

OFFICE

300 Fishel Street
Martinsville, VA 24112-3248
Phone: (276) 403-5354

LANDFILL

225 Arden Circle
Martinsville, VA 24112



REQUEST FOR PROPOSAL

(This RFP document and any future addenda may be obtained from the City of Martinsville website at: <http://www.martinsville-va.gov/Bid-Documents.html>)

Project Title: City of Martinsville LFG-to-Energy Project

Proposals will be received at the following location, subject to the conditions attached hereto until **2:00 PM EST, November 1, 2010**. Proposals should be submitted via UPS, Fed Ex or hand delivery (**do not send regular mail**) in a sealed envelope to the attention of Karen Mays, Purchasing Agent, and labeled "City of Martinsville LFG-to-Energy Project".

Where to submit Proposals: Attn: Ms. Karen Mays
City of Martinsville Central Warehouse
300 Fishel Street
Martinsville, VA 24112-3248
Phone: (276) 403-5354

SCHEDULE OF EVENTS

- | | |
|---|--------------------|
| 1. Issue/Advertise RFP | September 13, 2010 |
| 2. Pre-submittal meeting at landfill 10:00 AM EST | October 12, 2010 |
| 3. Pre-submittal questions due by 5:00 PM EST* | October 18, 2010 |
| 4. Response to pre-submittal questions | October 22, 2010 |
| 5. Proposals due by 2:00 PM EST | November 1, 2010 |

*Questions should be submitted via e-mail to Karen Mays, kmays@ci.martinsville.va.us and copied to Robin Legus, rlegus@ci.martinsville.va.us.

In compliance with this Request for Proposal (RFP), and to all the conditions imposed herein, the undersigned offers and agrees to complete all requirements and conditions in accordance with the attached signed proposal or as mutually agreed upon by subsequent negotiations.

Submitting Firm Name and Address:

Telephone: (____) _____
Fax: (____) _____

Signature: _____ Date: _____
Title: _____

This proposal is for (select one): Option 1
 Option 2

!! THIS PAGE MUST BE RETURNED WITH YOUR PROPOSAL !!

CITY OF MARTINSVILLE LFG-TO-ENERGY RFP

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PART 1: REQUIREMENTS

1.1 PURPOSE & SCOPE OF SERVICES

Purpose

The City of Martinsville, Virginia (the City), is requesting proposals for development of a facility at the closed Martinsville Sanitary Landfill to generate electricity from landfill gas. The City intends to evaluate two distinct scenarios with this RFP:

- **Option 1:** The City may retain ownership, operation and all revenues from the project. In this case the City would contract for turn-key, design/build services to provide the ready-to-operate facility. At the completion of construction of the facility, the City would pay the successful Proposer the contracted amount.
- **Option 2:** The City may enter into an agreement with a Proposer in which the Proposer may assume responsibility for all or some portion of project ownership, operation and initial capital expenditures in exchange for receiving revenue from the City over the course of a long-term contract or Power Purchase Agreement. The structuring of the responsibilities, costs and revenue sharing, and term (duration) of the proposed contract should be provided by the Proposer, as described in Section 1.3 of this RFP.

Proposers may submit a proposal for Option 1 or for Option 2. A single Proposer may choose to submit two proposals—one for Option 1 and one for Option 2. The City will evaluate all proposals for the option and proposal that best meets the City's goals. After the initial evaluation of proposals, the City may choose to have discussions and negotiate with one or more Proposer, and may or may not enter a contract with a Proposer.

In general, the City seeks a facility that will:

- Maximize the quantity of electricity that can be generated from the available landfill gas,
- Allow the City to recover capital costs as quickly as possible and maximize long term net revenue,
- Be relatively simple to operate,
- Require minimal maintenance, and
- Be highly reliable.

Scope of Services

Comprehensive services to establish a fully functional, ready to operate, electricity generating facility are required, including but not necessarily limited to:

Option 1

- Engineering design of the facility,
- Electricity generation equipment,
- Gas conditioning equipment,

- Shipping,
- Installation and construction of equipment,
- Building or other enclosure (container),
- Switchgear,
- Transformer,
- Ground mat and all applicable safety devices required for interconnection to the City's 12.5 kV distribution system,
- Civil sitework (grading, concrete, stone, foundations, fencing etc.)
- Utilities,
- SCADA system for remote monitoring and data acquisition (wireless internet is available),
- Start-up and training,
- Obtaining all necessary permits, and
- Equipment Service Contract*

*This should be itemized separately from the base price and should include a description of the services to be provided, length of contract and price.

Not included

- Negotiation of power purchase agreement, and
- Interconnect fee or other costs required for work by electric utility for interconnection or power transmission
 - (the City's electric utility will provide the interconnection to an existing power distribution line that is within approximately 100 feet of the proposed location of the power generation facility)

Option 2

The scope of Option 2 includes, at a minimum all of the same items described for Option 1. Any and all alternative scenarios to ownership, operation, cost sharing and payments will be considered under Option 2. Items such as operations of the facility, maintenance and repairs of the equipment, brokering sale of carbon credits and/or renewable energy credits (RECs) etc. may be included at the discretion of the Proposer in accordance with a proposed payment structure. Proposers must clearly describe the responsibilities and costs they will assume and the revenues they will receive from the City over a defined period of time.

1.2 PROPOSER'S QUALIFICATIONS & EXPERIENCE

The Proposer should have extensive experience providing design and construction of biogas to electricity facilities of 1 MW or greater in size. Landfill specific project experience is desired. A description of past experience should be included with specific site information. At least one (1) currently operating project with references is required.

1.3 PROPOSAL RESPONSE FORMAT

As a minimum, each proposal should include the following:

- A. Cover Page – Complete the provided cover page and include with submittal. Indicate whether the proposal is for Option 1 or Option 2. If a Proposer desires to submit on both options, separate proposals should be submitted.
- B. Executive Summary – Provide a brief introduction of the company and the proposed project.
- C. Table of Contents – Provide a table of contents that identifies each section of the proposal. All pages should be numbered.
- D. Qualifications & Experience – Provide a description of your company’s background, its focus, and the scope and nature of services provided on other projects of this specific type. Also provide an outline of the main personnel that would make up the project team for this specific project, along with the background, experience and roles that each individual would have. At least one (1) client references should be provided in this section, including: name of client, client contact information, and brief description of service performed on project. Photographs of existing projects are encouraged.
- E. Scope & Schedule – Provide an outline of the services that will be provided to deliver the end product that the City desires—a fully functional, ready-to-operate facility to generate electricity using landfill gas as fuel. Also, provide a timeline for completion of major project components and an estimate of overall time to complete the project.
- F. Facility Description – Provide a detailed description of the layout and components of the facility you propose, including:
 - a. Maximum rated electricity generating capacity (MW),
 - b. Make/model of engine-generators,
 - c. Description of building/enclosure,
 - d. Description of proposed pre-treatment of LFG,
 - e. Operating procedures,
 - f. Minimum required landfill gas flow rate and methane content,
 - g. Maintenance items and schedule of maintenance (if your company offers an annual maintenance service contract, please describe that service including maintenance items required over at least a 10-year period).
- G. Roles and Responsibilities (for Option 2) – Provide a description of the responsibilities the City would have in the project and the responsibilities the Proposer would have.
- H. Price

- a. Option 1 – Provide a total price for providing the design-build services described in the proposal with a separate price for an optional equipment maintenance/service contract.
 - b. Option 2 – Provide a cost/revenue sharing structure with the duration of the structure. Provide a breakdown of the City’s projected annual costs and revenues under the proposed structure over the duration of the proposed term.
- I. List of Strengths – Provide a summary explanation of the competitive advantages the proposed facility would have, and why it is in the best interest of the City to select the proposal.

1.4 PROPOSAL SUBMISSION

Proposers shall submit three (3) hard copies of their response to this RFP. The complete proposal shall be placed in a sealed envelope or box having the name and address of the Proposer and the statement “Proposal for: City of Martinsville LFG-to-Energy Project”. The sealed envelope or box shall then be placed in another sealed envelope or box which should be addressed to: Ms. Karen Mays, City of Martinsville Central Warehouse, 300 Fishel Street, Martinsville, VA 24112. The envelope or box shall also bear the statement “Proposal Document Enclosed”. The City of Martinsville is not responsible for the timeliness of any parcel or mail delivery service. Proposals may be hand delivered to the address provided above, or sent via Fed Ex or UPS. Do not send proposals via regular mail. All proposals must be received prior to the time specified herein.

1.5 PRE-SUBMITTAL MEETING

An optional pre-submittal meeting will be held at the Martinsville Sanitary Landfill at 10:00 A.M. EST on October 12, 2010. Proposers are encouraged to attend in order to investigate the site to obtain a more detailed understanding of the location and existing conditions prior to submitting proposals.

1.6 AWARD

The City will evaluate the proposals and assess whether or not any one or multiple proposals meets their goals. The City may then negotiate terms and enter into a contract with the Proposer that they feel has submitted the proposal that is in their best interest. The City reserves the right to reject all proposals if they do not feel that any of the proposals is in their best interest.

