

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- Prepare one form for each individually monitored unit.
- Please type or print legibly.
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

AMEC Environment & Infrastructure, Inc.

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Susan Kelly Phone: 828-252-8130

E-mail: susan.kelly@amec.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Western Carolina University MSW Landfill	Monteith Gap Road (State Road 1336) Cullowhee, NC 28723	50-01	0.0500	January 9, 2012

Environmental Status: (Check all that apply)

- Initial/Background Monitoring
 Detection Monitoring
 Assessment Monitoring
 Corrective Action

Type of data submitted: (Check all that apply)

- Groundwater monitoring data from monitoring wells
 Methane gas monitoring data
 Groundwater monitoring data from private water supply wells
 Corrective action data (specify) _____
 Leachate monitoring data
 Other(specify) _____
 Surface water monitoring data

Notification attached?

- No. No groundwater or surface water standards were exceeded.
 Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
 Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Susan E. Kelly, PE, LG Senior Engineer (828) 252-8130
 Facility Representative Name (Print) Title (Area Code) Telephone Number
Susan Kelly 1/27/2012 Affix NC Licensed/ Professional Geologist Seal
 Signature Date

1308 Patton Avenue, Asheville, NC 28806

Facility Representative Address

F-1253

NC PE Firm License Number (if applicable effective May 1, 2009)



AMEC Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806
Phone: (828) 252-8130 Fax: (828) 251-9690



LETTER OF TRANSMITTAL

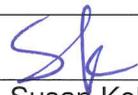
TO: Ms. Jaclynne Drummond NCDENR DWM 1646 Mail Service Center Raleigh, North Carolina 27699-1646	DATE: January 27, 2012 PROJECT NO.: 6252-11-1937 PROJ. NAME: Western Carolina University Closed MSWLF SUBJECT: Preliminary Landfill Gas Investigation Report
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WE TRANSMIT TO YOU: HEREWITH UNDER SEPARATE COVER

SUBJECT: <input type="checkbox"/> DRAWINGS <input type="checkbox"/> SPECIFICATIONS <input type="checkbox"/> CALCULATIONS <input checked="" type="checkbox"/> REPORT <input type="checkbox"/> COST ESTIMATE <input type="checkbox"/> AS NOTED	ACTION: <input checked="" type="checkbox"/> FOR YOUR INFORMATION <input type="checkbox"/> FOR YOUR COMMENT OR APPROVAL <input type="checkbox"/> RETURNED FOR CORRECTION: RESUBMIT <input type="checkbox"/> APPROVED AS NOTED <input type="checkbox"/> AS REQUESTED	SENT BY: <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> CERTIFIED MAIL <input type="checkbox"/> EXPRESS FedEx Overnight and e-mail <input type="checkbox"/> COURIER <input type="checkbox"/> HAND DELIVERED <input type="checkbox"/> FACSIMILE: pages (including transmittal sheet)
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COPIES	DATE	DESCRIPTION
1	1/27/2011	Western Carolina University Closed MSWLF – Preliminary Landfill Gas Investigation Report

REMARKS:
Ms. Drummond,
Attached is the Preliminary Landfill Gas Investigation Report for Western Carolina University's closed MSWLF in Cullowhee. Please feel free to contact me if you have any questions. Thanks, Susan

CC: Mr. Troy Harrison – NCDENR, Asheville Regional Office
Mr. Roger Turk – Western Carolina University
By: 
Susan Kelly
Phone: 828-252-8130
File (1)

CONFIDENTIALITY NOTICE: This message is intended only for the use of the individual or entity to which it is addressed, and may contain information that is privileged, confidential, and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original message to us at the above address via the U.S. Postal Service. Thank you.



