

ERM NC, Inc.

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August 18, 2014

North Carolina Department of Environment and Natural Resources
Division of Waste Management
1646 Mail Service Center
Raleigh, North Carolina 27699-1646
Attention: Ms. Jaclynne Drummond



Subject: Response to Warning Letter – Proposed Selected Remedy
Swift Creek CCB Structural Fill Project
Battleboro, Nash County, North Carolina
CCB 0057/DIN21032

Dear Ms. Drummond:

On behalf of Full Circle Solutions, Inc. & ReUse Technology, Inc., ERM NC, Inc. (ERM) is submitting this letter in response to the Warning Notice issued by the Division of Waste Management (DWM) dated May 16, 2014. The Warning Notice requires corrective action to address groundwater contamination at the referenced facility. The following presents our preliminary assessment results and the proposed selected remedy for site closure and groundwater corrective measures.

Background

Based on previously submitted reports, “On November 11, 1991, ReUse Technology, Inc. submitted a letter to the Solid Waste Management Section seeking approval to use coal ash as structural fill material in the development of 25 acres of commercial property along Highway 301 at Swift Creek. On December 3, 1991, the Solid Waste Section issued a letter to ReUse that stated “Based upon the information received, the project appears to meet the guidelines previously agreed to for such reuse.” In September 1992, ReUse began placement of coal ash at the site. In January 2003, the last shipment of coal ash was accepted at the site. According to records of Full Circle Solutions, Inc., a total of approximately 134,000 tons of CCBs were placed at the project. On March 23, 2003, the site had been graded, compacted, covered with an 18 inch soil cap and planted with grass seed. On November 4, 2004, the Closure Notice was forwarded to the Solid Waste Section.

In March 2006, a Comprehensive Site Assessment (CSA) for the Swift Creek Project was submitted to the Solid Waste Section. In December 2006, an Assessment Monitoring Plan was submitted to the Solid Waste Section. On February 22, 2007, the Assessment Monitoring Plan was approved by the Solid Waste Section.”

The Assessment Plan included the installation of an underdrain “cutoff” trench along the western boundary of the fill along US Highway 301 in order to lower the local groundwater table to provide a minimum 2-foot vertical separation between coal ash and seasonal high groundwater elevations. Semi-annual sampling and laboratory analytical testing for eight (8) groundwater monitoring locations and three (3) surface water monitoring locations was also included within the Assessment Plan. The reported results of the groundwater monitoring conducted at the site since 2005 indicated groundwater quality impacts including concentrations of sulfate and lead at levels above the respective North Carolina 2L groundwater standards. The monitoring indicated no impacts to surface water quality adjacent to the facility.

The Division of Waste Management issued a “Warning Notice” to Full Circle Solutions, Inc. and ReUse Technology, Inc. dated May 16, 2014. The notice states that the required groundwater vertical separation between filled coal ash and seasonal high groundwater elevations has not been achieved and exceedances of the North Carolina 2L groundwater standards have been routinely reported. As a result, the project must submit a “Groundwater Corrective Action Application” for approval.

Existing Conditions and Site Visit

ERM NC, Inc. (ERM) visited the Swift Creek Project site on July 24, 2014 to assess the current site conditions (David Wasiela, P.E., Tom Wilson, P.G. and Frans Lowman, P.G.). ERM met with Mr. Paul Odom of Full Circle Solutions, Inc. The following was noted following ERM’s site visit:

- Groundwater monitoring wells and piezometers are in place as noted in the Groundwater Assessment Monitoring Reports previously submitted to the Division of Waste Management (some piezometers have been damaged from mowing activities and has been noted in the reports).
- The southernmost cleanout riser pipe for the “cutoff” drain was damaged.
- At the north end of the “cutoff” drain a concrete valve box was observed that serves to discharge collected groundwater from the “cutoff” drain system. Upon removal of the valve box lid, water levels within the valve box were observed to be approximately 2 feet higher than the surrounding swamp water elevation indicating that the “cutoff” drain was not functioning effectively.
- Storm water structures were observed along the western border of the fill area between Highway 301 and the fill limits. It could not be determined if the structures were active and pipe outlets could not be located.
- The fill area has a well-established stand of vegetation and appears to be mowed on a regular basis.
- Existing grades and elevations over the majority of the project area are relatively flat and therefore poorly drained.

- The site is bordered on three sides (north, east and south) by swamp areas with standing water that will establish and affect local groundwater elevations.
- The coal ash fill is a dry storage design which is not subject to potential catastrophic release of ash material compared to a wet storage design of a coal ash pond. The cap and side slopes are well vegetated, minimizing erosion, and precipitation that falls around the perimeter of the landfill is diverted around the fill, which also minimizes erosion.

