



North Carolina Department of Environment and Natural Resources
Division of Waste Management

Beverly Eaves Perdue
Governor

Dexter R. Matthews
Director

Dee Freeman
Secretary

Solid Waste Section

December 09, 2010

Mr. Tim Broome, Director
Johnston County Public Utilities Department
Post Office Box 2263
Smithfield, NC 27577-2633

Re: Comments on Permit Modification Application – Landfill Gas Collection and Control System (LFGCCs) and Landfill Gas to Energy (LFGTE) Project
Johnston County Landfill Facility, Johnston County, North Carolina
Permit No. 51-03, Document ID No. (Doc ID) 12384

Dear Mr. Broome:

On December 1, 2010, the Division of Waste Management (DWM), Solid Waste Section (SWS) received the permit modification application document titled:

- *Solid Waste Permit Modification, Landfill Gas Collection and Control System, Johnston County MSW and C&D Landfill Facility.* Dated November 30, 2010. Include a work plan in letter format and Attachment A - a set of construction drawings (a total of six drawings) and Attachment B – SCS CQA Guidelines for Installation of LFG Extraction Wells. (Doc ID 12322).

SCS Engineers, PC (SCS) in Charlotte, North Carolina on behalf of Johnston County prepared and submitted the application and requested for an approval of constructing and operating the LFGCCs & LFGTE project at the above-referenced landfill facility. After conducting a review, the SWS has comments on the submittal. Your responses to the following comments will expedite the review of the permit application:

1. (LFG Extraction Wells, on page 2) Please address the following concerns:

- Provide the construction project specifications as appendices of the permit application. The specifications include, but not limited to, gas well installation (safety, provisions to handle obstruction while drilling, etc.) and completion (well logs and decontamination), the gas well abandonment/capping.
- The wells located in active filling area are expected to encounter leachate due to the vertical expansions at the existing phases in the future. Therefore, the coarse aggregates backfilled between the borehole and well casing must be tested for the calcium carbonate content and the grain size analysis to confirm the aggregate gradations. The maximum amount of the calcium carbonate content must be specified in the specification. The specification shall also include test methods and frequencies of the grain size analysis and measurement of calcium carbonate content.
- Prior to installing extraction wells, if the Johnston County Landfill is accepting and has accepted asbestos containing material or wastes for disposal at Phases 3, 4A, and 5 areas, County needs to submit a work plan to the Health Hazards Control Unit of the Division of Public Health, Department of Health & Human Services for a review and approval. For preparing the work plan, please contact Mr. Jeff Dellinger, at phone 919-707-5950, or jeff.dellinger@ncmail.net for the details and requirements.

If the above-mentioned condition is applicable to the landfill, please add the requirement to this section. A copy of correspondence/approval document issued by the Health Hazards Control Unit of the Division of Public Health needs to append to the construction completion report.

- iv. In addition to the extraction gas wells, the coordinates of the other LFGCCs components including the alignments of the header piping, buried control valves, and sumps must be surveyed by a surveyor licensed in the State of North Carolina; and the final locations of each component must be presented in the as-built drawings. Please add these requirements to this section.
2. (LFG Header and Lateral Piping, on Page 3) Please address the following concerns:
- i. Please describe the estimated gas flow rates and capacities of the current and future LFGCCs based on the described SCS model.
 - ii. Please describe the existing closure cover systems at Phases 3 and 4 – clay liner, synthetic composite liner, or two-foot thick soil layer?
 - iii. If the prescribed cover systems (clay liner or synthetic composite liner) should be damaged while excavation of trench, what provisions (repair approaches, QC testing methods and frequencies, etc.) are there to ensure the final cover system can be properly restored? Please clarify.
 - iv. Will the condensate flow by gravity in the header /lateral piping? If so, please specify the minimum pipe slope/gradient (the post-settlement).
 - v. Please provide the specification for testing leakage and air-tightness of the solid piping (header and leachate/condensate piping).
 - vi. To mitigate nuisances (such as vector, odor, etc.) and maintain dry condition of the open trench, please specify (a) the maximum length of trench (such as 200 feet) may be opened in advance of pipe installation in the landfill units and (b) the open trench shall be backfill at the end of each workday.
3. (Condensate Management, on Page 3) Please address the following concerns:
- i. Does the sump pump have overflow alarm/prevention and auto start/shut-off devices, which can't be found in the Condensate Sump Detail on Drawing No. 6 of 6?
 - ii. If the answer of the comment i in the subparagraph is "No." Please describe the spill prevention plan. The Phases 3 & 4 are unlined landfills; therefore, the condensates can't be drained back to the wastes in these two areas in compliance the requirement stated in Rule .1626(9)(a)(2).
 - iii. Pursuant to Rule .1626(9)(a)(2), the force mains inside the unlined landfill footprints must be dual-contained. Please revise the context accordingly.
 - iv. Will there be scheduled or routine inspection on the condensate sump? This inspection plan can be incorporated to the existing Operations Plan.
4. (Blower/Flare Station, on page 3) Please describe the LFG control system and emergency shutdown of the system.
5. (Existing Permitted Cap, on Page 4) The DWM records show that Phases 3 and 4 were originally proposed to close by constructed two-foot-thick soil. On August 4, 1998 DWM approved the alternative final cap design for the Phases 3 and 4 which included for Phase 4, on the top portions of the landfill, a geomembrane will be installed; for Phase 3, on the top portion, a GCL will be installed. Soil will be used on the side slopes. In 1999 the construction completed; and the deck portion of the Phase 3 cover system consisted of a GCL and drainage

composite layer overlain by 18-inch thick top soil. Phase 4 cap consisted of 12-mil geomembrane overlain by 18-inch thick top soil. Based on the findings the SWS requests County address the following concerns:

