



# Validation/Verification Report

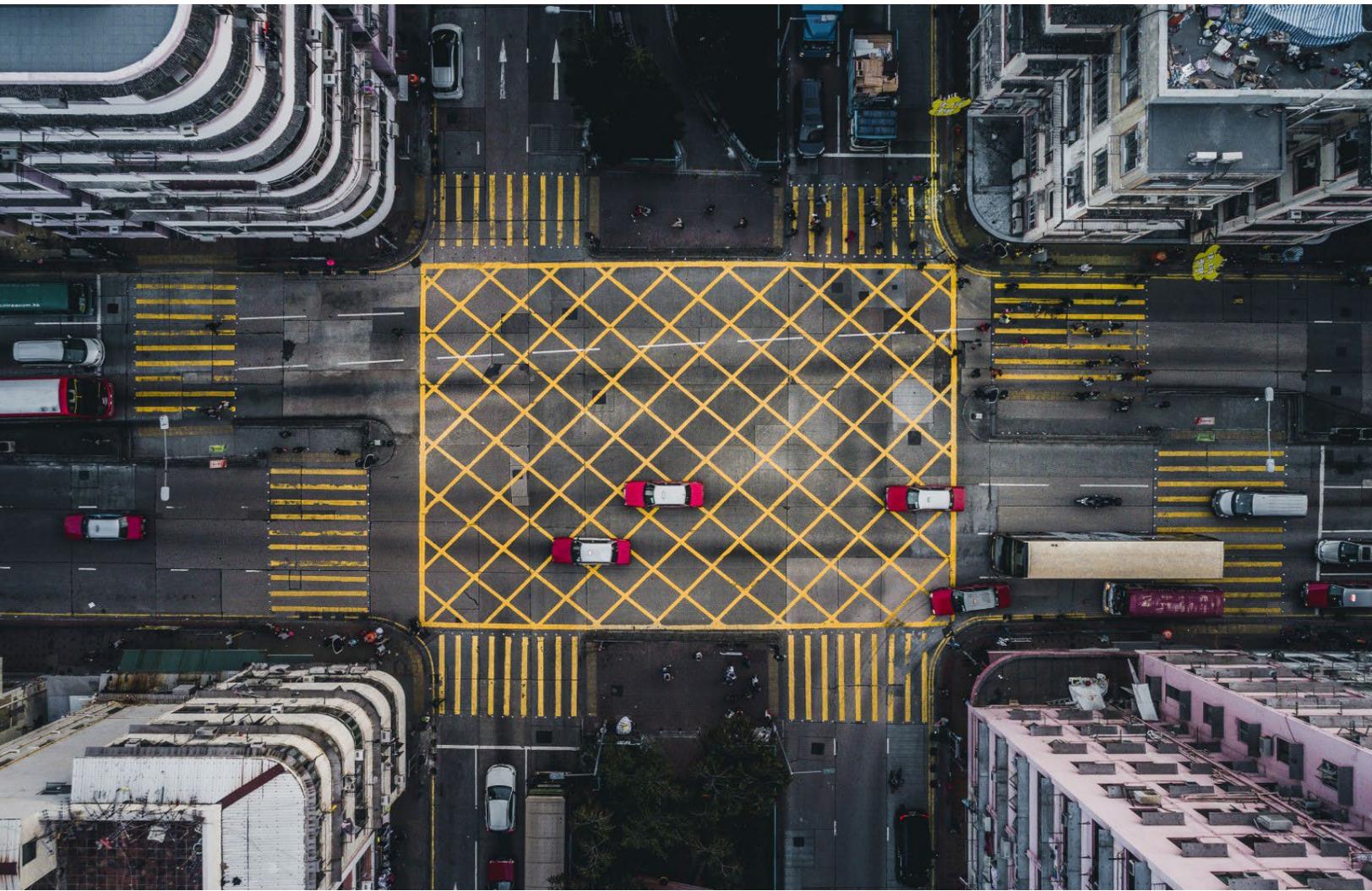
Tradewater International – Thailand 1.0  
Samutprakarn, Thailand  
ACR Project ID: ACR814

**Reporting Period:**

December 17, 2022 – January 23, 2023

Tradewater, LLC  
01 March 2023

➔ **The Power of Commitment**



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<b>Document title</b>		Validation/Verification Report					
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# Contents

<b>1.</b>	<b>Introduction</b>	<b>1</b>
<b>2.</b>	<b>Validation/Verification Objective</b>	<b>1</b>
<b>3.</b>	<b>Level of Assurance</b>	<b>1</b>
<b>4.</b>	<b>Validation/Verification Standards and Criteria</b>	<b>2</b>
<b>5.</b>	<b>Validation/Verification Scope</b>	<b>2</b>
5.1	Validation and Verification Scope	2
5.1.1	Validation	2
5.1.2	Verification	3
5.2	Project Operations and Project Sources, Sinks and Reservoirs	3
5.3	Client Contact	4
5.4	Project Geographical and Organizational Boundaries	4
5.5	Reporting Period	4
5.6	Project Deviations	5
5.7	Use of this Report	5
5.8	Use of Information and Communication Technology	5
<b>6.</b>	<b>Validation/Verification Plan</b>	<b>5</b>
6.1	Strategic Analysis	5
6.2	Assessment of Risk and Magnitude of Potential Errors, Omissions or Misrepresentations	7
6.3	Materiality Threshold	9
6.4	Validation/Verification Team and Internal Reviewer	10
6.4.1	Roles and Responsibilities	10
6.4.2	Qualifications	10
<b>7.</b>	<b>Validation/Verification Procedures</b>	<b>11</b>
7.1	Conflict of Interest Review	11
7.2	Kick off Meeting	12
7.3	Validation Process	12
7.4	Verification Process	13
7.5	Details of Site Visit	15
<b>8.</b>	<b>Validation/Verification Findings</b>	<b>15</b>
8.1	Use of ICT	15
8.2	Findings List	16
8.3	Validation Findings	16
8.3.1	Project Boundary	16
8.3.2	Project Deviations	16
8.3.3	Project Applicability	16
8.3.4	Project Eligibility	17
8.3.5	Double Issuance, Double Selling and Double Use of Offsets	20

# Contents

8.4	QA/QC Data Management Systems, and Document Retention	20
8.5	Validation/Verification of Quantification Methods	21
8.5.1	Activity Data	21
8.5.2	Assessment of the Emission Reduction Calculations	22
8.5.2.1	Project Emissions	22
8.5.2.2	Baseline Emissions	22
8.6	Monitoring Plan	23
8.6.1	Parameters to be Monitored	24
8.7	Summary of Discrepancies, Omissions, Misreporting, Misstatements or Non-Compliances Identified	25
8.8	Independent Review	25
<b>9.</b>	<b>Validation/Verification Statements</b>	<b>26</b>
9.1	Validation Conclusion	26
9.2	Verification Conclusion	26
<b>10.</b>	<b>Limitation of Liability</b>	<b>26</b>
<b>11.</b>	<b>Closing</b>	<b>27</b>

## Table index

Table 5.1	Project's Sources, Sinks, Reservoirs	3
Table 8.1	Project Applicability	16
Table 8.2	Project Eligibility	17

## Appendices

Appendix A	Validation/Verification Plan
Appendix B	Document Review Reference List
Appendix C	Findings List
Appendix D	Validation/Verification Statement

# 1. Introduction

GHD Services Inc. (GHD) was engaged by Tradewater, LLC (Tradewater) to conduct greenhouse gas validation and verification services for the validation and verification for Tradewater International – Thailand 1.0 (the Project). The Project consisted of the destruction of eligible ozone depleting substance (ODS) refrigerant from a government stockpile in the custody of Thailand’s Customs Department on or before 2007. The ODS was transferred to Waste Management Sia LTD (WMS) warehouse for consolidation/aggregation and then destruction at the WMS destruction facility. The Project is located in Samutprakarn, Thailand. The Project is listed under the American Carbon Registry (ACR), ID: ACR814.

Tradewater is the Project Proponent for the Project and is responsible for the preparation and fair presentation of the Project Plan, Monitoring Report and emissions reductions.

GHD is an accredited validation and verification body under the American Carbon Registry.

The Project utilizes the “Methodology for the Quantification, Monitoring, Reporting and Verification of Greenhouse Gas Emissions Reductions and Removals from the Destruction of Ozone Depleting Substances from International Sources”, Version 1.0, dated April 2021 (ACR Methodology).

This validation/verification covers reported emission reductions claimed by Tradewater during the reporting period of December 17, 2022 to January, 23, 2023. The current crediting period is December 17, 2022 to December 16, 2032.

GHD has prepared this Validation and Verification Report in accordance with ISO Standard ISO 14064 Greenhouse gases - Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions (ISO 14064-3:2019) and with the requirements of the ACR.

## 2. Validation/Verification Objective

The objective of the validation was to have an independent third-party validate the Greenhouse Gas Project Plan (GHG Project Plan) to ensure the Project conforms to the ACR Validation and Verification Standard, that the Project was using the applicable Methodology and that it is also correctly evaluating the reported GHG baseline, project emissions and emission reductions.

The objective of the verification was to have an independent third-party verify the emission reductions that the Project claimed during the reporting period to ensure they have been calculated in accordance with the ACR Standard and the Methodology. The Project was reviewed for compliance with the ACR criteria and relevant guidance provided by the ACR.

GHD is responsible for expressing an opinion on the reported GHG emissions reductions based on the validation/verification.

## 3. Level of Assurance

The verification was conducted to a reasonable level of assurance as per the requirements of the ACR standard.

Based on this level of assurance, GHD determined whether the Project's assertions are:

- Materially correct, free of misstatements and an accurate representation of the GHG data and information.
- The Project Report and documentation were prepared in accordance with the requirements of the ACR Standard and in accordance with the applicable GHG quantification, monitoring and reporting, standards or practices.

If validation/verification statements could be provided, they were worded in a manner to meet the requirements set forth in the ACR standard.

## 4. Validation/Verification Standards and Criteria

GHD adhered to the requirements outlined in the following documents as validation/verification criteria:

- ISO 14064 Greenhouse Gases - Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements, ISO, April 2019 (ISO 14064-2-2019) \*
- ISO 14064 3:2019 Specification with guidance for the validation and verification of greenhouse gas assertions, April 2019 (ISO 14064-3-2019)
- The American Carbon Registry Standard, Requirements and Specifications for the Quantification, Monitoring, Reporting, Verification, and Registration of Project Based GHG Emissions Reductions and Removals, Version 7.0, December 2020 (ACR Standard)
- The American Carbon Registry Validation and Verification Standard, Version 1.1, May 2018 (ACR V/V Standard)
- Methodology for the Quantification, Monitoring, Reporting and Verification of Greenhouse Gas Emissions Reductions and Removals from the Destruction of Ozone Depleting Substances from International Sources, Version 1.0, dated April 2021 (ACR Methodology) \*

Note:

\* Denotes change from Proposal and/or draft Verification Plan

## 5. Validation/Verification Scope

### 5.1 Validation and Verification Scope

The scope of the validation and verification was to review the following aspects of the Project:

#### 5.1.1 Validation

- The Project's boundary and the procedures for establishing the project boundary
- The physical infrastructure, activities, technologies, and processes of the GHG project
- GHGs, sources, and sinks within the project boundary
- Temporal boundary
- Description of and justification for the baseline scenario
- Methods, algorithms, and calculations that will be used to generate estimates of emissions and emission reductions
- Process information, sources identification/counts, and operational details
- Data management systems
- QA/QC procedures

- Processes for uncertainty assessments
- Project specific conformance to ACR eligible criteria, including additionality

## 5.1.2 Verification

- Physical infrastructure, technologies and processes of the GHG project
- GHG sources, sinks and reservoirs within the project boundary
- Temporal boundary
- Baseline scenario
- Methodologies and calculations used to generate estimates of emissions and emission reductions/removal enhancements
- Original underlying data and documentation as relevant and required to evaluate the GHG assertion
- Process information, source identification/counts, and operation details
- Data management
- Quality assurance/quality control (QA/QC) procedures and results
- Process for and results from uncertainty assessments
- Project specific conformance to ACR eligibility criteria

## 5.2 Project Operations and Project Sources, Sinks and Reservoirs

The Project consisted of the destruction of CFC-12 which is an eligible ODS refrigerant under the Methodology. The CFC-12 is derived from a government stockpile which is in the custody of the Thailand Customs Department on or before 2007. The ODS was transferred to WMS for consolidation and destruction. Upon arrival at WMS, the ownership of the ODS, including any offset credits that resulted from the destruction of the ODS, was transferred to Tradewater.

Table 5.1 below presents the sources, sinks, and reservoirs (SSRs) for the Project.

*Table 5.1 Project's Sources, Sinks, Reservoirs*

SSR		Source Description	Gas	Included (I) or Excluded (E)
1.	ODS Collection	Fossil fuel emissions from the collection and transport of ODS sources	CO2 CH4 N2O	E
2.	ODS Recovery and Collection	Emissions of ODS from the recovery and collection of ODS at end-of-life or servicing	ODS	E
		Fossil fuel emissions from the recovery and collection of refrigerant at end-of-life or servicing	CO2 CH4 N2O	E
3.	ODS Use	Emissions of ODS from equipment use, leaks and servicing	ODS	E
		Fossil fuel emissions from the operation of refrigeration and A/C equipment	CO2 CH4 N2O	E

SSR		Source Description	Gas	Included (I) or Excluded (E)
4.	Substitute Refrigerant Production	Emissions of substitute refrigerant production	CO2e	E
		Fossil fuel emissions from the production of substitute refrigerant	CO2 CH4 N2O	E
5.	Transport to Destruction Facility	Fossil fuel emissions from the vehicular transport of ODS from aggregation point to final destruction facility	CO2 CH4 N2O	I E E
6.	ODS Use	Emissions from ODS from use, leaks and servicing through continued operation of equipment	ODS	I
		Emissions of substitute from use, leaks and servicing through continued operation of equipment	CO2e	I
		Indirect emissions from grid-delivered electricity	CO2 CH4 N2O	E
7.	Destruction	Emissions from ODS from incomplete destruction at destruction facility	ODS	I
		Emissions from the oxidation of carbon contained in destroyed ODS	CO2	I
		Fossil fuel emissions from the destruction of ODS at destruction facility	CO2 CH4 N2O	I E E
		Indirect emissions from the use of grid-delivered electricity	CO2 CH4 N2O	I E E

## 5.3 Client Contact

Ms. Maria Gutierrez, Senior Director of International Programs with Tradewater is GHD's primary contact for the validation/verification of the Project.

## 5.4 Project Geographical and Organizational Boundaries

The Project's destruction facility is located at the following address:

WMS Facility  
 965 Moo 2 Soi 3B Bangpoo Industrial Estate  
 Sukhumvit Rd Bangpoo Mai  
 Muang Samutprakarn  
 Samutprakarn 10280  
 Thailand

## 5.5 Reporting Period

The Reporting Period for the Project is December 17, 2022 to January, 23, 2023.

