



Robin Simmons
Regional Land Manager

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February 10, 2021

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Oklahoma Water Resources Board

Matt Cogburn
Oklahoma Water Resources Board
3800 N. Classen
Oklahoma City, OK 73118

Re: Martin Marietta/Material Producers Davis Quarry Q4 and Annual 2020 Monitoring Report

Dear Mr. Cogburn:

Attached please find the Q4 and Annual 2020 monitoring report and associated data and calculations for Martin Marietta/Material Producers' Davis Quarry.

As is typical at the Davis Quarry, in Q4 we see more precipitation and runoff entering the pit than the total water we use from the pit. Also typically, we do not see a rise in water levels in the pit that correspond to the additional precipitation and runoff that we know is entering the pit and not being used. Thus we still see a net decrease of water within the pit indicating that we continue to augment groundwater through the pit.

Sincerely,

A handwritten signature in blue ink that reads 'Robin L. Simmons'.

Robin L. Simmons
Regional Land Manager

MMM Davis Quarry 2020 Monitoring Report

All volumes are in acre-feet.

	Total Groundwater Entering Pit	Total Stormwater Entering Pit	Total Stormwater Diverted from Pit	Total Water Diverted	Water Sent To Holding Basin	Groundwater Augmentation	Streamwater Augmentation	Consumptive Use of Stormwater	Consumptive Use of Groundwater	Groundwater Pumped From Well
January-20	-4.49	18.47	18.47	13.98	N/A	-4.49	0.00	5.96	0.00	0.00
February-20	-6.13	11.19	11.19	5.06	N/A	-6.13	0.00	5.00	0.00	0.00
March-20	-13.32	21.03	21.03	7.70	N/A	-13.32	0.00	7.17	0.00	0.00
1st QTR Totals	-23.94	50.69	50.69	26.75	0.00	-23.94	0.00	18.13	0.00	0.00
April-20	-14.93	28.23	28.23	13.30	N/A	-14.93	0.00	9.23	0.00	0.00
May-20	-20.15	32.31	32.31	12.15	N/A	-20.15	0.00	17.54	0.00	0.00
June-20	-3.99	16.74	16.74	12.74	N/A	-3.99	0.00	7.78	0.00	0.00
2nd QTR Totals	-39.07	77.27	77.27	38.20	0.00	-39.07	0.00	34.55	0.00	0.00
July-20	-13.51	30.77	30.77	17.26	N/A	-13.51	0.00	4.88	0.00	0.00
August-20	-27.31	10.05	10.05	-17.26	N/A	-27.31	0.00	4.17	0.00	0.00
September-20	-16.18	39.92	39.92	23.74	N/A	-16.18	0.00	14.00	0.00	0.00
3rd QTR Totals	-57.01	80.74	80.74	23.73	0.00	-57.01	0.00	23.05	0.00	0.00
October-20	-0.88	5.76	5.76	4.88	N/A	-0.88	0.00	3.67	0.00	0.00
November-20	-3.31	7.23	7.23	3.92	N/A	-3.31	0.00	3.23	0.00	0.00
December-20	-8.52	6.25	6.25	-2.27	N/A	-8.52	0.00	2.52	0.00	0.00
4th QTR Totals	-12.70	19.23	19.23	6.53	0.00	-12.70	0.00	9.42	0.00	0.00
2020 Totals	-132.73	227.94	227.94	95.21	0.00	-132.73	0.00	85.15	0.00	0.00

Note: Negative entries for Total Groundwater Entering Pit indicate that stormwater is entering the rock formation via the pit.