January 27, 2012

Ms. Jaclynne Drummond
NCDENR – DWM
Solid Waste Section
217 West Jones Street Raleigh
Raleigh, North Carolina 27603

Subject: **Letter Report of Preliminary Landfill Gas Investigation
Western Carolina University Closed MSWLF (Permit 50-01)
Cullowhee, Jackson County, North Carolina
AMEC Project 6252-11-1937**

Dear Ms. Drummond:

AMEC Environment & Infrastructure, Inc. (AMEC) on behalf of Western Carolina University (WCU) is pleased to submit this Letter Report of Preliminary Landfill Gas Investigation for WCU's closed municipal solid waste landfill (MSWLF) located on Monteith Gap Road in Cullowhee, North Carolina (Site).

PROJECT INFORMATION

WCU operated a municipal solid waste landfill from approximately the 1960s until October 1993. Jackson County also disposed of municipal solid waste at the landfill from approximately the early 1970s to the early 1980s. The landfill property is approximately 31.5 acres, approximately four acres of which contains the former landfill (Figure 1). The landfill was closed in accordance with the then applicable North Carolina Department of Environment and Natural Resources (NCDENR) closure standards (15A NCAC 13B 0.0510) and WCU received a closure permit approval letter from NCDENR on September 5, 1995. The post-closure conditions stated in the letter included requirements for landfill gas management and water quality monitoring.

NCDENR Solid Waste Section staff conducted a facility compliance audit at the facility on March 16, 2011. The audit report indicated that WCU was not in compliance with the landfill gas management requirements of the post-closure conditions. AMEC submitted a Landfill Gas Investigation Work Plan to the Solid Waste Section for review on October 19, 2011. NCDENR approved the Landfill Gas Investigation Work Plan in a letter dated November 29, 2011. This letter report documents the results of the preliminary landfill gas investigation conducted in accordance with the Landfill Gas Investigation Work Plan.

FIELD ACTIVITIES

As discussed in the Landfill Gas Investigation Work Plan, landfill gas was measured at the four existing monitoring wells at the site (Figure 2) during low/decreasing barometric

Correspondence:
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pressure conditions (January 9, 2012). The monitoring wells were fitted with a temporary slip cap equipped with a barb fitting to allow for measurement of potential landfill gas. A calibrated gas monitoring instrument, a Landtec GEM 2000, was used to measure the following landfill gas parameters, as well as atmospheric barometric pressure:

- Methane (percent by volume)
- Oxygen (percent by volume)
- Carbon dioxide (percent by volume)

The initial and stabilized readings for the above parameters were measured and recorded. The Solid Waste Section's "Landfill Gas Monitoring Data Form" was used to record measurements and other relevant information and is provided as an attachment to this report.

DISCUSSION AND CONCLUSIONS

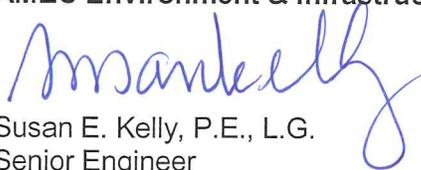
Of the four monitoring points, monitoring well MW-3 contained methane at a detectable concentration. A stabilized reading of 3.1 percent methane by volume and a lower explosive limit reading of 63 percent were recorded at MW-3. A stabilized reading of 19.3 percent carbon dioxide and 0.0 percent oxygen were also recorded at MW-3. The initial and stabilized readings collected from the other three site monitoring wells (MW-1, MW-2 and MW-4) did not indicate elevated concentrations of methane or carbon dioxide or decreased concentrations of atmospheric oxygen, which would be indicative of landfill gas migration.

The regulatory limit for methane at a MSWLF property boundary is equal to the lower explosive limit of methane (15A NCAC 13B.0544(d)), which is five percent methane on a volume to volume basis. The recorded results from the four Site monitoring wells do not exceed this limit. The results of the preliminary landfill gas investigation do not suggest that regulatory limits are being exceeded at the Site.

As proposed and approved in the letter from NCDENR dated November 29, 2011, a more extensive landfill gas investigation will be performed as funding is received by WCU.

Sincerely,

AMEC Environment & Infrastructure, Inc.