## 5.6 Project Deviations

There were no deviations from the Methodology for the Project.

## 5.7 Use of this Report

This report has been prepared for the use of Tradewater, and upon request, ACR.

Statements from GHD's Verification Report, including the Verification Statement must use the language in which the statement was issued, and reference the date of issuance of GHD's report, the applicable verification period and the associated program for which the verification was conducted. The GHG statement provided by GHD can be freely used by Tradewater for marketing or other purposes other than in a manner misleading to the reader. The GHD mark shall not be used by Tradewater in any way that might mislead the reader about the verification status of the organization. The GHD mark can only be used in relation to the specific time period verified by GHD.

## 5.8 Use of Information and Communication Technology

As part of the verification process, GHD utilized information and communication technology (ICT) in accordance with IAF Mandatory Document for the use of Information and Communication Technology for Auditing/Assessment Purposes (IAF MD 4:2018) for various aspects of the verification, including conducting video/tele-conferencing with various personnel.

The decision to use ICT is permissible if GHD and the client agree on using ICT. The agreed ICT method will be MS Teams. By accepting GHD's proposal, Tradewater agreed to the use of the afore mentioned ICT methods and their associated information security, data protection and confidentiality measures. Any other ICT method(s) were agreed to in writing (email) between GHD and Tradewater prior to use. The parties did not agree to the use of an ICT method which either party did not have the necessary infrastructure to support. Throughout the entire verification process, including use of ICT, GHD abided by the confidentiality procedures.

# 6. Validation/Verification Plan

GHD developed a Validation/Verification Plan based on a preliminary review of the data initially provided. GHD submitted the Validation/Verification Plan to Tradewater on October 16, 2022, prior to GHD's Site visit on October 17, 2022. GHD's Validation/Verification Plan was revised, as required, throughout the course of the verification to address questions or initial concerns with data originally provided.

GHD has developed an Evidence -Gathering Plan (EGP) for internal use based on review of the objectives, criteria, scope, and level of assurance detailed above. The EGP was designed to lower the verification risk to an acceptable level and specifies the type and extent of evidence gathering activities. The EGP was reviewed and approved by the Lead Verifier prior to issuing the verification plan. The EGP was dynamic and was revised, as required, throughout the course of the verification. Any modifications to the EGP were reviewed and approved by the Lead Verifier, with the final EGP completed prior to issuing the final verification report and opinion.

The final Validation/Verification Plan is provided as Appendix A to this report.

## 6.1 Strategic Analysis

GHD's Validation/Verification Team performed a strategic analysis to understand the activities and complexity of the Project to determine the nature and extent of the validation/verification activities.

GHD's strategic analysis for the validation included:

- a. Relevant sector information
- b. Nature of operations
- c. The requirements of the criteria, including applicable regulatory and/or GHG programme requirements
- d. The intended user's materiality threshold, including the qualitative and quantitative components
- e. Likely accuracy and completeness of the GHG statement
- f. The proper disclosure of the GHG statement
- g. The scope of the GHG statement and related boundaries
- h. Time boundary for data
- i. Emissions SSRs and their contribution to the overall GHG statement
- j. Appropriateness of quantification and reporting methods, and any changes
- k. Sources of GHG information
- l. Data management information system and controls
- m. Management oversight of the responsible party's reporting data and supporting processes
- n. Availability of evidence for the responsible party's GHG information and statement
- o. Results of sensitivity or uncertainty analysis
- p. Other relevant information

GHD's strategic analysis for the verification included:

- a. Relevant sector information
- b. Nature of operations of the Project
- c. Criteria requirements, including applicable regulatory and/or GHG programme requirements
- d. Materiality threshold, including the quantitative and qualitative components
- e. Likely accuracy and completeness of the GHG statement
- f. Scope of the GHG statement and related boundaries
- g. Time boundary for data
- h. Emissions sources and their contribution to the overall GHG statement
- i. Changes in GHG emissions from the prior reporting period
- j. Appropriateness of quantification and reporting methods, and any changes
- k. Sources of GHG information
- l. Data management information system and controls
- m. Management oversight of the reporting data and supporting processes
- n. Availability of evidence for the GHG information and statement
- o. Results of previous verifications
- p. Results of sensitivity or uncertainty analysis
- q. Location approach
- r. Type of GHGs
- s. Applied monitoring methodology (i.e., direct measurement of GHGs or calculation of GHGs with indirect measurement of activity and calculation data)
- t. The Project Plan
- u. Results of the validation report
- v. The requirements of the monitoring plan

- w. The applied monitoring methodology
- x. The monitoring report
- y. Other relevant information

## 6.2 Assessment of Risk and Magnitude of Potential Errors, Omissions or Misrepresentations

The results of GHD’s strategic analysis were used in the risk assessment. Based on GHD’s review of the Project’s operations, the following table summarizes the potential risk and magnitude of potential errors, omissions, or misrepresentations:

Source and Percentage of Total Attributable Emissions	Attributes	Inherent Risk	Control Risk	Detection Risk Design	Consideration for Procedure
<b>General</b>					
Data Management	Occurrence	High - There is a high risk that an error in data management could lead to an error in the Emissions Report.		Low	GHD reviewed all data systems, the flow of data to the GHG Assertion, and the QA/QC procedures, thereby mitigating the detection risk to low.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
Use of ICT	Occurrence	Medium –The GHD project team gained knowledge of the project and Facility operations via ICT during the kick-off call with Tradewater Thailand. GHD conducted an in-person site visit to the Thailand Facility.	Medium – ICT technologies (e.g., Microsoft Teams, video conferencing, site photographs) are available to both GHD and Tradewater. Systems are in place and can be made available through Teams. Due to a multi-national project team, issues using conferencing technology between different time-zones may arise.	Low	Tradewater and the GHD project team used ICT software to conduct discussions, share screens, and view key documents. GHD conducted an in-person site visit to the Thailand facility, thereby mitigating the detection risk to low.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
<b>Validation of Project Plan</b>					
Project Boundary	Occurrence	Low – All equipment at the Facility is operated by WMS and all emissions are included in the Emissions Report. Ownership and use by Tradewater of the offset credits are clearly defined.	Low – Boundary is well defined, and all emissions processes are considered in the quantification.	Low	As this is GHD’s first validation/verification of the Project the detection risk has been set as low. GHD confirmed the boundaries through a review of Facility operations, emission sources and supporting documentation, conducted both via the site visit, desktop reviews and interviews with Tradewater personnel.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				

Source and Percentage of Total Attributable Emissions	Attributes	Inherent Risk	Control Risk	Detection Risk Design	Consideration for Procedure
Project Applicability and Baselines	Occurrence	Low - Project documentation clearly defines the applicability of the project, including its baseline scenario.	Low - The applicability and baseline scenario are clearly defined by ACR within the ACR Methodology for the project type.	Low	As this is GHD's first validation/verification of the Project the detection risk has been set as low. GHD confirmed the baseline scenario through review of government documents which indicate stockpiling of ODS by the Thailand government.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
ACR Project Eligibility Requirements	Occurrence	Low - Project documentation clearly defines its conformance to the eligibility criteria as required by ACR. Additionality tests are clearly specified.	Low - Majority of project eligibility requirements are clearly defined by ACR within its standards and the ACR Methodology for the project type.	Low	As this is GHD's first validation/verification of the Project the detection risk has been set as low. GHD confirmed the eligibility criteria via a review of project documentation.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
<b>Baseline Sources, Sinks and Reservoirs</b>					
SSR 6 ODS Use – Emissions from Refrigerant ODS (ODS) (100% of Baseline SSR emissions)	Occurrence	Low - Low complexity source. Quantified using volume of ODS sent to destruction, default emission rate and global warming potential.	Low – ODS volume determined through weighing tank. Quantification methodology is well defined.	Low	To maintain a low risk that GHD would not detect a discrepancy in the data, GHD reviewed all available data used in the emissions calculations.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
<b>Project Sources, Sinks and Reservoirs</b>					
SSR 5 Transport to Destruction Facility – Fossil fuel emissions from the vehicular transport of ODS from point of origin to final destruction facility (CO2) (1.08% of Project SSR emissions total for SSR 5 and SSR 7)	Occurrence	Low - Complexity is low. Quantified using default emission factors and ODS volume.	Low - Low control risk as values based on default emission factors and ODS volume.	Low	GHD reviewed the emission factors used and the ODS volume used.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				

Source and Percentage of Total Attributable Emissions	Attributes	Inherent Risk	Control Risk	Detection Risk Design	Consideration for Procedure
SSR 7 Destruction – Emissions of ODS from incomplete destruction at destruction facility (ODS)	Occurrence	Medium – Based on GHD’s knowledge of the Facility and its operations, and that this is the first ODS project to be conducted at this facility, the risk is medium.	Medium – Reported destruction is based on internal records and metering resulting in a medium control risk.	Low	GHD reviewed all available data in order to maintain a low detection risk.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
SSR 7 Destruction – Emissions from the oxidation of carbon contained in destroyed ODS (CO <sub>2</sub> )					
SSR 7 Destruction – Fossil fuel emissions from destruction of ODS at destruction facility (CO <sub>2</sub> )					
SSR 7 Destruction – Indirect emissions from the use of grid-delivered electricity (CO <sub>2</sub> )					
SSR 6 ODS Use – Substitute refrigerants from leaks and servicing through continued operation of equipment (CO <sub>2</sub> e) (98.92% of Project SSR emissions)	Occurrence	Low – Low complexity source. Quantified using volume of ODS sent to destruction, default emission rate and global warming potential.	Low – ODS volume determined through weighing tank. Quantification methodology is well defined.	Low	To maintain a low risk that GHD would not detect a discrepancy in the data, GHD reviewed all available data used in the emissions calculations.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				

## 6.3 Materiality Threshold

ACR requires that the materiality threshold for the discrepancies between the emission reduction and those estimated by GHD be less than +/-5%. Before a verification statement will be accepted, the individual and aggregation of errors or omissions which are found to be greater than the ACR materiality threshold, require correcting.

The % error can be calculated using the following equation:

$$\text{Percent Error} = \frac{[\text{Project Emission Reduction Assertion} - \text{Verifier Emission Reduction Recalculation}] \times 100 \text{ percent}}{\text{Verifier Emission Reduction Recalculation}}$$

## 6.4 Validation/Verification Team and Internal Reviewer

### 6.4.1 Roles and Responsibilities

**Co-Lead Validator/Verifier – Anothai Setameteekul** – Ms. Setameteekul led the validation/verification and was responsible for development of the validation/verification plan. Ms. Setameteekul reviewed the risk assessment, recalculation of raw data, data management, and draft findings. Ms. Setameteekul prepared and signed the validation and verification statements and validation/verification report. Ms. Setameteekul conducted a site visit of the facility.

**Co-Lead Validator/Verifier – Gordon Reusing** – Mr. Reusing led the validation/verification and was responsible for development of the validation/verification plan. Mr. Reusing reviewed the risk assessment, recalculation of raw data, data management, and draft findings. Mr. Reusing prepared and signed the validation and verification statements and validation/verification report.

**Validator/Verifier – Michelle Hirst** – Ms. Hirst developed and revised the validation/verification and evidence gathering plan, developed a risk assessment, recalculated raw data, reviewed management of data quality and prepared draft findings.

**Support Staff – Angela Kuttemperoor** – Ms. Kuttemperoor provided support with preparing the validation/verification plan and evidence gathering plan, developed a risk assessment, recalculated raw data, reviewed management of data quality and prepared draft findings.

**Internal Reviewer – Deacon Liddy** – Mr. Liddy conducted a peer review of the verification plan, risk assessment, verification report and findings.

### 6.4.2 Qualifications

Anothai Setameteekul, P. Eng.	Role: Co-Lead Validator/Verifier
<p><b>Professional Summary</b>   Ms. Setameteekul is a GHG and Air Emissions Engineer based in GHD's Calgary office and is a licensed Professional Engineer in the provinces of Alberta and Saskatchewan. She has extensive knowledge and experience in GHG quantification and verification in particular industrial facilities – Oil Sands (In Situ, Mining, Upgrader operations), Hydrogen Production, Petrochemical, Cement, Refinery, Natural Gas Processing, Natural Gas Power Generation with Cogeneration, and Steel Manufacturing. She is familiar with the GHG Regulation in Canadian jurisdictions including British Columbia, Alberta, and Ontario. Ms. Setameteekul is also accredited by the California Air Resource Board as a lead verifier of greenhouse gas emissions for Oil and Gas system, process emissions sectors, fuel pathways, alternative fuel transactions and petroleum-based fuel report. Ms. Setameteekul is also accredited by the Washington State as a verifier. Ms. Setameteekul also has experience working in the accreditation audit process for GHD by ANAB and has training and knowledge of the ISO 14064 and ISO 14065 standards.</p> <p>Ms. Setameteekul graduated with a Masters degree in Industrial System Engineering from the University of Regina. Ms. Setameteekul worked as a research assistant in International Testing Center for CO2 Capture (ITC). Her work was related to CO2 capture using chemical absorption process. Ms. Setameteekul also worked as a process engineer to evaluate process performance such as process efficiency, air emissions, liquid effluent, waste, and utility consumption at a carbon capture test facility.</p>	

<b>Gordon Reusing, M. Sc., P. Eng.</b>	<b>Role: Co-Lead Validator/Verifier</b>
<p><b>Professional Summary</b>   Mr. Reusing is a greenhouse gas (GHG) Lead Verifier, Lead Validator, and Peer Reviewer with extensive experience including GHG programmes in Alberta, British Columbia, Ontario, Quebec, Nova Scotia, California, and programmes operated by the United Nations Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (CDM), The Gold Standard, The Climate Registry (TCR), the Carbon Disclosure Project (CDP), and Verra: Verified Carbon Standard (VCS). Mr. Reusing has completed numerous GHG quantification studies for the oil and gas sector, including upstream, midstream, and downstream facilities. Mr. Reusing has conducted GHG verifications as a Lead Verifier, Technical Expert and Peer Reviewer in many jurisdictions, including, but not limited to, the Alberta Carbon Competitiveness Incentive Regulation (CCIR), Ontario Regulations, British Columbia Greenhouse Gas Reduction (Cap and Trade) Act, (B.C. Reg. 272/2009), and Quebec Regulation R.Q.c.Q 2, r.15 (Quebec Regulation).</p>	

