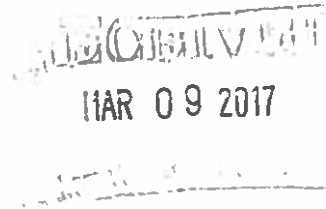




Robin Simmons
Regional Land Manager

March 9, 2017



Kent Wilkins
Oklahoma Water Resources Board
3800 N. Classen
Oklahoma City, OK 73118

Re: Martin Marietta/Material Producers Davis Quarry Q4 and Annual 2016 Monitoring Report

Dear Mr. Wilkins:

Attached please find the Q4 and Annual 2016 monitoring report and associated data and calculations for Martin Marietta/Material Producers' Davis Quarry. During Q3 at the Davis Quarry a new water recovery system was built and brought online to maximize the recovery and reuse of water from the plant. In addition, the in-pit sump is being relocated to a lower level. As a result of these changes, the monitoring of water levels has been temporarily suspended while the new water retention facilities are established. We expect full monitoring of pond water levels to be established in March 2017.

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 black ink that reads 'Robin L. Simmons'. The signature is written in a cursive style.

Robin L. Simmons, EIT
Land Manager

North Texas/Oklahoma District
1503 LBJ Parkway Suite 400, Dallas, Texas 75234
t. (972) 350-8228 f. (972) 647-3363 m. (214) 213-6024 e. Robin.Simmons@martinmarietta.com
www.martinmarietta.com


MMM Davis Quarry 2016 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-16	-2.71	2.26	2.26	2.26	-0.44	N/A	N/A	-2.71	0.00	0.00	0.00	0.00	0.00	2.76	0.00	0.00	0.00	0.00	0.00	0.00
February-16	-5.50	6.43	6.43	6.43	0.93	N/A	N/A	-5.50	0.00	0.00	0.00	0.00	0.00	3.77	0.00	0.00	0.00	0.00	0.00	0.00
March-16	-7.84	11.82	11.82	11.82	3.98	N/A	N/A	-7.84	0.00	0.00	0.00	0.00	0.00	3.44	0.00	0.00	0.00	0.00	0.00	0.00
1st QTR Totals	-16.05	20.52	20.52	20.52	4.47	0.00	0.00	-16.05	0.00	0.00	0.00	0.00	0.00	9.98	0.00	0.00	0.00	0.00	0.00	0.00
April-16	-20.74	28.24	28.24	28.24	7.49	N/A	N/A	-20.74	0.00	0.00	0.00	0.00	0.00	3.66	0.00	0.00	0.00	0.00	0.00	0.00
May-16	-13.77	12.28	12.28	12.28	-1.49	N/A	N/A	-13.77	0.00	0.00	0.00	0.00	0.00	2.96	0.00	0.00	0.00	0.00	0.00	0.00
June-16	-4.43	9.88	9.88	9.88	5.45	N/A	N/A	-4.43	0.00	0.00	0.00	0.00	0.00	5.84	0.00	0.00	0.00	0.00	0.00	0.00
2nd QTR Totals	-38.94	50.39	50.39	50.39	11.45	0.00	0.00	-38.94	0.00	0.00	0.00	0.00	0.00	12.46	0.00	0.00	0.00	0.00	0.00	0.00
July-16		4.08	4.08	4.08	4.08	N/A	N/A		0.00	0.00	0.00	0.00	0.00	5.79	0.00	0.00	0.00	0.00	0.00	0.00
August-16		8.74	8.74	8.74	8.74	N/A	N/A		0.00	0.00	0.00	0.00	0.00	6.97	0.00	0.00	0.00	0.00	0.00	0.00
September-16		9.51	9.51	9.51	9.51	N/A	N/A		0.00	0.00	0.00	0.00	0.00	4.57	0.00	0.00	0.00	0.00	0.00	0.00
3rd QTR Totals		22.33	22.33	22.33	22.33	0.00	0.00		0.00	0.00	0.00	0.00	0.00	17.32	0.00	0.00	0.00	0.00	0.00	0.00
October-16		6.66	6.66	6.66	6.66	N/A	N/A		0.00	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00
November-16		8.56	8.56	8.56	8.56	N/A	N/A		0.00	0.00	0.00	0.00	0.00	3.02	0.00	0.00	0.00	0.00	0.00	0.00
December-16		2.17	2.17	2.17	2.17	N/A	N/A		0.00	0.00	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00
4th QTR Totals		17.39	17.39	17.39	17.39	0.00	0.00		0.00	0.00	0.00	0.00	0.00	9.35	0.00	0.00	0.00	0.00	0.00	0.00
2016 Totals		110.64	110.64	110.64	55.65	0.00	0.00		0.00	0.00	0.00	0.00	0.00	49.11	0.00	0.00	0.00	0.00	0.00	0.00

