



## North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor  
William G. Ross Jr., Secretary  
Document ID No. RCO3317

### SOLID WASTE SECTION

October 31, 2007

Mr. Mike Gladden  
Public Works Director  
McDowell County  
60 East Court Street  
Marion, North Carolina 28752

Subject: McDowell County -  
Municipal Solid Waste Landfill  
Permit No. 56-01  
Methane Investigation Approval  
McDowell County

Dear Mr. Gladden:

On October 29, 2007 the Division of Waste Management received the documentation necessary for the approval of a Methane Investigation at the McDowell County, Municipal Solid Waste Landfill (MSWLF) Permit No. 56-01. The Investigation is to be accomplished in accordance with the submitted documents dated October 29, 2007 and approved by the County by letter, dated October 26, 2007.

The purpose for the Investigation, as stated in documents provided to the Division by Shield Engineering, Appalachian State University's subcontractor and with approval by the County; is *"to execute an assessment of the methane potential at the former McDowell County Landfill."*

Approval of the Investigation is contingent on:

- All work being done in accordance with the submitted documents.
- The submission to the Division of the results of the Investigation.

If you should have any questions regarding this matter please contact me at (828) 296-4704.

Sincerely,

Larry Frost  
Regional Engineer

#### Attachments

cc: David Wallace – Shield Engineering, Inc., 4301 Taggart Creek Road, Charlotte, NC 28208  
Deb Aja – SWS/ARO  
Bill Wagner – SWS/ARO

2090 US Highway 70, Swannanoa, North Carolina 28778  
Phone (828) 296-4500 \ FAX (828) 299-7043 \ Internet <http://wastenotnc.org>

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October 29, 2007

RECEIVED

OCT 29 2007

Mr. Larry Frost  
Environmental Engineer  
Solid Waste Section  
North Carolina Department of Environment and Natural Resources  
2090 U.S. Highway 70  
Swannanoa, North Carolina 28778

SOLID WASTE SECTION  
ASHEVILLE REGIONAL OFFICE

**Reference: Methane Investigation  
Former McDowell County Landfill  
Shield Project No. 1070249-01**

Dear Mr. Frost:

As we had discussed on September 20, 2007, Appalachian State University (ASU) is planning to execute an assessment of the methane potential at the former McDowell County Landfill. As of October 24, 2007 Shield Engineering, Inc. (Shield) has been subcontracted by ASU to perform an evaluation of the potential methane resources at this closed former landfill. ASU has a goal of completing this project by November 30, 2007. Hence, your assistance in expediting your review of this request would be greatly appreciated by ASU and Shield. The first task is to complete an assessment of the optimum locations within the landfill for the presence of methane. The purpose of this letter is to inform the Solid Waste Section of NCDENR of the proposed assessment and acquire consent for the work proposed herein.

To that end Shield is proposing to advance a series of Geoprobe boreholes across the cover of the closed former landfill in a grid pattern. The layout of the proposed grid is shown in Figure 1. Each of these boreholes will be pushed through the landfill cover into the underlying waste. Based on an assumed cover thickness of about 2 to 3 feet, the proposed depth for each borehole will be 5 feet. Following the withdrawal of the Geoprobe from the borehole, a LandTec GEM-500 methane probe will be used to measure the methane in air percentage within each borehole. Upon the completion of the boreholes and the subsequent measuring of the methane in air percentages, the last two steps will be the disposal of extracted waste from the borehole and the sealing of each borehole.

The extracted waste from all of the boreholes will be collected together and disposed of at the adjacent Transfer Station for later disposal at a permitted landfill. A slurry mix of hydrated bentonite will be subsequently prepared and then this mix will be used to seal up each of the



boreholes drilled across the landfill cover. The slurry mix will be placed from top to bottom in each borehole. The application of bentonite will seal up each hole and prevent the intrusion of either rain water or surface water into the borehole.

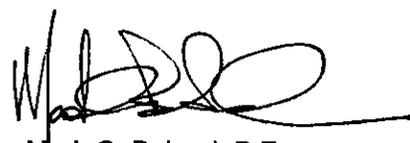
Based on the procedures outlined above we request SWS consent for the proposed assessment activities and Shield has included a letter of permission from McDowell County for the work proposed herein.

Should you have any questions please contact us by telephone at (704)-971-4149 or by e-mail at [dwallace@sheildengineering.com](mailto:dwallace@sheildengineering.com).

