Permit No.	Date	Document ID No.
11-07	**May 29, 2009**	**7693**

CDM

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May 28, 2009

Mr. Allen Gaither
North Carolina Department of Environmental and Natural Resources
Division of Waste Management
Solid Waste Section
2090 US Highway 70
Swannanoa, North Carolina 28778

Subject: Letter of Notice
Methane Monitoring Plan - Well Locations
Buncombe County Subtitle D Landfill
Alexander, North Carolina
Permit # 11-07

Dear Mr. Gaither:

CDM, on behalf of Buncombe County, is providing this Letter of Notice for the Methane Monitoring Plan at the Buncombe County Subtitle D Landfill. This Notice includes a discussion of methane monitoring well locations and a phased approach to well installation and provides the Division of Waste Management with a proposed monitoring well location map. Existing and proposed well locations are provided on **Figure 1**.

Currently, there are two methane monitoring wells at the facility south of Cells 1 and 2. The most recent Methane Monitoring Plan submitted in the Operations Plan of the Cell 6 Permit to Construct Application called for a total of nine wells at the facility. The Plan also stated that the wells will be installed in a phased approach as landfill development continues. Current and proposed well locations are inside of the landfill facility boundary. Similar to the groundwater wells, the well locations, as provided, serve as a detection system to monitor for methane before the facility boundary. In the event that methane gas is detected in the monitoring wells above the Lower Explosive Limit (LEL), gas migration can be assessed and remediated prior to migrating beyond the facility boundary.

Existing Monitoring Wells

Existing methane monitoring wells M-1 and M-2 are south of Cells 1 and 2. These wells were installed in 1997 and, along with the existing structures at the site, have been monitored for methane gas quarterly. To date, neither of these wells have had a detection of methane gas.

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Proposed Monitoring Wells
Proposed methane monitoring wells M-3 and M-4 locations are provided on **Figure 1**. These wells will be installed prior to the 2009 4th quarter monitoring event for the site. These wells will be installed at the locations on **Figure 1** to monitor possible methane gas migration to the north and west of the existing landfill cells.

Future Proposed Monitoring Wells
Future proposed methane monitoring wells M-5, -6, -7, -8, and -9 will be installed as subsequent phases of landfill development are completed. M-5 will be installed north of the future Cell 7; M-6 will be installed east of future Cell 7; M-7 will be installed east of future Cell 8; M-8 will be installed southeast of future Cell 9; and M-9 will be installed south of future Cell 10. Actual well locations for these future proposed wells may be modified as future Permit to Construct Applications are submitted.

Methane Monitoring Well Installation
Proposed methane monitoring wells M-3 through M-9 will be installed with a hollow-stem auger rig utilizing 4.25-inch inside diameter augers to create a nominal 8-inch borehole. Methane monitoring wells will be constructed with five feet of two-inch Schedule 40 PVC casing and a minimum of five feet of machine slotted 0.010-inch screen set in a sand pack at or within 18-inches of the existing groundwater table or at the top of bedrock if groundwater is not present in the saprolite or partially weathered rock. The sand pack will extend two feet above the top of the screen and a bentonite seal will be placed above the sand pack in each of the wells. The remainder of the borehole annulus will be completed with a bentonite/Portland cement grout to land surface. The wells will be completed with a two foot by two foot by six inch thick concrete pad and a locking, above grade, steel protective riser. Typical methane monitoring well detail is provided on **Figure 2**.

Methane Monitoring Forms
All readings will be recorded on a standard methane monitoring log form. A sample methane monitoring log is provided at the end of this letter. This form, or a similar form, is filled out and placed in the landfill operating records. The quarterly methane monitoring logs are on file at the landfill with other landfill records and available on the Buncombe County Bioreactor website.

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If you have any questions or comments regarding this proposed plan, please do not hesitate to contact me at (919) 787-5620.

Very truly yours,

Kenton J. Yang
CDM

NORTH CAROLINA PROFESSIONAL SEAL 029928 ENGINEER KENTON J. YANG
05/28/2009

cc: A. Keller, NCDENR DWM
J. Mears, BCSWMF
K. Smith, BCSWMF
C. Gabel, CDM
M. Brinchek, CDM
M. Colone, CDM

METHANE MONITORING LOG FORM
(report must be completed quarterly)

Buncombe County Subtitle D Landfill
Buncombe County, North Carolina

Technician Name: _____

Date: (mo/day/year)_____

General weather conditions: _____

Temperature: _____

Barometric condition pressure: _____

MONITORING INSTRUCTIONS

1. Measure methane levels within structures on the landfill property. The landfill gas reading must not exceed 25% of the methane lower explosive limit (LEL). If methane measurements exceed 25% of the LEL, contact the landfill supervisor and follow the outlined plan in Appendix B of the operations manual.