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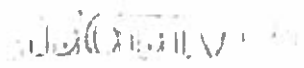
Consumptive Use	January	February	March	April	May	June	July	August	September	October	November	December
Water Truck Usage	0.46	0.52	0.71	0.64	-	1.50	2.46	3.81	1.41	0.98	0.74	0.37
Moisture Content of Product Shipped	2.30	3.25	2.74	3.02	2.96	4.33	3.32	3.16	3.15	2.72	2.29	2.25
Misc on site use	-	-	-	-	-	-	-	-	-	-	-	-
Misc off site	-	-	-	-	-	-	-	-	-	-	-	-
Total	2.76	3.77	3.44	3.66	2.96	5.84	5.79	6.97	4.57	3.70	3.02	2.63

Shipped Tons	January	February	March	April	May	June	July	August	September	October	November	December
Base	35,366	27,088	29,170	28,008	34,258	49,070	23,333	26,974	33,810	25,589	15,857	29,551
Coarse Aggregate	57,982	74,390	65,711	56,491	68,262	61,094	56,061	67,778	52,775	63,707	52,184	55,197
Fine Aggregate	16,218	43,194	30,304	43,155	32,076	63,860	55,748	43,349	44,429	33,281	32,792	20,417
Total	109,566	144,673	125,185	127,655	134,596	174,024	135,142	138,101	131,014	122,576	100,833	105,165
Moisture Shipped	2.30	3.25	2.74	3.02	2.96	4.33	3.32	3.16	3.15	2.72	2.29	2.25


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Davis Water Balance

Monitoring Period, Days	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
Monthly Production, tons		113,229	107,164	120,892	104,186	63,864	114,429	114,544	127,370	115,167	117,382	137,988	140,979
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		15	17	23	21	0	49	85	124	46	32	24	13
Month End Water Elevs.													
1) Freshwater pond, depth to water	2.619	7.269	9.277	9.937	6.082	10.517	8.442						
2) Pit Sump, depth to water	10.409	9.321	11.648	10.347	10.12	8.193	12.872						
Pond Surface Acres													
1) Freshwater pond	0.937	0.937	0.937	0.937	0.937	0.937	0.937	0.937	0.937	0.937	0.937	0.937	0.937
2) Pit Sump	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322
Total surface acres	1.259	1.259	1.259	1.259	1.259	1.259	1.259	1.259	1.259	1.259	1.259	1.259	1.259
Pond Water Volume Change													
1) Freshwater pond	-4.357	-1.881	-0.618	3.612	-4.156	1.944							
2) Pit Sump	0.350	-0.749	0.419	0.073	0.620	-1.507							
3) Change in settling pond storage	0.000	0.000	0.000	0.000	0.000	0.000							
Net Volume Change	-4.007	-2.631	-0.199	3.685	-3.535	0.438							
Water Inputs, ac-ft													
Rural Water	0.018	0.033	0.043	0.033	0.033	0.028	0.014	0.052	0.022	0.000	0.000	0.015	0.152
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	2.265	6.432	11.823	28.238	28.238	12.276	9.875	4.077	8.743	9.513	6.659	8.562	2.174
Total Water Input	2.283	6.466	11.866	28.271	28.271	12.304	9.890	4.129	8.765	9.513	6.659	8.576	2.327
Water Usage, ac-ft													
Product moisture content	2.916	2.760	2.760	3.113	2.883	1.645	2.947	2.950	3.280	2.966	3.023	3.554	3.631
Haul road dust control	0.460	0.522	0.706	0.644	0.644	0.000	1.504	2.609	3.805	1.412	0.982	0.737	0.399
Evaporation losses	0.207	0.316	0.407	0.515	0.515	0.424	0.574	0.675	0.648	0.499	0.384	0.227	0.161
Misc usage													
Total Water Usage, Ac-ft	3.583	3.597	4.226	3.842	3.842	2.068	5.024	6.233	7.734	4.877	4.389	4.518	4.191
Net Water Input emergency storage of precipitation and runoff, ac-ft													
Net Water Input	-1.300	2.868	7.640	24.429	24.429	10.236	4.865	-2.104	1.030	4.636	2.270	4.059	-1.864
emergency storage of precipitation and runoff	-2.707	-5.499	-7.840	-20.744	-20.744	-13.771	-4.428						
Groundwater Inflow, Avg Ac-ft/Day	-0.087	-0.190	-0.253	-0.691	-0.691	-0.444	-0.148						
Groundwater Inflow, Avg Gallons/Day	-28,450	-61,791	-82,407	-225,313	-225,313	-144,751	-48,093						


