



NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

Division of Waste Management

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Solid Waste Section

August 27, 2014

Ms. Amanda Bader, P.E.
County Engineer
Harnett County Solid Waste Department
P. O. Box 2773
Lillington, NC 27546

Subject: Comments on Permit Amendment Applications for Continued Operation in Compliance with Solid Waste Management Rule 15A NCAC 13B .0547(4) Dunn-Erwin Construction and Demolition Debris Landfill (C&DLF) Harnett County, North Carolina, Permit No. 4302-CDLF-1998, Document ID No. (Doc ID) 21576

Dear Ms. Bader:

On June 17, 2014 the Division of Waste Management (DWM), Solid Waste Section (SWS) received electronic copies of the revised permit amendment application (Permit Application) and the written responses to the October 02 2013 DWM comments (DIN 19858). The new submittal was logged and scanned to the DWM document tracking system and assigned with a document identification number (DIN) 21279. The SWS conducts a review of the engineering portions of the revised permit application and has several comments stated below. The SWS Hydrogeologist is reviewing the Water Quality Monitoring Plan and Landfill Gas Monitoring Plan (Attachments H & I), and she/he may or may not have comments on the aforementioned monitoring plans. She or he will inform you the decision later in a separate document.

General

1. The Permit Application mentioned that the following documents will be provided to SWS for a review and approval when they are available. Please provide the documents to the final application.
 - i. Attachment K - The local government approval documents which were noted in Comment No. 1 of the DWM comment letter (DIN 19858) dated October 02, 2013.
 - ii. Appendix E of the Operations Manual (Attachment E) – Sheriff’s Department Training Facility, Operational and Environmental Practices.

2. The SWS notifies Harnett County (the County) the decision regarding the proposed new C&DLF. The Permit Application described information related to a new C&DLF – Area 2, which is a stand-alone landfill unit and located on the west of the existing C&DLF (also known as Area 1 in the Permit

Application) underlain by the closed unlined MSWLF. According to mutual understanding between the County and the SWS made in August 05, 2013 meeting, the sole purpose of this permit application is complying with the requirements stated in the North Carolina Solid Waste Management Rule (Rule) 15A NCAC 13B. 0547(4) so that the County can continue operating the existing C&DLF – Area 1, which has approximately 5-year service life prior to closure. Therefore, the SWS will not review any information pertaining to the new C&DLF – Area 2 at this time but may engage the permit review processes later after the permit review process of C&DLF – Area 1 is completed.

3. Please provide requested information of comprehensively developing the LCIDLF to the Permit Application including, but not limited to, phased developments, gross capacity for each phased development, expected service life, drawings [referring the Comment Nos. 10, 11(ii), 12, 13, 14, & 15 dated October 02, 2013 (DIN 19858) & in compliance with requirements stated in Rules 15A NCAC 13B .0565(3)(n) & (o) and (4)(b) & (c)] .
4. Since the footprint of the proposed South Berm may encroach into the limits of Sediment Basin (SB) No. 1 resulting a reduction of retaining capacity of water/runoff, the construction of the proposed South Berm may require the modification of the existing erosion and sediment control permit (NPDES General Stormwater Permit) issued by the NC Division of Water Resources. Please clarify.

Facility & Engineering Plan

5. (Section 5.3) The proposal of removal of the existing French drain was approved in February 2014 (DIN 20630). The approved proposal/plan may be appended to the Permit Application.
6. (Appendix B) Please address the following concerns regarding the foundation soil/subgrade of the proposed South Berm:
 - i. Why are soil engineering properties from soil borings/well logs of MW-4 and MW-5 not used for the design of South Berm?
 - ii. The toe (south end) of the proposed berm will be likely located inside the SB No.1 (Referring Sheet No. 13/ Drawing No. EX2); will the toe be inundated by standing water in the basin anytime? Is there any measure to prevent the inundation condition? Is there any measure/armor to prevent the toe from slough or damage resulting from wave action/erosion?
 - iii. Please provide the bearing capacity and settlement analyses to demonstrate that the foundation soil can safely support the proposed South Berm. Regarding settlement analysis, the soil supporting the existing berm/embankment is likely stabilized through decade's consolidation processes and expected pertaining higher strength than the foundation soil under the proposed extension embankment. Therefore, please consider the potential differential settlement which might occur at the new constructed embankment. Should the estimated differential settlement raise any concern, the routine inspection and maintenance of South Berm must be addressed in the Operations Manual and Post-Closure Plan such as inspection and repair of tension cracks (both longitudinal & transverse directions) on the top or side slopes of the embankment, bulge formed at toe areas, etc.

