



Wasatch Integrated Waste Management District, Greenhouse Gas Emissions Reduction Verification Report 2008

Presented to:



Wasatch Integrated Waste Management District

3404 North 650 East
Layton, Utah 84041

Presented by:

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January 2010
File No. 01207128.28, Task 1

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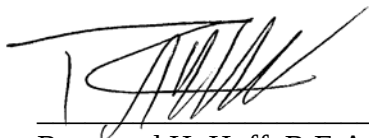
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This Greenhouse Gas Emissions Reductions Verification Report was prepared in accordance with the Climate Action Reserve Landfill Project Verification Protocol, Version 2.0, November 2008. This report developed for the Wasatch Integrated Waste Management District, Davis Landfill Project located in Utah in the United States, dated January 2010, was prepared and reviewed by the following:



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1.0 INTRODUCTION

The Wasatch Integrated Waste Management District (WIWMD) has retained SCS Engineers (SCS) to perform verification activities associated with the Davis Landfill Gas Offset project (Project) being submitted to the Climate Action Reserve (Reserve) for the period from January 1, 2008 through December 31, 2008. The Project is located at the Davis Landfill, Layton, Utah (Davis Landfill). This verification report (report) was produced in accordance with the Reserve's Landfill Project Verification Protocol, Version 2.0, November 2008 (LPVP). SCS is a Reserve-approved verifier and is fully qualified to perform GHG verification activities for WIWMD.

1.1 PROJECT OVERVIEW

The Davis Landfill is an active landfill located northwest of Layton, Utah. The Davis Landfill encompasses an area of 76.5 acres and accepts municipal solid waste (MSW) and ash from a MSW incinerator. The landfill started accepting waste in 1952 and had approximately 3,288,086 tons of refuse in-place at the end of 2008.

In 2002, WIWMD installed a gas collection and control system (GCCS) at the Davis Landfill. The current GCCS consist of multiple landfill gas (LFG) extraction wells which are connected via a common header line to a blower station equipped with a 1,200 standard cubic feet per minute (scfm) Hauck Centrifugal Blower. From the blower station, captured LFG is either sent to a pipeline for off-site combustion, or combusted on site in a Flare Industries Model FEF-12 Enclosed Bio-gas Flare System. Prior to the flare, the gas passes through a Thermal Instruments Company, Inc. Model 62-9/62T-9/9500 Thermal Mass Probe flow meter.

Prior to the pipeline, the gas passes through an LFG Specialties Compression skid, equipped with a gas compressor, Amistco Separation Product, Inc. Tex-Mesh Mist Eliminator condensate trap, Amercool Manufacturing Air Cooled Heat Exchanger, a Ketema DX Horizontal chiller (900 scfm) sn 232841, a moisture separator and coalescing filter, and a 600 scfm Root 412 J Gas Blower,. Collected LFG is routed through the blower station, past a Oripac orifice plate flow meter Model #4150-P with a Rosemount 3095 transmitter. A single, dedicated pipeline delivers the compressed LFG 10,000 feet, to an electricity generation plant where the LFG is destroyed in a Jenbacher Engine Model # J320 (1050 KW), CAT Engine Model #3516 (750 KW), and a CAT Engine Model #3512 (55- KW), all of which are owned and operated by Hill Air Force Base.

1.2 LEVEL OF ASSURANCE

SCS adheres to the ISO 14064-3:2006 concept of two levels of assurance that a GHG verification process can provide; “reasonable,” and “limited.” A “reasonable” level of assurance provides a reasonable, but not absolute, level of assurance that the Project's GHG assertions are

1. Materially¹ correct and a fair representation of the GHG data and information, and
2. Prepared in accordance with the Reserve’s Landfill Project Reporting Protocol (LPRP).

¹ Under CCAR, materiality is defined as a discrepancy of overall reported emissions (both direct and indirect) that differs from the verifier’s estimated emissions by more than 5%.

A “limited” level of assurance provides a more limited/“qualified” level of assurance as compared to a reasonable level of assurance due to less emphasis on detailed GHG data testing and supporting information.