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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)	54.36	subject to refinement
Pit fringe (area drains to pit)	68.34	subject to refinement
Drainage to Pit (total area)	122.70	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	0.13
2-Oct	0.00	0.00	0.00	0.21
3-Oct	0.00	0.00	0.00	0.13
4-Oct	0.00	0.00	0.00	0.13
5-Oct	0.00	0.00	0.00	0.14
6-Oct	0.04	0.04	0.00	0.11
7-Oct	0.69	0.69	0.00	0.06
8-Oct	0.01	0.01	0.00	0.11
9-Oct	0.00	0.00	0.00	0.10
10-Oct	0.00	0.00	0.00	0.14
11-Oct	0.00	0.00	0.00	0.15
12-Oct	0.00	0.00	0.00	0.14
13-Oct	0.09	0.09	0.00	0.04
14-Oct	0.07	0.07	0.00	0.09
15-Oct	0.00	0.00	0.00	0.13
16-Oct	0.00	0.00	0.00	0.16
17-Oct	0.00	0.00	0.00	0.18
18-Oct	0.00	0.00	0.00	0.13
19-Oct	0.14	0.14	0.00	0.10
20-Oct	0.43	0.43	0.00	0.10
21-Oct	0.00	0.00	0.00	0.10
22-Oct	0.00	0.00	0.00	0.12
23-Oct	0.00	0.00	0.00	0.11
24-Oct	0.00	0.00	0.00	0.11
25-Oct	0.00	0.00	0.00	0.09
26-Oct	0.00	0.00	0.00	0.09
27-Oct	0.00	0.00	0.00	0.10
28-Oct	0.00	0.00	0.00	0.12
29-Oct	0.00	0.00	0.00	0.13
30-Oct	0.00	0.00	0.00	0.10
31-Oct	0.00	0.00	0.00	0.11
		1.47	0.00	

Volume, ac-ft 6.66 0.00 3.657

Total Vol, ac-ft 6.66

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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
S (pit fringe)	1.364	area draining into pit
S (pit)	0.000	area with direct interception
Pit - Direct Interception (>95 ft deep)	54.36	subject to refinement
Pit fringe (area drains to pit)	68.34	subject to refinement
Drainage to Pit (total area)	122.70	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	0.10
2-Nov	0.02	0.02	0.00	0.07
3-Nov	0.38	0.38	0.00	0.04
4-Nov	0.01	0.01	0.00	0.01
5-Nov	0.00	0.00	0.00	0.06
6-Nov	0.00	0.00	0.00	0.04
7-Nov	0.13	0.13	0.00	0.02
8-Nov	0.34	0.34	0.00	0.01
9-Nov	1.00	1.00	0.00	0.08
10-Nov	0.00	0.00	0.00	0.08
11-Nov	0.00	0.00	0.00	0.08
12-Nov	0.00	0.00	0.00	0.07
13-Nov	0.00	0.00	0.00	0.08
14-Nov	0.00	0.00	0.00	0.09
15-Nov	0.00	0.00	0.00	0.10
16-Nov	0.00	0.00	0.00	0.12
17-Nov	0.00	0.00	0.00	0.11
18-Nov	0.00	0.00	0.00	0.09
19-Nov	0.00	0.00	0.00	0.06
20-Nov	0.00	0.00	0.00	0.08
21-Nov	0.00	0.00	0.00	0.08
22-Nov	0.00	0.00	0.00	0.07
23-Nov	0.00	0.00	0.00	0.08
24-Nov	0.00	0.00	0.00	0.07
25-Nov	0.00	0.00	0.00	0.08
26-Nov	0.00	0.00	0.00	0.06
27-Nov	0.01	0.01	0.00	0.02
28-Nov	0.00	0.00	0.00	0.14
29-Nov	0.00	0.00	0.00	0.10
30-Nov	0.00	0.00	0.00	0.09
		0.00	0.00	
		1.89	0.00	

Volume, ac-ft 8.56 0.00 2.168
 Total Vol, ac-ft 8.56

11AR 09 2017

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)	54.36	subject to refinement
Pit fringe (area drains to pit)	68.34	subject to refinement
Drainage to Pit (total area)	122.70	subject to refinement

Quarry area Fringe area

Date	Precip, in	Runoff, in	Runoff, in	Evapor, in/day
1-Dec	0.00	0.00	0.00	0.09
2-Dec	0.03	0.03	0.00	0.03
3-Dec	0.22	0.22	0.00	0.00
4-Dec	0.15	0.15	0.00	0.02
5-Dec	0.01	0.01	0.00	0.02
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	0.04
9-Dec	0.00	0.00	0.00	0.03
10-Dec	0.00	0.00	0.00	0.04
11-Dec	0.00	0.00	0.00	0.07
12-Dec	0.00	0.00	0.00	0.05
13-Dec	0.00	0.00	0.00	0.05
14-Dec	0.00	0.00	0.00	0.04
15-Dec	0.02	0.02	0.00	0.01
16-Dec	0.03	0.03	0.00	0.04
17-Dec	0.00	0.00	0.00	0.03
18-Dec	0.00	0.00	0.00	0.03
19-Dec	0.00	0.00	0.00	0.04
20-Dec	0.00	0.00	0.00	0.08
21-Dec	0.00	0.00	0.00	0.08
22-Dec	0.00	0.00	0.00	0.03
23-Dec	0.01	0.01	0.00	0.01
24-Dec	0.01	0.01	0.00	0.02
25-Dec	0.00	0.00	0.00	0.07
26-Dec	0.00	0.00	0.00	0.14
27-Dec	0.00	0.00	0.00	0.07
28-Dec	0.00	0.00	0.00	0.10
29-Dec	0.00	0.00	0.00	0.07
30-Dec	0.00	0.00	0.00	0.12
31-Dec	0.00	0.00	0.00	0.09
		0.48	0.00	

Volume, ac-ft 2.17 0.00 1.538
 Total Vol, ac-ft 2.17



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