



Robin Simmons
Regional Land Manager

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Oklahoma Water Resources Board

March 30, 2022

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

Re: Martin Marietta/Material Producers Davis Quarry Q4 and Annual 2021 Monitoring Report

Dear Mr. Cogburn:

Attached please find the Q4 and Annual 2021 monitoring report and associated data and calculations for Martin Marietta/Material Producers' Davis Quarry.

As is typical at the Davis Quarry, 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

North Texas/Oklahoma District

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MMM Davis Quarry 2021 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-21	8.49	7.98	7.98	16.47	N/A	8.49	0.00	2.91	0.00	0.00
February-21	-0.52	3.69	3.69	3.17	N/A	-0.52	0.00	1.49	0.00	0.00
March-21	0.27	4.67	4.67	4.94	N/A	0.27	0.00	4.00	0.00	0.00
1st QTR Totals	8.23	16.35	16.35	24.58	0.00	8.23	0.00	8.39	0.00	0.00
April-21	-17.16	47.18	47.18	30.03	N/A	-17.16	0.00	3.80	0.00	0.00
May-21	-11.73	25.59	25.59	13.87	N/A	-11.73	0.00	5.99	0.00	0.00
June-21	-10.03	17.66	17.66	7.63	N/A	-10.03	0.00	5.30	0.00	0.00
2nd QTR Totals	-38.91	90.44	90.44	51.52	0.00	-38.91	0.00	15.09	0.00	0.00
July-21	-2.75	17.44	17.44	14.69	N/A	-2.75	0.00	7.01	0.00	0.00
August-21	-8.66	11.41	11.41	2.75	N/A	-8.66	0.00	5.17	0.00	0.00
September-21	-2.31	5.05	5.05	2.74	N/A	-2.31	0.00	6.11	0.00	0.00
3rd QTR Totals	-13.72	33.90	33.90	20.18	0.00	-13.72	0.00	18.29	0.00	0.00
October-21	-2.70	10.54	10.54	7.84	N/A	-2.70	0.00	4.00	0.00	0.00
November-21	-1.41	3.26	3.26	1.85	N/A	-1.41	0.00	2.50	0.00	0.00
December-21	-5.76	13.53	13.53	7.77	N/A	-5.76	0.00	3.16	0.00	0.00
4th QTR Totals	-9.87	27.33	27.33	17.45	0.00	-9.87	0.00	9.65	0.00	0.00
2021 Totals	-54.27	168.01	168.01	113.74	0.00	-54.27	0.00	51.43	0.00	0.00

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Davis Water Balance

	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
Monitoring Period, Days		31	28	31	30	31	30	31	31	30	31	30	31
Monthly Production, tons		121,396	76,601	172,367	157,640	141,622	184,051	183,822	174,830	167,166	170,757	161,141	90,917
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		4	0	13	57	31	8	119	228	81	80	97	145
Month End Water Elevs.													
1) Freshwater pond, depth to water	13.575	13.283	14.307	17.891	17.194	17.558	15.229	16.651	15.716	15.032	13.353	13.534	14.899
2) Pit Sump, depth to water	32.469	38.184	38.081	36.267	47.378	50.252	51.46	53.235	51.78	49.917	51.431	49.907	51.109
Pond Surface Acres													
1) Freshwater pond		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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		3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Pond Water Volume Change													
1) Freshwater pond	-0.292	1.024	1.024	3.584	-0.697	0.364	-2.329	1.422	-0.935	-0.684	-1.679	0.181	1.365
2) Pit Sump	13.145	-0.237	-0.237	-4.172	25.555	6.610	2.778	4.083	-3.347	-4.285	3.482	-3.505	2.765
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	0.000
Net Volume Change	12.853	0.787	0.787	-0.588	24.858	6.974	0.449	5.505	-4.282	-4.969	1.803	-3.324	4.130
Water Inputs, ac-ft													
Rural Water	0.043	0.043	0.015	0.007	0.079	0.006	0.006	0.003	0.004	0.006	0.011	0.010	0.016
Lake 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	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	0.000
Precipitation	7.982	3.694	3.694	4.672	47.184	25.594	17.657	17.440	11.409	5.053	10.540	3.260	13.526
Total Water Input	8.024	3.709	3.709	4.680	47.264	25.601	17.663	17.443	11.413	5.059	10.551	3.270	13.542
Water Usage, ac-ft													
Product moisture content	3.126	1.973	1.973	4.439	4.060	3.647	4.740	4.734	4.502	4.305	4.397	4.150	2.341
Haul road dust control	0.123	0.123	0.123	0.203	0.350	0.190	0.196	0.730	1.473	2.486	0.957	0.595	0.890
Evaporation losses	0.413	0.302	0.302	0.892	0.837	0.906	1.254	1.287	1.060	0.925	0.692	0.435	0.422
Misc usage	-	-	-	-	-	2.16	0.99	2.44	-	-	-	-	-
Total Water Usage, Ac-ft	3.662	2.397	2.397	5.533	5.246	6.901	7.184	9.192	7.035	7.716	6.047	5.181	3.664
Net Water Input	4.362	1.312	1.312	-0.854	42.018	18.700	10.479	8.251	4.378	-2.657	4.504	-1.911	9.888
emergency storage of precipitation and runoff, ac-ft													
Groundwater Inflow	8.490	-0.525	-0.525	0.265	-17.159	-11.726	-10.030	-2.746	-8.660	-2.311	-2.701	-1.413	-5.759
Groundwater Inflow, Avg Ac-ft/Day	0.274	-0.019	-0.019	0.009	-0.572	-0.378	-0.334	-0.089	-0.279	-0.077	-0.087	-0.047	-0.186
Groundwater Inflow, Avg Gallons/Day	89,244	-6,109	-6,109	2,790	-186,379	-123,252	-108,942	-28,866	-91,024	-25,106	-28,389	-15,350	-60,532

