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March 11, 2014

Ms. Paula Plont
Tennessee Department of Environment & Conservation
Division of Solid Waste Management
3711 Middlebrook Pike
Knoxville, TN 37921-5602

Re: Matlock Bend Landfill – Loudon County
Proposed Landfill Expansion
Permit #: SNL 53-103-0203

Dear Ms. Plont:

In response to the Tennessee Department of Environment and Conservation's letter dated December 17, 2013, Santek Waste Services, Inc. (Santek) prepared the following submittal.

TDEC's Comment 1:

"The phased plans presented should include closure strategies/timelines. Please depict minimum closure areas (Rule 0400-11-.011-.03(2)(a)(b)2(i)(ii)) and fold such into the closure/post closure costs as developed. One improved element for the phasing sheets is to show the waste fill elevations and not the base liner grades for the applicable cells developed at each phase."

Santek's Response:

The TDEC Rule referenced in the letter dated December 17, 2013 appears to be incorrect. Santek reviewed TDEC Rule 0400-11-01-.03(2)(b)(i) in response to the comment.

As stated on page 2, section 1.2.2 of the Closure/Post Closure Plan, the landfill will be closed once all available airspace has been utilized. The closure and post-closure costs have been estimated based on closing the entire 67 acres. However, the phasing sheets 8A through 8G have been revised to include waste fill elevations for each module developed. And, in accordance with a meeting on January 21, 2014 between Santek and TDEC officials, Abe Almassi, Glen Pugh, Lisa Hughey and Pat Flood, Santek revised section 1.2.2 of the Closure/Post Closure plan to include a more detailed discussion regarding the closure of the landfill. A "red line" version of pages 3 and 4 has been included for ease of review.

TDEC's Comment 2:

"In addition as the phases are developed, the site at some point will require a title V air permit. Please include supporting data (i.e. using EPA LandGem computer program) for predicting compliance year with the New Source Performance Standards."

Santek's Response:

Santek recalculated the site specific waste density in October of 2013. Based on the results, we submitted a NSPS Amended Design Capacity Report and Tier 1 NMOC Emission Rate Report. Santek plans to conduct a Tier 2 testing event and submit a Title V operating permit application within the required timelines as outlined in 40 CFR Part 60 and 70. A copy of the report is attached for your records.

TDEC's Comment 3:

"The stability analysis should include both short term (total stress–during operation) and long term stress (effective stress-after final closure) analysis."

House Engineering's Response:

Total stress analyses have been performed for the waste fill by Geosyntec previously as a result of the slope failure of the waste. The development of the landfill from waste filling operations proceeds at a slow enough rate that renders the effective stress analysis as critical relative to slope stability analyses.

TDEC's Comment 4:

"Stability calculations for intra-liner scenario (block failure) and intra-waste scenario (failure within the waste mass) are not included in the stability calculations."

House Engineering's Response:

Intra-liner (block/wedge) and global slope stability analyses have been performed for the section deemed as the most critical from a slope stability perspective and are attached with this submittal.

TDEC's Comment 5:

"Critical cross section A-A geometry, chosen in analysis, does not agree with the proposed final elevation shown on sheet 9 and proposed base grade elevations shown on sheet 6 or 7. Please verify."

House Engineering's Response:

The nomenclature for the critical section now references Section C as the most critical section and is depicted in the engineering drawings. The cross section used in the analysis is included with the slope stability reports which are attached with this submittal.

TDEC's Comment 6:

The revised plan should include references/rationale used for input modeling parameters of waste and liner system. Use actual site specific shear strength data instead of published generic parameters, especially as this site's waste is dominated by industrial wastes."

House Engineering's Response:

An explanation as to the determination of the strength characteristics for each of the materials which were modeled are provided in the narrative reports for both veneer and global stability which are attached with this submittal.

TDEC's Comment 7:

"Clearly show/specify the details of the bottom liner used in stability computations and identify the critical failure plane."

House Engineering's Response:

Details of the bottom liner used in the stability calculations along with the coordinates of the critical failure plane (the plane with the lowest factor of safety) are provided on the output sheets of the slope stability analyses which are attached with this submittal.

