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North Carolina Department of Environment and Natural Resources
Division of Waste Management
Dexter R. Matthews
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Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

February 12, 2009

Mr. Jerry Mears
Buncombe County Solid Waste Manager
85 Panther Branch Road
Alexander, North Carolina 28701

Subject: Site Hydrogeologic Report, Design Hydrogeologic Report, Water Quality Monitoring Plan, and Landfill Gas Monitoring Plan
Buncombe County Solid Waste Management Facility
Permit to Construct Application
Substantial Amendment and Phase 5
C & D Landfill
Permit 11-07
Doc ID 9634

Dear Mr. Mears:

The Solid Waste Section (SWS) completed its second technical review of the Hydrogeologic Report (site report), Design Hydrogeologic Report (design report), and Water Quality Monitoring Plan (plan). The aforementioned documents incorporated revisions specified in the first technical review of the permit application and comprise the SWS file identified as Doc ID 8748. Camp, Dresser & McKee (CDM) originally included the site report, design report, and plan in the Permit To Construct (PTC) application for the Buncombe County Solid Waste Management Facility. The application is comprised of two volumes: Volume 1 (Doc ID 7374) containing the site report and Volume 2 (Doc ID 7375) containing the design report and plan. Both volumes are entitled, "Substantial Amendment and Phase 5". Included in CDM's current revision and the SWS's second technical review is a Landfill Gas Monitoring Plan not contained in the original application. This review primarily addresses that plan.

The SWS approves the site report, design report, and plan; however, the landfill gas monitoring plan should be revised. The landfill gas monitoring plan is not to be confused with the landfill gas collection system described in the Closure/Post-Closure Plan, Part 8 in Volume 2 of the current permit application. In that plan, interior wells—landfill gas wells within the waste boundary—are under review by the SWS engineer who will comment on them in a separate letter. The landfill gas monitoring plan referenced in this review addresses perimeter wells—wells outside the waste boundary.

Revisions of the landfill gas monitoring plan are specified below. The numbers correspond to the numbered sections and paragraphs in the plan.

1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Phone: 919-508-8400 \ FAX: 919-733-4810 \ Internet: www.wastenotnc.org/swhome

Section 1

Revise the introduction to include the following information. Insert "aerobic" in the discussion to account for conditions in which explosions ignite and fires propagate. Identify gases expected to be generated from waste at this type of landfill. Correct the statement in which "no structures" are reported, since structures depicted on engineering drawings contradicts the statement.

1.2 Include in the discussion how the composition of C&D landfill gas varies from MSW landfill gas, and list asphyxiation among the effects of "pollution" from landfill gas.

Section 2

2.1 Two revisions are necessary. Somewhere in the section: one, list Regulation 15A NCAC 13B .0544(f) to emphasize submission of "any other monitoring plan or program" and clarify that monitoring is not solely for methane; two, explain that the generation of hydrogen sulfide or other explosive gases is also anticipated.

Section 3

In the introduction, replace "methane" with "landfill gas". In the second paragraph, explain that both federal and state regulations apply to the landfill.

3.1 Replace "methane" with "methane gas or other explosive gases". Methane is stated in the cited "Rule"; however, in the regulation containing that "Rule" is also "other explosive gases" and "***mixture*** of explosive gases in air that will propagate a flame".

3.2 In both paragraphs, replace "methane" with "methane or other explosive gases".

3.3 Three revisions are necessary. One, in the first sentence add that "the instrument" will be calibrated according to the manufacturer's instruction. Two, in the first and second paragraphs replace "methane" with "landfill gases". Three, correct the statement about structures and report that they are adjacent to the landfill.