PROPOSAL EVALUATION CRITERIA AND SELECTION PROCESS:

The selection committee will evaluate each proposal based on the following criteria:

- A. Project definition and approach;
- B. Proposer's qualifications and demonstrated ability to manage the project;
- C. Qualifications of project team and relevant experience;

- D. Project schedule; and
- E. Cost/Revenue sharing strategy.

The selection committee may interview short listed firms as a part of the selection process. The selection committee reserves the right to perform **any due diligence** necessary to ensure that the Proposer is capable of implementing the landfill gas project, and that is in the best interest of the City of Martinsville. **The cost/revenue sharing strategy will be considered, but will not be the major determining factor.** After interviews have been conducted, the selection committee may begin negotiations with the Proposer, which, in its opinion, is the most qualified and has the best proposal.

In the event that a single proposer is uniquely qualified, or clearly more highly qualified than other firms offering proposals for this service, THE CITY OF MARTINSVILLE may so state this fact, give a reasonable explanation for this decision and enter into negotiations with the uniquely qualified proposer.

In the event negotiations of specific terms and conditions prove unsuccessful with the selected proposer, the selection committee may choose another proposer with which to begin negotiations.

1.7 GENERAL CONDITIONS

- A. **APPROVAL OF LANDFILL GAS PROJECT:** All construction drawings, plans, construction specifications, equipment specifications, site plans, construction schedules, startup and operational procedures, and permit applications must be reviewed by and approved by the City of Martinsville prior to implementation or application. Operations of the landfill and compliance with Federal, State, and local laws, codes, and regulations affecting the operation of the landfill shall take precedence over all aspects of the LFG project.
- B. **COLLUSION:** By submitting a proposal in response to this Request for Proposal, the Proposer represents that in the preparation and submission of this proposal, said Proposer did not, either directly or indirectly, enter into any combination or arrangement with any person, Proposer or corporation or enter into any agreement, participate in any collusion, or otherwise take any action in the restraint of free competitive bidding in violation of the Sherman Act (15 U.S.C. Section 1) or Section 59.1-9.1 through 59.1-9.17 or Sections 59.1-68.6 through 59.1-68.8 of the Code of Virginia.
- C. **PREPARATION:** The City of Martinsville intends that responses to this RFP be concise, informative, and inexpensive for the Proposer to prepare. Proposals should be organized in the order in which the requirements are presented in this RFP. An authorized representative with the authority to bind the Proposer shall sign the proposal. All information requested shall be submitted. Failure to submit all information requested may result in the purchasing agent or selection committee requiring prompt submission of missing information and/or giving a lowered evaluation of the proposal. Proposals which

are substantially incomplete or lack key information may be rejected by the purchasing agent or selection committee. Each copy of the proposal shall be bound or contained in a single volume where practical.

- D. **THE CITY OF MARTINSVILLE RESERVES THE RIGHT TO:** The City of Martinsville reserves the right to reject any and all proposals and to waive any informality or technical defects if, in its judgment, the best interests of the City of Martinsville will be served as specified in the Code of Virginia Public Procurement Act Section 2.2-4319.
- E. **NOTICE OF AWARD:** The City of Martinsville will provide public notice announcing its decision to award by posting the Notice of Intent to Award on the City of Martinsville Bulletin Board, and by mailing the notice to all Proposers submitting a proposal.
- F. **ADDITIONAL GENERAL TERMS AND CONDITIONS:**
1. **TERMS:** In the event there is a conflict between the general terms and conditions and any special terms and conditions which may be included in this solicitation for use in a particular procurement, the special terms and conditions shall apply.
 2. **CLARIFICATION:** If any prospective Proposer has questions about the specifications or other solicitation documents, the prospective Proposer should submit the questions to Karen Mays, Purchasing Agent at kmays@ci.martinsville.va.us prior to 5:00 PM EST, October 18, 2010. Any revisions to the solicitation will be made only by addendum issued by the City of Martinsville
 3. **QUALIFICATIONS OF OFFERORS:** The City of Martinsville may make such reasonable investigations as deemed proper and necessary to determine the ability of the Proposer to perform the work and the Proposer shall furnish to the City of Martinsville all such information and data for this purpose as may be requested. The City of Martinsville reserves the right to inspect the Proposers physical facilities prior to award to satisfy questions regarding the Proposers capabilities. The City of Martinsville further reserves the right to reject any proposal if the evidence submitted by, or investigations of, such Proposer fails to satisfy the City of Martinsville that such Proposer is properly qualified to carry out the obligations of the contract and to complete the work/furnish the item(s) contemplated therein.
 4. **ASSIGNMENT OF CONTRACT:** A contract shall not be assignable by the Proposer in whole or in part without the prior written consent of the City of Martinsville.
 5. **ETHICS IN PUBLIC CONTRACTING:** By submitting a proposal, all Proposers certify that their proposals are made without collusion or fraud and that

they have not offered or received any kickbacks or inducements from any other Proposer, supplier, manufacturer or subcontractor in connection with their proposal.

- 6. ANTI-DISCRIMINATION:** By submitting a proposal, all Proposers certify to the City of Martinsville that they will conform to the provisions of Presidential Order #11246, the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Act of 1975, as amended, where applicable, and Section 2.2-4311 of the Virginia Public Procurement Act and that during the performance of this contract, the Proposer agrees as follows:

a. The Proposer will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by the state law relating to discrimination in employment, except when there is bona fide occupational qualification reasonably necessary to the normal operation of the Proposer. The Proposer agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

b. Notices, advertisements and solicitations placed by or on behalf of the Proposer will state that such contractor is an equal opportunity employer.

c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.

d. The Proposer will include the provisions of the fore mentioned paragraphs in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

- 7. MINORITY AND WOMEN-OWNED BUSINESSES:** In accordance with Presidential Executive Orders #12138 & #11625, the City of Martinsville actively solicits both minority and women-owned businesses to respond to all Invitations for Bid and Requests for Proposal, and if not already on the City's mailing list, you may request application for inclusion on the list. Should you be interested, please contact the City of Martinsville at 276-403-5354 and request application.

Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees.

8. DRUG-FREE WORKPLACE: During the performance of this contract, the Proposer agrees to (i) provide a drug-free workplace for the Proposer's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violation of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

9. ANTI-DISCRIMINATION - FAITH BASED ORGANIZATIONS:

It is the policy of the City of Martinsville not to (i) discriminate against a faith-based organization on the basis of the organization's religious character or (ii) impose conditions that (a) restrict the religious character of the faith-based organization, except for sectarian worship, instruction, or proselytizing; however, this prohibition shall not apply to expenditures pursuant to contracts, if any, for the service of chaplains, or (b) impair, diminish, or discourage the exercise of religious freedom by the recipients of such goods, services, or disbursement.

10. INSPECTION OF PROCUREMENT RECORDS: Proposals submitted shall be subject to public inspection only in accordance with Virginia Code § 2.2-4342.

11. COSTS OF PROPOSAL PREPARATION: Any costs incurred by the Proposer in preparing or submitting proposals are the Proposer's responsibility. The City of Martinsville will not reimburse any Proposer for any costs incurred as a result of a response to this Request for Proposal.

12. OWNERSHIP OF MATERIAL: Ownership of all data, material and documentation originated and prepared for the City of Martinsville pursuant to the RFP shall belong exclusively to the City of Martinsville and be subject to public inspection in accordance with the Virginia Freedom of Information Act.

13. TRADE SECRETS OR PROPRIETARY INFORMATION: Trade secrets or proprietary information submitted by a Proposer in response to this Request for Proposal shall not be subject to public disclosure under the Virginia Freedom of Information Act; however, the Proposer must invoke the protection of this section prior to or upon

submission of data or materials, and must identify the data or other materials to be protected and state the reasons why protection is necessary (Section 2.2-4342F of the Code of Virginia).

14. CANCELLATION OF CONTRACT: The City of Martinsville reserves the rights to cancel and terminate any resulting contract, in part or in whole, without penalty, upon 60 days written notice to the contractor.

15. INSURANCE: Without limiting Contractor's indemnification, it is agreed that Contractor shall purchase at its own expense and maintain in force at all times during the performance of services under this agreement the following policies of insurance. Where specific limits are shown, it is understood that they shall be the minimum acceptable limits. If the Contractor's policy contains higher limits, the Authority shall be entitled to coverage to the extent of such higher limits. Certificates of Insurance must be furnished to the Contracting Officer prior to beginning work and must provide for a 30-day prior notice of cancellation, nonrenewal or material change of conditions. Failure to furnish satisfactory evidence of insurance or lapse of the policy is a material breach of this contract and shall be grounds for termination of the Contractor's services. All insurance policies shall comply with, and be issued by insurers licensed to transact the business of insurance in Virginia. Proof of insurance is required for the following:

a. Workers' Compensation Insurance: The Contractor shall provide and maintain, for all employees engaged in work under this contract, coverage as required by Virginia Code, and; where applicable, any other statutory obligations including but not limited to Federal U.S.L. & H. and Jones Act requirements. The policy must waive subrogation against the Authority.

b. Professional Liability Insurance: in an amount of not less than \$1,000,000 each claim for errors and omissions with at least Best's Guide Rating-A-VIII or better.

c. Commercial General Liability Insurance: covering all business premises and operations used by the Contractor in the performance of services under this agreement with minimum coverage limits of \$1,000,000 combined single limit per occurrence.

d. Commercial Automobile Liability Insurance: covering all vehicles used by the Contractor in the performance of services under this agreement with minimum coverage limits of \$500,000 combined single limit per occurrence.

e. Failure to supply satisfactory proof of insurance within the time required will cause the City to declare the bidder nonresponsive and to reject the proposal.