TDEC's Comment 8:

"Sheet 10 A and Sheet 10 B: Plans show side slope benches of 50 to 60 vertical feet in height. The frequency of side slope swale or rather the vertical height distance should be based upon soil loss calculations on the final covered slope. We did not see any calculations to support this design choice. While spacing can extend towards 50 feet for MSW waste fills the Division considers swales spaced on 30 to 40 feet more appropriate in this instance where the waste stream is dominated by industrial wastes. "

CEC's and Santek's Response:

Tack-on berms have been added to the final cover system in order to reduce the swale spacing. This was done for two reasons: One, the swales will allow the geocomposite drainage net to release the storm water more often than the original design, which increases the landfill's final cap veneer stability. And, two, the swales further minimize surface erosion thereby reducing soil loss.

The Revised Universal Soil Loss Equation (RUSLE) was used to predict erosion form the final cap. The results show that soil loss from the landfill will be 1.32 tons/acre/year, which is less than the limit of 2 tons/acre/year. Please refer to the calculation in Attachment A.

TDEC's Comment 9:

"Sheet 10 A does not clearly depict a perimeter ditch along the southern side of the lined fill area."

CEC's and Santek's Response:

A perimeter ditch, labeled D16, has been shown along the southern edge of the proposed expansion. This channel conveys runoff toward the east, and then south to Sediment Pond 2. The calculations for this ditch as well as Culvert C-6 are included in Attachment B. Sheet 10A and 10 B have been revised to show the perimeter ditch. A revised copy is attached for your review.

TDEC's Comment 10:

"Please reevaluate the size and number of let-down drainage pipes to ensure they have adequate design capacity, especially DS8 on Sheet 10 B."

CEC's Response:

The plastic pipe down chutes proposed for the final cap were reviewed for capacity. Because of the tack-on bench revision, the predicted peak flow for the Maximum Downchute (Downchute A2, on the western slope draining to Sediment Pond 3) increased from 65.0 cfs to 73.8 cfs. This increased the peak flow depth in the pipe to 1.05 feet, which is acceptable in a 24-inch diameter pipe.

The drainage area also increase slightly to the downchute on the southeast side that includes DS8. The peak runoff rate from the 25-year storm increased to 45.1 cfs, which is still much less than the Maximum Downchute flow rate.

The number and size of the downchutes is sufficient to provide drainage to the final cap. The revised hydrographs and pipe capacity calculation are included within Attachment B.

TDEC's Comment 11:

"The roughness coefficient of the grass-lined side slope swale ditch (0.024) is incorrect as this value corresponds to corrugated metal pipe. It appears the ditch is undersized with this adjustment."

CEC's Response:

The Manning's n value for the side slope swale was intended to be 0.026, as was listed in the Channel Summary. A revised capacity calculation is included with the correct n value. The change from 0.024 to 0.026 increased the 25-year peak depth only marginally. However, with the addition of the tack-on swales, the maximum peak flow predicted for any slope bench has been reduced to 6.9 cfs. With these revisions, the maximum flow depth for the slope benches is 0.52 feet. Compared to the design depth of 2.0 feet, there is adequate capacity in the slope benches. The revised calculation is provided in Attachment B.

TDEC's Comment 12:

"Include for review the site's proposed watershed areas on a map and include networking route details through each proposed drainage structures."

CEC's Response:

A new figure is included with this submittal in Attachment C, titled "Stormwater Network Diagram". This figure includes drainage structures, ditches, and sediment ponds, and hopefully clarifies the stormwater network better.

TDEC's Comment 13:

"Include for review calculations for sediment pond #3 & pond # 4 the required and proposed storage volume."

CEC's Response:

The table below summarizes the required storage volumes and the provided volumes for Sediment Pond 3 and Sediment Pond 4. Both of the ponds have the capacity to contain the 25-year runoff volume, and safely pass the 100-year storm through the emergency spillway. Refer to the revised Attachment B – Hydraulic Calculations in the 2010 Revision for further details.