3.3.1 Required are several revisions to the text and referenced figure. One, either delete the last sentence in the section on page 3-1, since the referenced well is not pertinent to the current monitoring plan, or show the well on Sheet 1 and include it in the plan for Phase 5. Two, throughout the section, replace "methane" with "landfill gas". Three, specify that well depths will equal the thickness of waste strata. Four, explain that all the vadose zone, including bedrock above the watertable, will be screened; that screens will extend to seasonal highwater elevations; and flooded wells will be replaced with dry wells. Five, specify well joints to be connected using threaded couplings in lieu of slip couplings, screwed couplings, and glued couplings. Six, specify for wellheads caps with a stopcock type valve that controls gas flow, that have a barb connection fitting the sampling instrument specified in the plan, and are of sufficient quality to facilitate sampling and calibration in accordance with industry and federal standards.

3.3.2 Three revisions are necessary. One, everywhere in the section, replace "methane" with "methane or other explosive gas". Two, since specifying a particular instrument, state that, at a minimum, explosive landfill gases detectable by that instrument—CH_4 and H_2S—will be measured. Three, since conveying a sampling plan, explain that wells compromised by flooding will not be sampled.

3.4 Replace "methane" with "methane or other explosive gases".

Sheets

Sheet 1 Show more monitoring. Space landfill gas monitoring wells no further than 500 feet apart along a perimeter around the waste boundary. Because the landfill contains no excavation beside which wells can be installed, show wells on the nearest high ground elevations closest to waste boundary. Show at least one well among the structures next to the landfill. Show wells placed on the review boundary already depicted and utilized on the drawing. If you have questions, please contact me.

Figures

Figure 1 Revise the detail to convey applicable criteria listed in comment for Section 3.2.1.

Forms

Revise the forms. Form 1 is entitled "Methane Monitoring Log Form"; Form 2, "Methane Monitoring Data Sheet". Neither form specifies recordation of constituents other than methane; therefore, both should be revised for recording other explosive gases at the landfill.

Form 1 Everywhere replace "methane" with "methane or other explosive gases", and, in Item #1, list each well instead of total number of wells.

Form 2 Three revisions are necessary. One, in the title, replace "methane" with "methane or other explosive gases". Two, list the wells of a revised landfill gas monitoring plan. Three, expand the table to include measured explosive gases listed in comment for Section 3.3.2.

Section 4

In the introduction, replace "methane" with "landfill gas".

4.1 Everywhere in the section, replace "methane" with "landfill gas".

4.2 Replace "methane" with "landfill gas".

4.2.1 Everywhere in the section, replace "methane" with "methane and landfill gas".

4.2.2 See comment for Section 4.2.1.

4.3 Include asphyxiation from landfill gases in the "dangerous situation" about which "the public, public service agencies, and the media" will be informed. Also, include the SWS among the notified agencies.

Section 5

In the introduction, replace "methane" with "landfill gas".

5.1 See comment for Section 5.1.2.

5.1.1 See comment for Section 5.1.2.

5.1.2 Understood is that this option pertains to controlling releases from interior wells. However, the option is already the proposed landfill operation. Interior wells are already "passive venting wells" comprising a "passive removal system" described in the application. Hence, should that system fail, remedial options will begin with addressing features inherent in that design—inadequate pressure in the landfill, air intruding the system, untreated atmospheric releases, etc. Also, installing trenches as proposed in the option will necessitate destruction of the landfill cap and may require a permit modification with a fee. That proposal will require review by a SWS environmental engineer. Therefore, options for controlling landfill gas releases should either address failure of the passive removal system presented in the application, or conversion the system to an active gas collection system. Propose an option that accomplishes one of these objectives and relate its effect to landfill gas monitoring.

If you have questions, I can be reached at zinith.barbee@ncdenr.gov or at 919-508-8401.

Sincerely,

Zinith Barbee

Zinith Barbee
Hydrogeologist
Solid Waste Section

cc: Kenton J. Yang Camp, Dresser & McKee
Allen Gaither Environmental Engineer, SWS
Andrea Keller SWS/ARO
Ed Mussler SWS Permitting Branch
Mark Poindexter SWS Compliance Branch
Central File