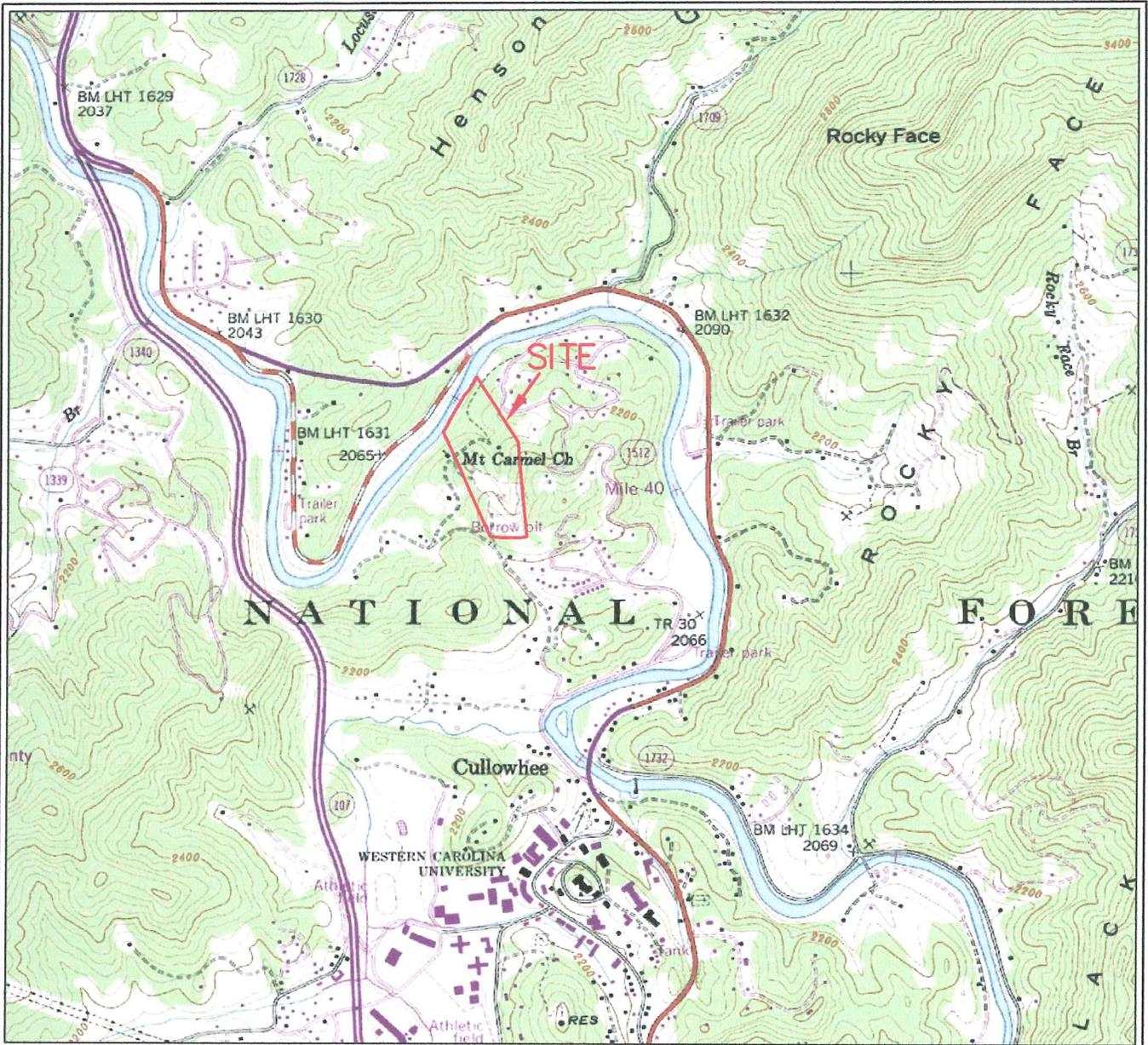

Susan E. Kelly, P.E., L.G.
Senior Engineer


Matthew E. Wallace, P.E.
Principal Engineer

SEK/MEW:sek

cc: Mr. Roger Turk – Western Carolina University
Mr. Troy Harrison – NCDENR – Solid Waste Section, Asheville Regional Office

attachments: Figure 1 – Site Location Map
Figure 2 – Monitoring Well Locations
Environmental Monitoring Reporting Form
Landfill Gas Monitoring Data Form