WIWMD is seeking a level of assurance in the verification process that is consistent with the requirements of the Reserve. In accordance with these requirements, in order for SCS to verify WIWMD’s GHG emission reductions assertions, a sample of the report data must be free of material misstatement. This constitutes a “reasonable level of assurance.”

1.3 OBJECTIVES

The objective of this verification report is to establish the Project's conformance with applicable verification criteria, including principles and requirements of relevant standards and the GHG program within the scope of the verification as outlined below.

1.4 SCOPE OF VERIFICATION PROCESS

The scope of this project encompasses the verification of WIWMD’s January 1, through December 31, 2008 Reserve-reported GHG emission reductions, which include the following components:

- Geographic boundary – U.S. emission reductions only
- Project Start Date – January 18, 2002
- Additionality
 - Performance Standard Test
- The Regulatory Test
- Emissions Reductions
 - Biogas from the Davis Landfill
- GHG Sources
 - Indirect emissions
 - purchased/consumed electricity
 - Direct emissions
 - mobile emissions from diesel vehicles
 - stationary emissions from flare start up propane
- Time period – Calendar year 2008 (January 1 - December 31)

1.4.1 Project Start Date

SCS reviewed the following documents to confirm the reported project start-up date of January 18, 2002:

- Certificate of Final Completion by HDR Design-Build, Inc.
- Project final Punch List by HDR Design-Build, Inc.
- Minutes from the February 7, 2002 Davis County Solid Waste Management and Energy Recovery Special Service District, Administrative Control Board

Review of the aforementioned forms document and cross-reference the project start up date as January 18, 2002.

1.5 VERIFICATION CRITERIA

Criteria against which the verification assessments were undertaken are:

- ISO 14064-3:2006
- Reserve Landfill Project Reporting Protocol version 2.0 November 2008 (LPRP)
- Reserve Landfill Project Verification Protocol (LPVP) version 2.0
- SCS *Greenhouse Gas Validation and Verification Program Manual (V/V Manual)*, version 1.6, dated August 2009.

1.5.1 Materiality

In accordance with the required level of assurance, the needs of WIWMD, and Reserve's LPVP, a materiality threshold of 5% will be applied to this verification project. Any misstatement greater than 5% will be considered material.

1.6 VERIFICATION CYCLE

WIWMD has requested verification of their 2008 emission reductions. Verification of the 2008 emissions reductions will put WIWMD into the first year of reporting with the Reserve and their fifth year of reporting overall. Prior to transferring this project to the Reserve, WIWMD had the project registered with the Chicago Climate Exchange (CCX). The Reserve has a ten-year emission reductions reporting allowance for projects. The Reserve requires a full review of emission reductions, management systems, and verification of emission reductions annually.

2.0 PRE-VERIFICATION ACTIVITIES

2.1 CONFLICT OF INTEREST DETERMINATION

The GVP requires that the Reserve make a determination of whether or not a conflict of interest (COI) exists between the verifier and the participant. This is done in order to ensure an objective review of a participant's AER by the verifier. In accordance with these requirements, on September 22, 2009 *Project Form: Notification of Planned Verification Activities and Request for Evaluation of Potential for Conflict of Interest between Verifier and Project Developer* (COI form) was submitted to the Reserve.

On September 25, 2009, SCS received a COI determination from the Reserve. The Reserve determined that there was no pre-existing relationship between SCS and WIWMD beyond construction activities, and that therefore the potential for COI was low. A copy of the submitted COI form and the COI determination letter has been posted to the Reserve's web site as a private document.

2.2 NOTIFICATION OF PLANNED VERIFICATION ACTIVITIES

The COI form submitted to the Reserve on September 22, 2009 also provides the Reserve with a notification of planned verification activities at least ten business days prior to the beginning of verification activities. The notification includes scheduling and site selection information. The intent of this requirement is to allow the Reserve the opportunity to accompany the verifier on the site visit.

In accordance with the LPVP, the notification of planned verification activities stated an intended date for the start of verification activities past October 6th, the end of the 10-day notification period.

2.3 PROJECT DEFINITION

In accordance with the LPRP, only projects that meet the definition of a "GHG reduction project," as defined in the LPRP can be considered for GHG reduction credits with Reserve. A proposed "GHG reduction project" consists of the "installation of an LFG control system for capturing and destroying methane gas that commences operation on or after January 1, 2001."