16. OBLIGATION OF PROPOSER: By submitting a proposal, the Proposer covenants and agrees that he has satisfied himself, from his own investigation of the conditions to be met, that he fully understands his obligation and that he will not make any claim for, or have right to cancellation or relief from the contract because of any misunderstanding or lack of information.

PART 2: BACKGROUND INFORMATION

2.1 GENERAL

2.1.1 Location

The Martinsville Sanitary Landfill address is:
225 Arden Circle
Martinsville, Virginia 24112

2.1.2 Landfill History

The Martinsville Sanitary Landfill is a municipal solid waste (MSW) landfill that operated between the years 1972 and 2005. Approximately 1,740,000 tons of waste was deposited in the landfill and is currently in place. A partial landfill closure was constructed in 2000 during which 16 passive landfill gas vents were installed. Final closure construction was performed in 2005 with an additional 27 passive vents being installed.

2.1.3 Landfill Gas Collection & Control System

An active landfill gas collection and control system was constructed in 2010. The landfill Site Plan with record of the active gas collection system installation is included in the Drawing sections of this RFP. All 43 landfill gas vents were converted into active gas extraction wells with Landtec Accuflo wellheads. The main header pipe is 12" SDR 17 HDPE and lateral connection pipes are 6" or 4" HDPE.

The landfill does not have a leachate collection system, and therefore condensate management is accomplished through 4 traps that are located at low spots in the header piping alignment. The traps are equipped with pneumatic pumps (DGSI SRX LP) that pump the condensate to a central storage tank (5,000 gallon septic tank). The storage tank is pumped and condensate hauled offsite as necessary by the City of Martinsville.

The landfill gas extraction blower/flare skid was supplied by Shaw/LFG Specialties. The blower is a Houston Service Industries Model 5203 (25 h.p.) with variable frequency drive. The open flare is rated for up to 1350 scfm.

A prefabricated 15' x 20' metal building was installed to house the air compressor (Gardner Denver) that is used to operate the pneumatic pumps.

Three phase power has been installed at a pole adjacent to the location of the Energy Facility (see Section 2.5).

2.1.4 Regulatory Requirements

The Martinsville Sanitary Landfill is regulated by the Virginia Department of Environmental Quality (VDEQ), Division of Solid Waste under Permit #49. There have been no regulatory requirements for either active or passive landfill gas collection or control by the Division of Solid Waste for methane migration control, odor control or for any other reason.

An active landfill gas collection and control system is not required by the VDEQ since the landfill is below the capacity thresholds for Title V permitting and New Source Performance Standards (NSPS) applicability.

A permit to construct and operate a utility flare was submitted to and approved by the Division of Air Quality of VDEQ.

2.2 SCHEDULE

The City intends to have a contract in place for development of the LFG-to-electricity project by the end of 2010, and to have a fully constructed and operational electricity generating facility by the end of 2011.

2.3 LANDFILL GAS QUANTITY

The City has been actively extracting and flaring the landfill gas since May 20, 2010. Landfill gas flow and composition data is provided in Appendix 1 and summarized below.

Average LFG Flow, Methane and Oxygen Readings (2010)

	Avg. LFG Flow (scfm)	Avg. CH4 (%)	Avg. O2 (%)
May	557	46.0	2.1
June	534	39.6	2.0
July	556	36.6	2.3
August	512	41.2	2.7

The Environmental Protection Agency's (EPA's) LandGEM model can be used to anticipate future gas quantities as the waste ages. The model, when run with inventory average parameter

values, predicts 471 cfm for the year 2010 at a concentration of 50% methane. This modeled value matches relatively closely with the observed values, and therefore can be expected to be reasonably accurate in predicting future flow rates, although no guarantee of future landfill gas flow and/or quality is implied. The LandGEM model results are provided in Appendix 2 and summarized below.

LandGEM Model Results (Inventory Parameters)

Year	Estimated LFG Flow (cfm)*
2010	471
2011	452
2012	435
2013	418
2014	402
2015	386
2016	371
2017	356
2018	342
2019	329
2020	316
2021	304
2022	292
2023	280
2024	269
2025	259
2026	248
2027	239
2028	229
2029	220
2030	212
2031	203

*assumes 50% methane

2.4 LANDFILL GAS QUALITY

Testing is being done to determine the concentration of siloxanes or hydrogen sulfide in the landfill gas. When available, test results will be provided as an addendum to this RFP.

2.5 ENERGY FACILITY LOCATION

The approximate location for the proposed electricity generation facility is shown on the drawing (SUR1). Approximately 1 acre is available for construction of the facility. Minimal grading or site preparation is anticipated to be necessary for construction of the facility.

If an agreement is formed such that the City is not the owner of the electricity generation facility, the land for the electricity generation facility will be leased to the developer at no cost.

Three phase power (277/480 volt) service is provided at a utility pole adjacent to the proposed electricity generation facility. The City has provided an electric meter, CT cabinet for a 400 amp main service, and two 200 amp disconnects—one of which will be dedicated to the electricity generation facility. The power pole is within approximately 100 feet of the proposed location of the electricity generation facility. The power lines will have adequate capacity to carry all of the electricity generated at the landfill facility into the City's 12.5 kV distribution system.

A transformer, switchgear, ground mat and all industry standard safety equipment will be required to allow the City's electric utility to complete the interconnection.

2.6 AVAILABILITY OF NATURAL GAS AS POTENTIAL SUPPLEMENTAL FUEL

Southwestern Virginia Gas Company has a 6" high pressure (175 psi) natural gas supply pipeline along Clearview Drive, approximately 1,500 feet away from the proposed electricity generation facility. The City seeks to take advantage of this resource, if feasible and economically sensible, as a supplemental fuel for increased electricity production during certain peak demand times. Proposers are encouraged to develop creative design solutions to incorporate the use of supplemental natural gas.

Additional information pertaining to the natural gas supply may be obtained directly from Southwestern Virginia Gas Company:

John Keim, VP Operations
(276) 632-5662
jkeim@swvagas.com

2.7 MARTINSVILLE ELECTRIC UTILITY

The City operates a small hydroelectric generating facility at a dam on the Smith River south of the city. The electric plant at the dam produces about 2.5 percent of the City's power. The remainder of the City's electricity demand is met through purchasing wholesale power on the open market and through American Municipal Power, an Ohio-based municipal joint action agency in which the City is a member.

2.8 APPALACHIAN POWER COMPANY

Appalachian Power Company (APCo) currently provides retail electric service to the area around the Martinsville Sanitary Landfill, which is located in Henry County, outside the city limits of Martinsville.

The Martinsville electric utility, with permission from APCo, has constructed new overhead power lines from the landfill, through APCo's service territory and connecting to the City's existing electrical system.

The City and APCo have agreed that the City may provide electricity to run the electricity generation facility at the landfill and transmit electricity generated at the facility onto the City's distribution system with the understanding that electrical energy from the City's electric system will not be used to serve any other customers or facilities located within APCo's service territory.

2.9 CARBON CREDITS

The City has registered as a project developer with the Climate Action Reserve (CAR) and plans to undergo project verification after the first 6 months of operation. Monitoring equipment for carbon credit verification includes a continuous gas analyzer (Landtec AEMS system), remote telemetry, and a thermal mass flow meter (Landtec). Additional information about the carbon credit monitoring equipment is provided in Appendix 3.

The City is prepared to market registered Climate Reserve Tonnes (CRTs) independently of proposals received from this RFP, but will offer the carbon credits as an option to be included in any proposed revenue sharing arrangements.

2.10 RENEWABLE ENERGY CREDITS (RECs)

The City recognizes that there is value in renewable energy credits (RECs) and seeks to take advantage of monetizing RECs, either independently or as part of an agreement with a Proposer.

2.11 GRANT MONEY

The City has received a Biomass Grant through the Virginia Division of Energy in the amount of \$1,000,000 for development of a landfill gas to electricity project. Certain terms and conditions apply to the usage of the grant money and as such the City must ensure that these conditions will be met prior to entering into a contract with any Proposer.

