

MEMORANDUM

To: SFSWMA Joint Powers Board Members
From: Randall Kippenbrock, P.E., Executive Director *RLK*
Date: May 14, 2025
Subject: Discussion and Possible Action Regarding Accepting Rio Arriba County Waste and Its Impact on the Useful Life of the Caja del Rio Landfill

BACKGROUND & SUMMARY

At the April 17, 2025 meeting, the Board discussed the possibility of accepting out-of-county waste from Rio Arriba County, including the City of Española, at the Caja del Rio Landfill (Landfill). As such, the matter is being introduced at this meeting for further discussion and possible action.

From a historical perspective, the subject of accepting out-of-county waste was presented to the Board in 1999, 2003, 2008, and 2013. Each time, the Agency did not obtain the required approvals from all three entities—the City of Santa Fe, Santa Fe County, and the Board—as per the Joint Powers Agreement (JPA).

Rio Arriba County is comprised of the City of Española, San Juan Pueblo, Santa Clara Pueblo, and rural areas. The Agency estimates Rio Arriba County generates approximately 125 tons per day of solid waste, or 32,000 tons per year. The amount of waste generated by Rio Arriba County equates to approximately six transfer trailers per day to the Landfill, Monday through Friday, a 4% increase in vehicle count. The Landfill processes an average of 586 tons of waste daily, Monday through Saturday.

Accepting waste from Rio Arriba County potentially increases the tonnage at the Landfill from 182,892 to 215,365 tons per year. The increase in tonnage will also increase revenues, allowing the Agency to achieve economies of scale by decreasing the cost per ton of waste. On the other hand, processing the additional tonnages from Rio Arriba County will decrease the available landfill airspace for disposal (reducing the number of years or life of the landfill). Landfill airspace is the volume of space on a landfill site permitted to dispose of municipal solid waste. In addition, this will also require cell development more frequently.

While additional waste from Rio Arriba County will bring revenue through tipping fees, it will also introduce added costs for operations, site management, and potential environmental risks. These risks include methane gas emissions, leachate production, and potential soil and groundwater contamination.

The attached landfill volume and site life calculations estimated the landfill life for the current tonnage (Santa Fe County only) with a 1% annual increase in tonnage to be 34 years. The calculations also determined that accepting tonnage from Rio Arriba County will decrease the landfill life to 29 years.

Landfills typically have a life expectancy ranging from 30 to 50 years, depending on factors like size, disposal rate, and compaction. While the site life calculations show the Landfill at 34 years, the Landfill has available land to increase the facility's life (footprint) by 20 or more years. The principal challenge and limiting factor for expanding the footprint at the Landfill is handling the underlying basalt rock. Cell development for rock removal versus soil excavation costs twice as much.

Separately, in 2000, in accordance with the JPA, the Agency entered into an MOU with San Miguel County to allow out-of-county waste from the Village of Pecos to be disposed of at the Landfill. In 2024, San Miguel County transported 211 loads, or approximately 1,864 tons, of waste to the landfill, which equates to approximately four loads per week.

ACTION REQUESTED

The matter is before the Board for discussion with possible action.

Attachment: Landfill Volume and Site Life Calculations

M:\Memo\Memo051425.3

ATTACHMENT

Landfill Volume and Site Life Calculations

Landfill Volume and Site Life Calculations

Santa Fe County Only

182,892 tons

Updated by Randall Kippenbrock, SFSWMA May 12, 2025

Task: Determine landfill life for each phase of the landfill as of December 31, 2024

Resources and References: CDM Smith volumetric calculations memo, dated February 9, 2024, using Autocad Civil 3D and data from Bohannan Huston, Inc (BHI) camera-equipped unmanned aerial topographical survey, dated December 12, 2023—also, WasteWorks tonnage data for the period December 12, 2023, to December 31, 2024.

Methodology: Use 20% daily cover and 1,400 lb/cy for density of MSW.

Assumptions & Inputs:		
	Percentage of MSW volume used for daily cover	20%
	Ratio of MSW Volume to Total Volume	0.83
	Density of MSW	1,400
	Average yearly tonnage	182,892
As of December 31, 2024	West Phase Remaining Volume (cy) - Available Airspace	3,929,328
As of December 31, 2024	Future East Phase Volume (cy) - Available Airspace	9,401,980
	West Phase = Current Landfill Area, Cells 1 through 6 A/B	13,331,308
	East Phase = Proposed Landfill Expansion Area, Cells 7 through 11	

Calculations:

Determine Landfill Life for 182,892 annual tonnage rate for West Phase only beginning January 2025

Assume 1% annual increase in tonnage

Remaining Capacity = Total Volume - Cumulative Tonnage / Density of MSW x Percentage of MSW volume used for daily cover