SYLVA SOUTH, N.C. QUADRANGLE

35083-C2-TF-024

DMA 4354 I SW-SERIES V842

PRINTED 1946

PHOTOREVISED 1990



QUADRANGLE LOCATION

NOTE: SITE BOUNDARY IS APPROXIMATE.



CONTOUR INTERVAL 40 FEET

GRAPHIC SCALE FEET



SITE LOCATION MAP
 WCU CLOSED MSWLF
 MONTEITH GAP ROAD
 CULLOWHEE, NORTH CAROLINA

DRAWN: RMC	DATE: JAN. 2012
DFT CHECK: SEK	SCALE: 1" = 2,000'
ENG CHECK: --	JOB: 6252-11-1937
APPROVAL: SEK	FIG: 1

NC Division of Waste Management - Solid Waste Section

Landfill Gas Monitoring Data Form

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Facility Name: WCU Closed MSWLF Permit Number: 50-01

Date of Sampling: 1/9/12 NC Landfill Rule (.0500 or .1600): .0500

Name and Position of Sample Collector: LANOTEC GEM 2000 @ Wellheads

Type and Serial Number of Gas Meter: GM12334 / 10 Calibration Date of Gas Meter: 1/5/12

Date and Time of Field Calibration: 1/5/12

Type of Field Calibration Gas (15/15 or 35/50): 35/50 Expiration Date of Field Calibration Gas Canister: 10/31/13

Pump Rate of Gas Meter: 0.3 L/min

Ambient Air Temperature: 56°F Barometric Pressure: 27.65 Hg General Weather Conditions: Light Rain

Instructions: Under "Location or LFG Well" identify the monitoring wells or describe the location for other tests (e.g., inside buildings). A drawing showing the location of test must be attached. Report methane readings in both % LEL and % methane by volume. A reading in percent methane by volume can be converted to % LEL as follows: % methane by volume = % LEL/20

Location or LFG Well ID	Sample Tube Purge	Time	Time Pumped (s)	Initial %LEL	Stabilized %LEL	%CH ₄ by Volume	%O ₂	%CO ₂	Notes
MW-2	/	1330	10 min.	0.0	0.0%	0.0%	21.7	0.0%	
MW-4	/	1350	10 min.	0.0	0.0%	0.0%	21.7	0.1%	
MW-3	/	1520	10 min.	42%	63%	3.1%	0.0%	19.3%	
MW-1	/	1600	10 min.	0.0	0.0%	0.0%	21.6	0.0%	
Background		1300	10 min.	0.0	0.0%	0.0%	21.8	0.0%	

If your facility has more gas monitoring locations than there is room on this form, please attach additional sheets listing the same information as contained on this form.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

[Signature]
SIGNATURE

Staff Geologist
TITLE



LEGEND

- Property Boundary
- Landfill Extents
- Unnamed Tributary/Stream
- Elevation Contour (10-foot interval)
- 50-foot Property Boundary Buffer
- MW-1 Monitoring Well

NOTE: Locations of depicted features are approximate.



MONITORING WELL LOCATIONS
 WCU CLOSED MSWLF
 CULLOWHEE, NORTH CAROLINA



DRAWN: RMC	ENG CHECK: --	DATE: JANUARY 2012	JOB: 6252-11-1937
DFT CHECK: SEK	APPROVAL: SEK	SCALE: APPROX. 1" = 180'	FIG: 2
REFERENCE: JACKSON COUNTY GIS.			