



Engineering. Environmental. Answers.

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July 6, 2021

Terri Graham
Baldwin County Commission
Solid Waste Director
15140 CR 49
Summerdale, AL 36580

**Re: 2020-2021 Capacity Report
Magnolia Sanitary Landfill**

Dear Mrs. Graham:

It is a pleasure for CDG Engineers and Associates to submit the requested 2020-2021 Capacity Report for the Magnolia Sanitary Landfill.

Methodology

UAS topography was collected on July 14, 2020 and May 26, 2021. CDG utilized the software program ArcMap, by Esri, in conjunction with the CAD files to compute the volume of airspace consumed for the landfill. The City provided CDG in-gate tonnages as reported to the Alabama Department of Environmental Management (ADEM).

In order to calculate airspace consumed, CDG used the following method:

- In-gate recorded tonnages were reviewed and it was determined that **172,671 tons** of MSW waste was disposed of during that time.
- By comparing the topographic surveys, CDG was able to calculate that **178,634 CY** of net fill had taken place during the reported timeframe.
- Using the two topographic surveys, along with the in-gate tonnages, CDG was able to calculate the site-specific compaction rate of **1,933 lbs/CY**.

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Calculations

Below is the summary and description of each volumetric calculation for the Magnolia Sanitary Landfill:

Table 1. Current FY Volumetric Calculations

Airspace Utilization	Cubic Yards
1. Gross Theoretical Airspace	12,137,439
2. Airspace Consumed through Previous FY	4,267,703
3. Current FY Airspace Consumed (MSW and Operational Soil)	178,634
4. Total Airspace Consumed to Date	4,446,337
5. Remaining Airspace To Date	7,691,102
6. Capacity Used as of May 26, 2021	37%

(1) Gross Theoretical Airspace

Refers to the total volume expressed in cubic yards between the permitted top of clay layer and bottom final cap of the permitted landfill footprint. (Calculated using a comparison between the base grade and final grade surfaces.)

(2) Total Airspace Consumed through Current FY

The total airspace consumed as reported in the previous FY Airspace Report.
(Total Airspace Consumed through to Date from previous year's report)

(3) Current FY Airspace Consumed (MSW and Operational Soil)

The total airspace consumed during the reported time frame.

(4) Total Airspace Consumed to Date

The total airspace consumed to date was calculated as the total volume consumed through Current FY.

(5) Remaining Airspace Available

The remaining airspace to date was calculated by subtracting the total airspace consumed to date from the net theoretical airspace.

(6) Capacity Used as of May 26, 2021

The total capacity consumed of the permitted footprint
(The percentage of Total Airspace Consumed to Date/Net Theoretical Airspace)



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In addition to the volumetric analysis above, area calculations were performed in the **Magnolia Sanitary Landfill**:

Table 2. Current FY Area Calculations

Landfill Area Calculations	Permitted Footprint (acres)
Total Permitted Waste Footprint	96
Total Constructed Waste Footprint	59.9
Percent of Permitted Footprint Constructed	62%

If you have any questions concerning the method of calculation or results, please feel free to call.

Sincerely,

CDG Engineers & Associates, Inc.

A handwritten signature in blue ink that reads "Joe Adams". The signature is fluid and cursive, with the first and last names clearly legible.

Joe Adams, P.E
Project Manager