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Mr. Johnny Beal
Solid Waste Specialist
Wake County
PO Box 550
Raleigh, NC 27602

Subject: Landfill Gas Migration Investigation and Geoprobe Installation – May 15, 2007
North Wake County Landfill – Raleigh, North Carolina

Dear Johnny:

SCS Engineers, PC (SCS) is pleased to present the attached record documentation for the temporary landfill gas (LFG) monitoring probes installed at the North Wake County Landfill (Solid Waste Permit No. 92-09) as part of the LFG migration investigation that focused on the area to the south and southwest of the Closed Landfill.

On May 15, 2007, Troxler Geologic Services, Inc. installed ten temporary LFG monitoring probes using direct-push methodology (geoprobes) in the general vicinity of existing probes M-10 and M-19. Specifically, the ten geoprobes were positioned along the sanitary sewer easement between the Active Landfill and the Closed Landfill and along the property boundary in the southwestern corner of the Closed Cell at the subject site. The geoprobe locations were not surveyed subsequent to installation, but they are depicted on the attached as-built drawing based on field observations.

The geoprobes were constructed using 1-inch diameter slotted SCH 40 PVC pipe and backfilled with coarse sand. The depth of each geoprobe and the subsurface conditions encountered during installation are recorded on the attached Boring Logs. SCS field personnel provided oversight during the geoprobe installation efforts.

RESULTS

On May 15, 2007, SCS monitored subsurface LFG quality and pressures at the ten geoprobes using a GEM-500 Infrared Gas Analyzer in order to better characterize the extent of potential LFG migration in the vicinity of probes M-10, M-19, the sewer easement, and the western property boundary. The monitoring data is presented in Exhibit 1.

The methane concentrations measured by SCS at the geoprobes were below detection limits at 8 of the 10 geoprobes. The methane content in TP-3 was equal to the detection limit of the field instrument. The methane content in TP-2 was 2.3 percent. Subsurface pressures recorded at the geoprobes were neutral or negative, except TP-3 which yielded 0.5 in-wc.

SCS performed a second round of monitoring at TP-2, TP-3, TP-4, and TP-10 on June 20, 2007 and noted that no methane was detected at these geoprobes except TP-3, which indicated a methane content of 12.5 percent.

CONCLUSIONS AND RECOMMENDATIONS

Three temporary LFG monitoring probes (TP-8, TP-9, and TP-10) were installed between existing probe M-19 and the property boundary along the southwestern corner of the Closed Landfill. No methane was measured in these three geoprobes. Therefore, SCS concludes that the movement of subsurface LFG from the Closed Cell, as detected at existing probes M-19 and G-65, is limited to the immediate vicinity of the access road and does not extend further westward. We believe that the more permeable materials used to construct the access road (aggregate and soil backfill) are serving as a pathway for LFG movement beyond the waste footprint; however, we suspect that the LFG is vented to the atmosphere from the slope of the berm that coincides with the outside shoulder of the road.

The methane levels measured at TP-8, TP-9, and TP-10 suggest that the Landfill is in compliance with the regulations. SCS recommends that the County relocate probe M-19 to the property boundary (approximately 115 feet west of its current location) in order to be properly positioned for purposes of determining compliance with the regulations at the Facility Boundary. This relocation will coincide with the probe position as proposed on Figure 3 of the "Proposed Landfill Gas Monitoring Network Report," revised 4/11/06. SCS recommends that the existing probe be converted into an extraction well and connected to the perimeter migration control system, if feasible, or the existing probe be abandoned.

Five temporary LFG monitoring probes (TP-1, TP-4, TP-5, TP-6, and TP-7) were installed along the southern edge of the sewer easement and south of Nance Spring Branch and the Closed Landfill. Geoprobes TP-4 and TP-5 are positioned to the north of existing probe M-10. No methane was measured in these five geoprobes. Therefore, SCS concludes that the movement of subsurface LFG from the Closed Cell, as detected at existing probes M-10 and groundwater well MW-15, is limited to the immediate vicinity of the access road and does not extend further toward the eastern or western property boundary. We believe that the more permeable materials used to construct the access road across Nance Spring Branch (aggregate roadbed) and/or the permeable backfill for multiple utility trenches that are aligned along the eastern shoulder and also across the creek are serving as a pathway for LFG movement south of the waste footprint; however, we suspect that the LFG dissipates at or just beyond the edge of the gravel base road.

The methane level measured at TP-2 (2.3 percent recorded next to the utilities running along the access road crossing and south of the creek) and the absence of detectable methane at TP-4 and TP-5 support this conclusion that the access road and/or utility trenches are the most likely pathways for the LFG migration that has been identified to the south of the

Closed Landfill and Nance Spring Branch. Since existing probe M-10 yielded methane content below detection limits as measured during our field investigation, SCS recommends no further investigations or remedial actions be implemented at this time. If methane levels above the regulatory limit are measured at probe M-10 in the future, we recommend the County relocate the probe to the property boundary (i.e. the proper position for determining compliance).

SCS recommends that select temporary LFG monitoring probes be monitored on a quarterly basis for informational purposes in order to compile additional data during the next six months. At that time monitoring at these temporary geoprobes should be discontinued.

If you have questions or require additional information, please contact either of the undersigned.

Sincerely,

D. Brandon King
Associate Staff Scientist

Robert E. Dick, PE
Project Director
SCS ENGINEERS

DBK/RED:asd

Attach.

cc: Jackie Drummond, NCDENR