APPENDIX 1

Landfill Gas Flow, CH₄ & O₂

May 20 – August 12, 2010

	Avg. LFG Flow (scfm)	Avg. CH4 (%)	Avg. O2 (%)
5/20/10	470	51.5	1.2
5/21/10	459	51.0	1.6
5/22/10	460	53.1	1.1
5/23/10	446	52.5	1.4
5/24/10	502	52.1	1.7
5/25/10	704	50.2	1.8
5/26/10	688	46.8	2.3
5/27/10	634	45.8	2.6
5/28/10	586	42.7	2.7
5/29/10	583	37.2	2.6
5/30/10	576	38.5	2.9
5/31/10	574	31.1	2.9
6/1/10	608	30.6	2.7
6/2/10	564	41.7	2.5
6/3/10	449	42.0	1.9
6/4/10	465	44.6	1.6
6/5/10	541	43.9	1.7
6/6/10	546	43.6	1.8
6/7/10	478	42.2	2.1
6/8/10	495	27.3	2.0
6/9/10	546	26.4	1.8
6/10/10	524	42.1	2.0
6/11/10	496	41.3	2.1
6/12/10	538	41.2	1.8
6/13/10	552	17.8	1.6
6/14/10	536	23.1	1.7
6/15/10	513	40.6	1.9
6/16/10	536	41.4	1.8
6/17/10	536	41.6	2.0
6/18/10	520	41.3	2.1
6/19/10	546	41.6	2.0
6/20/10	542	41.2	2.0
6/21/10	528	31.3	2.0
6/22/10	541	38.2	1.9
6/23/10	550	37.9	1.9
6/24/10	564	38.1	1.9
6/25/10	541	37.5	1.9
6/26/10	569	37.9	1.9
6/27/10	574	37.8	1.9
6/28/10	557	37.4	2.0
6/29/10	534	36.2	2.1

	Avg. LFG Flow (scfm)	Avg. CH4 (%)	Avg. O2 (%)
6/30/10	529	35.4	2.1
7/1/10	548	35.5	2.0
7/2/10	560	35.4	2.0
7/3/10	578	35.6	2.0
7/4/10	586	35.8	2.1
7/5/10	580	35.5	2.2
7/6/10	581	35.1	2.3
7/7/10	597	34.9	2.3
7/8/10	599	34.8	2.3
7/9/10	602	34.5	2.3
7/10/10	587	34.1	2.2
7/11/10	586	33.8	2.3
7/12/10	575	33.2	2.4
7/13/10	550	34.1	2.1
7/14/10	534	34.6	2.2
7/15/10	546	37.6	2.6
7/16/10	563	37.9	2.6
7/17/10	552	37.5	2.6
7/18/10	563	37.8	2.6
7/19/10	565	37.9	2.5
7/20/10	545	37.3	2.7
7/21/10	510	39.4	2.4
7/22/10	473	42.1	2.0
7/23/10	481	42.3	2.0
7/24/10	488	42.1	2.1
7/25/10	491	38.9	3.0
7/26/10	476	35.0	4.6
7/27/10	480	33.2	5.3
7/28/10	475	33.4	5.5
7/29/10	504	32.5	5.7
7/30/10	488	30.7	6.4
7/31/10	493	30.9	6.5
8/1/10	477	30.5	6.5
8/2/10	477	29.9	6.2
8/3/10	500	29.6	6.3
8/4/10	522	29.1	6.3
8/5/10	520	28.4	6.2
8/6/10	508	34.6	4.4
8/7/10	493	41.3	2.6
8/8/10	504	41.1	2.6
8/9/10	509	41.1	2.7
8/10/10	518	41.0	2.7

	Avg. LFG Flow (scfm)	Avg. CH4 (%)	Avg. O2 (%)
8/11/10	523	41.1	2.6
8/12/10	526	41.4	2.7

*Note: Shaded areas represent times when the gas analyzer was not functioning properly.

APPENDIX 2

LandGEM Model Results

USER INPUTS

Landfill Name or Identifier: City of Martinsville, VA Landfill

Clear ALL Non-Parameter
Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	1972	
Landfill Closure Year	2006	
Have Model Calculate Closure Year?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Waste Design Capacity		

Restore Default Model
Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k ($year^{-1}$)
Inventory Conventional - 0.04
Potential Methane Generation Capacity, L_o (m^3/Mg)
Inventory Conventional - 100
NMOC Concentration (<i>ppmv as hexane</i>)
Inventory No or Unknown Co-disposal - 600
Methane Content (% by volume)
CAA - 50% by volume

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1	Default pollutant parameters are currently being used by model.	<p>Edit Existing or Add New Pollutant Parameters</p> <p>Restore Default Pollutant Parameters</p>
Total landfill gas		
Gas / Pollutant #2		
Methane		
Gas / Pollutant #3		
Carbon dioxide		
Gas / Pollutant #4		
NMOC		

Description/Comments:

--

4: ENTER WASTE ACCEPTANCE RATES

Input Units:

Year	Input Units (short tons/year)	Calculated Units (Mg/year)
1972	30,000	27,273
1973	30,000	27,273
1974	30,000	27,273
1975	30,000	27,273
1976	30,000	27,273
1977	30,000	27,273
1978	30,000	27,273
1979	30,000	27,273
1980	30,000	27,273
1981	30,000	27,273
1982	30,000	27,273
1983	30,000	27,273
1984	30,000	27,273
1985	30,000	27,273
1986	30,000	27,273
1987	30,000	27,273
1988	30,000	27,273
1989	30,000	27,273
1990	30,000	27,273
1991	30,000	27,273
1992	30,000	27,273
1993	30,000	27,273
1994	90,000	81,818
1995	90,000	81,818
1996	90,000	81,818
1997	90,000	81,818
1998	90,000	81,818
1999	90,000	81,818
2000	90,000	81,818
2001	90,000	81,818
2002	90,000	81,818
2003	90,000	81,818
2004	90,000	81,818
2005	90,000	81,818
2006		
2007		
2008		
2009		
2010		
2011		

RESULTS

Landfill Name or Identifier: City of Martinsville, VA Landfill

Closure Year (with 80-year limit) = 2006
 Methane = 50 % by volume

Please choose a third unit of measure to represent all of the emission rates below.

User-specified Unit:

Year	Waste Accepted		Waste-In-Place		Total landfill gas			Methane			Carbon dioxide			NMOC		
	(Mg/year)	(short tons/year)	(Mg)	(short tons)	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1972	27,273	30,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	27,273	30,000	27,273	30,000	2,676E+02	2,143E+05	1,440E+01	7,149E+01	1,072E+05	7,200E+00	1,961E+02	1,072E+05	7,200E+00	4,609E-01	1,286E+02	6,639E-03
1974	27,273	30,000	54,545	60,000	5,248E+02	4,202E+05	2,823E+01	1,402E+02	2,101E+05	1,412E+01	3,846E+02	2,101E+05	1,412E+01	9,037E-01	2,521E+02	1,694E-02
1975	27,273	30,000	81,818	90,000	7,718E+02	6,180E+05	4,153E+01	2,062E+02	3,090E+05	2,076E+01	5,657E+02	3,090E+05	2,076E+01	1,329E+00	3,708E+02	2,492E-02
1976	27,273	30,000	109,091	120,000	1,009E+03	8,081E+05	5,430E+01	2,696E+02	4,041E+05	2,715E+01	7,396E+02	4,041E+05	2,715E+01	1,738E+00	4,849E+02	3,258E-02
1977	27,273	30,000	136,364	150,000	1,237E+03	9,907E+05	6,657E+01	3,305E+02	4,954E+05	3,328E+01	9,068E+02	4,954E+05	3,328E+01	2,131E+00	5,944E+02	3,994E-02
1978	27,273	30,000	163,636	180,000	1,456E+03	1,166E+06	7,836E+01	3,890E+02	5,831E+05	3,918E+01	1,067E+03	5,831E+05	3,918E+01	2,508E+00	6,997E+02	4,701E-02
1979	27,273	30,000	190,909	210,000	1,667E+03	1,335E+06	8,968E+01	4,452E+02	6,674E+05	4,484E+01	1,222E+03	6,674E+05	4,484E+01	2,871E+00	8,009E+02	5,381E-02
1980	27,273	30,000	218,182	240,000	1,869E+03	1,497E+06	1,006E+02	4,993E+02	7,484E+05	5,028E+01	1,370E+03	7,484E+05	5,028E+01	3,219E+00	8,980E+02	6,034E-02
1981	27,273	30,000	245,455	270,000	2,063E+03	1,652E+06	1,110E+02	5,512E+02	8,262E+05	5,551E+01	1,512E+03	8,262E+05	5,551E+01	3,554E+00	9,914E+02	6,661E-02
1982	27,273	30,000	272,727	300,000	2,250E+03	1,802E+06	1,211E+02	6,011E+02	9,009E+05	6,053E+01	1,649E+03	9,009E+05	6,053E+01	3,875E+00	1,081E+03	7,264E-02
1983	27,273	30,000	300,000	330,000	2,430E+03	1,946E+06	1,307E+02	6,490E+02	9,728E+05	6,536E+01	1,781E+03	9,728E+05	6,536E+01	4,184E+00	1,167E+03	7,843E-02
1984	27,273	30,000	327,273	360,000	2,602E+03	2,084E+06	1,400E+02	6,950E+02	1,042E+06	7,000E+01	1,907E+03	1,042E+06	7,000E+01	4,481E+00	1,250E+03	8,400E-02
1985	27,273	30,000	354,545	390,000	2,788E+03	2,218E+06	1,489E+02	7,392E+02	1,108E+06	7,445E+01	2,028E+03	1,108E+06	7,445E+01	4,766E+00	1,330E+03	8,934E-02
1986	27,273	30,000	381,818	420,000	2,927E+03	2,344E+06	1,575E+02	7,817E+02	1,172E+06	7,873E+01	2,145E+03	1,172E+06	7,873E+01	5,040E+00	1,406E+03	9,448E-02
1987	27,273	30,000	409,091	450,000	3,080E+03	2,466E+06	1,657E+02	8,226E+02	1,233E+06	8,284E+01	2,257E+03	1,233E+06	8,284E+01	5,303E+00	1,480E+03	9,941E-02
1988	27,273	30,000	436,364	480,000	3,226E+03	2,584E+06	1,736E+02	8,618E+02	1,292E+06	8,679E+01	2,365E+03	1,292E+06	8,679E+01	5,566E+00	1,550E+03	1,042E-01
1989	27,273	30,000	463,636	510,000	3,368E+03	2,697E+06	1,812E+02	8,995E+02	1,348E+06	9,059E+01	2,468E+03	1,348E+06	9,059E+01	5,799E+00	1,618E+03	1,087E-01
1990	27,273	30,000	490,909	540,000	3,503E+03	2,805E+06	1,885E+02	9,375E+02	1,403E+06	9,424E+01	2,567E+03	1,403E+06	9,424E+01	6,033E+00	1,683E+03	1,131E-01
1991	27,273	30,000	518,182	570,000	3,633E+03	2,909E+06	1,955E+02	9,705E+02	1,455E+06	9,774E+01	2,663E+03	1,455E+06	9,774E+01	6,257E+00	1,746E+03	1,173E-01
1992	27,273	30,000	545,455	600,000	3,759E+03	3,010E+06	2,022E+02	1,004E+03	1,505E+06	1,011E+02	2,755E+03	1,505E+06	1,011E+02	6,473E+00	1,806E+03	1,213E-01
1993	27,273	30,000	572,727	630,000	3,879E+03	3,106E+06	2,087E+02	1,036E+03	1,553E+06	1,043E+02	2,843E+03	1,553E+06	1,043E+02	6,870E+00	1,864E+03	1,252E-01
1994	81,818	90,000	600,000	660,000	3,994E+03	3,198E+06	2,149E+02	1,067E+03	1,599E+06	1,075E+02	2,927E+03	1,599E+06	1,075E+02	6,875E+00	1,919E+03	1,289E-01
1995	81,818	90,000	681,818	750,000	4,641E+03	3,716E+06	2,497E+02	1,240E+03	1,858E+06	1,248E+02	3,401E+03	1,858E+06	1,248E+02	7,992E+00	2,230E+03	1,498E-01
1996	81,818	90,000	763,636	840,000	5,262E+03	4,213E+06	2,831E+02	1,405E+03	2,107E+06	1,415E+02	3,856E+03	2,107E+06	1,415E+02	9,061E+00	2,528E+03	1,699E-01
1997	81,818	90,000	845,455	930,000	5,858E+03	4,691E+06	3,152E+02	1,565E+03	2,345E+06	1,576E+02	4,293E+03	2,345E+06	1,576E+02	1,009E+01	2,815E+03	1,891E-01
1998	81,818	90,000	927,273	1,020,000	6,431E+03	5,150E+06	3,460E+02	1,718E+03	2,575E+06	1,730E+02	4,713E+03	2,575E+06	1,730E+02	1,108E+01	3,090E+03	2,076E-01
1999	81,818	90,000	1,009,091	1,110,000	6,982E+03	5,591E+06	3,756E+02	1,865E+03	2,795E+06	1,878E+02	5,117E+03	2,795E+06	1,878E+02	1,202E+01	3,355E+03	2,254E-01
2000	81,818	90,000	1,090,909	1,200,000	7,511E+03	6,015E+06	4,041E+02	2,006E+03	3,007E+06	2,021E+02	5,505E+03	3,007E+06	2,021E+02	1,294E+01	3,609E+03	2,425E-01
2001	81,818	90,000	1,172,727	1,290,000	8,019E+03	6,422E+06	4,315E+02	2,142E+03	3,211E+06	2,157E+02	5,877E+03	3,211E+06	2,157E+02	1,381E+01	3,853E+03	2,589E-01
2002	81,818	90,000	1,254,545	1,380,000	8,508E+03	6,813E+06	4,577E+02	2,273E+03	3,406E+06	2,289E+02	6,235E+03	3,406E+06	2,289E+02	1,465E+01	4,088E+03	2,746E-01
2003	81,818	90,000	1,336,364	1,470,000	8,977E+03	7,189E+06	4,830E+02	2,398E+03	3,594E+06	2,415E+02	6,579E+03	3,594E+06	2,415E+02	1,546E+01	4,319E+03	2,898E-01
2004	81,818	90,000	1,418,182	1,560,000	9,428E+03	7,550E+06	5,073E+02	2,518E+03	3,775E+06	2,536E+02	6,910E+03	3,775E+06	2,536E+02	1,624E+01	4,530E+03	3,044E-01
2005	81,818	90,000	1,500,000	1,650,000	9,861E+03	7,896E+06	5,306E+02	2,634E+03	3,948E+06	2,659E+02	7,227E+03	3,948E+06	2,659E+02	1,698E+01	4,793E+03	3,183E-01
2006	0	0	1,581,818	1,740,000	1,028E+04	8,230E+06	5,530E+02	2,745E+03	4,115E+06	2,765E+02	7,532E+03	4,115E+06	2,765E+02	1,770E+01	4,938E+03	3,318E-01
2007	0	0	1,581,818	1,740,000	9,875E+03	7,907E+06	5,313E+02	2,638E+03	3,954E+06	2,656E+02	7,237E+03	3,954E+06	2,656E+02	1,701E+01	4,744E+03	3,188E-01
2008	0	0	1,581,818	1,740,000	9,487E+03	7,597E+06	5,104E+02	2,534E+03	3,799E+06	2,552E+02	6,933E+03	3,799E+06	2,552E+02	1,634E+01	4,558E+03	3,063E-01
2009	0	0	1,581,818	1,740,000	9,115E+03	7,299E+06	4,904E+02	2,435E+03	3,650E+06	2,452E+02	6,681E+03	3,650E+06	2,452E+02	1,570E+01	4,379E+03	2,943E-01
2010	0	0	1,581,818	1,740,000	8,758E+03	7,013E+06	4,712E+02	2,339E+03	3,506E+06	2,356E+02	6,419E+03	3,506E+06	2,356E+02	1,508E+01	4,208E+03	2,827E-01
2011	0	0	1,581,818	1,740,000	8,415E+03	6,738E+06	4,527E+02	2,248E+03	3,369E+06	2,264E+02	6,167E+03	3,369E+06	2,264E+02	1,449E+01	4,043E+03	2,716E-01
2012	0	0	1,581,818	1,740,000	8,085E+03	6,474E+06	4,350E+02	2,159E+03	3,237E+06	2,175E+02	5,925E+03	3,237E+06	2,175E+02	1,392E+01	3,884E+03	2,610E-01
2013	0	0	1,581,818	1,740,000	7,768E+03	6,220E+06	4,179E+02	2,075E+03	3,110E+06	2,090E+02	5,693E+03	3,110E+06	2,090E+02	1,338E+01	3,732E+03	2,507E-01
2014	0	0	1,581,818	1,740,000	7,463E+03	5,976E+06	4,015E+02	1,993E+03	2,988E+06	2,008E+02	5,470E+03	2,988E+06	2,008E+02	1,285E+01	3,586E+03	2,409E-01
2015	0	0	1,581,818	1,740,000	7,170E+03	5,742E+06	3,858E+02	1,915E+03	2,871E+06	1,929E+02	5,255E+03	2,871E+06	1,929E+02	1,235E+01	3,445E+03	2,315E-01
2016	0	0	1,581,818	1,740,000	6,889E+03	5,517E+06	3,707E+02	1,840E+03	2,758E+06	1,853E+02	5,049E+03	2,758E+06	1,853E+02	1,185E+01	3,310E+03	2,224E-01
2017	0	0	1,581,818	1,740,000	6,619E+03	5,300E+06	3,561E+02	1,768E+03	2,650E+06	1,781E+02	4,851E+03	2,650E+06	1,781E+02	1,140E+01	3,180E+03	2,137E-01
2018	0	0	1,581,818	1,740,000	6,360E+03	5,092E+06	3,422E+02	1,699E+03	2,546E+06	1,711E+02	4,661E+03	2,546E+06	1,711E+02	1,095E+01	3,055E+03	2,053E-01
2019	0	0	1,581,818	1,740,000	6,110E+03	4,893E+06	3,287E+02	1,632E+03	2,446E+06	1,644E+02	4,478E+03	2,446E+06	1,644E+02	1,052E+01	2,936E+03	1,972E-01
2020	0	0	1,581,818	1,740,000	5,871E+03	4,701E+06	3,159E+02	1,568E+03	2,350E+06	1,579E+02	4,302E+03	2,350E+06	1,579E+02	1,011E+01	2,821E+03	1,895E-01
2021	0	0	1,581,818	1,740,000	5,640E+03	4,517E+06	3,035E+02	1,507E+03	2,258E+06	1,517E+02	4,134E+03	2,258E+06	1,517E+02	9,714E+00	2,710E+03	1,821E-01
2022	0	0	1,581,818	1,740,000	5,419E+03	4,339E+06	2,916E+02	1,448E+03	2,170E+06	1,458E+02	3,972E+03	2,170E+06	1,458E+02	9,333E+00	2,604E+03	1,749E-01
2023	0	0	1,581,818	1,740,000	5,207E+03	4,169E+06	2,801E+02	1,391E+03	2,085E+06	1,401E+02	3,816E+03	2,085E+06	1,401E+02	8,967E+00	2,502E+03	1,681E-01
2024	0	0	1,581,818	1,740,000	5,003E+03	4,006										

