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March 18, 2011

Mr. Irvin Lane  
Compliance Hydrogeologist  
Division of Waste Management  
Solid Waste Section  
401 Oberlin Road  
Suite 150  
Raleigh, North Carolina 27605-1350

Subject: Catawba County, North Carolina  
Newton Sanitary Landfill  
Methane Migration Remediation Plan

Dear Mr. Lane:

During the afternoon of Friday January 28, 2011, methane concentrations exceeding the state regulatory limits were measured in the LFG (landfill gas) monitoring wells located along the west and northwest boundaries of the Newton Sanitary Landfill (Landfill) property. NCDENR Division of Waste Management (DWM) was notified on Monday January 31, 2011 of the exceedances. Camp Dresser and McKee (CDM), on behalf of Catawba County (County) is submitting this proposed remediation plan. Implementation of Task 1 of the remediation plan is currently underway, a copy of the plan has been placed in the operating record, and the DWM will be notified when all tasks are complete.

This remediation plan includes immediate remediation actions already taken, assessing LFG migration beyond the property boundary, monitoring of nearest off-site structures and installation of new LFG extraction wells and piping to limit further migration of landfill gas from the landfill. A discussion of the plan and schedule follows.

### **Background**

The Landfill ceased waste disposal operations in 1990 and was capped with a silty clay soil material cover at an average depth of 4 feet. The County currently operates a convenience center site in the southwest corner of the landfill property. The Landfill has an active LFG collection system, which consists of 84 extraction wells, a blower, and a flare for the collection and destruction of LFG. During routine system monitoring on January 28, 2011, methane concentrations exceeding 100% of the Lower Explosive Limit (5% methane by volume) were



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detected in eight LFG monitoring wells along the west and northwest property boundaries as shown in **Figure 1**.

On February 8, 2011, DWM staff and County personnel conducted a site inspection. During the inspection, it was agreed that a remediation plan would be submitted within 60 days of the initial reporting on January 31, 2011.

### **Remediation Plan**

The plan includes the following tasks:

#### **I. Immediate Remedial Actions**

Since reporting the exceedance, the County has performed the following remedial actions:

- evaluated the LFG collection system and determined that vacuum was low at a number of extraction wells and at the blower,
- blower vacuum was increased without a corresponding increase at the extraction wells. The County concluded that potentially the header pipe and/or extraction wells were flooded,
- condensate sumps were pumped out,
- vacuum remained low at several of the extraction wells so the County measured the water depth of the extraction wells and discovered that water was present in the extraction wells exhibiting low vacuum levels,
- activated the extraction wells directly adjacent to the monitoring wells with exceedances in an attempt to prevent further LFG migration,
- took readings at the monitoring wells along the boundary since the initial exceedance (refer to **Table 1**), and
- installed a new blower on March 8<sup>th</sup> to improve reliability and efficiency of the collection system.



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## II. Offsite Migration Assessment

To assess offsite migration, the County proposes to perform temporary borings on the west side of Bethany Church Road in the NCDOT right-of-way and in the northwest corner of the landfill property as shown in **Figure 2**. Temporary borings will be performed using a Geoprobe at 100-ft intervals. Based on groundwater information we estimate that the borings will be approximately 20 feet deep. Soil samples will be collected to determine if preferential flow paths such as weathered intrusions or sand lenses are present.

Measurements of %CH<sub>4</sub>, %CO<sub>2</sub>, and %O<sub>2</sub> will be collected following completion of each boring using a GEM 2000 or equivalent instrument. Readings will be collected also at the completion of all borings and 24-hours after completion. The 24-hour readings will be collected in the afternoon when LFG pressures are typically highest. Following collection of the 24-hour readings the boreholes will be backfilled.

## III. Offsite Structures Monitoring

The structures on the adjacent property parcels shown in **Figure 2** will be monitored for the presence of LFG by probing around the perimeter and in the crawl spaces for total organics (including CH<sub>4</sub>) with a Flame Ionizing Detector (FID).