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Davis Water Balance

	Jan-20 31	Feb-20 28	Mar-20 31	Apr-20 30	May-20 31	Jun-20 30	Jul-20 31	Aug-20 31	Sep-20 30	Oct-20 31	Nov-20 30	Dec-20 31
Monitoring Period, Days												
Monthly Production, tons	127,571	116,816	163,132	94,739	9,753	110,987	138,304	107,676	99,262	123,841	90,085	112,548
Product Moisture Content	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Water Truck Loads	12	13	22	59	7	39	38	67	24	41	11	10
Month End Water Elevs.												
1) Freshwater pond, depth to water	19.362	18.223	19.75	17.185	17.189	19.235	15.601	17.015	13.377	14.562	15.327	13.575
2) Pit Sump, depth to water	13.37	13.392	12.251	14.835	12.972	13.48	31.559	29.362	34.863	34.301	34.153	32.469
Pond Surface Acres												
1) Freshwater pond	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
2) Pit Sump	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Total surface acres	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Pond Water Volume Change												
1) Freshwater pond	3.656	-1.253	1.680	-2.822	0.004	2.251	-3.997	1.555	-4.002	1.304	0.842	-1.927
2) Pit Sump	2.997	0.051	-2.624	5.943	-4.285	1.168	41.582	-5.053	12.652	-1.293	-0.340	-3.873
3) Change in settling pond storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Net Volume Change	6.653	-1.202	-0.945	3.122	-4.281	3.419	37.584	-3.498	8.651	0.011	0.501	-5.800
Water Inputs, ac-ft												
Rural Water	0.130	0.132	0.361	0.061	0.006	0.007	0.016	0.009	0.010	0.155	0.020	0.058
Lake Water	0.000	0.000	0.000	0.000	0.000	0.000	27.100	19.357	0.000	0.000	0.000	0.000
Well Water	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Precipitation	18.472	11.192	21.025	28.229	32.306	16.737	30.775	10.051	39.919	5.759	7.226	6.248
Total Water Input	18.602	11.323	21.387	28.289	32.312	16.744	57.890	29.416	39.929	5.914	7.245	6.306
Water Usage, ac-ft												
Product moisture content	3.285	3.008	4.201	2.440	0.251	2.858	3.562	2.773	2.556	3.189	2.320	2.898
Haul road dust control	0.368	0.233	0.491	0.724	0.215	1.197	1.166	1.522	0.737	1.258	0.338	0.307
Evaporation losses	0.436	0.480	0.799	0.962	1.168	1.575	1.397	1.304	0.804	0.578	0.781	0.381
Misc usage	3.37	2.67	3.52	6.11	14.81	3.70	0.67	-	11.00	-	-	-
Total Water Usage, Ac-ft	7.460	6.393	9.011	10.240	16.441	9.330	6.794	5.599	15.095	5.025	3.439	3.586
Net Water Input	11.143	4.931	12.376	18.049	15.871	7.414	51.096	23.817	24.834	0.889	3.806	2.720
emergency storage of precipitation and runoff, ac-ft												
Groundwater Inflow	-4.489	-6.133	-13.320	-14.927	-20.151	-3.995	-13.511	-27.315	-16.184	-0.878	-3.305	-8.520
Groundwater Inflow, Avg Ac-ft/Day	-0.145	-0.219	-0.430	-0.498	-0.650	-0.133	-0.436	-0.881	-0.539	-0.028	-0.110	-0.275
Groundwater Inflow, Avg Gallons/Day	-47,188	-71,373	-140,014	-162,135	-211,818	-43,392	-142,022	-287,115	-175,781	-9,229	-35,902	-89,558

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Consumptive Use

	January	February	March	April	May	June	July	August	September	October	November	December	
Water Truck Usage	0.37	0.23		0.49	0.72	0.21	1.20	1.17	1.52	0.74	1.26	0.34	0.31
Moisture Content of Product Shipped	2.22	2.10		3.16	2.39	2.52	2.88	3.04	2.65	2.27	2.41	2.89	2.22
Misc on site use	-	-		-	-	-	-	-	-	-	-	-	-
Misc off site	3.37	2.67		3.52	6.11	14.81	3.70	0.67	-	11.00	-	-	-
Total	5.96	5.00		7.17	9.23	17.54	7.78	4.88	4.17	14.00	3.67	3.23	2.52