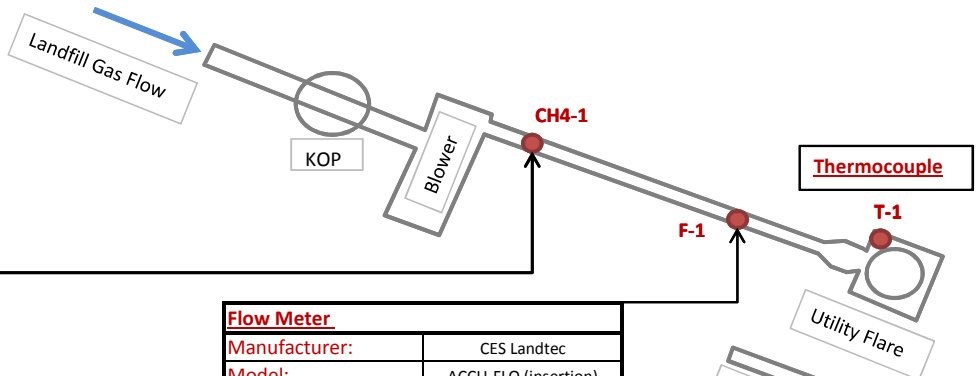
RESULTS Landfill Name or Identifier: City of Martinsville, VA Landfill

Closure Year (with 80-year limit) = 2006
 Methane = 50 % by volume
 Please choose a third unit of measure to represent all of the emission rates below.
 User-specified Unit:

Year	Waste Accepted		Waste-In-Place		Total landfill gas			Methane			Carbon dioxide			NMOC		
	(Mg/year)	(short tons/year)	(Mg)	(short tons)	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2048	0	0	1,581,818	1,740,000	1,915E+03	1.534E+06	1.031E+02	5.116E+02	7.669E+05	5.153E+01	1.404E+03	7.669E+05	5.153E+01	3.299E+00	9.203E+02	6.183E-02
2049	0	0	1,581,818	1,740,000	1,840E+03	1.474E+06	9.902E+01	4.916E+02	7.368E+05	4.951E+01	1.349E+03	7.368E+05	4.951E+01	3.169E+00	8.842E+02	5.941E-02
2050	0	0	1,581,818	1,740,000	1,768E+03	1.416E+06	9.513E+01	4.723E+02	7.079E+05	4.757E+01	1.296E+03	7.079E+05	4.757E+01	3.045E+00	8.495E+02	5.708E-02
2051	0	0	1,581,818	1,740,000	1,699E+03	1.360E+06	9.140E+01	4.538E+02	6.802E+05	4.570E+01	1.245E+03	6.802E+05	4.570E+01	2.926E+00	8.162E+02	5.484E-02
2052	0	0	1,581,818	1,740,000	1,632E+03	1.307E+06	8.782E+01	4.360E+02	6.535E+05	4.391E+01	1.196E+03	6.535E+05	4.391E+01	2.811E+00	7.842E+02	5.269E-02
2053	0	0	1,581,818	1,740,000	1,568E+03	1.256E+06	8.438E+01	4.189E+02	6.279E+05	4.219E+01	1.149E+03	6.279E+05	4.219E+01	2.701E+00	7.535E+02	5.063E-02
2054	0	0	1,581,818	1,740,000	1,507E+03	1.207E+06	8.107E+01	4.025E+02	6.033E+05	4.053E+01	1.104E+03	6.033E+05	4.053E+01	2.595E+00	7.239E+02	4.864E-02
2055	0	0	1,581,818	1,740,000	1,448E+03	1.159E+06	7.789E+01	3.867E+02	5.796E+05	3.894E+01	1.061E+03	5.796E+05	3.894E+01	2.493E+00	6.955E+02	4.673E-02
2056	0	0	1,581,818	1,740,000	1,391E+03	1.114E+06	7.483E+01	3.715E+02	5.569E+05	3.742E+01	1.019E+03	5.569E+05	3.742E+01	2.395E+00	6.683E+02	4.490E-02
2057	0	0	1,581,818	1,740,000	1,336E+03	1.070E+06	7.190E+01	3.570E+02	5.351E+05	3.595E+01	9.794E+02	5.351E+05	3.595E+01	2.301E+00	6.421E+02	4.314E-02
2058	0	0	1,581,818	1,740,000	1,284E+03	1.028E+06	6.908E+01	3.430E+02	5.141E+05	3.454E+01	9.410E+02	5.141E+05	3.454E+01	2.211E+00	6.169E+02	4.145E-02
2059	0	0	1,581,818	1,740,000	1,234E+03	9.878E+05	6.637E+01	3.295E+02	4.939E+05	3.319E+01	9.041E+02	4.939E+05	3.319E+01	2.125E+00	5.927E+02	3.982E-02
2060	0	0	1,581,818	1,740,000	1,185E+03	9.491E+05	6.377E+01	3.166E+02	4.745E+05	3.188E+01	8.687E+02	4.745E+05	3.188E+01	2.041E+00	5.695E+02	3.826E-02
2061	0	0	1,581,818	1,740,000	1,139E+03	9.119E+05	6.127E+01	3.042E+02	4.559E+05	3.063E+01	8.346E+02	4.559E+05	3.063E+01	1.961E+00	5.471E+02	3.676E-02
2062	0	0	1,581,818	1,740,000	1,094E+03	8.761E+05	5.887E+01	2.923E+02	4.381E+05	2.943E+01	8.019E+02	4.381E+05	2.943E+01	1.884E+00	5.257E+02	3.532E-02
2063	0	0	1,581,818	1,740,000	1,051E+03	8.418E+05	5.656E+01	2.808E+02	4.209E+05	2.828E+01	7.704E+02	4.209E+05	2.828E+01	1.810E+00	5.051E+02	3.394E-02
2064	0	0	1,581,818	1,740,000	1,010E+03	8.088E+05	5.434E+01	2.698E+02	4.044E+05	2.717E+01	7.402E+02	4.044E+05	2.717E+01	1.739E+00	4.853E+02	3.260E-02
2065	0	0	1,581,818	1,740,000	9,704E+02	7.771E+05	5.221E+01	2.592E+02	3.885E+05	2.611E+01	7.112E+02	3.885E+05	2.611E+01	1.671E+00	4.662E+02	3.133E-02
2066	0	0	1,581,818	1,740,000	9,324E+02	7.466E+05	5.016E+01	2.490E+02	3.733E+05	2.508E+01	6.833E+02	3.733E+05	2.508E+01	1.606E+00	4.480E+02	3.010E-02
2067	0	0	1,581,818	1,740,000	8,958E+02	7.173E+05	4.820E+01	2.393E+02	3.587E+05	2.410E+01	6.565E+02	3.587E+05	2.410E+01	1.543E+00	4.304E+02	2.892E-02
2068	0	0	1,581,818	1,740,000	8,607E+02	6.892E+05	4.631E+01	2.299E+02	3.446E+05	2.315E+01	6.308E+02	3.446E+05	2.315E+01	1.482E+00	4.135E+02	2.778E-02
2069	0	0	1,581,818	1,740,000	8,289E+02	6.622E+05	4.449E+01	2.209E+02	3.311E+05	2.225E+01	6.060E+02	3.311E+05	2.225E+01	1.424E+00	3.973E+02	2.669E-02
2070	0	0	1,581,818	1,740,000	7,945E+02	6.362E+05	4.275E+01	2.122E+02	3.181E+05	2.137E+01	5.823E+02	3.181E+05	2.137E+01	1.368E+00	3.817E+02	2.565E-02
2071	0	0	1,581,818	1,740,000	7,633E+02	6.113E+05	4.107E+01	2.039E+02	3.056E+05	2.053E+01	5.594E+02	3.056E+05	2.053E+01	1.315E+00	3.668E+02	2.464E-02
2072	0	0	1,581,818	1,740,000	7,334E+02	5.873E+05	3.946E+01	1.959E+02	2.936E+05	1.973E+01	5.375E+02	2.936E+05	1.973E+01	1.263E+00	3.524E+02	2.368E-02
2073	0	0	1,581,818	1,740,000	7,047E+02	5.643E+05	3.791E+01	1.882E+02	2.821E+05	1.896E+01	5.164E+02	2.821E+05	1.896E+01	1.214E+00	3.386E+02	2.275E-02
2074	0	0	1,581,818	1,740,000	6,770E+02	5.421E+05	3.643E+01	1.808E+02	2.711E+05	1.821E+01	4.962E+02	2.711E+05	1.821E+01	1.166E+00	3.253E+02	2.186E-02
2075	0	0	1,581,818	1,740,000	6,505E+02	5.209E+05	3.500E+01	1.738E+02	2.604E+05	1.750E+01	4.767E+02	2.604E+05	1.750E+01	1.125E+00	3.125E+02	2.100E-02
2076	0	0	1,581,818	1,740,000	6,250E+02	5.005E+05	3.363E+01	1.669E+02	2.502E+05	1.681E+01	4.580E+02	2.502E+05	1.681E+01	1.076E+00	3.003E+02	2.018E-02
2077	0	0	1,581,818	1,740,000	6,005E+02	4.808E+05	3.231E+01	1.604E+02	2.404E+05	1.615E+01	4.401E+02	2.404E+05	1.615E+01	1.034E+00	2.885E+02	1.938E-02
2078	0	0	1,581,818	1,740,000	5,769E+02	4.620E+05	3.104E+01	1.541E+02	2.310E+05	1.552E+01	4.228E+02	2.310E+05	1.552E+01	9.936E-01	2.772E+02	1.862E-02
2079	0	0	1,581,818	1,740,000	5,543E+02	4.439E+05	2.982E+01	1.481E+02	2.219E+05	1.491E+01	4.062E+02	2.219E+05	1.491E+01	9.546E-01	2.663E+02	1.789E-02
2080	0	0	1,581,818	1,740,000	5,326E+02	4.265E+05	2.865E+01	1.423E+02	2.132E+05	1.433E+01	3.903E+02	2.132E+05	1.433E+01	9.172E-01	2.559E+02	1.719E-02
2081	0	0	1,581,818	1,740,000	5,117E+02	4.097E+05	2.753E+01	1.367E+02	2.049E+05	1.377E+01	3.750E+02	2.049E+05	1.377E+01	8.812E-01	2.458E+02	1.652E-02
2082	0	0	1,581,818	1,740,000	4,916E+02	3.937E+05	2.645E+01	1.313E+02	1.968E+05	1.323E+01	3.603E+02	1.968E+05	1.323E+01	8.467E-01	2.362E+02	1.587E-02
2083	0	0	1,581,818	1,740,000	4,723E+02	3.782E+05	2.541E+01	1.262E+02	1.891E+05	1.271E+01	3.462E+02	1.891E+05	1.271E+01	8.135E-01	2.269E+02	1.525E-02
2084	0	0	1,581,818	1,740,000	4,538E+02	3.634E+05	2.442E+01	1.212E+02	1.817E+05	1.221E+01	3.326E+02	1.817E+05	1.221E+01	7.816E-01	2.180E+02	1.465E-02
2085	0	0	1,581,818	1,740,000	4,360E+02	3.492E+05	2.346E+01	1.165E+02	1.746E+05	1.179E+01	3.196E+02	1.746E+05	1.179E+01	7.505E-01	2.095E+02	1.408E-02
2086	0	0	1,581,818	1,740,000	4,189E+02	3.355E+05	2.254E+01	1.119E+02	1.677E+05	1.127E+01	3.070E+02	1.677E+05	1.127E+01	7.215E-01	2.013E+02	1.352E-02
2087	0	0	1,581,818	1,740,000	4,025E+02	3.223E+05	2.166E+01	1.075E+02	1.612E+05	1.083E+01	2.950E+02	1.612E+05	1.083E+01	6.932E-01	1.934E+02	1.299E-02
2088	0	0	1,581,818	1,740,000	3,867E+02	3.097E+05	2.081E+01	1.033E+02	1.548E+05	1.040E+01	2.834E+02	1.548E+05	1.040E+01	6.660E-01	1.858E+02	1.248E-02
2089	0	0	1,581,818	1,740,000	3,716E+02	2.975E+05	1.999E+01	9.925E+01	1.488E+05	9.995E+00	2.723E+02	1.488E+05	9.995E+00	6.399E-01	1.785E+02	1.199E-02
2090	0	0	1,581,818	1,740,000	3,570E+02	2.859E+05	1.921E+01	9.536E+01	1.429E+05	9.604E+00	2.616E+02	1.429E+05	9.604E+00	6.148E-01	1.715E+02	1.152E-02
2091	0	0	1,581,818	1,740,000	3,430E+02	2.747E+05	1.845E+01	9.162E+01	1.373E+05	9.227E+00	2.514E+02	1.373E+05	9.227E+00	5.907E-01	1.648E+02	1.107E-02
2092	0	0	1,581,818	1,740,000	3,295E+02	2.639E+05	1.773E+01	8.802E+01	1.319E+05	8.865E+00	2.415E+02	1.319E+05	8.865E+00	5.675E-01	1.583E+02	1.064E-02
2093	0	0	1,581,818	1,740,000	3,166E+02	2.535E+05	1.704E+01	8.457E+01	1.268E+05	8.518E+00	2.320E+02	1.268E+05	8.518E+00	5.453E-01	1.521E+02	1.022E-02
2094	0	0	1,581,818	1,740,000	3,042E+02	2.436E+05	1.637E+01	8.126E+01	1.218E+05	8.184E+00	2.230E+02	1.218E+05	8.184E+00	5.239E-01	1.462E+02	9.820E-03
2095	0	0	1,581,818	1,740,000	2,923E+02	2.340E+05	1.573E+01	7.807E+01	1.170E+05	7.863E+00	2.142E+02	1.170E+05	7.863E+00	5.034E-01	1.404E+02	9.435E-03
2096	0	0	1,581,818	1,740,000	2,808E+02	2.249E+05	1.511E+01	7.501E+01	1.124E+05	7.554E+00	2.058E+02	1.124E+05	7.554E+00	4.836E-01	1.349E+02	9.065E-03
2097	0	0	1,581,818	1,740,000	2,698E+02	2.161E+05	1.452E+01	7.207E+01	1.080E+05	7.258E+00	1.977E+02	1.080E+05	7.258E+00	4.647E-01	1.296E+02	8.710E-03
2098	0	0	1,581,818	1,740,000	2,592E+02	2.076E+05	1.395E+01	6.924E+01	1.038E+05	6.974E+00	1.900E+02	1.038E+05	6.974E+00	4.464E-01	1.245E+02	8.368E-03
2099	0	0	1,581,818	1,740,000	2,491E+02	1.994E+05	1.340E+01	6.653E+01	9.972E+04	6.700E+00	1.825E+02	9.972E+04	6.700E+00	4.289E-01	1.197E+02	8.040E-03
2100	0	0	1,581,818	1,740,000	2,393E+02	1.916E+05	1.287E+01	6.392E+01	9.581E+04	6.437E+00	1.754E+02	9.581E+04	6.437E+00	4.121E-01	1.150E+02	7.725E-03
2101	0	0														

APPENDIX 3

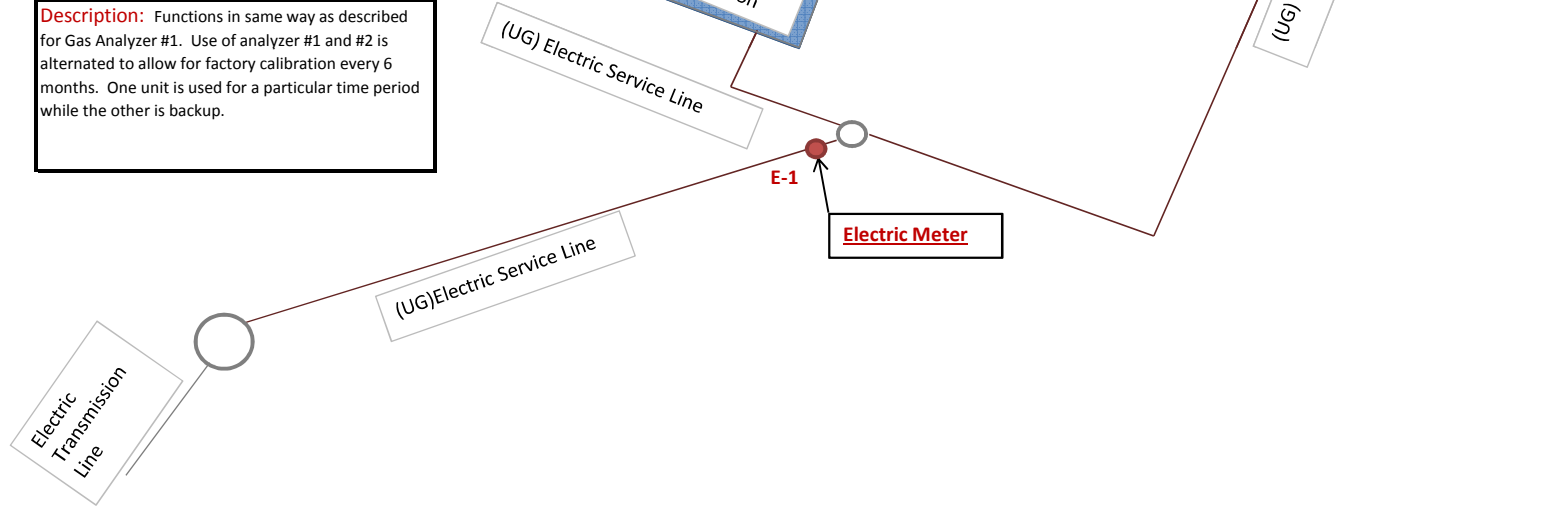
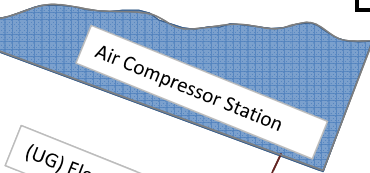
Carbon Credit Monitoring Equipment