Shaded cell indicates landfill life

year	annual tonnage	cumulative tonnage	Remaining Capacity (cy) West Phase
1	182,892	182,892	3,615,799
2	184,721	367,613	3,299,134
3	186,568	554,181	2,979,303
4	188,434	742,615	2,656,274
5	190,318	932,933	2,330,014
6	192,221	1,125,154	2,000,492
7	194,144	1,319,298	1,667,674
8	196,085	1,515,383	1,331,529
9	198,046	1,713,429	992,022
10	200,026	1,913,455	649,119
11	202,027	2,115,482	302,788
12	204,047	2,319,528	-47,006
13	206,087	2,525,616	-400,299
14	208,148	2,733,764	-757,124
15	210,230	2,943,993	-1,117,518
16	212,332	3,156,325	-1,481,515
17	214,455	3,370,781	-1,849,153
18	216,600	3,587,380	-2,220,467
19	218,766	3,806,146	-2,595,494
20	220,953	4,027,100	-2,974,271
21	223,163	4,250,263	-3,356,837
22	225,395	4,475,657	-3,743,227
23	227,649	4,703,306	-4,133,482
24	229,925	4,933,231	-4,527,639
25	232,224	5,165,455	-4,925,738
26	234,547	5,400,002	-5,327,818
27	236,892	5,636,894	-5,733,919
28	239,261	5,876,155	-6,144,080
29	241,654	6,117,808	-6,558,343
30	244,070	6,361,878	-6,976,749
31	246,511	6,608,389	-7,399,339

Landfill Volume and Site Life Calculations

Santa Fe County Only

182,892 tons

Determine Landfill Life for 182,892 annual tonnage rate for West Phase and East Phase beginning January 2025.

Assume 1% annual increase in tonnage

Remaining Capacity = Total Volume - Cumulative Tonnage / Density of MSW x Percentage of MSW volume used for daily cover

Shaded cell indicates landfill life

year	annual tonnage	cumulative tonnage	Remaining Capacity (cy)
			West Phase and East Phase
1	182,892	182,892	13,017,779
2	184,721	367,613	12,701,114
3	186,568	554,181	12,381,283
4	188,434	742,615	12,058,254
5	190,318	932,933	11,731,994
6	192,221	1,125,154	11,402,472
7	194,144	1,319,298	11,069,654
8	196,085	1,515,383	10,733,509
9	198,046	1,713,429	10,394,002
10	200,026	1,913,455	10,051,099
11	202,027	2,115,482	9,704,768
12	204,047	2,319,528	9,354,974
13	206,087	2,525,616	9,001,681
14	208,148	2,733,764	8,644,856
15	212,332	3,156,325	7,920,465
16	214,455	3,370,781	7,552,827
17	216,600	3,587,380	7,181,513
18	218,766	3,806,146	6,806,486
19	220,953	4,027,100	6,427,709
20	223,163	4,250,263	6,045,143
21	225,395	4,475,657	5,658,753
22	227,649	4,703,306	5,268,498
23	229,925	4,933,231	4,874,341
24	232,224	5,165,455	4,476,242
25	234,547	5,400,002	4,074,162
26	236,892	5,636,894	3,668,061
27	239,261	5,876,155	3,257,900
28	241,654	6,117,808	2,843,637
29	244,070	6,361,878	2,425,231
30	246,511	6,608,389	2,002,641
31	248,976	6,857,365	1,575,825
32	251,466	7,108,831	1,144,741
33	253,980	7,362,811	709,346
34	256,520	7,619,331	269,597
35	259,085	7,878,416	-174,549
36	261,676	8,140,093	-623,136
37	264,293	8,404,386	-1,076,210
38	266,936	8,671,321	-1,533,814
39	269,605	8,940,927	-1,995,995
40	272,301	9,213,228	-2,462,797
41	275,024	9,488,252	-2,934,267

Estimated Landfill Life (years)

Annual Tonnage	West Phase	East Phase	Both Phases
182,892	11	23	34

Landfill Volume and Site Life Calculations

Santa Fe County and Rio Arriba County

215,365 tons = Santa Fe County 182,892 tons, Rio Arriba County 32,373 tons

Updated by Randall Kippenbrock, SFSWMA May 12, 2025

Task: Determine landfill life for each phase of the landfill as of December 31, 2024

Resources and References: CDM Smith volumetric calculations memo, dated February 9, 2024, using Autocad Civil 3D and data from Bohannon Huston, Inc (BHI) camera-equipped unmanned aerial topographical survey, dated December 12, 2023—also, WasteWorks tonnage data for the period December 12, 2023, to December 31, 2024.

Methodology:

Use 20% daily cover and 1,400 lb/cy for density of MSW.