2. Measure methane levels at current methane monitoring wells located around the landfill perimeter. The landfill gas reading must not exceed the methane LEL. If methane measurements exceed the LEL, contact the landfill supervisor and follow the outlined plan in Appendix B of the operations manual.

3. Complete the entire data sheet located on the following page.

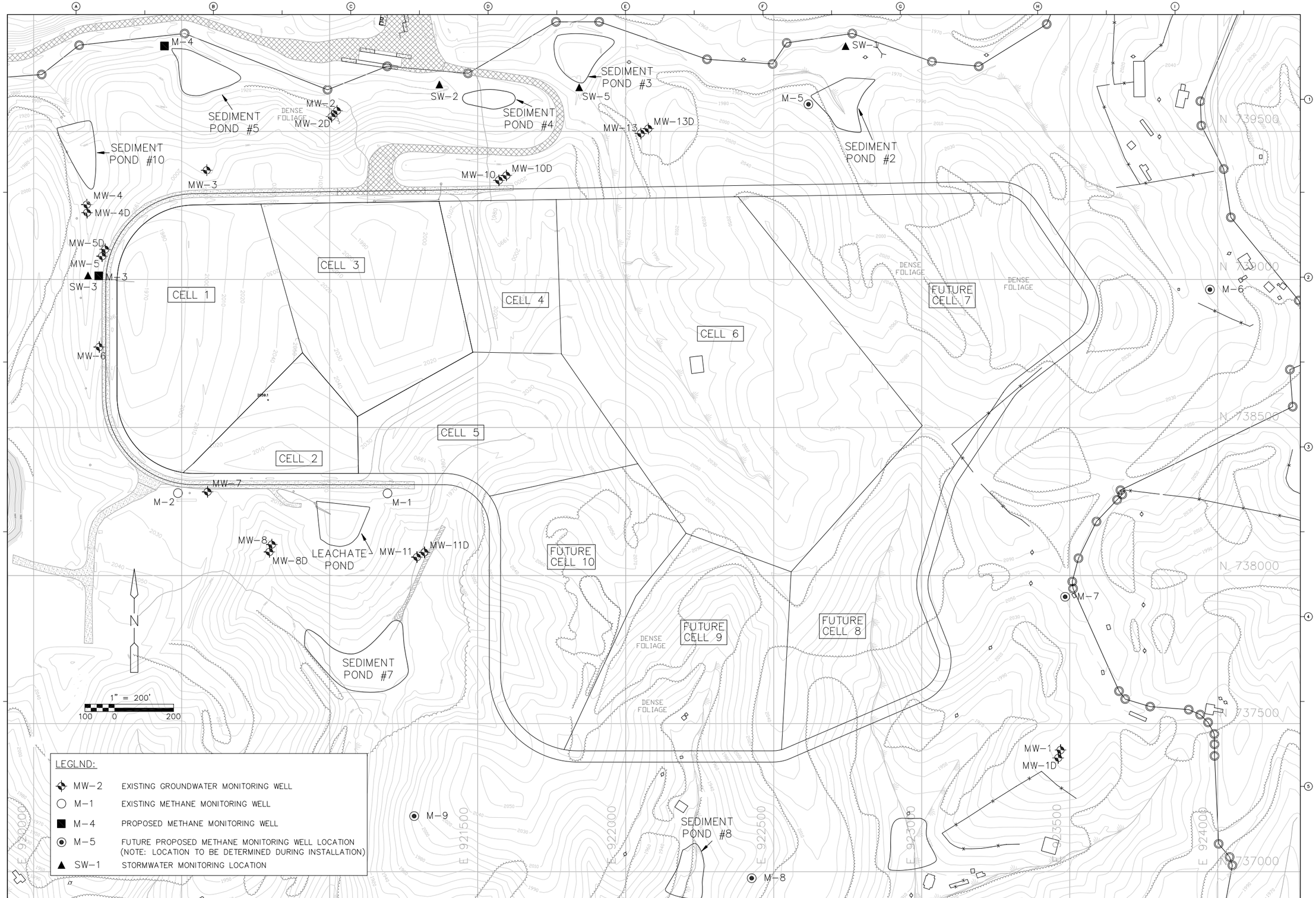
4. If methane levels exceed the above-mentioned levels at any monitoring location, report the measurements to the Landfill Supervisor at the following number: (828) 250-5460.