Continuous Gas Analyzer #1	
Manufacturer:	CES Landtec
Model:	FAU
Serial #:	GA08977
Description: Samples landfill gas automatically, controlled by PLC, approx. once every 4 minutes and analyzes for CH4, CO2 and O2 on a wet basis. Field calibrations are performed automatically, controlled by PLC, at least daily. Factory calibration is recommended after 6 months use.	

Flow Meter	
Manufacturer:	CES Landtec
Model:	ACCU-FLO (insertion)
Serial #:	SIP-05-18-SVA05-DC24-LFG-LANDTEC
Description: Thermal mass flow meter that auto-adjusts for temperature and pressure and reports a value of standard cubic feet per minute	

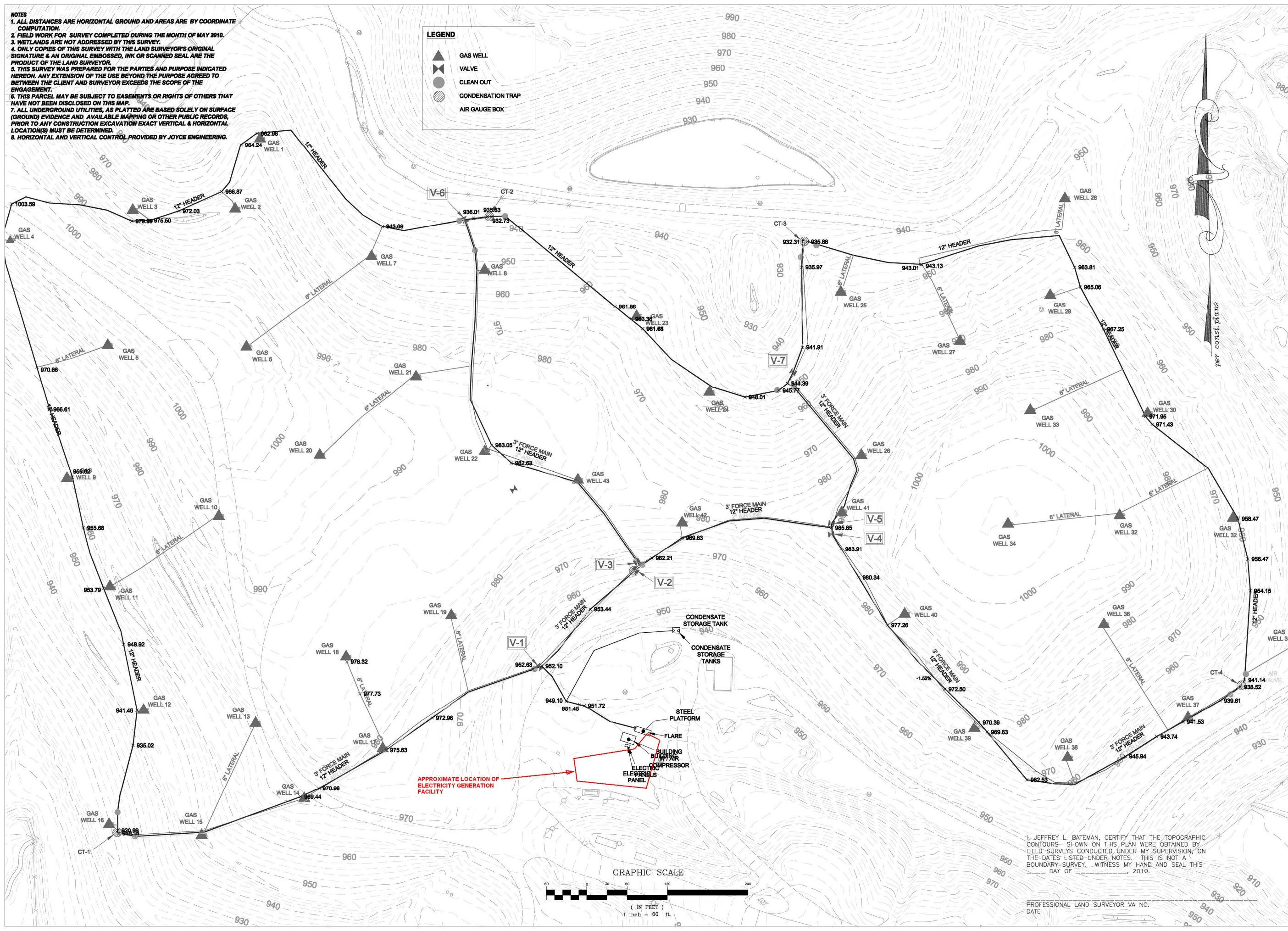
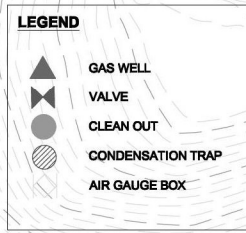
Continuous Gas Analyzer #2	
Manufacturer:	CES Landtec
Model:	FAU
Serial #:	GA08976
Description: Functions in same way as described for Gas Analyzer #1. Use of analyzer #1 and #2 is alternated to allow for factory calibration every 6 months. One unit is used for a particular time period while the other is backup.	



DRAWING

SUR1 – Record Drawing of Gas Collection System

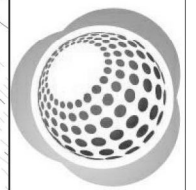
NOTES
 1. ALL DISTANCES ARE HORIZONTAL GROUND AND AREAS ARE BY COORDINATE COMPUTATION.
 2. FIELD WORK FOR SURVEY COMPLETED DURING THE MONTH OF MAY 2010.
 3. WETLANDS ARE NOT ADDRESSED BY THIS SURVEY.
 4. ONLY COPIES OF THIS SURVEY WITH THE LAND SURVEYOR'S ORIGINAL SIGNATURE & AN ORIGINAL EMBOSSED, INK OR SCANNED SEAL ARE THE PRODUCT OF THE LAND SURVEYOR.
 5. THIS SURVEY WAS PREPARED FOR THE PARTIES AND PURPOSE INDICATED HEREON. ANY EXTENSION OF THE USE BEYOND THE PURPOSE AGREED TO BETWEEN THE CLIENT AND SURVEYOR EXCEEDS THE SCOPE OF THE ENGAGEMENT.
 6. THIS PARCEL MAY BE SUBJECT TO EASEMENTS OR RIGHTS OF OTHERS THAT HAVE NOT BEEN DISCLOSED ON THIS MAP.
 7. ALL UNDERGROUND UTILITIES, AS PLATTED ARE BASED SOLELY ON SURFACE (GROUND) EVIDENCE AND AVAILABLE MAPPING OR OTHER PUBLIC RECORDS, PRIOR TO ANY CONSTRUCTION EXCAVATION EXACT VERTICAL & HORIZONTAL LOCATION(S) MUST BE DETERMINED.
 8. HORIZONTAL AND VERTICAL CONTROL PROVIDED BY JOYCE ENGINEERING.



I, JEFFREY L. BATEMAN, CERTIFY THAT THE TOPOGRAPHIC CONTOURS SHOWN ON THIS PLAN WERE OBTAINED BY FIELD SURVEYS CONDUCTED UNDER MY SUPERVISION, ON THE DATES LISTED UNDER NOTES. THIS IS NOT A BOUNDARY SURVEY. WITNESS MY HAND AND SEAL THIS DAY OF _____, 2010.

PROFESSIONAL LAND SURVEYOR VA NO. _____
 DATE _____

Bateman Civil Survey Company, PC
 Engineers • Surveyors • Planners
 200 North Main Street, Holly Springs, NC 27540
 Phone: (919) 577-1080 Fax: (919) 577-1081
 Info@BatemanCivilSurvey.com



Gas Line As-built Survey
Martinsville Sanitary Landfill
Martinsville, Virginia

Revisions
Designed By:
Drawn By:
Checked By:
Scale:
Date:
Drawing Number: 000-000

SUR1