

## Werner, Elizabeth

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**From:** Dave Pasko [dave.pasko@mcgillengineers.com]  
**Sent:** Friday, September 30, 2011 3:29 PM  
**To:** Werner, Elizabeth  
**Cc:** 'Marty Stamey'; 'David Francis'; 'Stephen King'; Gaither, Allen; Keller, Andrea; Jeff Bishop; 'Bill Sperry'; Mark Cathey; kelly.smith@mcgillengineers.com; andy@blecorp.com  
**Subject:** Landfill Gas Monitoring - Francis Farm Landfill Haywood County (44-03)  
**Attachments:** FFLF - Sept 29, 2011.pdf

Ms. Werner,

In accordance with the Landfill Gas Monitoring Plan submitted on September 13, 2010, quarterly monitoring took place at the Francis Farm Landfill on September 29, 2011. See the attached pdf for the monitoring results. Samples were taken from the thirteen (13) landfill gas (LFG) monitoring wells located around the periphery of the landfill. LFG monitoring wells 1, 2, 3, 4, 6, 10, 11, and 12 exceeded 100% of the lower explosive limit (LEL) for methane gas. LFG wells 1, 2, 3, 4, and 6 are located on the north side of the landfill. LFG wells 10, 11, and 12 are located along the south/southwestern border of the landfill. Additionally, sample points within the on-site buildings were monitored with all of the methane observations being 0% LEL. This sampling event completes the sampling period noted in the Landfill Gas Assessment & Remediation Plan. The data collected over the past year has been consistent and will be useful in evaluating the effectiveness of the remediation efforts taken by the County (see below). We will begin work on the Report of Landfill Gas Assessment and submit this Report to your office in November, as noted in the Plan.

We want to take this opportunity to bring you up to date on the remediation work that Haywood County is performing at the Francis Farm Landfill. The County is proceeding with the implementation of Phases 2 and 3 of the Gas Collection, Combustion, and Generation System. Phase 1 of the project – the installation of 21 gas extraction wells – was completed in September 2010. Phase 2 consists of the installation of gas collection piping, well dewatering pumps, a flare station, and a waste water pumping station. The County has begun construction of Phase 2 and hopes to complete construction by the end of this year. The County received a grant to produce electricity from the combustion of landfill gas and Phase 3 of the project – the installation of a 75 KW generator – is under way. Phase 3 will be completed after the necessary Phase 2 items (i.e. flare station, blower, collection piping) are completed. The goal is to have Phase 3 on line and producing electricity by the end of January 2012. The Gas Collection, Combustion and Generation System will assist the County with the control of LFG migration by combusting approximately 100 scfm of landfill gas continuously. Over time, the gas flow gradient will be diverted from the LFG monitoring wells at the periphery of the property to the extraction wells instead, where the gas will then be collected and used to create electricity. As noted above, the monthly monitoring data collected as part of the LFG Assessment & Remediation Plan has been consistent and will provide a good measure of the effectiveness of the Gas Collection, Combustion and Generation System when it comes on line. In addition to controlling the migration of landfill gas, leachate will be removed from the extraction wells and discharged into the Town of Waynesville Waste Water Treatment system. Within the first few weeks of operation of the dewatering pumps, we anticipate that approximately 200,000 gallons of leachate will be removed from the landfill. After the initial pump down of leachate, leachate removal rates will be lower, with the intent to continuously pump from 5 locations within the landfill. The design of the dewatering pumps is such that if an area of the landfill becomes dry, the pumps can be moved to other extraction wells to allow the County to remove leachate from different areas of the landfill.

With the LFG monitoring data being very consistent over the past 13 months, the County would like to go on a quarterly monitoring schedule until such time that electricity is being produced, approximately January 2012. As part of the Report of Landfill Gas Assessment, the County will request that a monthly monitoring schedule be implemented for one year beginning when the generator is brought on line. The one year sampling period

will allow the County to observe trends in landfill gas monitoring which in turn will help determine the effectiveness of the Gas Collection, Combustion and Generation Project.

Please call should you have any questions or need additional information. We look forward to submitting the Report of Landfill Gas Assessment to your office. And we look forward to getting the Gas Collection, Combustion and Generation system on line and LFG migration at the Francis Farm Landfill under control.



“Building Partnerships by Providing Superior Service with Professional Integrity”

**Dave Pasko**

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## ASSESSMENT MONITORING

# Landfill Gas Measurements Field Worksheet

## Francis Farm Landfill - Permit #44-03

### Haywood County, North Carolina

Name of Person Taking Readings: KS

Date: September 29, 2011

Weather Conditions: Cool, Overcast

Ambient Temp: 58°

Atmospheric Pressure: 27.03" Hg

Gas Monitoring Equipment: Land-Tec GEM 2000

Serial #: 11944/09

Factory Calibration Date: April 7, 2011

Field Calibration Date : September 29, 2011

Well or Probe ID	Stable Readings	Time	%LEL	%CH <sub>4</sub>	%CO <sub>2</sub>	%O <sub>2</sub>	Notes:
MM-1	Y	11:50	1268.0	63.4	35.0	1.0	Added MM # on metal casing
MM-2	Y	11:45	1224.0	61.2	36.5	1.0	Added MM # on metal casing
MM-3	Y	11:40	1056.0	52.8	35.7	1.4	
MM-4	Y	11:20	446.0	22.3	25.7	1.2	
MM-5	Y	11:25	0.0	0.0	4.1	17.6	
MM-6	Y	11:30	352.0	17.6	15.9	3.6	
MM-7	Y	11:10	0.0	0.0	4.0	16.6	
MM-8	Y	10:45	0.0	0.0	3	17.8	
MM-9	Y	10:10	0.0	0.0	3.8	17.6	
MM-10	Y	10:05	1128.0	56.4	36.5	0.4	
MM-11	Y	10:00	858.0	42.9	33.5	1.4	
MM-12	Y	9:50	1216.0	60.8	39.0	0.1	Pad damaged - cracked/broken
MM-13	Y	9:40	0.0	0.0	0.3	20.3	
SM-1a	Y	10:55	0.0	0.0	0.0	20.4	
SM-1b	Y	11:00	0.0	0.0	0.0	20.4	
SM-1c	Y	11:05	0.0	0.0	0.0	20.5	
SM-2	Y	10:40	0.0	0.0	0.0	20.4	
SM-3	Y	11:15	0.0	0.0	0.0	20.4	
MW-12	Y	10:15	0.0	0.0	0.0	20.3	
VB-1*	No	11:10					
MW-4*	Y	10:30	12.0	0.6	1.0	19.7	
MW-5	Y	10:20	0.0	0.0	0.1	20.1	

Note: If methane gas readings exceed 25% of LEL in structures or 100% of LEL in probes contact Haywood County Solid Waste Director immediately at 828-400-3544.

**Field Observation Notes:**