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Consumptive Use

	January	February	March	April	May	June	July	August	September	October	November	December
Water Truck Usage	0.12	0.12		0.20	0.35	0.19	0.20	0.73	1.47	2.49	0.96	0.89
Moisture Content of Product Shipped	2.78	1.37		3.79	3.45	3.64	4.11	3.84	3.70	3.63	3.04	1.90
Misc on site use	-	-	-	-	-	-	-	-	-	-	-	-
Misc off site	-	-	-	-	-	2.16	0.99	2.44	-	-	-	-
Total	2.91	1.49		4.00	3.80	5.99	5.30	7.01	5.17	6.11	4.00	2.50
												3.16

	January	February	March	April	May	June	July	August	September	October	November	December
Shipped Tons	28,145	15,853	37,153	40,978	52,599	80,562	57,570	38,190	20,270	17,176	14,543	20,249
Base	63,545	36,461	106,102	88,218	88,742	69,491	80,618	97,161	91,345	76,785	72,019	84,545
Coarse Aggregate	33,301	12,706	38,086	32,901	29,570	30,463	34,957	38,321	51,972	43,402	14,169	15,316
Fine Aggregate	124,991	65,020	181,340	162,096	170,911	180,516	173,145	173,673	163,588	137,363	100,731	120,109
Total	2.78	1.37	3.79	3.45	3.64	4.11	3.84	3.70	3.63	3.04	1.90	2.27
Moisture Shipped												

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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 areFringe area

Date	Precip, in.	Runoff, in.	Runoff, in.	Evapor, in/day
1-Oct	0.00	0.00	0.00	0.06
2-Oct	0.23	0.23	0.00	0.10
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	0.10
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	0.12
9-Oct	0.00	0.00	0.00	0.12
10-Oct	0.01	0.01	0.00	0.08
11-Oct	0.00	0.00	0.00	0.10
12-Oct	0.00	0.00	0.00	0.06
13-Oct	0.78	0.78	0.00	0.04
14-Oct	0.02	0.02	0.00	0.06
15-Oct	0.00	0.00	0.00	0.08
16-Oct	0.00	0.00	0.00	0.08
17-Oct	0.00	0.00	0.00	0.07
18-Oct	0.00	0.00	0.00	0.08
19-Oct	0.00	0.00	0.00	0.08
20-Oct	0.00	0.00	0.00	0.06
21-Oct	0.00	0.00	0.00	0.07
22-Oct	0.00	0.00	0.00	0.07
23-Oct	0.00	0.00	0.00	0.08
24-Oct	0.00	0.00	0.00	0.10
25-Oct	0.00	0.00	0.00	0.07
26-Oct	0.00	0.00	0.00	0.05
27-Oct	0.90	0.90	0.00	0.05
28-Oct	0.00	0.00	0.00	0.13
29-Oct	0.00	0.00	0.00	0.10
30-Oct	0.00	0.00	0.00	0.08
31-Oct	0.00	0.00	0.00	0.06
		1.94	0.00	
Volume, ac-ft		10.54	0.00	2.516
Total Vol, ac-ft		10.54		