File & Data Review

ERM reviewed files and information made available by others in order to assess current site conditions and to develop conceptual cross sections of the project site. From the existing data, the vertical limits of ash fill were established using records of piezometer installation. Existing groundwater elevations were determined based on the most recent Assessment Monitoring Report prepared by Sherrill Environmental, Inc. March 2014. Historic seasonal high water table elevations were determined based on the Assessment Monitoring Report prepared by Sherrill Environmental, Inc. March 2014 including water table elevations from 2005 to 2014.

Based on historic groundwater elevation recordings at the project site, downgradient groundwater elevations are controlled by surrounding swamp areas. The swamp-influenced groundwater elevations are reflected at monitoring wells MW-2, MW-6 and MW-8. Based on historic readings reported at these locations between 2005 and 2013, the seasonal high groundwater table elevation would range from 91.5 to 92.5 ft msl. In order to meet the 2-foot vertical separation criteria between ash and seasonal high groundwater table, ash could not be lower than approximately 93.5 to 94.5 along the perimeter of the fill area. Based on available information, ash is present at elevations below 94.5.

Exceedances of North Carolina 2L Groundwater Standards have been reported at the site. These exceedances are a result of either infiltration of rainfall through the ash fill area and into the shallow groundwater system or from ash in direct contact with groundwater; or a combination of both.

A review of existing groundwater elevation data shows a low hydraulic gradient for the groundwater at the site, which combined with the estimated low hydraulic conductivity characteristics of the ash and underlying soils, is anticipated to result in very low groundwater flow velocities. Consequently, contaminant migration rates in groundwater are expected to be relatively low (i.e. on the order of tens of years to migrate from beneath the coal ash fill to nearby downgradient surface water receptors). The primary downgradient receptors are the creeks and swampy areas immediately adjacent to the coal ash fill. Groundwater quality downgradient of the coal ash fill is monitored by existing monitor wells MW-1S, MW-1D, MW-2S, MW-2D, MW-7 and MW-8.

Proposed Selected Remedy

Based on the site conditions and a preliminary remedial alternatives analysis, the proposed selected remedy is to consolidate the fill footprint within a reduced area underlain by a raised disposal floor elevation and capped with an LLDPE liner. The proposed selected remedy was developed to address two key components:

1. Establish vertical separation of 2-feet minimum between disposed ash and seasonal high groundwater table as established from nine (9) years of routine monitoring.
2. Improve site drainage and minimize rainfall infiltration into and through the ash fill footprint.

With this proposed remedy, phased construction would be required to remove approximately one half of the fill area footprint, temporarily stockpile ash and cover soils, import and place clean fill soils to elevations supporting 2-foot separation from seasonal high groundwater table. Removed ash could then be placed back into the original fill footprint on the raised soil floor with an 18-inch soil cover. The second half of the fill area footprint would follow by placing removed ash above the newly developed area. The consolidated footprint would be developed with 4H:1V slopes improving site drainage and reducing rainfall infiltration. Additionally, installation of a 40-mil LLDPE liner system with geocomposite drainage layer above would be installed to cap the fill footprint. 18-inches of protective soil cover would be placed above the liner system and seeded. This proposed remedy would provide for the required vertical separation from groundwater and address the long term infiltration of rainfall through the ash fill. While doing so, the ash fill footprint will be consolidated reducing the total fill footprint from 10 acres to approximately 5 - 6 acres.

Historically, ground water sampling at the site has been conducted using bailers rather than low-flow sampling techniques which are preferable for groundwater quality assessments for metals. Additional Ground water monitoring utilizing low-flow sampling is recommended to adequately evaluate the metals concentrations in groundwater at the site.

Schedule Request

On behalf of Full Circle Solutions, Inc. & ReUse Technology, Inc., ERM requests a 60-day extension to the submittal date for the required Groundwater Corrective Action Application that was requested in the Warning Notice. The extension is needed because ERM was recently retained for the project and requires additional time to develop the information required in the application, including the conceptual design plans for the proposed selected remedy and the two contingency plans.

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If you should have any questions or need additional information concerning this letter,
please contact us at your convenience.

Sincerely,
ERM NC, Inc.



Thomas M. Wilson, P.G.
Principal



David W. Wasiela, P.E.
Senior Engineer

cc: Perrin Dargan - K&L Gates LLP
David Franchina - K&L Gates LLP