Assumptions & Inputs:

	Percentage of MSW volume used for daily cover	20%
	Ratio of MSW Volume to Total Volume	0.83
	Density of MSW	1,400
	Average yearly tonnage	215,365
As of December 31, 2024	West Phase Remaining Volume (cy) - Available Airspace	3,929,328
As of December 31, 2024	Future East Phase Volume (cy) - Available Airspace	9,401,980
	West Phase = Current Landfill Area, Cells 1 through 6 A/B	13,331,308
	East Phase = Proposed Landfill Expansion Area, Cells 7 through 11	

Calculations:

Determine Landfill Life for 215,365 annual tonnage rate for West Phase only beginning January 2025

Assume 1% annual increase in tonnage

Remaining Capacity = Total Volume - Cumulative Tonnage / Density of MSW x Percentage of MSW volume used for daily cover

Shaded cell indicates landfill life

year	annual tonnage	cumulative tonnage	Remaining Capacity (cy)
1	215,365	215,365	3,560,131
2	217,519	432,884	3,187,242
3	219,694	652,577	2,810,624
4	221,891	874,468	2,430,240
5	224,110	1,098,578	2,046,052
6	226,351	1,324,929	1,658,022
7	228,614	1,553,543	1,266,111
8	230,900	1,784,443	870,282
9	233,209	2,017,653	470,494
10	235,542	2,253,194	66,709
11	237,897	2,491,091	-341,114
12	240,276	2,731,367	-753,016
13	242,679	2,974,046	-1,169,036
14	245,105	3,219,151	-1,589,217
15	247,557	3,466,708	-2,013,600
16	250,032	3,716,740	-2,442,226
17	252,532	3,969,272	-2,875,139
18	255,058	4,224,330	-3,312,381
19	257,608	4,481,938	-3,753,995
20	260,184	4,742,123	-4,200,025
21	262,786	5,004,909	-4,650,516
22	265,414	5,270,323	-5,105,512
23	268,068	5,538,391	-5,565,057
24	270,749	5,809,140	-6,029,198
25	273,456	6,082,597	-6,497,981
26	276,191	6,358,788	-6,971,451
27	278,953	6,637,741	-7,449,656
28	281,742	6,919,483	-7,932,643
29	284,560	7,204,043	-8,420,460
30	287,405	7,491,448	-8,913,155
31	290,279	7,781,728	-9,410,777

Landfill Volume and Site Life Calculations

Santa Fe County and Rio Arriba County

215,365 tons = Santa Fe County 182,892 tons, Rio Arriba County 32,373 tons

Determine Landfill Life for 215,365 annual tonnage rate for West Phase and East Phase beginning January 2025.

Assume 1% annual increase in tonnage

Remaining Capacity = Total Volume - Cumulative Tonnage / Density of MSW x Percentage of MSW volume used for daily cover

Shaded cell indicates landfill life

year	annual tonnage	cumulative tonnage	Remaining Capacity (cy)
			West Phase and East Phase
1	215,365	215,365	12,962,111
2	217,519	432,884	12,589,222
3	219,694	652,577	12,212,604
4	221,891	874,468	11,832,220
5	224,110	1,098,578	11,448,032
6	226,351	1,324,929	11,060,002
7	228,614	1,553,543	10,668,091
8	230,900	1,784,443	10,272,262
9	233,209	2,017,653	9,872,474
10	235,542	2,253,194	9,468,689
11	237,897	2,491,091	9,060,866
12	240,276	2,731,367	8,648,964
13	242,679	2,974,046	8,232,944
14	245,105	3,219,151	7,812,763
15	250,032	3,716,740	6,959,754
16	252,532	3,969,272	6,526,841
17	255,058	4,224,330	6,089,599
18	257,608	4,481,938	5,647,985
19	260,184	4,742,123	5,201,955
20	262,786	5,004,909	4,751,464
21	265,414	5,270,323	4,296,468
22	268,068	5,538,391	3,836,923
23	270,749	5,809,140	3,372,782
24	273,456	6,082,597	2,903,999
25	276,191	6,358,788	2,430,529
26	278,953	6,637,741	1,952,324
27	281,742	6,919,483	1,469,337
28	284,560	7,204,043	981,520
29	287,405	7,491,448	488,825
30	290,279	7,781,728	-8,797
31	293,182	8,074,910	-511,395
32	296,114	8,371,024	-1,019,019
33	299,075	8,670,099	-1,531,719
34	302,066	8,972,165	-2,049,547
35	305,087	9,277,252	-2,572,552
36	308,138	9,585,389	-3,100,788
37	311,219	9,896,608	-3,634,306
38	314,331	10,210,939	-4,173,160
39	317,474	10,528,414	-4,717,401
40	320,649	10,849,063	-5,267,086
41	323,856	11,172,919	-5,822,267

Estimated Landfill Life (years)

Annual Tonnage	West Phase	East Phase	Both Phases
215,365	10	19	29