shared with Anew. In 2021 until project conclusion, the Project will seek emissions reductions from the flare and the engines.

Flowmeter data is recorded every 15 minutes, Methane concentration is recorded every 15 minutes, kWh data is provided by Duke Energy or the ROC every 15 minutes, and thermocouple data is recorded every 15 minutes.

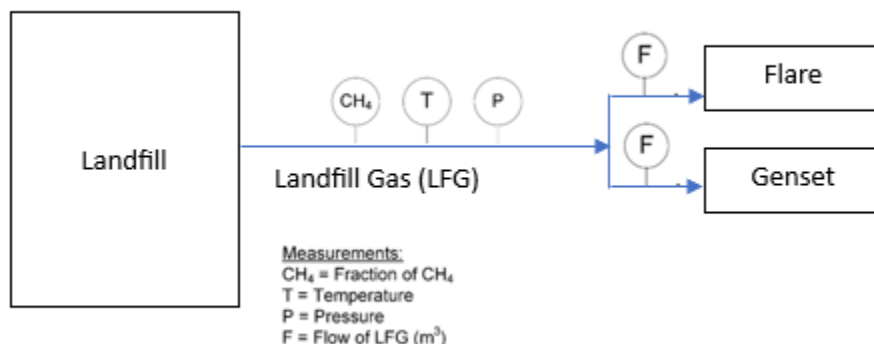


Figure 1: Arrangement of LFG Metering Equipment

4.3.2 Calibration Reporting

Calibration records are provided, as available, for all project equipment requiring calibration checks – this includes the flare flow meter, engine flow meter, as well as the continuous methane analyzer. All project equipment is calibrated annually as there are no calibration or cleaning/inspection requirements specified by the manufacturer. Note, although there are no manufacturer's recommendations for the cleaning and inspection of this project equipment, it should be noted that the cleaning and inspection occurs on a regular basis as it is part of the operational duties at the site. The calibrations are also performed and checked for accuracy by a third party with the as found, as left conditions and percent drift recorded. The end of reporting period field check/third party calibration was conducted for all instruments and the related reports will be provided to the verifier.

Instrument	Unit	Measurement Frequency	Measurement Temperature and Pressure	Operating Parameters	Date of Calibration
Flow Meter (flare)	Fisher Model RSP1C-GP3 flow meter (SN. 4691608), Instrument tag FT-200	Measured continuously, recorded every 15 minutes	60 °F and 1 atm	Thermocouple readings > 500 °F	12/10/2024
Flow Meter (engine)	Fisher Model RSP1C-GP3	Measured continuously, recorded	60 °F and 1 atm	Engine run time	12/10/2024

	flow meter (SN. 4691177), Instrument tag FT-100	every 15 minutes			
Gas Analyzer	Seimens Ultramat 23 CH4 Analyzer, Model 7MB2335-3DR10-5AA1 (SN. N1-AG-902), Instrument tag AIT-100	Measured continuously, recorded every 15 minutes	N/A	N/A	12/10/2024

Table 2: Instrument Calibration

4.3.3 Landfill Regulations

DTE personnel monitor all applicable regulations and permit requirements for the landfill on an on-going basis. These actions help to ensure ongoing project eligibility. If any potential issue arises around legal requirements or project eligibility for the landfill, EM is notified, and the issue is discussed. Regulations that are monitored include:

- NSPS Regulations
Requirements around Tier II reporting are checked by DTE to ensure that the report is up to date and that a new report is not required. DTE and EM also check the predicted NMOC levels in the Tier II report to determine if the landfill is expected to exceed the 34 MG/year threshold.

4.3.4 Project Roles

DTE manages operations, maintenance, data collection, and compliance of the destruction facility. DTE is responsible for relevant cleaning and inspection of project equipment and calibrating project equipment per Protocol requirements. DTE is responsible for compiling data and sharing with Anew to facilitate emissions reduction calculation.

Davidson County is responsible for operating and maintenance of the landfill and wellfield and obtaining all relevant permits for the landfill.

Anew is responsible for quantifying emissions reductions, hiring a verification body, sharing data/documentation with the verifier, and submitting the project on VCS.