	January	February	March	April	May	June	July	August	September	October	November	December
Shipped Tons												
Base	29,088	30,835	45,028	23,538	29,086	26,455	33,284	21,136	27,472	22,202	35,617	27,132
Coarse Aggregate	52,412	46,515	56,544	54,229	63,661	63,742	59,435	66,938	50,890	60,549	61,705	57,879
Fine Aggregate	20,991	18,524	34,684	29,264	24,890	37,330	38,674	33,109	24,175	28,088	31,778	19,969
Total	102,491	95,875	136,256	107,031	117,637	127,527	131,393	121,183	102,537	110,839	129,100	104,980
Moisture Shipped	2.22	2.10	3.16	2.39	2.52	2.88	3.04	2.65	2.27	2.41	2.89	2.22

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October Precipitation Data

PIT RUNOFF ASSUMPTIONS		
Hydrologic Soil Group	D	
Land Use	gravel road	
AMC Condition	II (ave)	
CN (pit fringe)	88	area draining into pit
CN (pit)	100	area with direct interception
S (pit fringe)	1.364	area draining into pit
S (pit)	0.000	area with direct interception
Pit - Direct Interception (>95 ft deep)	65.19	subject to refinement
Pit fringe (area drains to pit)	94.06	subject to refinement
Drainage to Pit (total area)	159.26	subject to refinement

Quarry area Fringe area

Date	Precip, in.	Runoff, in.	Runoff, in.	Evapor, in/day
1-Oct	0.00	0.00	0.00	0.10
2-Oct	0.00	0.00	0.00	0.09
3-Oct	0.00	0.00	0.00	0.10
4-Oct	0.00	0.00	0.00	0.10
5-Oct	0.00	0.00	0.00	0.09
6-Oct	0.00	0.00	0.00	0.09
7-Oct	0.00	0.00	0.00	0.09
8-Oct	0.00	0.00	0.00	0.09
9-Oct	0.00	0.00	0.00	0.08
10-Oct	0.00	0.00	0.00	0.08
11-Oct	0.00	0.00	0.00	0.09
12-Oct	0.00	0.00	0.00	0.10
13-Oct	0.00	0.00	0.00	0.09
14-Oct	0.00	0.00	0.00	0.09
15-Oct	0.00	0.00	0.00	0.08
16-Oct	0.00	0.00	0.00	0.07
17-Oct	0.00	0.00	0.00	0.07
18-Oct	0.00	0.00	0.00	0.04
19-Oct	0.00	0.00	0.00	0.02
20-Oct	0.07	0.07	0.00	0.04
21-Oct	0.00	0.00	0.00	0.07
22-Oct	0.00	0.00	0.00	0.07
23-Oct	0.08	0.08	0.00	0.03
24-Oct	0.00	0.00	0.00	0.05
25-Oct	0.08	0.08	0.00	0.01
26-Oct	0.32	0.32	0.00	0.00
27-Oct	0.11	0.11	0.00	0.00
28-Oct	0.26	0.26	0.00	0.01
29-Oct	0.10	0.10	0.00	0.05
30-Oct	0.03	0.03	0.00	0.06
31-Oct	0.01	0.01	0.00	0.06
		1.06	0.00	
Volume, ac-ft		5.76	0.00	2.039
Total Vol, ac-ft		5.76		

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November Precipitation Data

PIT RUNOFF ASSUMPTIONS

Hydrologic Soil Group	D	
Land Use	gravel road	
AMC Condition	II (ave)	
CN (pit fringe)	88	area draining into pit
CN (pit)	100	area with direct interception
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Drainage to Pit (total area)	159.26	subject to refinement