## IV. LFG Collection System Improvements

The County intends to make the following improvements to the existing LFG collection system to provide better control of LFG:

- replace existing 10-inch diameter extraction wells near the western boundary that are not performing well with 36-inch diameter wells,
- install additional 36-inch diameter extraction wells along the west side of the landfill to provide closer spacing between wells (approximately 130-ft apart),
- install new header pipe and condensate sump to provide maximum vacuum to the wells, and
- install a new access road to facilitate operations and maintenance of the system.

Eight new vertical extraction wells will be installed and four existing wells will be replaced in the locations shown in **Figure 3**.



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### Schedule

Immediate actions have already begun and monitoring is on-going. The County intends to move forward with implementing the remediation plan (Tasks II through IV) unless otherwise directed by DWM. Completion of the remediation tasks is scheduled to occur in June 2011. During the course of work the County will provide scheduling updates to DWM on a bi-weekly basis. The County will submit a Completion Report 30 days following completion of the work.

The County and CDM are committed to working with the DWM in resolving the gas migration issue at the Newton Sanitary Landfill. If you have any questions or comments, please do not hesitate to contact me at (919) 787-5620 or at [colonemf@cdm.com](mailto:colonemf@cdm.com).

Very truly yours,

Mathew F. Colone, P.G.  
Camp Dresser & McKee

03/18/2011

cc: Rodney Hamby, Catawba County  
Barry Edwards, Catawba County  
Chris Gabel, CDM  
Martin Sanford, CDM  
Kenton Yang, CDM





**LEGEND**

—	PROPERTY LINE
---	SANITARY LANDFILL LIMITS
---	EXISTING INTERMEDIATE CONTOUR
---	EXISTING INDEX CONTOUR
⊕ LW-5	EXISTING EXTRACTION WELL
*	EXISTING KNOCKOUT SUMPS
⊕	EXISTING VALVE
---	EXISTING GAS PIPE
---	ABANDON EXISTING GAS PIPE
⊕ MW P3	EXISTING LFG MONITORING WELL

**METHANE MONITORING WELLS**

ID	EXCEEDANCE
MW P1	NO
MW P2	NO
MW P3	NO
MW P4	YES
MW P5	YES
MW P6	YES
MW P7	YES
MW P8	YES
MW P9	YES
MW P10	YES
MW P11	YES
MW P12	NO

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: MC/KJV  
 DRAWN BY: KJV  
 SHEET CHECKED BY: MDS  
 CROSS CHECKED BY: CJC  
 APPROVED BY: \_\_\_\_\_  
 DATE: MARCH 2011