Anew has been hired by DTE to manage verification and provide guidance and expertise regarding monitoring requirements based on the Protocol. Anew and DTE are in constant communication regarding project compliance and monitoring requirements. Any disruption in monitoring activities will be immediately reported to Anew and remedied as soon as possible.

DTE has internal checks and QA/QC procedures for project data. The IT team constantly monitors and validates data.

4.3.5 Record Keeping

In accordance with the Protocol, DTE and Anew will keep all required information for a period of 10 years after the information is generated or 7 years after the last verification. The following system information will be retained for the given period:

- All data inputs for the calculation of the project emission reductions
- 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
- Project developer attestation of voluntary implementation of the project
- Collection and control device information (installation dates, equipment list, etc.)
- LFG flow meter information (model number, serial number, manufacturer's calibration procedures)
- Methane monitor information (model number, serial number, calibration procedures)
- Destruction device monitor information (model number, serial number, calibration procedures)
- LFG flow data (for each flow meter)
- LFG flow meter calibration data (for each flow meter)
- Methane monitoring data
- Methane analyzer calibration data
- Destruction device monitoring data (for each destruction device)
- Destruction device calibration data (for each destruction device),
- CO₂e monthly and annual tonnage calculations
- Copies of the results of the NSPS/EG Tier 1 and/or Tier 2 NMOC emission rate estimates and the projected date when system start-up will be required by NSPS
- Initial and annual verification records and results
- All maintenance records relevant to the LFG control system, monitoring equipment, and destruction devices
- Operational records of the landfill relating to the amount of waste placed onsite (scalehouse records, etc.), or most recent documented WIP report accepted by a regulatory agency
- Calibrated portable gas analyzer information that the project developer should retain includes:
 - Date, time, and location of methane measurement
 - Methane content of LFG (% by volume) for each measurement
 - Methane measurement instrument type and serial number

- Date, time, and results of instrument calibration
- Corrective measures taken if instrument does not meet performance specifications

4.3.6 Data QA/QC

4.3.6.1 Data Acquisition

The Davidson LFG project is monitored at least monthly as data (flow, generator, methane %) is acquired from DTE, with the data being reviewed for accuracy, completion and periods of unusual flow, generator output and/or methane concentration. Data is also compared to previous data for quality assurance purposes. This review helps to ensure that the appropriate data has been sent, any gaps in data are understood, no erroneous information is utilized, and that all systems are running as expected.

4.3.6.2 Flow Meter Calibration QA/QC

The Protocol requires that all gas flow meters be cleaned and inspected on a regular basis and field checked for calibration accuracy by a third-party technician at the end of – but no more than two months prior to or after – the end date of the reporting period. In addition, flow meters must be calibrated by the manufacturer per manufacturer guidelines. If a stationary meter that was in use for 60 days or more is removed and not reinstalled during a reporting period, that meter shall either be field-checked for calibration accuracy prior to removal or sent in for calibration after it was removed.

This project follows a calendar reporting period and the flow meter has been and will continue to be calibrated with percent drift documented annually within 2 months prior to or after the end of the reporting period.

4.3.6.3 Methane Analyzer Calibration QA/QC

The Protocol requires that all gas analyzers be cleaned and inspected on a regular basis and field checked for calibration accuracy by a third-party technician at the end of – but no more than two months prior to or after – the end date of the reporting period.

This project follows a calendar reporting period and the analyzer has been and will continue to be calibrated with percent drift documented annually within 2 months prior to or after the end of the reporting period.

4.3.7 Davidson Quantification QA/QC

The initial emission reduction calculations are completed by the Project Manager for the Davidson LFG project. Anew has internal procedures in place to check the accuracy of the calculations with additional EM staff reviewing all aspects of the calculations including reviewing raw data from Anew's internal database, methane readings, excel formulas/functions and electricity/fossil fuel use. After review by Anew staff, any errors or changes are noted, and the calculations are then reviewed again for the final time by the Project Manager.