- iv. The proposed South Berm is very sizable, approximately 40-feet tall and 175-feet wide at base (including 70-foot extension), and the current designs are based on the engineering parameters obtained from two soil borings (MW-3R & MW-6B), which are located outside the project location. Because the variability of soil profiles and engineering properties between soil borings is highly possible, the SWS recommends the County to conduct a subsurface investigation program (a conventional soil borings and laboratory testing or coupling with field testing such as static or dynamic core penetrometers) to verify and confirm if the engineering properties of the subgrade / foundation soil underneath South Berm are consistent with those used in the design, or if modifications of the existing design are required. This requirement may be add to the Section 3.2 of the CQA Manual if the County intends to implement the above-mentioned investigation in the course of construction.
- v. Although the slope stability analysis concluded that the designed embankment is stable, the length of the side slopes [south external slope with steepness of 3 (H) to 1 (V)] might exceed the critical distance with respect to erosive forces. A bench (or benches) coupling with drainage systems may be needed to prevent soil erosion, safely convey surface runoff to the downslope sediment basin, and facilitate routine inspection/maintenance (such as mowing).

Technical Specifications

7. (Section 02110 – Site Preparation) Could the cleared and grubbed material which is generated from the proposed construction be disposed of at the LCIDLF or Yard Waste Storage & Processing Area inside the landfill facility? Please clarify.
8. (Section 02222 – Excavation) Please address the following concerns regarding the construction of proposed South Berm:
 - i. Paragraph C – Submittals need including the soil testing results (field and/or laboratory testing) to confirm the engineering property of the foundation soil which supports South Berm is equivalent to or exceeds those used in design as specified in Paragraph D.9 (also see Comment No. 6. iv).
 - ii. The portions of South Berm are located in/immediately adjacent to the SB No. 1; therefore, the Contractor must prepare and submit a dewatering plan (Paragraph D.5) in advance for approval to handle and manage forthcoming surface water /run off into the basin or groundwater from a perched water table during the course of excavation and construction of the berm.
 - iii. Paragraph D must add the specification of constructing benches/steps, back slopes, and key at existing berm and/or ground surface associated with South Berm construction.
9. (Section 02223 – Embankment) Please address the following concerns regarding the construction of proposed South Berm:
 - i. Because the pore water pressures are measured in the soil laboratory testing (ASTM D 4767) please specify the minimum total shear strength and effective shear strength in the Paragraph B.1.
 - ii. Provide construction procedures/specifications for slope bench including form/excavation the bench section and backfilling and “bond”/”knit” the existing sloped surface to the new slope resulting in the design South Berm.

- iii. The procedures of constructing berm “Key” to the existing subgrade (Detail 2/EX2, Sheet No. 13/ Drawing No. EX2) must be added to the Paragraph D.5.
- iv. The compacted lift shall be scarified to a depth (X-inches) before the receiving/depositing of material thereon to ensure that fill material will bond with the existing material and no seams will be created between lifts. Please add the scarification requirement to the Paragraph D.10.
- v. In the area that proposed South Berm to be constructed, the surface of the existing perimeter berm (not the steep slope area only) must be cut, notched/ benched, and scarified in consistent with the Detail 1/EX2, Sheet No. 13/ Drawing No. EX2. The Paragraph D.13 specifies the bench depth is incorrect. The related construction procedures must be specified in the Paragraph D.
- vi. The requirements of re-vegetation (seeding or sodding) and BMPs for erosion control for the constructed South Berm must be addressed in this Section.
- vii. Should the toe of South Berm be inundated frequently (see Comment No. 6ii), the measures to protect the toe from weakening/sloughing must be addressed in the Section.
- viii. Will the as-built survey and drawing of the constructed South Berm be included in the Paragraph D.15?
- ix. Since the proposed South Berm is likely located inside or adjacent to the existing SB No.1, the specification must provide temporary structure to diver and retain standing water away from the project site in the course of construction the berm.

10. (Section 02258 – Vegetative Soil Layer) According to the proposed alternative final cover system, the VSL will be placed over a layer of geosynthetic drainage composite (GDC); therefore, the Paragraph B must specify that soil particle ranges (gradation) of VSL that is consistent with the design parameters in Appendix A of the Facility & Engineering Plan so that the performance of GDC will not be impaired (clogged) by soil fines.