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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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Quarry areFringe area

Date	Precip, in	Runoff, in	Runoff, in	Evapor, in/day
1-Nov	0.12	0.12	0.00	0.03
2-Nov	0.13	0.13	0.00	0.01
3-Nov	0.16	0.16	0.00	0.02
4-Nov	0.00	0.00	0.00	0.03
5-Nov	0.01	0.01	0.00	0.05
6-Nov	0.00	0.00	0.00	0.05
7-Nov	0.00	0.00	0.00	0.06
8-Nov	0.00	0.00	0.00	0.06
9-Nov	0.00	0.00	0.00	0.06
10-Nov	0.17	0.17	0.00	0.03
11-Nov	0.01	0.01	0.00	0.06
12-Nov	0.00	0.00	0.00	0.08
13-Nov	0.00	0.00	0.00	0.06
14-Nov	0.00	0.00	0.00	0.06
15-Nov	0.00	0.00	0.00	0.06
16-Nov	0.00	0.00	0.00	0.06
17-Nov	0.00	0.00	0.00	0.07
18-Nov	0.00	0.00	0.00	0.06
19-Nov	0.00	0.00	0.00	0.05
20-Nov	0.00	0.00	0.00	0.06
21-Nov	0.00	0.00	0.00	0.04
22-Nov	0.00	0.00	0.00	0.06
23-Nov	0.00	0.00	0.00	0.07
24-Nov	0.00	0.00	0.00	0.05
25-Nov	0.00	0.00	0.00	0.05
26-Nov	0.00	0.00	0.00	0.06
27-Nov	0.00	0.00	0.00	0.07
28-Nov	0.00	0.00	0.00	0.04
29-Nov	0.00	0.00	0.00	0.08
30-Nov	0.00	0.00	0.00	0.07
		0.00	0.00	
		0.60	0.00	
Volume, ac-ft		3.26	0.00	1.583
Total Vol, ac-ft		3.26		

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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
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Drainage to Pit (total area)	159.26	subject to refinement

Quarry areaFringe area

Date	Precip, in	Runoff, in	Runoff, in	Evapor, in/day
1-Dec	0.00	0.00	0.00	0.06
2-Dec	0.00	0.00	0.00	0.05
3-Dec	0.00	0.00	0.00	0.04
4-Dec	0.00	0.00	0.00	0.02
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	0.03
8-Dec	0.00	0.00	0.00	0.03
9-Dec	0.00	0.00	0.00	0.07
10-Dec	0.00	0.00	0.00	0.10
11-Dec	0.00	0.00	0.00	0.04
12-Dec	0.00	0.00	0.00	0.04
13-Dec	0.00	0.00	0.00	0.04
14-Dec	0.00	0.00	0.00	0.05
15-Dec	0.00	0.00	0.00	0.05
16-Dec	0.00	0.00	0.00	0.04
17-Dec	1.52	1.52	0.60	0.03
18-Dec	0.09	0.09	0.00	0.04
19-Dec	0.00	0.00	0.00	0.02
20-Dec	0.00	0.00	0.00	0.03
21-Dec	0.00	0.00	0.00	0.04
22-Dec	0.00	0.00	0.00	0.03
23-Dec	0.00	0.00	0.00	0.05
24-Dec	0.00	0.00	0.00	0.07
25-Dec	0.00	0.00	0.00	0.09
26-Dec	0.00	0.00	0.00	0.04
27-Dec	0.00	0.00	0.00	0.04
28-Dec	0.01	0.01	0.00	0.11
29-Dec	0.00	0.00	0.00	0.07
30-Dec	0.00	0.00	0.00	0.07
31-Dec	0.01	0.01	0.00	0.06
		1.63	0.60	
Volume, ac-ft		8.86	4.67	1.536
Total Vol, ac-ft		13.53		

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