4.3.8 Data Substitution Guidelines

Version 6.0 of the Protocol references data substitution guidelines that are permissible for methane concentration and flow metering parameters but not for destruction monitoring devices. Substitution may only occur when two monitored parameters corroborate proper functioning of the destruction device and system operation within normal ranges. The substitution methodology is as follows:

Duration of Missing Data	Substitution Methodology
Less than six hours	Use the average of the four hours immediately before and following the outage
Six to 24 hours	Use the 90% lower or upper confidence limit of the 24 hours prior to and after the outage, whichever results in greater conservativeness
One to seven days	Use the 95% lower or upper confidence limit of the 72 hours prior to and after the outage, whichever results in greater conservativeness
Greater than one week*	No data may be substituted, and no credits may be generated

Table 3: Data Substitution Methodology

*For weekly measured methane concentration, the lower of the measurement before and the measurement after must be used and only one week missing weekly measurement can substituted.

The lower confidence limit should be used for both methane concentration and flow readings for landfill projects.

4.3.8.1 Flow Data

No flow rate data was substituted during the reporting period.

4.3.8.2 Methane Concentration

No Methane concentration was substituted during the reporting period.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The 2024 baseline emissions are 51,349 MTCO₂e. Detailed calculations can be found in “Davidson ER Calcs” spreadsheets provided to Verification Body.

Baseline emissions are calculated using Equations 5.3 and 5.4 of the protocol.

Equation 5.3. Calculating Baseline Emissions

$$BE = CH_4Dest_{PR} \times GWP \times (1 - OX) \times (1 - DF) - Dest_{base} \times (1 - OX)$$

Where,

		<u>Units</u>
BE	= Baseline emissions during the reporting period	tCO ₂ e
CH ₄ Dest _{PR}	= Total methane destroyed by the project landfill gas collection and destruction system during the reporting period (see Equation 5.4)	tCH ₄
GWP	= Global warming potential factor of methane to carbon dioxide equivalent, equal to 25 at the time of publication ²³	tCO ₂ e/tCH ₄
OX	= Factor for the oxidation of methane by soil bacteria. Equal to 0.10 for all landfills except those that incorporate a synthetic liner throughout the entire area of the final cover system, where OX = 0	
DF	= Discount factor to account for uncertainties associated with the monitoring equipment. (See Section 6.1.) Equal to zero if using continuous methane monitoring	
Dest _{base}	= Adjustment to account for baseline LFG destruction device (see Equation 5.5). Equal to zero if no baseline LFG destruction system is in place prior to project implementation	tCO ₂ e

Equation 5.4. Total Methane Emissions Destroyed

$$CH_4Dest_{PR} = \sum_i (CH_4Dest_i) \times (0.0423 \times 0.000454)$$

Where,

CH_4Dest_{PR}	= Total methane destroyed by the project landfill gas collection and destruction system during the reporting period	<u>Units</u> tCH ₄
CH_4Dest_i	= The net quantity of methane destroyed by destruction device i during the reporting period	scf CH ₄
0.0423	= Density of methane	lb CH ₄ /scf CH ₄
0.000454	= Conversion factor from pounds to metric tonnes	tCH ₄ /lb CH ₄

And,

$$CH_4Dest_i = Q_i \times DE_i$$

Where,

CH_4Dest_i	= The net quantity of methane destroyed by device i during the reporting period	<u>Units</u> scf
Q_i	= Total quantity of landfill methane sent to destruction device i during the reporting period	scf
DE_i	= Methane destruction efficiency for device i . See Appendix B for guidance	

And,

$$Q_i = \sum_t (LFG_{i,t} \times PR_{CH_4,t})$$

Where,

Q_i	= Total quantity of landfill methane sent to destruction device i during the reporting period	<u>Units</u> scf
$LFG_{i,t}$	= Adjusted volume of landfill gas fed to the destruction device i , in time interval t	scf
t	= Time interval for which LFG flow and concentration measurements are aggregated. See Table 6.1 for guidance	
$PR_{CH_4,t}$	= The average methane fraction of the landfill gas in time interval t	scf CH ₄ / scf LFG

For the project specific measurements, the related measured and fixed parameters required are identified in Section 4.2 or below:

Year	$Q_{i(Engine)}$	$Q_{i(Flare)}$	Dest _{base}
2024	108,823,128	4,423,315	0

For the project specific measurements, the annual totals are as follows:

Year	Q_{PR}	CH_4Dest_{PR}	BE
2024	113,246,442	2,038	51,349

5.2 Project Emissions

The 2024 project emissions are 111 MTCO₂e. Detailed calculations can be found in “Davidson ER Calcs” spreadsheets provided to Verification Body.

