



PAT MCCRORY  
*Governor*

DONALD R. VAN DER VAART  
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MICHAEL SCOTT  
*Acting Director*

March 29, 2016

Mr. Edward Stephens PG, Project Manager  
Civil & Environmental Consultants, INC.  
1900 Center Park Dr, Suite A  
Charlotte, NC 28217

Re: Design Hydrogeological Data Review  
Proposed Phase 3 Expansion  
Highway 55 CDLF (SW Permit 9230-CDLF)  
**DIN 25841**

Dear Mr. Stephens,

The Solid Waste Section (Section) has conducted the technical review of the design hydrogeological data presented by Civil & Environmental Consultants, Inc. (DEC) for the Greenway Waste Solutions of Apex, LLC (GWS) Highway 55 C & D landfill in Apex NC. The data report was submitted to the Section by CEC on February 24, 2016 and included an evaluation estimate of the seasonal high groundwater level (SHGW) and top of bedrock elevations for the design elements of the proposed Phase 3 expansion area. In addition, CEC proposed that hydrogeological design data approved by the Section for previous phases are sufficiently applicable for meeting the design criteria for Phase 3 as well. This includes approved hydrogeological design data presented for Phase 1 (Construction Plan Application approved 8/12/2002, DIN 20750) and for Phase 2 (Construction Plan Application, February 2009, DIN 5930).

#### Seasonal High Groundwater & Bedrock Surface Data Evaluation

CEC provided an evaluation the 2009 SHGW potentiometric map data along with water level data collected between 2009 and 2015 from existing detection monitoring wells for the facility. Based on CEC's evaluation of observed and calculated water levels, CEC provided an estimate of expected SHGW levels for the proposed Phase 3 expansion area, as depicted in the potentiometric map (Figure 1) and Cross-section A-A' (Figure 3 in the evaluation submittal).

Top-of-bedrock and auger refusal data from previous site suitability borings and design hydro borings and detection monitoring wells for the site were used to determine bedrock surface elevations in the Phase 3 expansion area. Borings within the footprint of Phase 3 provided

sufficient areal coverage to meet the design requirements. The bedrock surface map (Figure 1) and Cross-section A-A' (Figure 3) illustrate the expected bedrock surface elevations for the Phase 3 area.

Upon review of the CEC evaluation, the Section is in agreement with the findings and conclusions presented for the seasonal high groundwater levels and the bedrock surface elevations. In addition, the Section agrees that all previously approved hydrogeologic design data for the site provides sufficient data to meet all the requirements for design hydrogeologic report {13B .0538(b)} for the proposed Phase 3 expansion. This data is approved for use in the engineering design of the Phase 3 expansion.

Prior to construction of cell(s), all piezometers, ground-water monitoring wells, and borings, located in the proposed cell(s), shall be properly abandoned by over drilling first (exception for non-cased borings) and sealed with grout in accordance with 15A NCAC 2C .0113, entitled "Abandonment of Wells".

- a. In areas where soil is to be undercut, abandoned piezometers, monitoring wells, and borings must not be grouted to pre-grade land surface, but to the proposed base grade surface to prevent having to cut excess grout and potentially damaging the wells.
- b. Well abandonment records (GW-30 form) for each decommissioned piezometer, boring, and groundwater monitoring well must be certified by a Licensed Geologist in accordance with rule .1623(b)(2)(1) and submitted to the Solid Waste Section in accordance with 15A NCAC 02C.0114(b).

**NOTE: Final Geologic, Ground Water and Monitoring Requirements will be included in the Permit to Construct.**

If you have any questions concerning this design hydro approval, please do not hesitate to contact me via email [perry.sugg@ncdenr.gov](mailto:perry.sugg@ncdenr.gov) or phone (919) 707-8258.

Sincerely,



Perry Sugg, PG  
Permitting Hydrogeologist  
Solid Waste Section

Cc: Mike Griffin, Greenway Waste Solutions  
Scott Brown, PE – CEC Inc  
Ed Mussler, P.E. – SWS, Permitting Branch Head  
John Murray – SWS, Permitting Engineer