- i. The plan proposes that the header pipe trench will be 2 to 3 feet deep and installed above the synthetic liner with the vegetative soil layer as described in this section, "LFG Header and Lateral Piping" and on the "Pipe Trench Detail" – Drawing No. 5 of 6. Since the vegetation layer is approximately 18-inch thick, please explain how the proposal can be implemented in the field without damaging the liners?
 - ii. Since gas extraction wells will be installed in the Phases 3 & 4 areas, the synthetic cover systems (FML and GCL) will likely be penetrated, if the wells are not located on side slope areas. Therefore, please provide details of the connections (boots) and seals around the well casing and liners on Drawing No. 4 of 6.
 - iii. If the portions of the liners are expected to be damaged or removed during the trench excavation, please provide specifications for restoration of cap (final cover) including material, construction procedures, & QA/QC testing (methods and frequency) which are consistent with the previously approved closure plans.
6. Please provide a section that describes how the operating LFGCCs and LFGTE project will properly be coordinate with the active fill operations. The section needs to include, but not limited to the following information:
- i. Restricted access and security to the blower/flare station, engines, and apparatus.
 - ii. A detailed emergency response plan for a landfill fire and/or a natural disaster. The plan should include provisions to train landfill employees in the proper response to a fire or inclement weather, specifically steps to be taken concerning the LFGCCs & LFGTE.
 - iii. Descriptions of how the presence of the gas collection system will be coordinated with the operation of the landfill units. For example, will the gas well be vertical extended in the active cell in coordination with the fill operation in the future vertical expansion? Protection measures to be implemented to protect the wells from filling operation.
 - iv. Descriptions of the routine maintenance requirements of the LFGCCs and LFGTE project.
 - v. Descriptions of the party (County or the contractor) will be in charge of the operations of LFGCCs and LFGTE and operator's credential. If County will contact third party to operate & manage the LFGCCs and LFGTE, please describe the contractor responsibilities and contact information. It is advised that the SWS will hold the County responsible, as permittee of the landfill, for any problems or violations at the landfill, even if the problems/violations are performed by a contractor on the property.
 - vi. Record keeping requirements pertain to LFGCCs and LFGTE; records and reports must be placed in the facility operating records ready for agencies' audit.
7. Provide a section describe how the installation and presence of the LFGCCs will be coordinated with the closure of the landfill units. Or, should the operating of LFGCCs be extended to the post-closure period of the landfill, the existing Post Closure Plan for Johnston County Landfill must be modified by adding a new plan defining the steps necessary to decommissioning the wells, piping (either buried or above-grade ones), sumps, and the blower/flare station at the end of their useful life. The costs associated with the decommissioning activities must be added to the cost estimates for either closure or the post-closure cares. Johnston County must rectify the final cost amounts in the annual financial assurance.
8. Please describe the construction completion report which will be signed, sealed, and certified by a professional engineer registered in the State of North Carolina and submitted to the DWM after the project is completed. In a minimum the report must include:

- i. Brief descriptions of the project activities, schedules, and all involved parties.
- ii. Descriptions of variances or deviations from the proposed plan.
- iii. Copies of approval letters (including the one described in Comment No. 1.iii) and/or permit document (Erosion and Sediment Control, building permit, zoning approval), if applicable.
- iv. As-built drawings including survey coordinates of gas wells, valves, sumps and piping gradients certified by a surveyor registered in the State of North Carolina.
- v. Well completion logs and final well completion schedule.
- vi. Certified Pipe leakage test results.
- vii. QA/QC testing report for the cover restoration, if required.
- viii. A series of color photographs to document the major project features.
- ix. Operation, Maintenance, and Inspection Plan for LFGCCs and LFGTE.
- x. Provide a schedule for submitting the construction completion report. The SWS suggests a 30-day after the construction is completed.

Upon approval of the construction completion report, the SWS will grant County an authorization to operate LFGCCs and/or LFGTE.

9. During the course of the project, what provisions are there to prevent the disturbed soil cover from erosion due to stormwater runoff and to restore vegetation covers? Please clarify.
10. (Drawing No. 4 of 6) Please address the following concerns:
 - i. Provide the proposed gas extraction wells – EW-402, EW-403, and EW-404 data to the “Well Schedule” Table.
 - ii. In the “Well Schedule” Table, the data of “baseliner elevation” for the gas extraction wells – EW-405 through EW-412 are not provided (or not available) but the well depth of 41 feet is pre-selected for each above-mentioned well. It is advised that the assumption for selection the proposed well depth is noted on the drawing.

Please respond the above-mentioned comments and provide the SWS one hard copy and an electronic copy (in the pdf format) of the revised application. The Solid Waste Section appreciates your efforts and cooperation in this matter. If you have any questions or would like to schedule a meeting to discuss this matter further, please contact me at (919) 508- 8507.

Sincerely,



Ming-Tai Chao, P.E.
Environmental Engineer II
Permitting Branch, Solid Waste Section

cc:

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