Project emissions are calculated using Equations 5.9, 5.10 and 5.11 in the protocol.

Equation 5.9. Calculating Project Emissions

$$PE = FF_{CO_2} + EL_{CO_2} + NG_{emissions}$$

Where,

		Units
PE	= Project emissions during the reporting period	tCO ₂ e
FF _{CO2}	= Total carbon dioxide emissions from the destruction of fossil fuel during the reporting period	tCO ₂
EL _{CO2}	= Total carbon dioxide emissions from the consumption of electricity from the grid during the reporting period	tCO ₂
NG _{emissions}	= Total quantity of emissions from supplemental natural gas, including both uncombusted methane and carbon dioxide emissions during the reporting period	tCO ₂ e

Equation 5.10. Calculating Project Emissions from Fossil Fuel Use

$$FF_{CO_2} = \frac{\sum_j (FF_{PR,j} \times EF_{FF,j})}{1000}$$

Where,

		Units
FF _{CO2}	= Total carbon dioxide emissions from the destruction of fossil fuel during the reporting period	tCO ₂
FF _{PR,j}	= Total fossil fuel consumed by the project landfill gas collection and destruction system during the reporting period, by fuel type <i>j</i>	volume fossil fuel
EF _{FF,j}	= Fuel specific emission factor. See Appendix B	kg CO ₂ /volume fossil fuel
1000	= Conversion factor	kg CO ₂ /tCO ₂

Equation 5.11. Calculating Project Emissions from Electricity Use

$$EL_{CO_2} = \frac{(EL_{PR} \times EF_{EL})}{2204.62}$$

Where,

		Units
EL _{CO2}	= Total carbon dioxide emissions from the consumption of electricity from the grid during the reporting period	tCO ₂
EL _{PR}	= Total electricity consumed by the project landfill gas collection and destruction system during the reporting period	MWh
EF _{EL}	= CO ₂ emission factor for electricity used ²⁶	lb CO ₂ / MWh
2204.62	= Conversion factor	lb CO ₂ / tCO ₂

For the project specific measurements, the related measured and fixed parameters required are identified in Section 4.2.

For the project specific measurements, the annual totals are as follows:

Year	FF _{CO2}	EL _{CO2}	PE
2024	0.31	110.97	111

5.3 Leakage Emissions

Not applicable

5.4 GHG Emission Reductions and Carbon Dioxide Removals

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCUs (tCO ₂ e)	Removal VCUs (tCO ₂ e)	Total VCUs (tCO ₂ e)
01-January-2024 to 31-December-2024	51,349	111	0	51,238	0	51,238

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-January-2024 to 31-December-2024	50,000	51,238	2.5%	The ex-ante emissions is a very high level estimate which was based on only preliminary information and is not representative of what actually occurred during the project activity. The true achieved emissions is based on the real flow and methane data for the reporting period which is an accurate representation of what occurred at the site.

APPENDIX 1: EVIDENCE OF SD CONTRIBUTIONS

Overall Engine Emission Reductions:

5.1 Project GHG Emission Reductions 01/01/2024 - 12/31/2024										
Vintage Year	Monitoring frequency	tCH ₄ Destroyed (tCH ₄ /Yr)	tCO ₂ e Destroyed (tCO ₂ e/Yr)	Less: Oxidation Factor (tCO ₂ e/Yr)	Less: DF Discount Factor (tCO ₂ e/Yr)	Less: FFCO ₂ & FFC _{CH4} Fossil Fuel and Supplemental NG (tCO ₂ e/Yr)	Less: ELCO ₂ Electricity (tCO ₂ e/Yr)	Less: PRE _{Discount} Baseline Adj. (tCO ₂ e/Yr)	Project E.R. (tCO ₂ e/Yr)	Annual Project E.R. (tCO ₂ e/Yr)
		CH ₄ Destroyed	Conversion to CO ₂ e	No Synthetic Liner from Closure	0% - continuous	FFCO ₂ & FFC _{CH4}	ELCO ₂	PRE _{Discount}		ER _y
			28	10%	10% - weekly			No Discount Applied		
2024	Continuous	1,956.11	54,771.08	49,293.97	49,293.97	49,293.92	49,182.95	49,182.95	49,183	49,183.00
2024	Weekly	-	-	-	-	-	-	-	-	-
2025	Continuous									
2025	Weekly									
2026	Continuous									
2026	Weekly									
TOTAL:										49,183

*The "Less: DF Discount Factor" column indicates the baseline emissions.