As detailed in Section 1.1, the Project consists of a network of LFG collection wells installed in the Davis Landfill. These wells are interconnected by a header line, which is in-turn connected to a pipeline where the LFG flows to an end user approximately 10,000 feet away at the Hill Air Force Base, and an on-site flare. Therefore, the Project meets the definition of a "GHG reduction project," per Reserve guidelines.

2.4 GAS RIGHTS DETERMINATION

In order to register GHG reductions with the Reserve, the ownership of the reductions must be established by clear and explicit title. On July 27, 2009, WIWMD completed an Attestation of Title document clearly documenting WIWMD's ownership of the gas rights to the LFG recovered from the Davis Landfill. WIWMD uploaded the Attestation of Title document on to the Reserve Reporting Tool.

On November 3, 2009, SCS reviewed the LFG purchase agreement between WIWMD or Wasatch Energy Systems (the Seller), and Exelon Services Federal Group, Inc. (the purchaser). Exelon Services Federal Group is in an agreement with the United States Air Force to operate an electric generation system at the Hill Air Force Base. The contract specified that "The Seller shall retain the rights to any Carbon Dioxide and/or Greenhouse Gas credits created by the destruction of the LFG and exclusive rights to any other remaining environmental credits as a result of this Project."

3.0 CORE VERIFICATION ACTIVITIES

In accordance with the LPVP, core verification activities are comprised of a four-step process by which Project GHG reduction assertions are subjected to risk assessment and data sampling

efforts designed to ensure that the risk of a reporting error is addressed through appropriate sampling and review.

3.1 DETERMINATION OF PROJECT ELIGIBILITY

In order to register reduction projects with the Reserve, a project must meet three eligibility rules established by the reserve in the LPRP. The applicability of each of these rules to the Project is discussed below.

3.1.1 Eligibility Rule I - Location

Only GHG reductions associated with U.S.-based projects are eligible to register reductions with the reserve. Since the Project is entirely based in Davis County, Utah, the Project meets this eligibility requirement.

3.1.2 Eligibility Rule II - Project Start Date

Only GHG reduction projects that commenced operation after January 1, 2001 are eligible to register reductions with the reserve. Since the Project was constructed and commenced operation in 2002, the Project meets this eligibility requirement.

3.1.3 Eligibility Rule III - Additionality

The Reserve only registers reductions that are "additional" to what would have occurred without implementation of the Project. The Reserve implemented the additionality test to ensure that projects that yield surplus GHG reductions are above and beyond what is considered "business-as-usual," also designated as the baseline scenario. Projects are considered additional if they can pass the following two tests:

- Performance Standard Test
- Regulatory Test

Each of these tests are discussed below.

3.1.3.1 Performance Standard Test

According to the LPRP, a project must be installing a landfill gas collection and destruction system in a landfill that is not required to do so by regulation. The EPA threshold for installation of a landfill gas collection and destruction system is the 50 mega gram per year (Mg/yr) threshold of New Source Performance Standards (NSPS) and emission guidelines (EG) regulations. The Davis Landfill is under the 50 Mg/yr threshold and was not collecting and destructing any landfill gas prior to the implementation of the Project.

3.1.3.2 Regulatory Test

The Reserves subjects all projects to the Regulatory Test to ensure that reductions achieved are done so by projects that would not have occurred in the baseline case due to federal, state, or local government regulations. As previously stated, the Davis Landfill does not meet the federal

NSPS or EG regulations, or the National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulation. In addition, there are no specific State of Utah or local regulations for the installation of a gas collection and destruction system.

On June 29, 2009, WIWMD completed an Attestation of Regulatory Compliance document which states that the project was implemented and established voluntarily and is in material compliance with all laws. During the site visit, SCS reviewed on-site permits and interviewed onsite personnel on all applicable federal, state, and local regulations and ordinances which the Davis Landfill is subject to, in order to confirm the attestation statement and to ensure that the project adheres to regulatory compliance requirement. Through our evaluation process SCS has concluded that the Davis Landfill adheres to the regulatory compliance requirement.