<b>Michelle Hirst</b>	<b>Role: Validator/Verifier</b>
<p><b>Professional Summary</b>   Mr. Reusing is a greenhouse gas (GHG) Lead Verifier, Lead Validator, and Peer Reviewer with extensive experience including GHG programmes in Alberta, British Columbia, Ontario, Quebec, Nova Scotia, California, and programmes operated by the United Nations Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (CDM), The Gold Standard, The Climate Registry (TCR), the Carbon Disclosure Project (CDP), and Verra: Verified Carbon Standard (VCS). Mr. Reusing has completed numerous GHG quantification studies for the oil and gas sector, including upstream, midstream, and downstream facilities. Mr. Reusing has conducted GHG verifications as a Lead Verifier, Technical Expert and Peer Reviewer in many jurisdictions, including, but not limited to, the Alberta Carbon Competitiveness Incentive Regulation (CCIR), Ontario Regulations, British Columbia Greenhouse Gas Reduction (Cap and Trade) Act, (B.C. Reg. 272/2009), and Quebec Regulation R.Q.c.Q 2, r.15 (Quebec Regulation).</p>	

<b>Angela Kuttemperoor, B. Eng.</b>	<b>Role: Support Staff</b>
<p><b>Professional Summary</b>   Ms. Kuttemperoor is an Air Engineer-In-Training with GHD's Greenhouse Gas Assurances Services Team and has retained 1.5 years of experience in greenhouse gas verification work. Ms. Kuttemperoor is a Bachelors of Environmental Engineering graduate (co-op) from the University of Guelph, located in Guelph, Ontario. Ms. Kuttemperoor has involved in numerous verifications for the Ontario greenhouse gas reporting program under Ontario regulation 390/18, and the Federal OBPS program, for a wide variety of sectors. Ms. Kuttemperoor has involved in carbon offset project verifications for sites located within the United States and regulated under various voluntary offset credit programs including the Climate Action Reserve (CAR), Verra: Verified Carbon Standard (VCS) and The Climate Registry (TCR). Ms. Kuttemperoor has experience with verifications for ODS offset projects regulated by the California Air Resources Board (ARB).</p>	

<b>Deacon Liddy, P. Eng.</b>	<b>Role: Technical Reviewer and Technical Expert</b>
<p><b>Professional Summary</b>   Mr. Liddy is a Principal with GHD and an experienced GHG validator and verifier, having completed over 100 GHG validation/verifications with 17years of experience. Mr. Liddy works with large industrial facilities, Provincial governments, and offset project developers to complete risk-based verifications. Mr. Liddy has been the lead verifier for completion of greenhouse gas verifications conducted on behalf of Alberta Environment for emission offset projects for landfill gas, biomass, tillage, composting and fuel switching for lumber kilns. Mr. Liddy has completed verifications of greenhouse gas emission intensity baseline applications and annual compliance reports under the Alberta Specified Gas Emitters Regulation and British Columbia Mandatory Reporting Regulation. Mr. Liddy is a professional engineer in BC, Alberta, and Saskatchewan.</p>	

## 7. Validation/Verification Procedures

### 7.1 Conflict of Interest Review

The Project was submitted to ACR on September 15, 2022. The ACR Standard for Projects listed subsequent to January 1, 2021 is Version 7.0. Prior to commencing the verification, GHD conducted an internal conflict of interest (COI) check to determine the potential for a COI in providing validation/verification services to the Project. Based on

the COI risk levels of the ACR Validation and Verification Standard, GHD identified a low risk for COI, based on the fact that GHD has previously only conducted verifications for the Project Proponent.

GHD submitted the ACR COI form for the Project on September 29, 2022. The ACR provided the authorization to commence the validation/verification of the project, as the project verification COI is listed as approved on ACR registry. Subsequently, GHD submitted updated ACR COI forms on February 17, 2023 to reflect project team changes (including changing of Anothai Setameteekul's role to co-Lead Verifier, addition of Gordon Reusing to Project Team as co-lead verifier, addition of Deacon Liddy as peer reviewer and change of Michelle Hirst to verifier) which was approved by ACR as the project verification COI is listed as approved on ACR registry.

## 7.2 Kick off Meeting

On October 5, 2022, a kick-off conference call was held between GHD and Tradewater to discuss the validation/verification scope and to provide the Project Proponent with a list of information required by GHD to initiate the desk review of the Project. The requested documents were provided by the Project Proponent via email and electronic media. The following specific items were discussed in the kick-off conference call:

- Project operations
- Proposed Validation/Verification timeline
- Site visit scheduling and arrangements
- Data and information request

## 7.3 Validation Process

The following sections outline GHD's validation process.

### Validating Project Boundaries

GHD's validation of the Project boundaries outlined in the GHG Project Plan included the following:

- Physical or geographic boundaries
- GHG assessment boundary
- Temporal boundary

### Validating Project Baselines

GHD confirmed that the baseline applied by the Project Proponent in the GHG Project Plan is appropriate per the Methodology. GHD ensured there is verifiable data for the baseline scenario, including selection rationale and justification, the guidance followed for baseline emissions estimation, and consistency across post-base year project emissions calculations.

### Validating Additionality

GHD evaluated the components of the additionality demonstration per the ACR Standard and the Methodology:

- Regulatory Surplus Test
- Common Practice Test
- Implementation Barriers Test
- Performance Standard Test

### **Validating Quantification Methods**

GHD validated the following:

- The quantification method for each data parameter is clearly defined, and supporting documentation provided is adequate to support the level of assurance required.
- The methods are appropriate for accurately quantifying each data parameter based on the required level of assurance.
- The methods are applied consistently to develop estimates of emission reductions and removal enhancements.
- The principle of conservativeness is applied.

### **Validating Other Project Criteria**

In addition to the above, GHD reviewed the following components within the GHG Project Plan:

- Start date
- Crediting period
- Minimum project term
- Offset title
- Impermanence and risk mitigation
- Leakage
- Environmental and community impacts
- Double issuance, double selling, and double use of offsets
- Projects participating in other asset programs

## **7.4 Verification Process**

The following sections outline GHD's verification process.

### **Information/Records Reviewed**

Information/records to be reviewed by GHD include the following:

- GHG Project Plans
- GHG Assertions
- Operational and control procedures and records for ensuring GHG data quality
- Documentation of GHG Sources, Sinks and Reservoirs
- Documentation of quantification methodologies
- Documentation of monitoring and measurement systems

### **Data Assessment and Management Systems**

GHD reviewed data assessment and management system documentation that describes the process of data collection, entry, calculation and management. GHD will review the following:

- Selection and management of GHG data and information
- Processes for collecting, processing, aggregating, and reporting
- Systems and processes to ensure accuracy
- Design and maintenance of the GHG data management system, including systems and processes that support it

GHD assessed the effectiveness of the data assessment and management system and determine areas of risk.

### **Collection of Evidence**

GHD collected physical, documentary, and testimonial evidence to verify the Project.

### **Evidence Gathering Plans; Risk-Based Approach**

GHD followed a risk-based validation/verification approach in developing the validation/verification plan and evidence gathering plan. As such, GHD identified the key reporting risks. Key issues in validation/verification include, but are not limited to, validation/verification of correct use of emission factors and conversion factors, and consistency in aggregation of emissions data. Wherever practical, direct reading instruments will be used to ensure that any reporting risks are kept with equipment and instrumentation performance limits.

GHD used a risk-based approach for on-site investigation conducted during the validation/verification process. The Lead Verifier followed the audit trails and data sets on site for specific indicators, and cross-checked with the Monitoring Report, GHG Project Plan, the Methodology, records, and latest versions of the ACR Standard. Direct reading instrumentation and redundancy in the data used to support the validation/verification were identified in the verification reporting.

During the on-site assessment, GHD focused on the key areas identified as follows:

- An assessment of the implementation and operation of the Project per the GHG Project Plan.
- A review of information flows for generating, aggregating, and reporting the monitoring parameters.
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the GHG Project Plan.
- A cross check between information provided in the monitoring report and data from other sources such as plant log books, inventories, purchase records, or similar data sources.
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the GHG Project Plan and Methodology.
- A review of calculations and assumptions made in determining the GHG data.
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

### **Error Checking/Testing**

GHD independently calculated the final emission reductions using Tradewater’s raw data to ensure that the correct Methodology and raw data was used.

During the verification process, GHD considered both quantitative and qualitative information on emission reductions. Quantitative data is comprised of the monitoring report submitted to the Project Team by the Project Proponent. Qualitative data is comprised of information on internal management controls, calculation and transfer procedures, frequency of emissions reports, and review and internal audit of calculations/data transfers.

### **Summary of Findings**

If during the verification of the Project, the Project Team identified issues that must be addressed to confirm that the Project meets the ACR requirements, the Lead Verifier issued findings to the Project Proponent. These issues were transparently identified, discussed, and concluded in the Validation/Verification Report.

Iterations of these requests were continued until such a time as the Lead Verifier adequately resolved or “closed out” the identified findings.

## Validation/Verification Report and Statement

The outcome of the on-site assessment, desktop review, and Summary of Findings was the creation of a Draft Validation/Verification Report. The draft Validation/Verification report was reviewed internally by the Internal Reviewer. Any additional findings as a result of the technical review were presented to the Project Proponent. Upon receipt of the Project Proponent's response, the Project Team issued the Final Validation/Verification Report to the Project Proponent and ACR along with the completed Validation/Verification Statement.

## 7.5 Details of Site Visit

A Site visit was conducted by Ms. Anothai Setameteekul of GHD on October 17, 2022. During the Site visit, GHD interviewed Project personnel involved in the development of the GHG Project Plan, and Monitoring Report, witnessed the Project's operations, and inspected data management systems. The following personnel were present at all times during the Site visit:

- Maria Gutierrez (Tradewater)
- Jutthida Fakkum (Waste Management Siam Ltd. (WMS)/Bangpoo Environmental Complex Co. Ltd. (BPEC))
- Kannikar Srithunyalucksana (Creagy Co. Ltd.)
- Arpakan Prompt (BPEC)
- Prin Hanthanon (WMS)
- Pattanasak Weerapattarachot (WMS)
- Thaphupoasnt Sangoansub (BPEC)

During the Site visit, GHD personnel interviewed participants about the Project. After the initial interview was completed, a visual inspection of the Facility and its operations occurred, which included an overview of the process, review of major emission sources and the Project boundary. Through this inspection, GHD was able to verify that personnel responsible for the GHG Project Plan and Monitoring Report preparation were sufficiently trained and qualified, and reviewed the data management system in place at the Facility.

# 8. Validation/Verification Findings

## 8.1 Use of ICT

### Summary of ICT Techniques Used

GHD and Tradewater successfully used MS Teams to hold calls, video conferences and screen shares. GHD and Tradewater used an online SharePoint folder (Dropbox) and email to share files.

### Findings and Conclusions

The majority of the verification was conducted via on-Site activities and as a desktop exercise; some client calls between Tradewater and GHD did occur via MS Teams.

GHD and Tradewater encountered no issues using ICT as a part of this verification; transfer of data between Tradewater and GHD was smooth, and MS Teams calls did not encounter any technical issues.

Based on GHD's review, the ICT technologies used are acceptable and reasonable for use in the validation/verification, and GHD was able to maintain the acceptable level of assurance.

## 8.2 Findings List

During the review of the data provided to GHD for the Reporting Period, GHD identified a list of findings and clarifications that required action from the Client. The Findings List is available in Appendix C.

## 8.3 Validation Findings

### 8.3.1 Project Boundary

To validate the project boundary, the project site was visited during the Site visit as described above. During this site visit, the completeness of the project was compared against the listed Project Plan and supporting documentation, including inclusion and/or omission of listed equipment in particular as it relates to the ACR Methodology-listed SSRs. Further, GHD confirmed that all listed operations in the Project Plan were controlled by Tradewater and WMS who operated the Project Site. Further to this review, GHD conducted a desktop review of related project documentation, including evidence of government stockpiling of ODS and evidence of ownership. From this inspection and review, GHD confirmed the following:

- All operations listed in the Project Plan was present and accounted for
- Other omitted Project sources and sinks were confirmed to not be present during the Project operation
- Only WMS-controlled equipment was present at the Project Site

Therefore, GHD can confirm that the listed project boundaries are appropriate for the Project.

### 8.3.2 Project Deviations

There were no deviations from the Methodology for the Project.

### 8.3.3 Project Applicability

As per Sections 2, 3 and 6 of the ACR Methodology, the following presents GHD’s summary of the applicability requirements for the Project:

*Table 8.1 Project Applicability*

ACR Criterion	GHD Assessment
<p>3.2 LOCATION</p> <p>I. All ODS must be obtained from eligible sources located outside the United States and its territories.</p> <p>II. Destruction of ODS must occur at an eligible destruction facility per the requirements found in Section 2.1.</p>	<p>GHD conducted a Site Visit and determined that the Project is located in Thailand. In addition the Project boundaries were assessed during the Site Visit. As a result, the Project conforms to the applicability conditions listed in the Methodology.</p>
<p>2.1 ELIGIBLE DESTRUCTION FACILITIES</p> <p>I. ODS must be destroyed at either:</p> <p>A. An approved HWC subject to the RCRA and with a RCRA permit for the ODS destruction facility stating an ODS destruction efficiency of at least 99.99% (only applicable to destruction facilities located in the United States); or</p> <p>B. A transformation or destruction facility that meets or exceeds the Montreal Protocol’s TEAP standards provided in the Report of the Task Force on Destruction Technologies, including DRE of 99.99% and emission levels consistent with the guidelines set forth in the TEAP report. Compliance can be demonstrated through the existence of appropriate permits or other regulatory documentation issued by a party to the Montreal Protocol documenting compliance with DRE and facility operational requirements.</p>	<p>GHD verified that the destruction facility meets the Montreal Protocol’s TEAP standards as shown in the 6<sup>th</sup> CFC DRE Report which indicates a 99.99% destruction efficiency.</p>

ACR Criterion	GHD Assessment
II. A destruction facility must meet all applicable monitoring and operational requirements under relevant environmental laws, as well as all applicable regulatory requirements that apply directly to ODS destruction activities during the time the ODS destruction occurs.	
<p>2.2.1 ODS Refrigerant Sources</p> <p>I. Eligible refrigerants must originate from equipment, refrigeration systems, or other supplies, including but not limited to cans, cylinders, and other containers of recovered, reclaimed or unused ODS.</p> <p>II. Only destruction of the following ODS refrigerants is eligible to generate ACR Emission Reduction Tonnes (ERTs) under this Methodology:</p> <p>A. CFCs:</p> <ul style="list-style-type: none"> <li>i. CFC-11</li> <li>ii. CFC-12</li> <li>iii. CFC-13</li> <li>iv. CFC-113</li> <li>v. CFC-114</li> <li>vi. CFC-115</li> </ul>	The eligible ODS consists of >99.9% CFC-12 as per the Certificate of Destruction (COD). The destruction activity took place under one COD dated January 23, 2023.
<p>3.5 REPORTING PERIODS</p> <p>I. An ODS destruction project can only have a single reporting period.</p> <p>II. Multiple destruction events may be combined within a single reporting period subject to the requirements in subchapter 2.2.VI of this Methodology.</p> <p>III. The reporting period must not exceed 12 consecutive months. The project proponent may choose a reporting period shorter than 12 consecutive months.</p> <p>IV. The project reporting period begins on the project start date.</p>	The Reporting Period for the Project is December 17, 2022 to January, 23, 2023 and falls within the crediting period of this Project and aligns with the commencement date. The Methodology allows annual monitoring, reporting and verification of the Project throughout the crediting period. As a result, the Reporting period duration for this Project conforms to the Methodology requirements.
<p>6.1 GENERAL MONITORING REQUIREMENTS</p> <p>IV. For projects destroying ODS sourced from government stockpiles or inventories, the project proponent must maintain documentation that the ODS is not required to be destroyed or converted.</p>	GHD reviewed the chain of custody documents and GHG Project Plan which confirm that the stockpiled ODS was not required to be destroyed.

