cornerstone
environmental

10012 International Boulevard, Cincinnati, OH 45246
T 877.633.5520 F 513.870.0610 | W www.cornerstoneeg.com

Memorandum

Date: 8/23/2017

To: Jim Wade, P.E.

From: Jerry L. McGraner, P.E.

Subject: Blue Ridge Landfill - Estimated Depth of BES Waste

As requested, I have attempted to evaluate the possible depth of the BES waste material that has been placed at the Blue Ridge Landfill in Irvine, Kentucky. The following sources were used for this determination:

- Topographic mapping for the site compiled by Southern Resources Mapping Corporation from photography dated 3/15/15;
- Drawings prepared as a part of the 2015 KDEP Report for the facility developed by Cornerstone and dated 5/05/15. These drawings compared the site mapping developed on 4/23/14 with that developed on 3/15/15;
- The facility drawing entitled "2016 Waste Placement Grid - Site Plan" prepared by Cornerstone and dated 2/29/15;
- Aerial photography from Google Earth. Images were captured on 6/13/14. This image showed ongoing waste placement operations;
- Cover Reports from Blue Ridge Landfill for the period from July 2015 through February 2016 that indicate the grid location and tonnage of waste placed each day;
- List of delivery dates where BES brought material to the landfill;
- Survey data for some of the grid points was obtained as a part of the Gamma radiation survey. These provided limited information on the current waste elevations;
- Public information indicating that the BES waste was placed in the landfill sometime between July and November of 2015. The waste consisted of 92 loads: a total of 1,157 tons; and
- Information from Advanced Disposal that the waste placed at the Blue Ridge Landfill has an in-place density of approximately 1,500 pounds/cubic yard.

cornerstone environmental

Summary of Estimation Procedure

The cover report identified the tonnage received for each day as well as the grid location where that tonnage was placed. The delivery dates from BES were correlated with the cover report in order to determine the volume of material that could have been placed above the waste received from BES. The steps in this estimation were:

- It was assumed that the tonnage received for each day was distributed evenly across the specified grid with an area of 10,000 square feet;
- The tonnage received was converted to cubic feet using the facility's in-place density;
- The cubic feet received was divided by the grid area to determine the average depth of waste placed in each grid;
- The days that BES delivered to the site were identified and the order of receipt was reviewed to determine how much of the calculated depth was placed above the BES waste;
- The limited survey data was plotted on plans and sections for the site. These were reviewed to determine if the estimated depth was reasonable.

The table below identifies the map grid where the BES waste has been place and the likely depth of that material. Grids with a zero depth listed as the first number indicate that the day that BES waste was placed in that grid was the last day any waste was placed in that grid. Multiple ranges indicate that BES waste was placed in that grid on more than one occasion.

Grid Location	Likely Depth Below Cover to BES Waste
P 12	4′ - 5′
P 11	5′ – 10′
O 13	0′ – 1′, 16′ – 19′
O 12	6′ - 7′
M 14	5′ - 6′
L 15	3′ - 4′
L 14	0′ – 5′
L 13	0′ – 6′
K 16	0′ – 2′
K 14	0′ – 3′, 6′ – 14′
K 13	0′ – 17′
J 14	9′ – 17′
J 13	4′ – 6′
J 12	0′ – 5′
I 15	3′ – 9′
I 14	0′ – 4′
I 12	5′ – 15′