3.2 IDENTIFICATION OF EMISSION SOURCES

3.2.1 Baseline Emissions

Prior to the construction of the Project, the Davis Landfill did not have a GCCS, therefore the baseline scenario assumes that all uncontrolled methane (CH₄) emissions were released into the atmosphere, with the exception of the amount of methane that would have been oxidized by soil bacteria in the absence of the project.

3.2.2 GHG Assessment Boundary

In accordance with the Table 4.1 of the LPRP, the following GHG sources should be included in the calculation of net emissions reductions associated with a LFG collection and destruction system similar to the landfill gas to energy (LFGTE) system that constitutes the Project.

- LFG Collection System
 - Emissions resulting from fossil fuel derived energy used by compressors, blowers, gathering, and upgrade systems (CO₂ only)
- Upgrading LFG to Natural Gas Pipeline Quality
 - Emissions resulting from fossil fuel derived energy used by compressors, blowers, associated with the upgrade and transport of the gas to the pipeline (CO₂ only)
- LFG Combustion in a Flare
 - Emissions resulting from the destruction of LFG in the flare (uncombusted CH₄ pass-through)
 - Emissions resulting from the destruction of fossil fuel in the flare (uncombusted CH₄ emissions and all CO₂ emissions from fossil fuel).

Note that displacement of GHG emissions from fossil fuel destruction from electricity generated using LFG is not included in the GHG assessment boundary.

3.2.3 Project Emission Sources

WIWMD identified the following emissions sources associated with the Project:

Table 1. 2008 Emissions Sources

GHG Source Category	GHG Source
LFG System	CO ₂ emissions associated with indirect electricity usage from blowers and system.
Flare	CH ₄ emissions associated with un-destroyed LFG (based on flare destruction efficiency). CO ₂ emissions associated with the propane usage from the flare start up.

During the site visits, SCS confirmed that there are no additional emissions sources that exist for these facilities that were not included in the inventory. Note that no alternative fuels (e.g. natural gas) are utilized on-site. The pipeline exclusively transports LFG. The flare operated LFG and has a propane start up.

3.2.4 GHG Gases Project Emissions

In accordance with the LPRP, WIWMD has to report all emission that may occur or increase as a result of the project activity, and therefore must be deducted from the overall project reductions. Currently emitted GHG include CO₂, CH₄, and nitrous oxide (N₂O) from electricity usage as well as CH₄ emissions associated with the portion of LFG that is sent through the flare but not combusted. Note that the Reserve has excluded N₂O emissions as a GHG source due to the limited amount and associated uncertainty in calculating these emissions. Thus, the Project emissions are limited to CO₂ and CH₄.

3.3 REVIEW OF GHG MANAGEMENT SYSTEMS AND ESTIMATION METHODOLOGIES

In accordance with the LPVP, SCS evaluated WIWMD's methodologies and management systems for calculating the Project's emission reductions. This evaluation consisted of interviews with key personnel associated with reporting and calculation of the Project's GHG reductions, as well as an initial review of the Project's Monitoring Plan to evaluate its conformance to the requirements outlined in Section 6 of the LPRP.

The Monitoring Plan provided by WIWMD provides a written account of the frequency of data acquisition, a record keeping plan, frequency of instrument calibration activities, as well as QA/QC provisions to ensure that meter calibration and data acquisition are carried out consistently.

Mr. Preston Lee, the landfill manager, is responsible for the day-to-day operation of the GCCS and LFGTE plant. Mr. Lee also oversees the collection and reporting of the monitoring data associated with the Project. Mr. Nathan Rich, Executive director of WIWMD, is responsible for QA/QC check of the data provided by Mr. Lee, as well as performing the calculations associated with the registration of GHG reductions from the Project.

During interviews and discussions with the above mentioned staff, both appeared to be knowledgeable with regard to their respective roles in the data acquisition and reporting processes.

Documentation of electricity usage, fuel consumption and other related activities are retained in a manner appropriate for accurate GHG reduction reporting and are outlined in the Monitoring Plan. Documentation is retained through spreadsheets, internal databases, invoicing databases, purchase records, and other similar methods. WIWMD's current GHG management system is appropriate for the emissions reductions identified in each emission source category as well as for the GHGs reported.

WIWMD used the default emission factors and standardized estimation methods in the LPRP when available.