### 8.3.4 Project Eligibility

The project eligibility requirements are outlined in Chapter 3 of the ACR Standard. GHD reviewed the Project against the eligibility requirements in the Standard as detailed below.

Table 8.2 Project Eligibility

ACR Criterion	Definition	GHD Assessment
Project Start Date	<p>ACR defines the Start Date for all projects other than AFOLU as the date on which the project began to reduce GHG emissions against its baseline.</p> <p>ACR defines the eligible Start Date(s) for AFOLU project types in Annex A, “ACR Requirements for AFOLU-Based Carbon Projects.”</p>	<p>For ODS projects, this is the start date listed on the Certificate of Destruction, when the destruction of ODS occurs.</p> <p>The start of destruction listed on the Certificate of Destruction was December 17, 2022. Per the criteria in the ACR Standard, the start date and the start of the first crediting period must be the same. GHD verified the start using CEMs data for the Facility and confirmed the start of the first crediting period.</p>

ACR Criterion	Definition	GHD Assessment
Minimum Project Term	The minimum length of time for which a Project Proponent commits to project continuance, monitoring, and verification.	NA for this project type
Crediting Period	<p>Crediting Period is the finite length of time for which a GHG Project Plan is valid, and during which a project can generate offsets against its baseline scenario.</p> <p>Crediting Periods are limited in order to require Project Proponents to reconfirm, at intervals appropriate to the project type, that the baseline scenario remains realistic and credible, the Project Activity remains additional, and GHG accounting best practice is being used.</p>	The eligible crediting period for this type of Project (i.e., non AFOLU) per the ACR Standard is 10 years. The crediting period for the ACR814 Project is from December 17, 2022 to December 16, 2032 (10 years). The crediting period began on the commencement date of the ACR814 Project, December 17, 2022. As such, the current crediting period falls within the 10 years specified by the ACR Standard.
Real	A real offset is the result of a project action that yields quantifiable and verifiable GHG emissions reductions and/or removals.	Per the ACR Standard, any GHG emission reduction or removal must be real and have already occurred prior to credit issuance on this Project. GHD verified the commencement date of the Project to verify the emission reduction is real and ex ante. In addition, GHD reviewed Facility records including CEMs data to verify the emissions reductions are real and verifiable. Based on GHD's review, the reported emissions reductions meet the criteria for real offsets outlined in the ACR standard.
Emissions Removal or Origin	<p>An emission or removal is direct if it originates from sources or sinks over which the Project Proponent has control.</p> <p>An emission or removal is indirect if it originates at sources or sinks over which the Project Proponent does not have control.</p>	GHD reviewed the transfer of ownership letters from the Thailand government Customs department and transfer of ownership letters from WMS to Tradewater, to confirm that Tradewater retains ownership of all emission reductions and credits generated by the project. During the Site visit, it was determined through a review of operations, that WMS owns and manages the destruction Facility.
Offset Title	Offset title is a legal term representing rights and interests in an offset, a future stream of offsets, or a project delivering offsets.	GHD reviewed permits applicable to the destruction facility, attestation provided in the GHG Project Plan, and transfer of ownership documentation and determined that the Project Proponent has a valid offset title.

ACR Criterion	Definition	GHD Assessment
Additional	GHG emission reductions and removal enhancements are additional if they exceed those that would have occurred in the absence of the Project Activity and under a business-as-usual scenario.	<p><b>Legal Requirement Test</b></p> <p>Under the Methodology, the Project Proponent must demonstrate that the emission reductions achieved by a project using this Methodology must exceed those required by any law, regulation or legally binding mandate.</p> <p>There is no mandate in Thailand that requires the destruction of ODS. Thus, all emission reductions resulting from the Project are considered to be not legally required, and therefore are eligible for crediting.</p> <p><b>Performance Standard Evaluation</b></p> <p>As the Project meets the ODS project definition and all other eligibility requirements in the Methodology, then the performance standard evaluation is satisfied.</p>
Regulatory Compliance	Adherence to all laws, regulations, and other legally binding mandates directly related to Project Activities.	<p>GHD reviewed a compliance letter provided by Tradewater confirming that WMS was in compliance with all regulatory requirements during the reporting period. Tradewater provided GHD with the following permits which were reviewed by GHD:</p> <p>-BPEC Permit: Letter of Permission for utilization and business operations under IEAT Renewable no. 3, October 30, 2019, Permit Number 2-02-0-102-03731-2562, Industrial Estate Authority of Thailand</p> <p>-BPEC Permit for waste residue stream: Waste or Unused Material Transferred Onsite to Disposal Permit, January 1, 2022, Valid February 26, 2022 to February 25, 2023, Permit Number 6501-334, Department of Industrial Waste</p>
Permanent	<p>Permanence refers to the longevity of removal enhancements and the risk of reversal (i.e., the risk that atmospheric benefit will not be permanent).</p> <p>Reversals may be unintentional or intentional.</p>	<p>Due to the nature of this Project, there is no risk of reversal. Once the ODS is destroyed, the associated GHG reductions are fixed. As such, GHD verified the emission reductions are permanent as defined in Section 5 of the ACR Standard. As there is no risk of reversal, no further action was required regarding risk mitigation to meet the permanence criteria per the ACR Standard.</p>
Net of Leakage	Leakage is an increase in GHG emissions or decrease in sequestration outside the project boundaries that occurs because of the project action.	GHD verified that leakage assessment is not applicable under the ACR Methodology.

ACR Criterion	Definition	GHD Assessment
Environmental and Community Assessments	Projects have the potential to generate positive and negative community and environmental impacts. Appropriate safe-guard procedures can identify, evaluate, and manage potential negative impacts. Positive impacts can contribute to sustainable development objectives.	As per the Project Plan (dated February 17, 2023), Tradewater determined that there are no negative environmental impacts resulting from the Project and the reduction in emissions from the Project is expected to bring net positive impacts to the local environment and community. GHD reviewed the Project Plan to ensure Tradewater had evaluated community and environmental impacts. Based on GHD's review, community and environmental impacts were evaluated by Tradewater. Tradewater reported net positive impacts from the Project and reported the Project meets three United Nations Sustainable Development Goals (SDG1, SDG12 and SDG13). GHD confirmed that a mitigation plan was not required as no negative impacts from the Project are foreseen.

### 8.3.5 Double Issuance, Double Selling and Double Use of Offsets

GHD confirmed that the Project is not claiming emission reductions on another GHG registry or platform by checking other registries as per Section 10.A of the ACR Standard. GHD reviewed the following registries to confirm this:

- Climate Action Reserve
- Verra

In addition, GHD reviewed other asset programs (such as Climate Forward) and confirmed that the project was not claiming other environmental assets elsewhere. Per the ACR Standard, the Project Proponent is required to disclose any other registrations of the Project.

GHD also verified ownership of the Facility as outlined in Sections 8.3.1-8.3.4 to verify that no double-claiming of emission reductions may occur as per Section 10.B of the ACR Standard.

## 8.4 QA/QC Data Management Systems, and Document Retention

### Summary of Data Management Procedures

The WMS destruction facility monitors and records destruction parameters in the CEMS data system which collects data per hour. Parameters including pressure and flow rate are monitored continuously on a separate stage of the furnace for gaseous substances such as ODS and this is collected every half hour. On-site personnel monitor destruction in order to prevent any occurrences of errors, exceedances, or other impacts to the project.

Scales used for determining weight of ODS are calibrated periodically by third-party, with requirement by Thai government for recalibrations every two years. WMS undergoes annual procedure reviews and required readings. Qualified technicians are constantly monitoring the emission levels during burns. The destruction facility is regulated by the Industrial Estate Authority of Thailand (IEAT). Tradewater International reviews all paperwork to ensure that it satisfies protocol requirements.

Sampling is conducted by WMS before destruction by a technician who is unaffiliated with the Project Proponent and is trained in the sampling process. Sample is taken with a clean, fully evacuated sample bottle that meets applicable

DOT requirements and is over one pound at liquid state. The sample is individually labeled, tracked, with the required information recorded on the ODS Sampling Certificate per the ACR Methodology.

Samples are sent to Bureau Veritas Belgium, an ISO/IEC 17025-certified lab where project samples are analyzed to confirm the mass percentage and identification of each component of the sample.

WMS has retention policy up to lifetime of facility. All documents are stored physically and digitally backed-up. Tradewater has a retention policy of 15 years. Documents are stored on a third-party cloud system that is backed up on a regular basis, with hard copies saved on-site wherever possible.

#### Assessment of Procedures

Based on discussions with Project personnel and GHD's review of the supporting documentation, the Project Proponent retains all GHG information and supporting documentation required by the ACR Standard at the Project Site for a minimum of 12-years. GHD reviewed the sampling and weighing procedures conducting by the facility and confirmed that they conformed to the ACR Methodology and that all required documentation requirements were met. GHD reviewed the most recent scale calibration conducted by Siam Scales & Engineering Co. Ltd. In October 2022 and confirmed that the scales were calibrated to 5%. Based on GHD's review the data management procedures at the Facility are robust and in accordance with the ACR Standard.

## **8.5 Validation/Verification of Quantification Methods**

### **8.5.1 Activity Data**

Tradewater calculated emissions using activity data for the Project Period. The activity data consisted of the following parameters:

- Weight of ODS Destroyed
- Composition of Batch make-up

GHD reviewed the Project Proponent's documentation and procedures to determine conformance with the requirements of ACR Standard and the Methodology. Data checks included all documents as detailed in Appendix B.

Through GHD's review of the activity data, the following issues were identified and resolved:

- The number of ODS containers and gross weight of containers as listed in the ISO Filling Tank Consolidation Report exceeded the number of containers and gross weights listed in the Delivery Manifest documents.  
Tradewater confirmed that the number of containers provided in the Delivery Manifest represents the transfer of bulk material from Customs to WMS for storage and handling at the WMS warehouse, prior to material acquisition by the Project Proponent, Tradewater. The consolidation report provides information on material selected from the WMS warehouse for transfer into the ISO tank for destruction, and does not cover all of the materials listed in the Delivery Manifest due business decisions determined by Tradewater.  
Tradewater confirmed that the gross weight provided in the Delivery Manifest documentation is an approximation of bulk weight made by Customs during the transportation process, and does not represent a process performed for precise material quantification. Upon arrival at the warehouse and transfer of ownership to Tradewater, personnel completed a comprehensive weight and inventory effort for compliance with the methodology, as reported in the consolidation report, prior to material transfer to the ISO tank for destruction. The consolidation report represents the most accurate description of the material destroyed by the Project due to material's disposition prior to acquisition by the Project Proponent, Tradewater.
- In the Consolidation Report, crates of containers included for Delivery Manifest 1.1 include crates 1-15, however excluded crate 4. Tradewater confirmed that Crate 4 was omitted from the consolidation report as the material was not transferred into the ISO tank for destruction in this Project.
- The R-12 % composition as indicated by the lab analysis report, 99.9%, differed from the % composition indicated on the Certificate of Destruction 99.99%. Tradewater revised the COD to align with the lab analysis report.

- Net weight of sample as listed in the ODS Sampling Certificate, contained a typo. Tradewater revised the ODS Sampling Certificate.
- Several containers listed as “damaged” in the Inventory Report are included in the consolidation report. This includes TH00054, TH00272, TH00300, TH00445, TH00481, TH00486, TH00861 and TH00926. Tradewater confirmed that "Damaged" includes tanks that are considerably rusty but not inoperable. Therefore, some of the tanks classified as "damaged" were able to be included in the project as the integrity of the containers were not compromised.
- Crate numbers for each cylinder as listed in the consolidation report did not generally align with the crate numbers for each cylinder as listed in the Inventory Report. Tradewater revised the consolidation report.
- All chain of custody documents contained tracking number 176-5028-6821/ PLC22100025 including the shippers declaration, airway bill and proof of delivery document, within the provided email. This tracking number did not match with the tracking number as listed in the sampling certificate, 25542. Tradewater revised the sampling certificate to include the tracking number associated with all chain of custody documents.

## 8.5.2 Assessment of the Emission Reduction Calculations

The following summarizes the emissions calculations completed by Tradewater and verified by GHD, and presents any material and immaterial discrepancies that GHD identified during validation/verification.

GHD reviewed the emission factors and calculation methodologies used by Tradewater to verify if they were in accordance with the ACR Methodology and ACR Standard. In addition, GHD performed independent calculations of the emissions to determine if there were any discrepancies, omissions or misreporting that could result in an offset material misstatement in the total reported emissions.

### 8.5.2.1 Project Emissions

GHD reviewed the calculation methodology used by Tradewater and found it to be in accordance with the ACR Methodology. The Project Proponent utilized Equations 3, 4 and 5 from the ACR Methodology to calculate Project Emissions. GHD reviewed the refrigerant sample analysis reports as certified by the laboratory to confirm composition. GHD reviewed mass determination procedures and the mass used in Tradewater’s calculations.

Per the ACR Methodology, Tradewater has removed mass applicable to the high boiling residue, moisture, and ineligible ODS (as determined by the laboratory analysis). GHD confirmed Tradewater used the correct emission factors for substitute refrigerants. Tradewater used the default emission factor for ODS transportation and destruction per the ACR Methodology.

GHD performed an independent calculation of baseline emissions and found no discrepancy to Tradewater calculations and OPDR.

### 8.5.2.2 Baseline Emissions

GHD reviewed the calculation methodology used by Tradewater and found it to be in accordance with the ACR Methodology. The Project Proponent utilized Equation 2 from the ACR Methodology to calculate Baseline Emissions. GHD reviewed the refrigerant sample analysis reports as certified by the laboratory to confirm composition.

GHD reviewed mass determination procedures and the mass used in Tradewater calculations. Per the ACR Methodology, Tradewater has removed mass applicable to the high boiling residue, moisture, and ineligible ODS (as determined by the laboratory analysis).

GHD confirmed Tradewater used the correct 10-year cumulative emission rate and 100-year global warming potential for the R-12 refrigerant.