Sincerely,

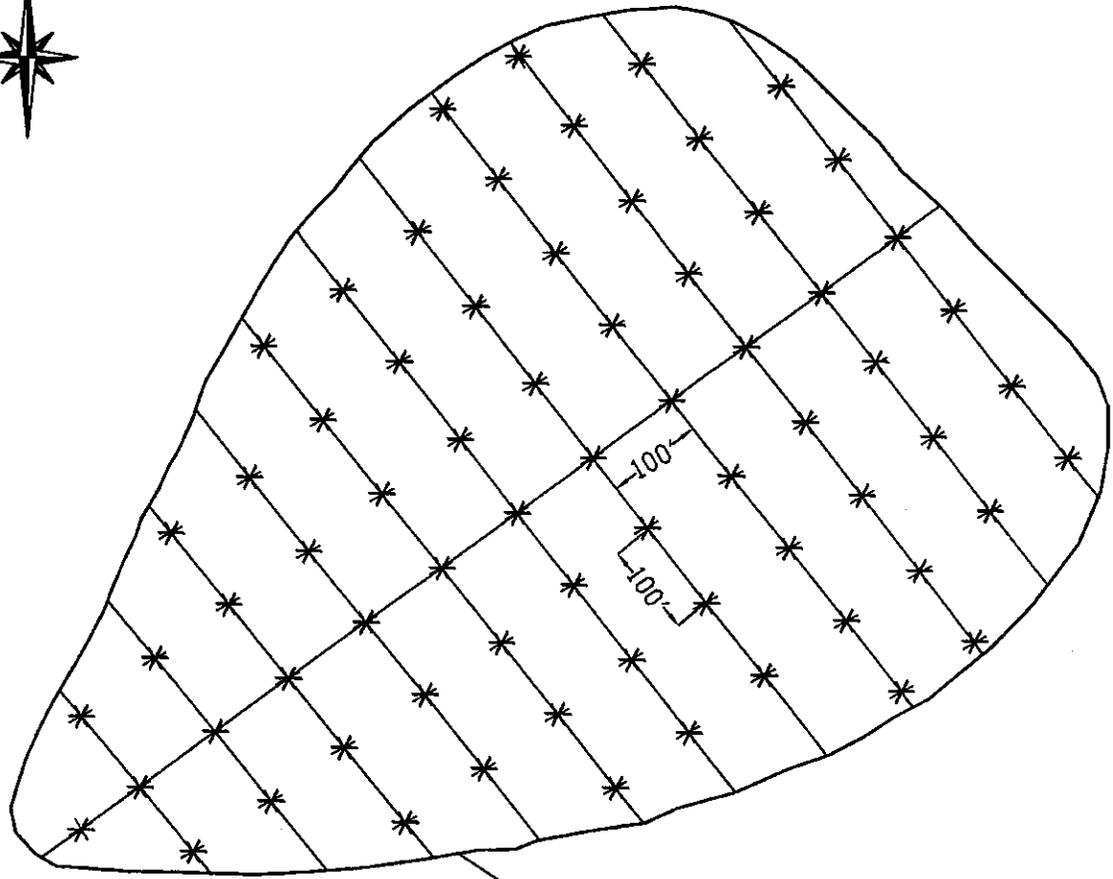
**SHIELD ENGINEERING, INC.**

  
David Wallace, P.E.  
Senior Engineer

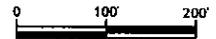
  
Mark C. Boland, P.E.  
Principal Engineer

Attachment: Permission Letter from McDowell County  
Figure 1

Cc: Mr. Stan Steury (Energy Center – Appalachian State University)  
Mr. Ed Mussler (SWS – Permitting Section; Raleigh)



APPROXIMATE  
BOUNDARY OF  
CLOSED LANDFILL



APPROXIMATE SCALE: 1 in. = 200 ft.

**LEGEND**

\* PROPOSED BORING LOCATION



**SHIELD**  
ENGINEERING, INC.

4301 TAGGART CREEK ROAD  
CHARLOTTE, NC 28208  
704-394-6913  
704-394-6968 fax  
www.shieldengineering.com

**PROPOSED METHANE INVESTIGATION  
PROBE LAYOUT**

**FORMER McDOWELL COUNTY LANDFILL  
MARION COUNTY, NORTH CAROLINA**

SHIELD # 1070249-01

DATE : 10/29/07

DRAWN BY : RBS

SCALE : AS SHOWN

FIGURE : 1

October 26, 2007

Mr. Larry Frost  
Environmental Engineer  
Solid Waste Section  
North Carolina Department of Environment and Natural Resources  
2090 U.S. Highway 70  
Swannanoa, North Carolina 28778

**Reference: Permission for Methane Investigation  
Former McDowell County Landfill  
Transfer Station Permit #5602T**

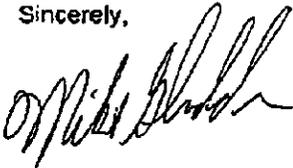
Dear Mr. Frost:

McDowell County understands that Appalachian State University (ASU) has subcontracted Shield Engineering, Inc. (Shield) to perform an evaluation of the potential methane resources at our former closed landfill. Our former landfill is located adjacent to our permitted Transfer Station referenced above, just off NC Highway 226, south of the I-40. This landfill was operational during the 1970s through to final closure in 1994. ASU recently approached McDowell County in regard to assessing the methane potential at this landfill for possible use as a source for renewable energy for businesses located in the area around the landfill. We have supported ASU in this endeavor since its inception. We have met with ASU and Shield to discuss the nature of the proposed methane investigation as a first step in assessing the methane potential for this former landfill.

Therefore, to that end we grant permission for ASU, and its subcontractor Shield, to perform an investigation across the former landfill in order to assess optimum locations for methane extraction.

Should you have any questions or concern, please contact myself by telephone at (828)-659-2521, or facsimile at (828)-652-2688.

Sincerely,



Mike Gladden  
McDowell County – Public Works Director