Sediment Pond	25-year Runoff Volume (ft^3)	Sediment Storage Volume (ft^3)	Total Required Volume (ft^3)	Storage Volume at Primary Spillway (ft^3)	Height above Primary SW to Pass 25-yr Storm (ft)	Flow Depth of 100-yr Storm through Emergency SW (ft)
Pond 3	417,749	43,560	461,309	475,256	1.99	1.00
Pond 4	90,822	43560	134,382	136,266	0.77	0.90

TDEC's Comment 14:

"Pond # 3 calculation specifies the riser pipe as 24 inches whereas the plans show it to be 48 inches. Please verify."

CEC's Response:

The 24-inch pipe shown in the calculation refers to the discharge barrel. The riser is intended to be a 48-inch pipe. This can be found in the Pond Report for Weir A. The crest length shown, 12.57 feet, corresponds to the circumference of a 48-inch diameter riser.

TDEC's Comment 15:

"The chart on sheet 14 C outlines the distance between the bottom of the pond and the first orifice perforation as only 1 foot. This allows for very limited settling and the first orifice perforation should at a minimum start above the barrel pipe."

CEC's Response:

The one foot specified from the bottom of Sediment Pond 3 to the lowest orifice provides 1.22 acre-feet of sediment storage, which we believe is more than adequate. However, per your request, we have raised the invert of the lowest orifice to 863.0 to match the top of the discharge barrel.

TDEC's Comment 16:

"The proposed storm water pumping discharge scenario does not slowly release waters off-site in similar manner as a gravity flow pond and is not considered sufficiently protective. Pond 4 should be built earlier or some version of that pond. The long term nature of waste permits and the existing Memorandum of Agreement with the Division of Water Resources dictates the Division of Solid Waste Management to fully incorporate storm water detention practices for this site now in this permitting phase and document."

CEC's Response:

All pumped stormwater is designed to be routed through an existing sediment basin prior to leaving the site. A note has been added to the phasing drawings 8A through 8G for further clarification. Additionally, a temporary sediment pond has been added to drawing 8B through 8D and will be installed as part of the Module J construction. The storm water calculations for the pond are located in Attachment D.

TDEC's Comment 17:

"The numbering system for the Division's regulations has been changed from Rule 1200 to Rule 0400. Please correct all references."

Santek's Response:

Reference to Rule 1200 has been changed to Rule 0400. A revised copy of the Operations Plan and Closure/Post Closure Plan are included for your review.

In addition to responding to the above comments, Santek is submitting a revised sheet 2 that incorporates the existing leachate sewer line along with the addition of a new flow meter to be installed through approval of the minor modification submitted to TDEC on February 12, 2014.

Please find the following documents attached for review:

- Matlock Bend Landfill – Slope Stability Analysis – House Engineering
- Matlock Bend Landfill – Veneer Stability Analysis – House Engineering
- Attachment A – Soil Loss Calculations – CEC
- Attachment B – Revised Hydrologic and Hydraulic Calculations – CEC
- Attachment C – Stormwater Network Diagram – CEC
- Attachment D – Temporary Storm Water Pond 1 Calcs - CEC
- Facility Operations Plan – Revised February 2014 – Santek
- Closure/Post Closure Plan – Revised February 2014 – Santek
- "Red Line" Version of Page 3 and 4 – Santek

- NSPS Amended Design Capacity Report and Tier 1 NMOC Emissions Rate Report Dated January 2, 2014
- Revised drawings 2, 8A – 8G, 10A, 10B, 14B, 14C and 14D.

A new divider labeled "Response to Comments" is included as well. In order to organize and incorporate these revised documents, please place them in the previously submitted notebook behind the new tab. Replace the original drawings with the revised drawings.

If you have any questions or require additional information, please give me a call at (423) 303-7101.

Sincerely,

Ron E. Vail, P.E.
V.P. of Engineering

Enclosures

cc: Revendra Awasthi, TDEC, Knoxville
Abe Almassi, TDEC, Nashville
Steve Field, Chairman, LCSWDC
Cheryl Dunson, Executive V.P. of Marketing, Santek
Robert D. Burnette, P.E., Executive V.P. of Engineering, Santek
Matt Dillard, Executive V.P. of Operations, Santek
Levi Higdon, Landfill Manager, Santek