GHD performed an independent calculation of baseline emissions and found no discrepancy to Tradewater calculations and OPDR.

GHD initially identified an immaterial discrepancy that affected both the project and baseline emission results relating to applying an adjustment to the total weight of ODS destroyed as calculated, based on Section I.(B) iii (g) which prescribes an adjustment using differences in truck fuel weights of the vehicles used pre- and post-destruction for transport of the ODS containers. GHD identified that this adjustment did not apply to the project as the criteria for applying Section I.(B) iii (g) as detailed in the Methodology, were not met, including that the same trucks were used for transporting the ODS pre- and post-destruction and the fuel weight of the truck post-destruction was higher than the fuel weight of the truck pre-destruction. Upon ACR's review of the issue, Tradewater noted that for Tradewater Thailand 1.0, the adjustment will not be applied, however for future projects, Tradewater may seek to include the truck fuel weight adjustment, and may seek approval to deviate from the Methodology as required. Tradewater revised the GHG project assertion and calculations as well as the GHG Project Plan accordingly.

A minor immaterial discrepancy was identified relating to use of the R-12 composition listed in the COD for emissions calculations, which did not align with the laboratory sampling analysis composition. Tradewater revised the COD to align with the laboratory analysis and corrected the calculations as well as the GHG Project Plan accordingly.

## 8.6 Monitoring Plan

GHD reviewed the monitoring plan for this Project and determined that the parameters monitored and the approach taken by the Project Proponent to determine the emission reduction conforms to the ACR Methodology.

Per Section V (2) of the Monitoring Report, the following information should be included and documented in the Monitoring Plan:

- Personnel names and roles/responsibilities for each party involved in monitoring the offset project
- Description of the GHG management system employed including:
  - The location and recordkeeping/retention requirements for all stored data
  - Methods used to generate data
  - Transfer points and methods of non-automated transfer of data
- Calibration procedures and the frequency with which calibration and other maintenance requirements are performed
- Internal audit and other quality assurance/quality control procedures
- Sampling methods utilized and performed during the reporting period

Per Section 6.1 of the ACR Methodology the following information should be included and documented as part of project Monitoring (excluding those items not applicable to this specific project):

- Source of ODS including owner, physical address, serial or ID number of containers and additional information as applicable.
- Chain of custody and ownership of the ODS including contact information and mass of ODS.
- For projects destroying ODS sourced from government stockpiles or inventories, the Project Proponent must maintain documentation that the ODS is not required to be destroyed or converted.
- Composition and mass analysis information including sample time and date, name of Project Proponent and technician taking sample, employer of technician taking sample, volume of sample container, ambient air temperature and sampling chain of custody.
- Information from the destruction facility on parameters of destruction including feed rate, operating temperature and pressure, effluent discharge and emissions of carbon monoxide during destruction (if applicable)
- Information showing conformance with the procedures in Appendix B: ODS Mass and Composition – Quantification Methodology of the ACR Methodology.
- Evidence of minimum quarterly inspections for scales per and calibrations per an RCRA permit, or for non-RCRA facilities, calibrated at least quarterly to 5% or better accuracy.

- Retention of documentation including all data inputs for emission reductions calculations including sampled data, project-related regulatory permits, destruction facility monitoring and maintenance information, chain of custody and sourcing documentation and ODS composition and mass determinations.

GHD reviewed the Monitoring Plan and confirmed that the above information was included as required per the ACR Methodology.

## 8.6.1 Parameters to be Monitored

The following parameters have been monitored by Tradewater.

Parameter	Mass of ODS mixture in each container
Unit	Kilograms
Description	The total quantity of ODS refrigerant in a container.
Methodology Section	Manual weight tickets taken pre and post destruction for each individual container
Source of Data	Section 5.1 of Methodology
Data uncertainty	Low
Monitoring Frequency	Once per project
Reporting Procedure	Gross weight of cylinders using calibrated scale, taken before and after destruction
QA/QC	Scale calibrations, CEMs data confirms destruction parameter throughout process

Parameter	Concentration of ODS mixture in each container
Unit	Percent
Description	The distribution of ODS refrigerant in each container (along with any other contaminants, moisture, or HBR)
Methodology Section	Sample data via lab analysis provided by an ISO 17025 certified third-party laboratory
Source of Data	Appendix C of Methodology
Data uncertainty	Low
Monitoring Frequency	Once per project
Reporting Procedure	Lab analysis report
QA/QC	Composition and concentration are analyzed at an ISO 17025-certified laboratory that is not affiliated with the project proponent using the AHRI Standard 700.

Parameter	$Q_{refr,i}$
Unit	MT
Description	The total weight of ODS refrigerant sent for destruction (baseline).
Methodology Section	Weight tickets taken both pre- and post-destruction coupled with lab analysis
Source of Data	Section 5.1 of Methodology
Data uncertainty	Low
Monitoring Frequency	Once per project
Reporting Procedure	Net weight of cylinders using calibrated scale
QA/QC	Scale calibrations; CEMs data confirms destruction; lab analysis confirms mass percentage and identification of ODS refrigerant

Parameter	Q <sub>ODS</sub>
Unit	MT
Description	The total quantity of ODS refrigerant sent for destruction (project).
Methodology Section	Weight tickets taken both pre- and post-destruction coupled with lab analysis and quantifications
Source of Data	Section 5.2 of Methodology
Data uncertainty	Low
Monitoring Frequency	Once per project
Reporting Procedure	Net weight of cylinders using calibrated scale; lab analysis
QA/QC	Scale calibrations performed CEMs data confirms destruction; lab analysis confirms mass percentage and identification of ODS refrigerant

Parameter	Legal Requirement Test
Unit	N/A
Description	Emissions reductions achieved through this project and methodology must not be required by any existing law or regulation
Methodology Section	Section 3.3.1
Source of Data	Thailand Customs Department and The National Ozone Protection Division from the Department of Industrial Works (DIW)
Data uncertainty	Low
Monitoring Frequency	Once per project
Reporting Procedure	Review of existing laws around ODS refrigerant management
QA/QC	Regular review of current laws and regulations surrounding ODS refrigerants, particularly CFCs

## 8.7 Summary of Discrepancies, Omissions, Misreporting, Misstatements or Non-Compliances Identified

Quantitative materiality for the verification is set at plus or minus 5% of the total reported emissions. The quantitative aggregated magnitude of errors, omissions, and misstatements for Tradewater's reported emissions reductions is 0.0%, which is less than the materiality threshold of 5%.

Based on this review, GHD has provided an Offset Validation/Verification Statement (Appendix D) attesting that GHD has found the Monitoring Report free of material misstatements.

## 8.8 Independent Review

On February 22, 2023, Deacon Liddy of GHD, independently reviewed the validation and verification services and findings, including the validation/verification plan, validation/verification report, validation/verification statement, and internal documents.

Based on the independent review conducted of the validation/verification services and findings, GHD's independent reviewer concurred with the validation/verification findings of the validation/verification team.

# 9. Validation/Verification Statements

GHD has prepared this Validation/Verification Report for Tradewater. Tradewater was responsible for the preparation and fair presentation of the GHG Project Plan and GHG Monitoring Report in accordance with the criteria and engaging with a qualified third-party validator/verifier to validate/verify the Project Documentation. Tradewater's GHG-related activity is detailed in Section 5.2.

GHD's objective and responsibility was to provide an opinion regarding whether the Project's GHG Project Plan and GHG Monitoring Report was free of material misstatements and that the information reported is a fair and accurate representation of the operations for the reporting period, accurate and consistent with the requirements of the ACR and associated criteria. The criteria used by GHD for the validation/verification of the Project documentation is detailed in Section 5.1. GHD completed the validation/verification of the Project documentation in accordance with ISO 14064-3:2019. GHD completed the verification to a reasonable level of assurance.

## 9.1 Validation Conclusion

GHD reviewed the GHG Project Plan for Tradewater International – Thailand 1.0 and determined that it conforms to the requirements outlined in the ACR Standard, and the Methodology. In addition, GHD determined that there are no qualifications regarding the validation opinion. The Validation Statement will be submitted to the ACR and is provided in Appendix D.

## 9.2 Verification Conclusion

GHD's calculated emissions for the Project and Tradewater's calculated emissions reductions for the project are provided below.

Emission Type	Project Proponent's Calculation (MT CO <sub>2e</sub> )	GHD Calculation (MT CO <sub>2e</sub> )
Total Baseline Emissions	206,044	206,044
Total Project Emissions	13,799	13,799
Emission Reduction value	192,244	192,244

The Offset Verification Statement will be submitted to the ACR and is provided as Appendix D. The emission reduction value from this project is 192,244 metric tonnes of CO<sub>2e</sub>.

GHD determined with a reasonable level of assurance that the Project was free of an offset material misstatement. This resulted in a Positive Offset Verification Statement for the emissions reductions with no qualifications.

# 10. Limitation of Liability

Because of the inherent limitations in any internal control structure, it is possible that fraud, error, or non-compliance with laws and regulations may occur and not be detected. Further, the verification was not designed to detect all weakness or errors in internal controls so far as they relate to the requirements set out above as the validation/verification has not been performed continuously throughout the period and the procedures performed on the relevant internal controls were on a test basis. Any projection of the evaluation of control procedures to future periods is subject to the risk that the procedures may become inadequate because of changes in conditions, or that the degree of compliance with them may deteriorate.

The validation and verification opinions expressed in this report has been formed on the above basis.

GHD's review of the GHG Project Plan and GHG Monitoring Report for the Reporting Period included only the information discussed above. While the review included observation of the systems used for determination of the Project documentation, GHD did not conduct any direct field measurements and has relied on the primary measurement data and records provided by Tradewater as being reliable and accurate. No other information was provided to GHD or incorporated into this review. GHD assumes no responsibility or liability for the information with which it has been provided by others.

The information and opinions rendered in this report are exclusively for use by Tradewater. GHD will not distribute or publish this report without Tradewater's consent except as required by law or court order. The information and opinions expressed in this report are given in response to a limited assignment and should only be evaluated and implemented in connection with that assignment. GHD accepts responsibility for the competent performance of its duties in executing the assignment and preparing this report in accordance with the normal standards of the profession but disclaims any responsibility for consequential damages.

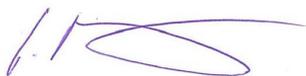
## 11. Closing

This document has been prepared in accordance with the Standard and the Methodology. The verification presented in this Report was conducted to a reasonable level of assurance.

All of Which is Respectfully Submitted,  
GHD Services, Inc.



Anothai Setameteekul, Co-Lead Verifier



Gordon Reusing, Co-Lead Verifier



Deacon Liddy, Internal Reviewer

# Appendices

# **Appendix A**

## **Validation/Verification Plan**

Our ref: 12588069-LTR-3

March 01, 2023

Ms. Maria Gutierrez  
Director of International Programs  
Tradewater, LLC  
San Jose, Costa Rica

**Validation/Verification Plan – Tradewater International – Thailand 1.0**  
**ACR Project ID: ACR814**  
**Methodology for the Quantification, Monitoring, Reporting and**  
**Verification of Greenhouse Gas Emissions Reductions and Removals**  
**from the Destruction of Ozone Depleting Substances from International Sources, Version 1.0**

Dear Ms. Gutierrez

## 1. Introduction

GHD Services Inc. (GHD) was engaged by Tradewater, LLC (Tradewater) to conduct independent third-party greenhouse gas validation and verification services for the validation and verification (reporting period) of one (1) offset project involving the destruction of Ozone Depleting Substances (ODS) (the Project) listed under the American Carbon Registry (ACR). The Project uses a destruction facility located at Waste Management Sia LTD (WMS) Facilities, in Samutprakarn, Thailand (Site). Tradewater is the Project Proponent of the Project.

This validation/verification covers reported emission reductions claimed by Tradewater during the monitoring period of December 17, 2022 to January, 23, 2023. The current crediting period is December 17, 2022 to December 16, 2032.

GHD is an ACR-approved GHG Validation/Verification Body (VVB) and is accredited by the American National Standard Institute (ANSI) National Accreditation Board (ANAB).<sup>1</sup> under ISO 14065 to provide project level validation and verification services.

The ACR defines validation as "the systematic, independent, and documented process for the evaluation of the GHG Project Plan against applicable requirements of the ACR Standard, sector standard, and approved methodology". ACR defines verification as "the systematic, independent and documented assessment by a qualified and impartial third party of the GHG assertion for a specific reporting period. The validation/verification process is intended to assess the degree to which a project complied with ACR-approved methodologies, tools, eligibility criteria, requirements and specification.

GHD has prepared this Verification Plan in accordance with ISO Standard *ISO 14064 Greenhouse gases Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions*

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<sup>1</sup> ANAB is a member of the International Accreditation Forum (IAF).

(ISO 14064 3:2019), and with the requirements of the ACR Standard and the ACR Validation/Verification Standard.

Tradewater is the Project Proponent for the Project, and is responsible for the preparation and fair presentation of the Project Plan, Monitoring Report and emissions reductions.

GHD is a recognized validation/verification body under ANAB for projects within the following scopes:

- Sector 1: GHG emission reductions from fuel combustion
- Sector 2: GHG emission reductions from industrial processes (non-combustion, chemical reaction, fugitive and other)
- Sector 3: Land Use and Forestry
- Sector 4: Carbon Capture and Storage
- Sector 5: Livestock
- Sector 6: Waste handling and disposal

## **2. Scope of Services**

The scope of services is to have an independent third-party validate the Greenhouse Gas Project Plan (GHG Project Plan) to ensure the Project conform to the ACR Validation and Verification Standard, that the Project are using the applicable Methodology and that they are also correctly evaluating the reported GHG baseline, project emissions and emission reductions. The purpose of the verification is to have an independent third-party verify the emission reductions that the Project claimed during the reporting period to ensure they have been calculated in accordance with the ACR Standard and the Methodology. The Project was reviewed for compliance with the ACR criteria and relevant guidance provided by the ACR.

GHD reviewed the GHG Project Plan, and related information and prepare a Validation/Verification Report and Validation/Verification Statement for the monitoring period. GHD submitted the Validation/Verification Report and Validation/Verification Statement to the ACR project database.

## **3. Verification Standards and Criteria**

GHD adhered to the requirements outlined in the following documents as validation/verification criteria:

- ISO 14064 Greenhouse Gases - Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements, ISO, April 2019 (ISO 14064-2-2019)
- ISO 14064 3:2019 Specification with guidance for the validation and verification of greenhouse gas assertions, April 2019 (ISO 14064-3-2019)
- The American Carbon Registry Standard, Requirements and Specifications for the Quantification, Monitoring, Reporting, Verification, and Registration of Project Based GHG Emissions Reductions and Removals, Version 7.0, December 2020 (ACR Standard)
- The American Carbon Registry Validation and Verification Standard, Version 1.1, May 2018 (ACR V/V Standard)

- Methodology for the Quantification, Monitoring, Reporting and Verification of Greenhouse Gas Emissions Reductions and Removals from the Destruction of Ozone Depleting Substances from International Sources, Version 1.0, dated April 2021 (ACR Methodology) \*

Note:

\* Denotes change from Proposal

## 4. Validation/Verification Objective

The objective of the validation was to have an independent third-party validate the Greenhouse Gas Project Plan (GHG Project Plan) to ensure the Project conforms to the ACR Validation and Verification Standard, that the Project was using the applicable Methodology and that it is also correctly evaluating the reported GHG baseline, project emissions and emission reductions.