**CDM**  
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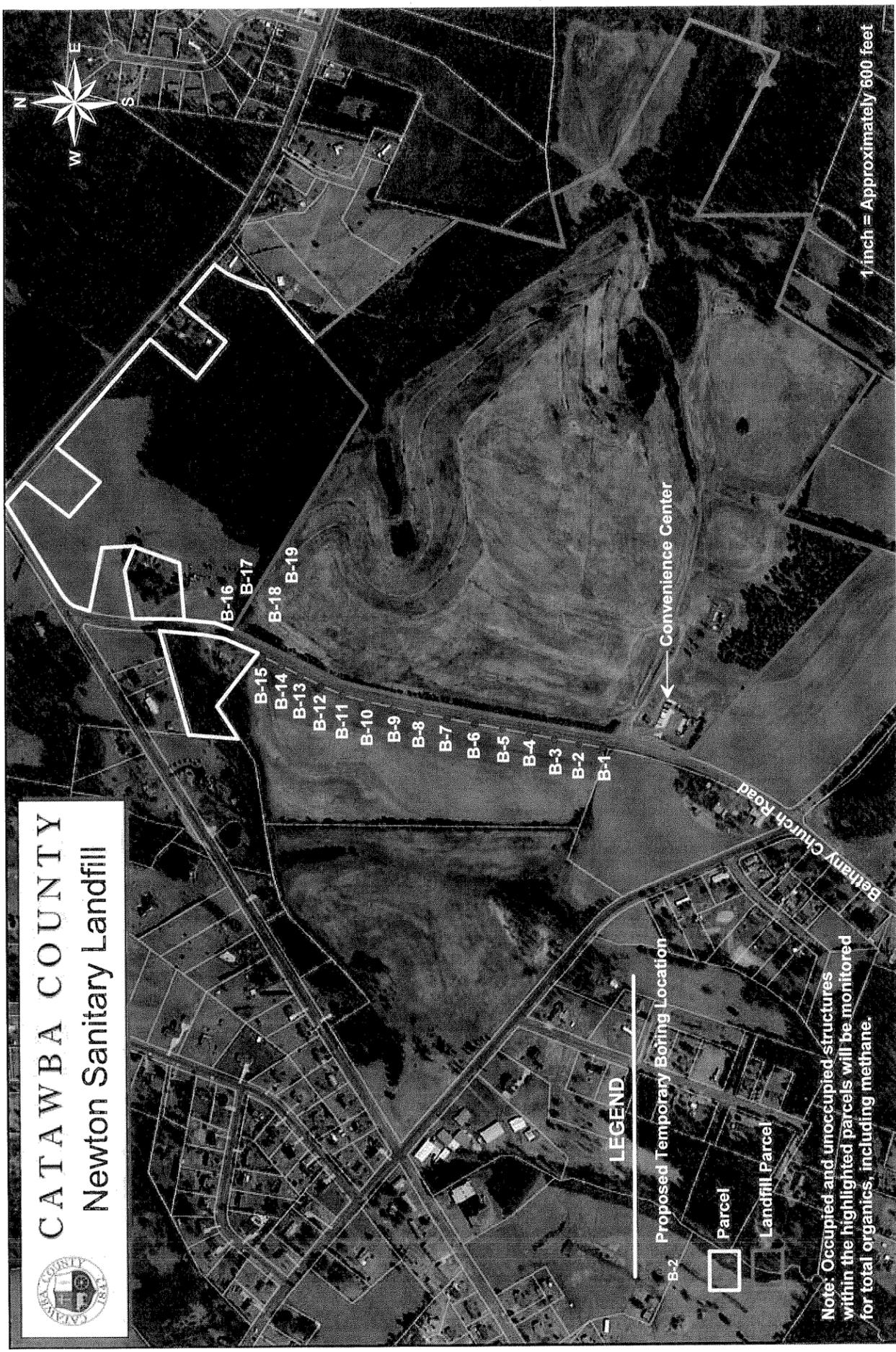
CATAWBA COUNTY  
 NORTH CAROLINA  
**METHANE MIGRATION REMEDIATION PLAN  
 NEWTON SANITARY LANDFILL**

METHANE EXCEEDANCE LOCATIONS

PROJECT NO. 6717-81467
FILE NAME:
FIGURE
1



**CATAWBA COUNTY**  
**Newton Sanitary Landfill**



**CDM**

**Figure 2**  
**Proposed Temporary Boring Locations**



LEGEND	
—	PROPERTY LINE
---	SANITARY LANDFILL LIMITS
---	EXISTING INTERMEDIATE CONTOUR
---	EXISTING INDEX CONTOUR
⊕	EXISTING EXTRACTION WELL
•	EXISTING KNOCKOUT SUMPS
⊕	EXISTING VALVE
—	EXISTING GAS PIPE
XXXXXXX	ABANDON EXISTING GAS PIPE
---	GAS PIPE
⊕ EW-101	EXTRACTION WELL
■	KNOCKOUT SUMPS
⊕ MW P3	EXISTING LFG MONITORING WELL

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: MC/KJY  
 DRAWN BY: KJT  
 SHEET CHK'D BY: MDS  
 CROSS CHK'D BY: C.J.G.  
 APPROVED BY: \_\_\_\_\_  
 DATE: MARCH 2011

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CATAWBA COUNTY  
 NORTH CAROLINA  
**METHANE MIGRATION REMEDIATION PLAN  
 NEWTON SANITARY LANDFILL**

PROPOSED LFG SYSTEM IMPROVEMENTS

PROJECT NO. 6717-81467  
 FILE NAME:  
 FIGURE  
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