5. File this methane monitoring log sheet in the landfill office in the appropriate record keeping section with other landfill records.

METHANE MONITORING DATA SHEET

Monitoring Locations	*% L.E.L. Reading*	*Within Compliance*		*Landfill Supervisor Contacted*		*Monitoring Point within Structure*
		Yes	*No*	*Yes*	*No*	
Scale house						
Admin. bldg.						
Drop-off facility						
Field service storage						
Field service bldg.						
Methane well-1						
Methane well-2						
Methane well-3						
Methane well-4						
Methane well-5*						
Methane well-6*						
Methane well-7*						
Methane well-8*						
Methane well-9*						
Comments and Observations:						
Landfill Supervisor Actions Taken:						

*Wells M-5 through M-9 to be installed with subsequent landfill development.



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. COLONE
DRAWN BY: A. WEBSPFENNING
SHEET CHK'D BY: K. YANG
CROSS CHK'D BY: M. COLONE
APPROVED BY:
DATE: MAY 2009

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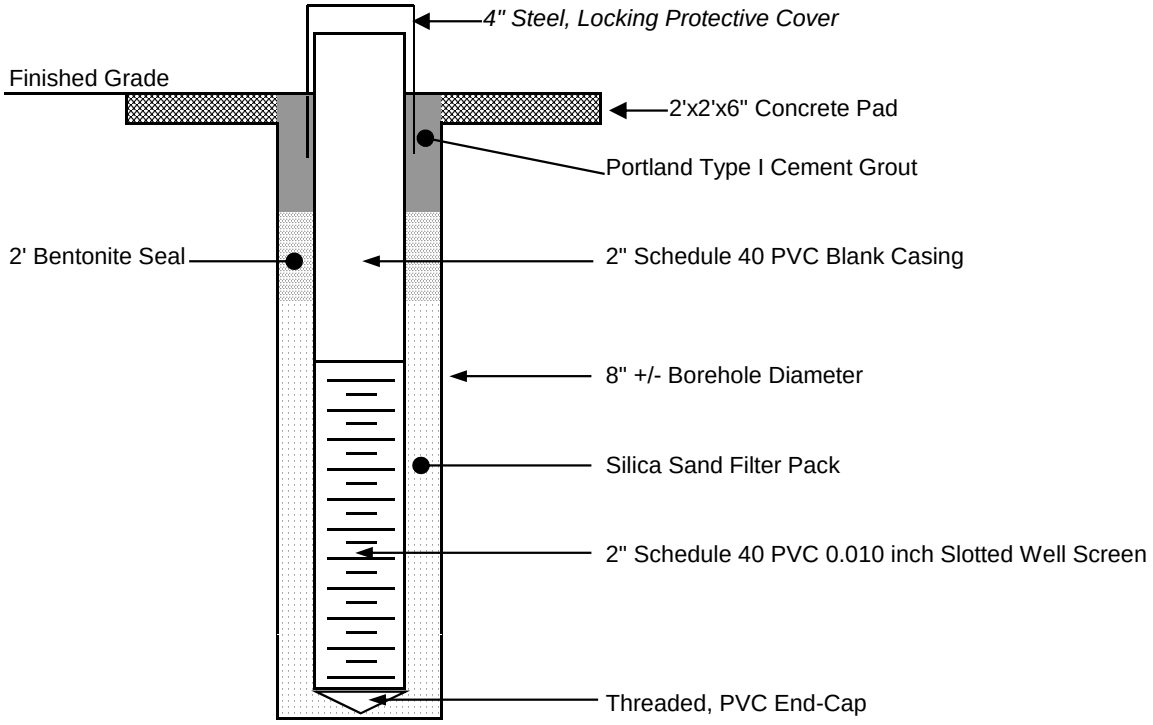
BUNCOMBE COUNTY
NORTH CAROLINA
SUBTITLE D LANDFILL

METHANE MONITORING PLAN

PROJECT NO. 6447-64253
FILE NAME: CH4 Plan.dwg

SHEET NO.
FIG - 1

Landfill Gas Monitoring Plan
Buncombe County
Subtitle D Landfill



Notes:
Stick-up will extend between 2.5 and 3 feet above finished grade.
Silica sand filter pack will extend at least 2 feet above top of screen elevation.
Anticipated screen length of 5 feet for all wells.

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Figure 2
Methane Well Construction Diagram