The objective of the verification was to have an independent third-party verify the emission reductions that the Project claimed during the reporting period to ensure they have been calculated in accordance with the ACR Standard and the Methodology. The Project was reviewed for compliance with the ACR criteria and relevant guidance provided by the ACR.

GHD is responsible for expressing an opinion on the reported GHG emissions reductions based on the validation/verification.

## 5. Level of Assurance

The verification was conducted to a reasonable level of assurance as per the requirements of the ACR standard.

Based on this level of assurance, GHD determined whether the Facility's assertions were:

- Materially correct, free of misstatements and an accurate representation of the GHG data and information.
- The Project Report and documentation were prepared in accordance with the requirements of the ACR Standard and in accordance with the applicable GHG quantification, monitoring and reporting, standards or practices.

If validation/verification statements could be provided, they were worded in a manner to meet the requirements set forth in the ACR standard.

## 6. Validation/Verification Team

The Validation/Verification Team consists of the following members:

Co-Lead Verifier	
Name	Anothai Setameteekul
Role	The lead verifier co-led the verification and was responsible for development of the verification plan. The lead verifier reviewed the risk assessment, recalculation of raw data, data management and draft findings. The lead verifier prepared and signed the verification statement and verification report. Ms. Setameteekul conducted the site visit.

Co-Lead Verifier	
Qualifications	<p>Ms. Setameteekul is a GHG and Air Emissions Engineer based in GHD's Calgary office and is a licensed Professional Engineer in the provinces of Alberta and Saskatchewan. She has extensive knowledge and experience in GHG quantification and verification in particular industrial facilities – Oil Sands (In Situ, Mining, Upgrader operations), Hydrogen Production, Petrochemical, Cement, Refinery, Natural Gas Processing, Natural Gas Power Generation with Cogeneration, and Steel Manufacturing. She is familiar with the GHG Regulation in Canadian jurisdictions including British Columbia, Alberta, and Ontario. Ms. Setameteekul is also accredited by the California Air Resource Board as a lead verifier of greenhouse gas emissions for Oil and Gas system, process emissions sectors, fuel pathways, alternative fuel transactions and petroleum-based fuel report. Ms. Setameteekul is also accredited by the Washington State as a verifier. Ms. Setameteekul also has experience working in the accreditation audit process for GHD by ANAB and has training and knowledge of the ISO 14064 and ISO 14065 standards.</p> <p>Ms. Setameteekul graduated with a Masters degree in Industrial System Engineering from the University of Regina. Ms. Setameteekul worked as a research assistant in International Testing Center for CO2 Capture (ITC). Her work was related to CO2 capture using chemical absorption process. Ms. Setameteekul also worked as a process engineer to evaluate process performance such as process efficiency, air emissions, liquid effluent, waste, and utility consumption at a carbon capture test facility.</p>

Co-Lead Verifier	
Name	Gordon Reusing
Role	The lead verifier co-led the verification and was responsible for development of the verification plan. The lead verifier reviewed the risk assessment, recalculation of raw data, data management and draft findings. The lead verifier prepared and signed the verification statement and verification report.
Qualifications	<p>Mr. Reusing is a greenhouse gas (GHG) Lead Verifier, Lead Validator, and Peer Reviewer with extensive experience including GHG programmes in Alberta, British Columbia, Ontario, Quebec, Nova Scotia, California, and programmes operated by the United Nations Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (CDM), The Gold Standard, The Climate Registry (TCR), the Carbon Disclosure Project (CDP), and Verra: Verified Carbon Standard (VCS). Mr. Reusing has completed numerous GHG quantification studies for the oil and gas sector, including upstream, midstream, and downstream facilities. Mr. Reusing has conducted GHG verifications as a Lead Verifier, Technical Expert and Peer Reviewer in many jurisdictions, including, but not limited to, the Alberta Carbon Competitiveness Incentive Regulation (CCIR), Ontario Regulations, British Columbia Greenhouse Gas Reduction (Cap and Trade) Act, (B.C. Reg. 272/2009), and Quebec Regulation R.Q.c.Q 2, r.15 (Quebec Regulation).</p>

Verifier	
Name	Michelle Hirst
Role	The verifier was responsible for development of the verification plan. The verifier reviewed the risk assessment, recalculation of raw data, data management and draft findings.
Qualifications	<p>Ms. Hirst holds a Master in Science (Environmental Governance) from Albert-Ludwigs Universität in Germany and a Bachelor of Environmental Science (Hons) from the University of Newcastle, Australia. As GHD's USA offset business lead, Ms. Hirst is responsible for the management of ARB and CAR project verification teams for GHD. Ms. Hirst is an ARB accredited Lead Offset Verifier, and an Offset Project Specialist for livestock, Mine Methane Capture and ODS projects, and a CAR accredited Lead Verifier and a Landfill Project Specialist.</p> <p>Ms. Hirst has over 15-years of experience working in environmental assessment, 8-years of this is directly working in greenhouse gas teams in Canada, Germany and the USA. Ms. Hirst is an experienced Lead Verifier for mine methane capture, livestock, forestry, and ozone depleting substances projects under the ARB, as well as forestry and livestock projects registered under CAR. Ms. Hirst has also verified 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.</p>

Support Staff	
Name	Angela Kuttemperoor
Role	Support staff assisted the lead validator/verifier.
Qualifications	Ms. Kuttemperoor is an Air Engineer-In-Training with GHD's Greenhouse Gas Assurances Services Team and has retained 1.5 years of experience in greenhouse gas verification work. Ms. Kuttemperoor is a Bachelors of Environmental Engineering graduate (co-op) from the University of Guelph, located in Guelph, Ontario. Ms. Kuttemperoor has involved in numerous verifications for the Ontario greenhouse gas reporting program under Ontario regulation 390/18, and the Federal OBPS program, for a wide variety of sectors. Ms. Kuttemperoor has involved in carbon offset project verifications for sites located within the United States and regulated under various voluntary offset credit programs including the Climate Action Reserve (CAR), Verra: Verified Carbon Standard (VCS) and The Climate Registry (TCR). Ms. Kuttemperoor has experience with verifications for ODS offset projects regulated by the California Air Resources Board (ARB).

Peer Reviewer	
Name	Deacon Liddy
Role	The peer reviewer conducted a peer review of the verification plan, risk assessment, verification report and findings.
Qualifications	Mr. Liddy is a Principal with GHD and an experienced GHG validator and verifier, having completed over 100 GHG validation/verifications with 17years of experience. Mr. Liddy works with large industrial facilities, Provincial governments, and offset project developers to complete risk-based verifications. Mr. Liddy has been the lead verifier for completion of greenhouse gas verifications conducted on behalf of Alberta Environment for emission offset projects for landfill gas, biomass, tillage, composting and fuel switching for lumber kilns. Mr. Liddy has completed verifications of greenhouse gas emission intensity baseline applications and annual compliance reports under the Alberta Specified Gas Emitters Regulation and British Columbia Mandatory Reporting Regulation. Mr. Liddy is a professional engineer in BC, Alberta, and Saskatchewan.

GHD informed Tradewater if the project team needed to change due to resourcing issues.

## 7. Verification Scope

The following sections describe the scope of the validation/verification.

### 7.1 Project Operations

The Project involved the destruction of eligible ODS refrigerant which was obtained from a government stockpile in the custody of Thailand's Customs Department on or before 2007. The ODS material was aggregated at WMS Warehouse in Thailand, prior to transport to the WMS destruction facility in Samutprakarn, Thailand.

### 7.2 Client Contact

Ms. Maria Gutierrez is GHD's contact at Tradewater for this validation/verification.

### 7.3 Emission Sources

The Projects' reportable GHG emissions include:

#### Baseline

- Emissions of ODS from use, leaks and servicing through continued operation of equipment (ODS)

#### Project

- Emissions of substitute from use, leaks and servicing through continued operation of equipment (CO2e)
- Fossil fuel emissions from the vehicular transport of ODS from aggregation point to final destruction facility (CO2)
- Emissions of ODS from incomplete destruction at destruction facility (ODS)
- Emissions from oxidation of carbon contained in destroyed ODS (CO2)
- Fossil fuel emissions from the destruction of ODS at destruction facility (CO2)
- Indirect emissions from the use of grid-delivered electricity (CO2)

## 7.4 Sources, Sinks, and Reservoirs

The following table presents the sources, sinks, and reservoirs (SSRs) for the Project, their relevance to the baseline and Project operations. Each GHG SSR were confirmed during the Site Visit and through a review of calculations.

SSR		Source Description	Gas	Included (I) or Excluded (E)
1.	ODS Collection	Fossil fuel emissions from the collection and transport of ODS sources	CO2 CH4 N2O	E
2.	ODS Recovery and Collection	Emissions of ODS from the recovery and collection of ODS at end-of-life or servicing	ODS	E
		Fossil fuel emissions from the recovery and collection of refrigerant at end-of-life or servicing	CO2 CH4 N2O	E
3.	ODS Use	Emissions of ODS from equipment use, leaks and servicing	ODS	E
		Fossil fuel emissions from the operation of refrigeration and A/C equipment	CO2 CH4 N2O	E
4.	Substitute Refrigerant Production	Emissions of substitute refrigerant production	CO2e	E
		Fossil fuel emissions from the production of substitute refrigerant	CO2 CH4 N2O	E
5.	Transport to Destruction Facility	Fossil fuel emissions from the vehicular transport of ODS from aggregation point to final destruction facility	CO2 CH4 N2O	I E E
6.	ODS Use	Emissions from ODS from use, leaks and servicing through continued operation of equipment	ODS	I
		Emissions of substitute from use, leaks and servicing through continued operation of equipment	CO2e	I
		Indirect emissions from grid-delivered electricity	CO2 CH4 N2O	E

SSR		Source Description	Gas	Included (I) or Excluded (E)
7.	Destruction	Emissions from ODS from incomplete destruction at destruction facility	ODS	I
		Emissions from the oxidation of carbon contained in destroyed ODS	CO2	I
		Fossil fuel emissions from the destruction of ODS at destruction facility	CO2 CH4 N2O	I E E
		Indirect emissions from the use of grid-delivered electricity	CO2 CH4 N2O	I E E

## 7.5 Project Geographical and Operational Boundaries

This validation/verification covers the GHG emission sources and reductions at the Project, which is located at the following address:

WMS Destruction Facility  
965 Moo 2 Soi 3B Bangpoo Industrial Estate  
Sukhumvut Rd Bangpoo Mai  
Muang Samutprakarn  
Samutprakarn 10280  
Thailand

## 7.6 Reporting & Compliance Period

The reporting period is understood to be the period between December 17, 2022 – January, 23, 2023.

## 7.7 Project Deviations

There were no deviations from the Methodology for the Project.

## 7.8 Use of this Report

This report has been prepared for the use of Tradewater and the ACR.

Statements from GHD's Validation/Verification Plan must use the language in which the statement was issued, reference the date of issuance of GHD's report, the applicable validation/verification period and the associated program for which the validation/verification was conducted. The GHD mark shall not be used by Tradewater in any way that might mislead the reader about the validation/verification status of the organization. The GHD mark can only be used with the expressed consent of GHD and, then, only in relation to the specific time period verified by GHD.

## 7.9 Use of Information and Communication Technology

As part of the verification process, GHD utilized information and communication technology (ICT) in accordance with IAF Mandatory Document for the use of Information and Communication Technology for Auditing/Assessment Purposes (IAF MD 4:2018) for various aspects of the verification, including conducting video/tele-conferencing with various personnel.

The decision to use ICT is permissible if GHD and the client agree on using ICT. The agreed ICT method was MS Teams. By accepting GHD's proposal, Tradewater agreed to the use of the afore mentioned ICT methods and their associated information security, data protection and confidentiality measures. Any other ICT

method(s) were agreed to in writing (email) between GHD and Tradewater prior to use. The parties did not agree to the use of an ICT method which either party did not have the necessary infrastructure to support. Throughout the entire verification process, including use of ICT, GHD abided by the confidentiality procedures.

## 8. Validation/Verification Schedule

GHD is committed to providing efficient and effective services to all of its clients. In order for GHD to maintain a strict schedule, it was the responsibility of Tradewater to maintain adherence to the proposed schedule.

Schedule Item	Date
Contract is signed by Tradewater	September 29, 2022
Kick-off call	October 4, 2022
Tradewater provides GHG Project Plan and associated documents to GHD	November 15, 2022
GHD sends Validation/Verification Plan to Tradewater	October 16, 2022
GHD Verification Team issues a summary of findings to Tradewater	Throughout the validation/verification process
Site Visit and interview with Site personnel	October 17, 2022
Tradewater submits documentation addressing all findings to GHD	Throughout the validation/verification process
Independent review	February 22, 2023
Issued Draft Validation/Verification Report	February 24, 2023
Closeout meeting	Within 1 week of provision of the Draft Offset Verification Report
Issue Final Validation/Verification Report and Statement	Within 1 week of the Closeout meeting

GHD notes that the approval for commencement of the Project from Tradewater was received by GHD on September 29, 2022.

## 9. Site Visit Requirement for 2022

GHD conducted an in-person site visit for this verification on October 17, 2022.

## 10. Site Visit Agenda

The Site Visit generally adhered to the following agenda. Deviations from the proposed agenda may be necessary to respond to data gaps and or issues identified during the validation/verification process:

- Opening Meeting - Introduction and sign in, safety review, and overview of validation/verification process and expectations (key personnel need to be present).
- Overview of Facility operations, activities and production processes, including description of key emission sources.
- Review of monitoring practices, quality control and quality assurance procedures, GHG data and emission calculations, and any personnel activities that have a potential to impact materiality.
- Review of meter calibration certificates and accuracy specifications for key meters.

- Interviews with key personnel and review of data collection process from meter through distributed control system or transcription and data entry, as applicable.
- Walkthrough to view Facility boundaries, physical infrastructure, and equipment and measuring devices.
- Closing Meeting – Review issues identified and next steps.

## 11. Strategic Analysis

GHD's Validation/Verification Team performed a strategic analysis to understand the activities and complexity of the Project to determine the nature and extent of the validation/verification activities.