3.4 VERIFICATION OF EMISSIONS ESTIMATES

3.4.1 Initial Verification Review

On November 23, 2009, SCS preformed a site visit to the WIWMD Davis Landfill facility. The purpose of the on-site inspection was to ensure that the collection and destruction devices were installed and operated correctly, the Monitoring Plan was being properly implemented and that all emission sources (e.g., facility, source, and fuel) were identified by WIWMD and correctly deducted. Discussions of the emission reductions and sources identified by WIWMD are presented below.

In addition, based on WIWMD's identified emission sources, management systems, and corresponding risk profile of GHG emissions, SCS selected the following emissions estimates for verification review:

- Review of electricity usage data using 3rd party utility bills
- GHG reduction recalculation

A discussion of the verification process for each of these emissions sources is presented below.

3.4.1.1 Review of Electrical Records

SCS reviewed the WIWMD's electricity data from 3rd party utility bills and spreadsheets. The spreadsheets are used to track monthly and annual utility expenses for each facility operated by WIWMD and were reviewed by SCS for January through December 2008. In addition, individual electricity bills were reviewed for the project. From this information, SCS was able to verify the WIWMD's utility records are consistent with the WIWMD emissions calculations.

3.4.1.2 Review and Recalculation of GHG Emissions

Due to the period of GHG reductions associated with the Project (January 1 through December 31, 2008), in exceedance of the requirements of the LPVP, SCS re-calculated all of the GHG reductions and emissions associated with the Project. SCS preformed independent calculations

of the Project's sources and reductions and compared the calculations to the emission levels reported by WIWMD for the 2008 reporting period.

A comparison of the direct and indirect emission and the total emission reductions performed by SCS, with the original emissions totals as reported by WIWMD was conducted. The net emission difference between SCS and WIWMDs calculations were less than 5%. This comparison of emissions calculations is used to determine if there is a large difference (defined as greater than 5% difference of the total emissions) in calculations performed by SCS and WIWMD.

3.4.2 Initial Verification Findings

Based on the results of our verification activities, the findings of our initial review were presented in a Verification Log and discussed with Mr. Preston Lee of WIWMD during a telephone conversation on December 3, 2009. The initial findings log identified several material misstatements and some potential material misstatements.

3.4.3 Final Verification

On December 21, 2009, WIWMD submitted an updated version of their Monitoring Plan and associated GHG reduction calculations, in response to SCS' initial findings. As such, this section addresses the final emissions report for WIWMD.

SCS performed a complete emissions data review, combined with weighted GHG emissions risk assessment in order to ensure that no material emissions sources were excluded and that the risk of error is assessed and addressed through the appropriate sampling and review. During this assessment, SCS determined that the 2008 emission reductions of GHG as well as all of the emissions factors used were consistent with the LPRP.

3.5 IDENTIFICATION OF MATERIAL/IMMATERIAL MISSTATEMENTS

In accordance with the LPVP, for SCS to verify a GHG emission reduction report, a sample of data must be free of material misstatement. As defined by the Reserve, material misstatements may be comprised of:

- 1) Emissions sources that are not reported, i.e., missed in the participant's inventory;
- 2) Use of inappropriate emissions factors;
- 3) An identified discrepancy which results in a difference between the verifier and the participant's calculated total emission of more than 5%. Note that a difference is considered immaterial if this difference is less than 5%;
- 4) Record consistency (fuel use matches fuel purchased, etc.);
- 5) Exclusion of material GHG emissions;

6) Other issues/items identified by the verifier during verification process

SCS's total combined (indirect and direct) emissions were within 5% of WIWMD's combined calculated emissions. From this information as well as other components of our review, it can be concluded that no material misstatements exist.

4.0 FINDINGS

Based on the verification activities conducted by SCS, it has been determined that WIWMD's United States GHG emission reductions for the January 1, through December 31, 2008 reporting period are consistent with the project methodology, free of material misstatement, and can be considered to a reasonable level of assurance.

Table 2. 2008 Verified GHG Emission Reductions

Reporting Period: January 1 to December 31, 2008	
Baseline Emissions	48,845 tons CO ₂ e
Project Emissions	162 tons CO ₂ e
TOTAL	48,683 tons CO₂e