Overall Flare Emission Reductions:

5.1 Project GHG Emission Reductions 01/01/2024 - 12/31/2024										
Vintage Year	Monitoring frequency	tCH ₄ Destroyed (tCH ₄ /Yr)	tCO ₂ e Destroyed (tCO ₂ e/Yr)	Less: Oxidation Factor (tCO ₂ e/Yr)	Less: DF Discount Factor (tCO ₂ e/Yr)	Less: FFCO ₂ & FFC _{CH4} Fossil Fuel and Supplemental NG (tCO ₂ e/Yr)	Less: ELCO ₂ Electricity (tCO ₂ e/Yr)	Less: PRE _{Discount} Baseline Adj. (tCO ₂ e/Yr)	Project E.R. (tCO ₂ e/Yr)	Annual Project E.R. (tCO ₂ e/Yr)
		CH ₄ Destroyed	Conversion to CO ₂ e	No Synthetic Liner from Closure	0% - continuous	FFCO ₂ & FFC _{CH4}	ELCO ₂	PRE _{Discount}		ER _y
			28	10%	10% - weekly			No Discount Applied		
2024	Continuous	81.55	2,283.35	2,055.02	2,055.02	2,055.02	2,055.02	2,055.02	2,055	2,055
2024	Weekly	-	-	-	-	-	-	-	-	-
2025	Continuous									
2025	Weekly									
2026	Continuous									
2026	Weekly									
2027	Continuous									
2027	Weekly									
TOTAL:										2,055

*The "Less: DF Discount Factor" column indicates the baseline emissions.

Project Emissions (Electricity Consumption):

Year	Flow days	Estimated Power Usage (EL _{PR} - MWh)	Metered Power Usage (EL _{PR} - MWh)	eGRID subregion acronym	Carbon emission factor (EF _{EL} - lbCO ₂ /MWh)	CO ₂ from electricity (ELCO - tCO ₂ /yr)
2024	0.00	0.00	412.288	SRVC	593.40	110.97
2025	0.00	0.00	0	SRVC	593.40	0.00
2026	0.00	0.00	0	SRVC	593.40	0.00

Project Emissions (Propane Consumption):

Year	No. of days	Propane Consumption (FF _{PR} - gallons)	Emission Factor (EF _{FF} - kg CO ₂ /gallon)	CO ₂ from Propane (FFCO ₂ -tCO ₂ /year)
2024	365	9.52	5.72	0.05

Project Emissions (Gasoline Consumption):

Year	Gasoline Consumed (gallons)		Emission Factor (EF _{FF} - kg CO ₂ /gallon)	CO2 from Gasoline (FFCO ₂ -tCO ₂ /year)
2024	23.00		8.78	0.20

Project Emissions (Diesel Consumption):

Year	Diesel Consumption (gallons)	Emission Factor (kg CO ₂ /gallon)	CO2 from Diesel (tCO ₂ /year)
2024	5	10.206	0.05103

Overall Summary:

<i>Project GHG Emissions Summary (Flare and Engine)</i>						
<i>01/01/2024 - 12/31/2024</i>						
Component	Baseline Emissions (tCO ₂)	Total Baseline Emissions (tCO ₂)	Project Emissions (tCO ₂)	Total Project Emissions (tCO ₂)	Leakage Emissions (tCO ₂)	Total Emissions (tCO ₂)
Flare	2,055	51,349	0.05	111	N/A	51,238
Engine	49,294		111.22		N/A	

APPENDIX B: ER CALCULATIONS

2024 Davidson ER Calcs (Engine) V1.3.xlsx

2024 Davidson ER Calcs (Flare) V1.2.xlsx