GHD's strategic analysis for the validation included:

- a. Relevant sector information
- b. Nature of operations
- c. The requirements of the criteria, including applicable regulatory and/or GHG programme requirements
- d. The intended user's materiality threshold, including the qualitative and quantitative components
- e. Likely accuracy and completeness of the GHG statement
- f. The proper disclosure of the GHG statement
- g. The scope of the GHG statement and related boundaries
- h. Time boundary for data
- i. Emissions SSRs and their contribution to the overall GHG statement
- j. Appropriateness of quantification and reporting methods, and any changes
- k. Sources of GHG information
- l. Data management information system and controls
- m. Management oversight of the responsible party's reporting data and supporting processes
- n. Availability of evidence for the responsible party's GHG information and statement
- o. Results of sensitivity or uncertainty analysis
- p. Other relevant information

GHD's strategic analysis for the verification included:

- a. Relevant sector information
- b. Nature of operations of the Project
- c. Criteria requirements, including applicable regulatory and/or GHG programme requirements
- d. Materiality threshold, including the quantitative and qualitative components
- e. Likely accuracy and completeness of the GHG statement
- f. Scope of the GHG statement and related boundaries
- g. Time boundary for data
- h. Emissions sources and their contribution to the overall GHG statement
- i. Changes in GHG emissions from the prior reporting period
- j. Appropriateness of quantification and reporting methods, and any changes
- k. Sources of GHG information
- l. Data management information system and controls
- m. Management oversight of the reporting data and supporting processes
- n. Availability of evidence for the GHG information and statement

- o. Results of previous verifications
- p. Results of sensitivity or uncertainty analysis
- q. Location approach
- r. Type of GHGs
- s. Applied monitoring methodology (i.e., direct measurement of GHGs or calculation of GHGs with indirect measurement of activity and calculation data)
- t. The Project Plan
- u. Results of the validation report
- v. The requirements of the monitoring plan
- w. The applied monitoring methodology
- x. The monitoring report
- y. Other relevant information

## 12. Assessment of Risk and Magnitude of Potential Errors, Omissions or Misrepresentations

The results of GHD's strategic analysis were used in the risk assessment. The risk assessment was updated during the validation/verification process. Based on GHD's review of the Facility's operations, the following table summarizes the potential risk and magnitude of potential errors, omissions, or misrepresentations:

Source and percentage of Total Attributable Emissions	Attributes	Inherent Risk	Control Risk	Detection Risk Design	Consideration for Procedure
<b>General</b>					
Data Management	Occurrence	High - There is a high risk that an error in data management could lead to an error in the Emissions Report.		Low	GHD reviewed all data systems, the flow of data to the GHG Assertion, and the QA/QC procedures, thereby mitigating the detection risk to low.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
Use of ICT	Occurrence	Medium –The GHD project team gained knowledge of the project and Facility operations via ICT during the kick-off call with Tradewater Thailand. GHD conducted an in-person site visit to the Thailand Facility.	Medium – ICT technologies (e.g., Microsoft Teams, video conferencing, site photographs) are available to both GHD and Tradewater. Systems are in place and can be made available through Teams. Due to a multi-national project team, issues using conferencing technology between different time-zones may arise.	Low	Tradewater and the GHD project team used ICT software to conduct discussions, share screens, and view key documents. GHD conducted an in-person site visit to the Thailand facility, thereby mitigating the detection risk to low.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				

Source and percentage of Total Attributable Emissions	Attributes	Inherent Risk	Control Risk	Detection Risk Design	Consideration for Procedure
<b>Validation of Project Plan</b>					
Project Boundary	Occurrence	Low – All equipment at the Facility is operated by WMS and all emissions are included in the Emissions Report. Ownership and use by Tradewater of the offset credits are clearly defined.	Low – Boundary is well defined, and all emissions processes are considered in the quantification.	Low	As this is GHD's first validation/verification of the Project the detection risk has been set as low. GHD confirmed the boundaries through a review of Facility operations, emission sources and supporting documentation, conducted both via the site visit, desktop reviews and interviews with Tradewater personnel.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
Project Applicability and Baselines	Occurrence	Low - Project documentation clearly defines the applicability of the project, including its baseline scenario.	Low - The applicability and baseline scenario are clearly defined by ACR within the ACR Methodology for the project type.	Low	As this is GHD's first validation/verification of the Project the detection risk has been set as low. GHD confirmed the baseline scenario through review of government documents which indicate stockpiling of ODS by the Thailand government.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
ACR Project Eligibility Requirements	Occurrence	Low - Project documentation clearly defines its conformance to the eligibility criteria as required by ACR. Additionality tests are clearly specified.	Low - Majority of project eligibility requirements are clearly defined by ACR within its standards and the ACR Methodology for the project type.	Low	As this is GHD's first validation/verification of the Project the detection risk has been set as low. GHD confirmed the eligibility criteria via a review of project documentation.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
<b>Baseline Sources, Sinks and Reservoirs</b>					
SSR 6 ODS Use – Emissions from Refrigerant ODS (ODS) (100% of Baseline SSR emissions)	Occurrence	Low - Low complexity source. Quantified using volume of ODS sent to destruction, default emission rate and global warming potential.	Low – ODS volume determined through weighing tank. Quantification methodology is well defined.	Low	To maintain a low risk that GHD would not detect a discrepancy in the data, GHD reviewed all available data used in the emissions calculations.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				

Source and percentage of Total Attributable Emissions	Attributes	Inherent Risk	Control Risk	Detection Risk Design	Consideration for Procedure
<b>Project Sources, Sinks and Reservoirs</b>					
SSR 5 Transport to Destruction Facility – Fossil fuel emissions from the vehicular transport of ODS from point of origin to final destruction facility (CO2) (1.08% of Project SSR emissions total for SSR 5 and SSR 7)	Occurrence	Low - Complexity is low. Quantified using default emission factors and ODS volume.	Low - Low control risk as values based on default emission factors and ODS volume.	Low	GHD reviewed the emission factors used and the ODS volume used.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
SSR 7 Destruction – Emissions of ODS from incomplete destruction at destruction facility (ODS)	Occurrence	Medium – Based on GHD’s knowledge of the Facility and its operations, and that this is the first ODS project to be destroyed at this facility, the risk is medium.	Medium – Reported destruction is based on internal records and metering resulting in a medium control risk.	Low	GHD reviewed all available data in order to maintain a low detection risk.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				
SSR 7 Destruction – Emissions from the oxidation of carbon contained in destroyed ODS (CO <sub>2</sub> )					
SSR 7 Destruction – Fossil fuel emissions from destruction of ODS at destruction facility (CO2)					
SSR 7 Destruction – Indirect emissions from the use of grid-delivered electricity (CO <sub>2</sub> )					

Source and percentage of Total Attributable Emissions	Attributes	Inherent Risk	Control Risk	Detection Risk Design	Consideration for Procedure
SSR 6 ODS Use – Substitute refrigerants from leaks and servicing through continued operation of equipment (CO <sub>2</sub> e) (98.92% of Project SSR emissions)	Occurrence	Low – Low complexity source. Quantified using volume of ODS sent to destruction, default emission rate and global warming potential.	Low – ODS volume determined through weighing tank. Quantification methodology is well defined.	Low	To maintain a low risk that GHD would not detect a discrepancy in the data, GHD reviewed all available data used in the emissions calculations.
	Completeness				
	Accuracy				
	Classification				
	Cut-off				

### 13. Evidence Gathering Plan

GHD has developed an evidence gathering plan for internal use based on review of the objectives, criteria, scope, and level of assurance detailed above. The evidence gathering plan is designed to lower the validation/verification risk to an acceptable level and specifies the type and extent of evidence gathering activities. The evidence gathering plan is dynamic and was revised, as required, throughout the course of the validation/verification.

### 14. Quantitative Testing

Quantitative data or raw data was made available to GHD. GHD assessed the completeness of the data and evaluate the GHG emission calculation methodologies to ensure they are consistent with ACR requirements. GHD recalculated the emission estimates based on the underlying activity data in order to determine whether material misstatements are present.

### 15. Materiality Level

Quantitative materiality for this verification is set at:

- ±5 percent of the reported emissions as per the ACR Standard

In addition, a series of discrete errors, omissions or misrepresentations or individual or a series of qualitative factors, when aggregated may be considered material.

## 16. Validation/Verification Procedures

### 16.1 Validation Process

The following sections outline GHD's validation process.

#### ***Validating Project Boundaries***

GHD validated the Project boundaries outlined in the GHG Project Plan which included the following:

- Physical or geographic boundaries
- GHG assessment boundary
- Temporal boundary

#### ***Validating Project Baselines***

GHD confirmed that the baseline applied by the Project Proponent in the GHG Project Plan is appropriate per the Methodology. GHD ensured that there is verifiable data for the baseline scenario, including selection rationale and justification, the guidance followed for baseline emissions estimation, and consistency across post-base year project emissions calculations.

#### ***Validating Additionality***

GHD evaluated the components of the additionality demonstration per the ACR Standard and the Methodology:

- Regulatory Surplus Test
- Common Practice Test
- Implementation Barriers Test
- Performance Standard Test

#### ***Validating Quantification Methods***

GHD validated the following:

- The quantification method for each data parameter were clearly defined, and supporting documentation provided were adequate to support the level of assurance required.
- The methods were appropriate for accurately quantifying each data parameter based on the required level of assurance.
- The methods were applied consistently to develop estimates of emission reductions and removal enhancements.
- The principle of conservativeness was applied.

#### ***Validating Other Project Criteria***

In addition to the above, GHD reviewed the following components within the GHG Project Plan:

- Start date
- Crediting period
- Minimum project term
- Offset title
- Impermanence and risk mitigation
- Leakage
- Environmental and community impacts
- Double issuance, double selling, and double use of offsets
- Projects participating in other offset programs

## 16.2 Verification Process

The following sections outline GHD's validation/verification process.

### ***Information/Records to be Reviewed***

Information/records reviewed by GHD included the following:

- GHG Project Plans
- GHG Assertions
- Operational and control procedures and records for ensuring GHG data quality
- Documentation of GHG Sources, Sinks and Reservoirs
- Documentation of quantification methodologies
- Documentation of monitoring and measurement systems

### ***Data Assessment and Management Systems***

GHD reviewed data assessment and management system documentation that described the process of data collection, entry, calculation and management. GHD reviewed the following:

- Selection and management of GHG data and information
- Processes for collecting, processing, aggregating, and reporting
- Systems and processes to ensure accuracy
- Design and maintenance of the GHG data management system, including systems and processes that support it

GHD assessed the effectiveness of the data assessment and management system and determined areas of risk.

### ***Collection of Evidence***

GHD collected physical, documentary, and testimonial evidence to verify the Projects.

### ***Evidence Gathering Plans; Risk-Based Approach***

GHD followed a risk-based validation/verification approach in developing the validation/verification plan and evidence gathering plan. As such, GHD identified the key reporting risks. Key issues in validation/verification include, but are not limited to, validation/verification of correct use of emission factors and conversion factors, and consistency in aggregation of emissions data. Wherever practical, direct reading instruments were used to ensure that any reporting risks are kept with equipment and instrumentation performance limits.

GHD used a risk-based approach for on-site investigation conducted during the validation/verification process. The Lead Verifier followed the audit trails and data sets on site for specific indicators, and cross-check with the Monitoring Report, GHG Project Plan, the Methodology, records, and latest versions of the ACR Standard. Direct reading instrumentation and redundancy in the data used to support the validation/verification was identified in the verification reporting.

During the on-site assessment, GHD focused on the key areas identified as follows:

- An assessment of the implementation and operation of the Project per the GHG Project Plan.
- A review of information flows for generating, aggregating, and reporting the monitoring parameters.
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the GHG Project Plan.
- A cross-check between information provided in the monitoring report and data from other sources such as plant log books, inventories, purchase records, or similar data sources.
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the GHG Project Plan and Methodology.

- A review of calculations and assumptions made in determining the GHG data.
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

### **Error Checking/Testing**

GHD independently calculated the final emission reductions using Tradewater's raw data to ensure that the correct Methodology and raw data was used.

During the verification process, GHD considered both quantitative and qualitative information on emission reductions. Quantitative data is comprised of the monitoring report submitted to the Project Team by the Project Proponent. Qualitative data is comprised of information on internal management controls, calculation and transfer procedures, frequency of emissions reports, and review and internal audit of calculations/data transfers.

### **Summary of Findings**

If during the verification of the Projects, the Project Team identified issues that must be addressed to confirm that the Project meets the ACR requirements, the Lead Verifier issued findings to the Project Proponent. It is imperative that these issues are transparently identified, discussed, and concluded in the Validation/Verification Report.

Iterations of these requests continued until the Lead Verifier could adequately resolve or "close out" the identified findings.

### **Validation/Verification Report and Statement**

The outcome of the on-site assessment, desktop review, and Summary of Findings was the creation of a Draft Validation/Verification Report for each Project. The draft Validation/Verification reports were reviewed internally by a Peer Reviewer. Any additional findings as a result of the technical review was presented to the Project Proponent. Upon receipt of the Project Proponent's response, the Project Team issued the Final Validation/Verification Report to the Project Proponent and ACR along with the completed Validation/Verification Statement.

## **17. Closing**

The Validation/Verification Plan is considered to be a dynamic document that required modification and adaptation to conditions as encountered during the completion of the Validation/Verification process. GHD communicated the changes to the validation/verification plan with Tradewater throughout the validation/verification.