Construction Quality Assurance (CQA) Manual

11. (Section 2.8) Please address the following concerns:
 - i. Please add the construction of the Area 1 South Berm to the Final CQA Report outline in consistent with the statement in Section 5.2 of the Facility & Engineering Plan.
 - ii. Table 2.1B needs to include the GCL CQA/CQC data and related documentations if the GCL is substitute LLDPE used in the final cover system for the C&DLF.
12. (Section 3) Please address the following concerns:
 - i. Do the CQA requirements stated in Section 3 directly related to construction of the proposed South Berm? If so, the soil classification method shall be ASTM D 2487. Additional the acceptable range (minimum and maximum) of Plastic Index of acceptable earthen material must be identified in the Table 3.1
 - ii. (Table 3.1) The shear strength testing method (will it be ASTM D 4767 as specified in Section 02223?) is not available, and the Note 1 is incomplete. Please define “lift” – loose and in-place (after specified compaction effort) ones or refer the Table 1 of Technical Section 02223.
13. (Section 4) Please address the following concerns:

- i. Because the proposed (regulatory) final cover system doesn't include any geosynthetic component, the Sections 4.4.G & 4.4I are not likely applicable for this facility. Please make necessary correction.
 - ii. The Note No.4 of Table 4.2 is likely a typo. The record tests performed of the test pad may count toward the frequencies established in Table 4.3, not Table 4.1. Please clarify.
14. (Section 5.5.1) The soil used for intermediate cover, intimately contacted to GCL or LLDPE, must meet the maximum grain size requirement specified in the Technical Specifications 02776 & 02778 or the recommendation of the geosynthetic material manufacturers. In addition to visual inspection, a laboratory testing is also required to confirm if the selected earthen material meets the specified requirement. Please add the requirement to the section and refer Table 8.1 for testing method and frequency.
15. (Section 8.1.4) The Table 9.1 is likely a typo. Please make a necessary correction.

Operations Manual

16. (Section 1.12) Item T leachate records referring Section 3.3 is likely a typo.
17. (Section 2.4.2, the fifth paragraph, on page 20) The reference of Litter Control is likely a typo.
18. (Section 2.8) Please provide the maximum capacity (in cubic yard) of the stockpiled (processed and & unprocessed) yard wastes at the unit at any time.
19. (Section 3.2.2) The forcemain pipe shall be a dual piping (3-inch by 6-inch), rather than 4-inch diameter pipe according to the approved proposal (DIN 17303) and consistent with the descriptions in Section 5.3 of the Facility & Engineering Plan which carries leachate/impacted groundwater from sumps to the central pump station. Please verify.
20. (Section 3.2.2) Please describe the leachate management related to the landfill operation at the proposed piggyback section (retained by South Berm) including initial and progression of waste placements and leachate & stormwater separation, etc.

Closure & Post-Closure Plan

21. Please provide the closure and post-closure requirements for the LCIDLF.
22. (Section 1.3) This section needs to describe how to convert or renovate the existing and inactive landfill gas control system, as mentioned in the Section 5.6 of the Facility and Engineering Plan of the Permit Application, to the proposed landfill gas system.
23. (Section 2.3.4) Please address the following concerns regarding the on-site leachate collection system:
- i. The proposal of removing French drain was approved by the Solid Waste Section on February 25, 2014. The approval documents may be appended to the Permit Application.
 - ii. Was the central leachate pump station completely constructed? Is it functional now?

- iii. Please describe the operation, inspection, and maintenance requirements for the components of the leachate collection system including sumps, pumps, and the central pump station which are consistent with the cost in Table 3.
 - iv. Provide an alternative to disposal of leachate if the pump station is not functioning during the post-closure period. For example, pump and haul the leachate by a septic hauler and dispose of the leachate to the local public owned wastewater treatment plant.
24. In the Post-Closure Plan, the County needs to address the following concerns:
- i. Add a section to describe the on-going corrective action activities (MNA & Phytoremediation) of impacted groundwater underneath the closed and unlined MSWLF which is underlain by the active C&DLF.
 - ii. The routine inspection and maintenance shall include South Berm of Area 1 to monitor and maintain the berm integrity. The grass mowing activity at South Berm must be a routine maintenance activity.

Drawings

25. (Sheet No. 8/Drawing No. D1) The maximum hydraulic conductivity for the compacted soil barrier of the C&DLF at Area 1 shall be 4.3×10^{-6} cm/sec. Please make necessary clarification in Detail 1/D1.
26. (Sheet No. 13/Drawing No. EX2) What is steepness of the back slope of the bench?
27. A profile (with stationing) to show the existing grades and final grades of embankment and other details along the centerline of the proposed South Berm will be required for the construction.

Please provide a revised permit application including drawings to incorporate the responses to the above-mentioned comments. If you have any questions or requests for further clarification regarding the above-mentioned comments, please contact me at (919) 707-8251 or ming.chao@ncdenr.gov.

Sincerely,



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Environmental Engineer
Division of Waste Management, NCDENR

cc:

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