Quarry area Fringe area

Date	Precip, in.	Runoff, in.	Runoff, in.	Evapor, in/day
1-Nov	0.00	0.00	0.00	0.09
2-Nov	0.00	0.00	0.00	0.08
3-Nov	0.00	0.00	0.00	0.13
4-Nov	0.00	0.00	0.00	0.17
5-Nov	0.00	0.00	0.00	0.09
6-Nov	0.00	0.00	0.00	0.08
7-Nov	0.00	0.00	0.00	0.11
8-Nov	0.00	0.00	0.00	0.08
9-Nov	0.00	0.00	0.00	0.12
10-Nov	0.00	0.00	0.00	0.07
11-Nov	0.00	0.00	0.00	0.08
12-Nov	0.00	0.00	0.00	0.14
13-Nov	0.05	0.05	0.00	0.06
14-Nov	0.00	0.00	0.00	0.14
15-Nov	0.00	0.00	0.00	0.12
16-Nov	0.00	0.00	0.00	0.08
17-Nov	0.00	0.00	0.00	0.09
18-Nov	0.00	0.00	0.00	0.18
19-Nov	0.00	0.00	0.00	0.16
20-Nov	0.00	0.00	0.00	0.11
21-Nov	0.00	0.00	0.00	0.06
22-Nov	0.20	0.20	0.00	0.02
23-Nov	0.00	0.00	0.00	0.05
24-Nov	0.83	0.83	0.00	0.04
25-Nov	0.00	0.00	0.00	0.07
26-Nov	0.00	0.00	0.00	0.08
27-Nov	0.00	0.00	0.00	0.08
28-Nov	0.17	0.17	0.00	0.06
29-Nov	0.08	0.08	0.00	0.06
30-Nov	0.00	0.00	0.00	0.06
		0.00	0.00	
		1.33	0.00	
Volume, ac-ft		7.23	0.00	2.758
Total Vol, ac-ft		7.23		

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December Precipitation Data

PIT RUNOFF ASSUMPTIONS

Hydrologic Soil Group	D	
Land Use	gravel road	
AMC Condition	II (ave)	
CN (pit fringe)	88	area draining into pit
CN (pit)	100	area with direct interception
S (pit fringe)	1.364	area draining into pit
S (pit)	0.000	area with direct interception
Pit - Direct Interception (>95 ft deep)	65.19	subject to refinement
Pit fringe (area drains to pit)	94.06	subject to refinement
Drainage to Pit (total area)	159.26	subject to refinement

Quarry area Fringe area

Date	Precip, in.	Runoff, in.	Runoff, in.	Evapor, in/day
1-Dec	0.01	0.01	0.00	0.05
2-Dec	0.02	0.02	0.00	0.01
3-Dec	0.00	0.00	0.00	0.01
4-Dec	0.00	0.00	0.00	0.04
5-Dec	0.00	0.00	0.00	0.05
6-Dec	0.00	0.00	0.00	0.04
7-Dec	0.00	0.00	0.00	0.05
8-Dec	0.00	0.00	0.00	0.06
9-Dec	0.00	0.00	0.00	0.08
10-Dec	0.00	0.00	0.00	0.08
11-Dec	0.02	0.02	0.00	0.04
12-Dec	0.00	0.00	0.00	0.03
13-Dec	0.30	0.30	0.00	0.00
14-Dec	0.04	0.04	0.00	0.02
15-Dec	0.04	0.04	0.00	0.00
16-Dec	0.01	0.01	0.00	0.02
17-Dec	0.00	0.00	0.00	0.04
18-Dec	0.00	0.00	0.00	0.05
19-Dec	0.00	0.00	0.00	0.04
20-Dec	0.00	0.00	0.00	0.05
21-Dec	0.00	0.00	0.00	0.06
22-Dec	0.00	0.00	0.00	0.06
23-Dec	0.00	0.00	0.00	0.07
24-Dec	0.00	0.00	0.00	0.08
25-Dec	0.00	0.00	0.00	0.06
26-Dec	0.00	0.00	0.00	0.09
27-Dec	0.00	0.00	0.00	0.09
28-Dec	0.00	0.00	0.00	0.04
29-Dec	0.01	0.01	0.00	0.02
30-Dec	0.25	0.25	0.00	0.01
31-Dec	0.45	0.45	0.00	0.01
		1.15	0.00	
Volume, ac-ft		6.25	0.00	1.344
Total Vol, ac-ft		6.25		

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