Regards



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Copy to: Gordon Reusing, Michelle Hirst

# **Appendix B**

## **Document Review Reference List**

## APPENDIX B - DOCUMENT REVIEW REFERENCE LIST

**Tradewater, LLC**  
**Tradewater International Thailand 1.0 Project Validation and Verification**

No.	Document Title	Description
1	GHG Project Plan TWI Thailand 1.0 (multiple revisions) Final Version titled '2023.02.22 GHG Project Plan TWI Thailand 1.0 - V5-Corr.pdf'	Project Plan
2	Monitoring Report TWI-Thailand 1.0 - signed	Monitoring Report
3	Project Assertion Spreadsheet - TWI -Thailand (multiple revisions)	Emissions reductions calculation workbook
4	Certificate of Destruction (multiple revisions)	Evidence of Destruction
5	TW ISO-01 ODS Sampling Certificate (multiple revisions)	Evidence of Sampling
6	Lab results	
7	Moisture Chart	
8	post weight report 23.01.23 16.47	Weight Tickets
9	Weight ticket 1st ISO	
10	ContinuousData_TW-THA-1_v1.0	CEMS Data
11	CEMS Data photos	
12	Inventory report 07.10.22	Activity Data
13	Consolidation Report	ISO Filling Tank Records
14	Customs to WMS letter (English/Thai)	Transfer of Ownership Documentation
15	WMS to Customs letter (English/Thai)	
16	1. Transfer of ownership Customs - WMS	
17	Delivery and Truck Manifests (1.1,1.3,1.8,1.9)	
18	Ownership Transfer (2) (WMS to Tradewater)	
19	Airway Bill	
20	Proof of delivery email	
21	Shipper's Declaration for Hazardous Goods	Sampling Chain of Custody
22	Chain of custody diagram	
23	Chain of custody manifest	General documentation
24	Certified Services List	
25	ISO 17025 Certification	Bureau Veritas Compliance Documentation
26	BPEC Residue Waste Stream Permit	
27	Compliance letter	
28	Regulatory compliance Manifest	
29	CFC DRE 6th report	
30	HBr Results	
31	2022.08.11 Destruction SOP's WMS- ACR	
32	2022.09.08 Sampling procedure fo ISOs and B1000	
33	2022.09.08 Transport and Storage procedure	
34	2022.09.09 Maintenance Procedure	
35	2022.09.14 Filling Procedure	
36	Training attendance list	
37	Certificate of Calibration 2022 - Copy	WMS Compliance Documentation

# Appendix C

## Findings List

## APPENDIX C - FINDINGS LIST

## Tradewater, LLC

## Tradewater International Thailand 1.0 Project Validation and Verification

Issue No.	Issues / Questions	Explanation/Response	Status
1	In the GHG Project Plan dated October 12, 2022, Section A4. the map of Thailand is not in English. Please update.	Updated on document GHG Project Plan TWI Thailand 1.0 - V2.docx	Closed
2	In the GHG Project Plan dated October 12, 2022, Section A4. there is a spelling error with "avquired" on page 9. Please update accordingly.	Updated on document GHG Project Plan TWI Thailand 1.0 - V2.docx	Closed
3	In the GHG Plan dated October 12, 2022, please include country for Tradewater International SRL under A8. Parties.	Updated on document GHG Project Plan TWI Thailand 1.0 - V2.docx	Closed
4	In the GHG Plan dated October 12, 2022, the ACR Project ID is not included on the title page. Update the GHG Plan to include the ACR Project ID accordingly.	Updated on document GHG Project Plan TWI Thailand 1.0 - V2.docx	Closed
5	In the GHG Project Plan dated October 12, 2022, the reporting period please include the reporting period.  GHD Response: Please note that the project timeline as listed in Section H2 of the updated GHG Project Plan V.3, contains an incorrect reporting period.	Reporting period updated in GHG plan. Corrected	Closed
6	In the GHG Project Plan dated October 12, 2022, in Table D1. the units of measurement Qrefr,i and QODS are in kilograms. However, the Methodology requires MT. Update accordingly.	Updated on document GHG Project Plan TWI Thailand 1.0 - V2.docx	Closed
7	Tradewater only provided Chapter 3 of the BPEC Residue Waste Stream Permit. Please provide the remaining sections of this document.	Document provided. Permit is available in document BPEC Monitoring Report.pdf	Closed
8	In the GHG Plan dated October 12, 2022, Section B3. please update the reporting period and crediting period.  GHD Response: Please note there is a typo in the project crediting period end date.	Reporting period updated in GHG plan. Corrected	Closed

## APPENDIX C - FINDINGS LIST

## Tradewater, LLC

## Tradewater International Thailand 1.0 Project Validation and Verification

Issue No.	Issues / Questions	Explanation/Response	Status
9	Please clarify why the total number of containers in the consolidation report for each Delivery Manifest, does not match with the number of containers listed in the Manifest Documents.	The number of containers provided in the Delivery Manifest represents the transfer of bulk material from Customs to WMS for storage and handling at the WMS warehouse, prior to material acquisition by the Project Proponent, Tradewater. The consolidation report provides information on material selected from the WMS warehouse for transfer into the ISO tank for destruction, and does not cover entire materials listed in the Delivery Manifest due to business decisions determined by Tradewater.	Closed
10	Please note that in the consolidation report, crates included for Delivery Manifest 1.1 include crates 1-15, however exclude crate 4.	Crate 4 was omitted from the consolidation report as the material was not transferred into the ISO for destruction in this Project.	Closed

**APPENDIX C - FINDINGS LIST**

**Tradewater, LLC  
Tradewater International Thailand 1.0 Project Validation and Verification**

Issue No.	Issues / Questions	Explanation/Response	Status
11	Please note that the gross weight of containers on the consolidation report, should not exceed the gross weight of containers listed in the Delivery Manifest documents. Please clarify.	Upon review it was noted that the Consolidation report has some inaccuracies to the Inventory Report not provided previously. Tradewater has updated the Consolidation Report and provided the Inventory Report to assist with the review. The gross weight provided in the Delivery Manifest documentation is an approximation of bulk weight made by Customs during the transportation process, and does not represent a process performed for precise material quantification. Upon arrival at the warehouse and transfer of ownership to Tradewater, personnel completed a comprehensive weight and inventory effort for compliance with the methodology, as reported in the consolidation report, prior to material transfer to the ISO for destruction. The consolidation report represents the most accurate description of the material destroyed by the Project due to material's disposition prior to acquisition by the Project Proponent, Tradewater.	Closed

## APPENDIX C - FINDINGS LIST

## Tradewater, LLC

## Tradewater International Thailand 1.0 Project Validation and Verification

Issue No.	Issues / Questions	Explanation/Response	Status
12	<p>a) Please note that the fuel weight adjustment to the weight of material destroyed as prescribed by Section I.(B) iii (g) of the ACR methodology can be applied, however, only if the trucks carrying the ODS containers to and from the ODS facility, are different trucks. The pre- and post-destruction weight tickets provided indicate the same truck ID number 51-3329, which suggest that the trucks to and from the facility were the same. Please confirm.</p> <p>b) If the trucks are different, Section I.(B) iii (g) of the ACR methodology which prescribes the fuel weight adjustment to the weight of material destroyed can be applied, however only if the vehicle transporting the full ODS containers to the destruction facility weighs more than the vehicle carrying the empty ODS containers from the facility. Please confirm.</p> <p><b>GHD Response:</b> In the current project assertion spreadsheet dated February 7, 2023, Destruction Tab, Cell C3 incorporates a fuel weight addition to the weight destroyed. This is not permitted by the Protocol as the truck fuel level post-destruction is higher than the truck fuel level pre-destruction. Please revise the calculations and the Certificate of Destruction which currently shows an addition for the residue oil level.</p>	<p>Because the fuel weight post destruction is higher than the fuel weight pre destruction, there is no adjustment prescribed by the methodology for this case. We used the actual fuel measurements and weights as applying the methodology process would result in an increased credit yield. The actual weight approach is most conservative.</p> <p><b>TW Response:</b> Upon discussion of the issue with ACR, concur with this approach. For future projects, may request deviation relating to this.</p>	Closed

## APPENDIX C - FINDINGS LIST

**Tradewater, LLC**  
**Tradewater International Thailand 1.0 Project Validation and Verification**

Issue No.	Issues / Questions	Explanation/Response	Status
13	<p>Please note that using the R-12 % composition as indicated by the lab analysis report, 99.9%, instead of the % composition indicated on the Certificate of Destruction 99.99%, results in a material discrepancy. GHD notes that it is more accurate to use the lab analysis report %composition information as detailed. Please correct as necessary.</p> <p><b>GHD Response:</b> It is noted that the Certificate of Destruction was revised to update the R-12 composition to 99.9%. The calculations in the project assertion file must be revised using the updated composition and re-provided.</p>	The COD has been updated to 99.9% to align with lab analysis listed composition, GHG Project Assertion updated.	Closed
14	GHD notes that all chain of custody documents contain tracking number 176-5028-6821/ PLC22100025 including the shippers declaration, airway bill and proof of delivery document, within the provided email. However, the tracking number does not match with the tracking number as listed in the sampling certificate, 25542. Please provide further evidence that the chain of custody documents are relating to the sample with tracking number 25542.	The sampling certificate has been updated.	Closed
15	Please confirm whether the quantity listed for Net weight of sample in the ODS Sampling Certificate has a typo.	There is a typo, which has been corrected.	Closed
16	Please note that several of the damaged containers as indicated in the Inventory Report are included in the consolidation report. This includes TH00054, TH00272, TH00300, TH00445, TH00481, TH00486, TH00861 and TH00926.	"Damaged" includes tanks that are considerably rusty but not inoperable. Therefore, some of the tanks classified as "damaged" were able to be included in the project as the integrity of the containers were not compromised.	Closed
17	Please note that the crate numbers for each cylinder as listed in the consolidation report do not generally align with the crate numbers for each cylinder as listed in the Inventory Report.	The consolidation report has been corrected.	Closed

## APPENDIX C - FINDINGS LIST

## Tradewater, LLC

## Tradewater International Thailand 1.0 Project Validation and Verification

Issue No.	Issues / Questions	Explanation/Response	Status
18	Please clarify the source of the re Fridgerant solubility information as provided within the Moisture Chart file.	This chart was adapted from a solubility chart provided by A-Gas Laboratories, an AHRI-certified lab located in the United States.	Closed
19	Please provide the remaining documents to have been provided in 'Batch 2' for the verification as per the Folder Outline, including scale calibrations, Annex 7 - Basel convention, CEMS data photos and the 'Monitoring Report', if not already provided.	Scale calibration and Annex 7 are already included in the folder. CEMs date pictures for 1 hour interval were included. Monitoring Report has been uploaded.	Closed
20	Please re-iterate the site's QA/QC procedures or confirm which documents provided eg. SOP's contain the QA/QC procedures of Tradewater and the WMS facility for data management.	QA/QC procedures for WMS and Tradewater are included in the Monitoring Report	Closed
21	Please provide evidence of an Offset title to the credits.	The evidence of offset title to the credits is included in the documents named 1. Ownership transfer 2022.06.26 and 2. Ownership transfer 2022.10.03	Closed
22	Please confirm who is the Project Proponent for the project (Thailand 1.0). The Monitoring Report and listing form indicates that the Project Proponent is Tradewater LLC however the Project Plan indicates that Tradewater International SRL is the Project Proponent and owner of the credits.	The Project Proponent and owner of the credits is Tradewater LLC. This changed mid project due to company mergers and the GHG plan was prepared before this. GHG Project Plan has been revised.	Closed

# **Appendix D**

## **Validation/Verification Statement**

Our ref: 12588069

01 March 2023

**Ms. Maria Gutierrez**  
**Director of International Programs**  
**Tradewater, LLC**  
**San Jose, Costa Rica**

**Validation/Verification Statement - ACR814 Tradewater International – Thailand 1.0**  
**Samutprakarn, Thailand**

Dear Ms. Gutierrez

GHD Services Inc. (GHD) was engaged by Tradewater, LLC (Tradewater) to conduct greenhouse gas (GHG) offset validation and verification services for Tradewater International – Thailand 1.0 (the Project). The Project is located in Samutprakarn, Thailand and is registered under the American Carbon Registry (ACR). The ACR Project ID for the Project is ACR 814. The Project involves the collection, aggregation and destruction of eligible ozone depleting substances (ODS) refrigerant from a government stockpile in the custody of Thailand's Customs Department on or before 2007.

Tradewater is the Project Proponent for the Project, and is responsible for the preparation and fair presentation of the Project Plan, Monitoring Report and emissions reductions.

The Project utilizes the "Methodology for the Quantification, Monitoring, Reporting and Verification of Greenhouse Gas Emissions Reductions and Removals from the Destruction of Ozone Depleting Substances from International Sources", Version 1.0, dated April 2021 (ACR Methodology).

This validation/verification covers reported emission reductions claimed by Tradewater during the reporting period of December 17, 2022 to January, 23, 2023. The current crediting period is December 17, 2022 to December 16, 2032.

The verification was completed to a reasonable level of assurance.

GHD has prepared this Validation and Verification Statement in accordance with ISO Standard ISO 14064 Greenhouse gases - Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions (ISO 14064-3:2019) and with the requirements of the ACR.

## **1. Validation/Verification Body**

GHD Services Inc. is an ACR approved Validation/Verification Body (VVB) located at the following address:

2055 Niagara Falls Boulevard, Unit #3  
Niagara Falls, NY 14304  
United States

## 2. Validation/Verification Criteria

GHD adhered to the requirements outlined in the following documents as validation/verification criteria:

- ISO 14064 Greenhouse Gases - Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements, ISO, April 2019 (ISO 14064-2-2019)
- ISO 14064 3:2019 Specification with guidance for the validation and verification of greenhouse gas assertions, April 2019 (ISO 14064-3-2019)
- The American Carbon Registry Standard, Requirements and Specifications for the Quantification, Monitoring, Reporting, Verification, and Registration of Project Based GHG Emissions Reductions and Removals, Version 7.0, December 2020 (ACR Standard)
- The American Carbon Registry Validation and Verification Standard, Version 1.1, May 2018 (ACR V/V Standard)
- Methodology for the Quantification, Monitoring, Reporting and Verification of Greenhouse Gas Emissions Reductions and Removals from the Destruction of Ozone Depleting Substances from International Sources, Version 1.0, dated April 2021 (ACR Methodology)

## 3. Validation/Verification Statements

GHD has prepared this Validation/Verification Statement for Tradewater. Tradewater was responsible for the preparation and fair presentation of the GHG Project Plan and GHG Monitoring Report in accordance with the criteria and engaging with a qualified third-party validator/verifier to verify the Project Documentation.

GHD's objective and responsibility was to provide an opinion regarding whether the Project's GHG Project Plan and GHG Monitoring Report was free of material misstatement and that the information reported is a fair and accurate representation of the operations for the reporting period and accurate and consistent with the requirements of the ACR and associated criteria. GHD completed the validation/verification of the Project documentation in accordance with ISO 14064-3:2019. GHD completed the validation/verification to a reasonable level of assurance.

### 3.1 Validation Statement

GHD reviewed the GHG Project Plan for the Tradewater International – Thailand 1.0 Project and determined that it conforms to the requirements outlined in the ACR Standard, and the Methodology. In addition, GHD determined that there are no qualifications regarding the validation opinion.

### 3.2 Verification Statement

GHD's calculated emissions for the Project and Tradewater's calculated emissions reductions for the project are provided below.

Emission Type	Project Proponent's Calculation (MT CO <sub>2e</sub> )	GHD Calculation (MT CO <sub>2e</sub> )
Total Baseline Emissions	206,044	206,044
Total Project Emissions	13,799	13,799
Emission Reduction value	192,244	192,244

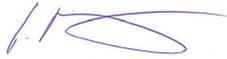
The emission reduction value from this project is 192,244 metric tonnes of CO<sub>2e</sub>.

GHD determined with a reasonable assurance that the Project was free of an offset material misstatement. This resulted in a Positive Offset Verification Statement for the emissions reductions with no qualifications.

Regards



**Anothai Setameteekul**  
Co-Lead Verifier



**Gordon Reusing**  
Co-Lead Verifier



**Deacon Liddy**  
Internal Reviewer



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