



Jesse Martindale
Sr. Environmental Engineer

December 14, 2023

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DEC 06 2024

OKLAHOMA WATER RESOURCES BOARD

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

Re: Martin Marietta Davis Quarry 2023 Q3 Report

Dear Mr. Cogburn:

Attached please find the Q3 monitoring report and associated data and calculations for the Martin Marietta Davis Quarry with the requested updated information.

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.

Regards,

A handwritten signature in blue ink that reads 'Jesse Martindale'.

Jesse Martindale
Sr. Environmental Engineer

MM Davis Quarry 2023 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-23	-4.37	5.50	5.50	1.13	N/A	-4.37	0.00	3.57	0.00	0.00
February-23	-0.45	18.82	18.82	18.37	N/A	-0.45	0.00	2.46	0.00	0.00
March-23	-1.19	22.79	22.79	21.60	N/A	-1.19	0.00	3.22	0.00	0.00
1st QTR Totals	-6.01	47.11	47.11	41.10	0.00	-6.01	0.00	9.25	0.00	0.00
April-23	-5.14	7.82	7.82	2.68	N/A	-5.14	0.00	3.48	0.00	0.00
May-23	-8.17	14.79	14.79	6.62	N/A	-8.17	0.00	3.44	0.00	0.00
June-23	-5.34	16.93	16.93	11.58	N/A	-5.34	0.00	3.19	0.00	0.00
2nd QTR Totals	-18.65	39.53	39.53	20.88	0.00	-18.65	0.00	10.11	0.00	0.00
July-23	-22.62	38.24	38.24	15.62	N/A	-22.62	0.00	28.39	0.00	0.00
August-23	-32.60	1.04	1.04	-31.56	N/A	-32.60	0.00	4.46	0.00	0.00
September-23	-8.88	11.67	11.67	2.79	N/A	-8.88	0.00	3.66	0.00	0.00
3rd QTR Totals	-64.10	50.95	50.95	-13.15	0.00	-64.10	0.00	36.51	0.00	0.00

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

Total groundwater entering the pit = total stormwater entering the pit - total water diverted

Groundwater Right Value (MEPS): 68 acre-feet

Consumptive Use

	January	February	March	April	May	June	July	August	September
Water Truck Usage	1.31	0.25	-	0.50	0.20	0.23	0.34	0.99	1.06
Moisture Content of Product Shipped	2.25	2.22	3.22	2.98	3.24	2.95	2.74	3.46	2.60
Misc on site use	-	-	-	-	-	-	-	-	-
Misc off site	-	-	-	-	-	-	25.31	-	-
Total	3.57	2.46	3.22	3.48	3.44	3.19	28.39	4.46	3.66

Shipped Tons	January	February	March	April	May	June	July	August	September
Base	23,239	16,326	23,066	17,047	35,888	17,767	16,317	21,485	13,441
Coarse Aggregate	74,255	83,049	120,556	102,832	86,233	84,072	72,279	107,489	90,009
Fine Aggregate	17,010	17,476	25,930	30,740	31,434	37,368	37,166	39,547	27,780
Total	114,504	116,851	169,552	150,619	153,555	139,207	125,762	168,521	131,229
Moisture Shipped	2.25	2.22	3.22	2.98	3.24	2.95	2.74	3.46	2.60

Davis Water Balance

Monitoring Period, Days

Monthly Production, tons

Product Moisture Content

Water Truck Loads

Month End Water Elevs.

1) Freshwater pond, depth to water

2) Pit Sump, depth to water

Pond Surface Acres

1) Freshwater pond

2) Pit Sump

Total surface acres

Pond Water Volume Change

1) Freshwater pond

2) Pit Sump

3) Change in settling pond storage

Net Volume Change

Water Inputs, ac-ft

Rural Water

Lake Water

Well Water

Precipitation

Total Water Input

Water Usage, ac-ft

Product moisture content

Haul road dust control

Evaporation losses

Misc usage

Total Water Usage, Ac-ft

Net Water Input

emergency storage of precipitation and runoff, ac-ft

Groundwater Inflow

Groundwater Inflow, Avg Ac-ft/Day

Groundwater Inflow, Avg Gallons/Day

	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
		31	28	31	30	31	30	31	31	30
Monthly Production, tons	120,624	159,499	129,817	198,017	186,934	148,208	124,439	142,524	171,805	171,764
Product Moisture Content		3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Water Truck Loads		107	20	0	41	16	19	28	81	86
Month End Water Elevs.										
1) Freshwater pond, depth to water	14.19505	14.76528	13.61745	16.87028	15.57677	13.77614	14.41761	16.27801	14.99487	13.7792
2) Pit Sump, depth to water	51.07803	49.83852	53.11196	55.79677	55.2249	55.59291	56.42099	53.31166	46.83039	46.16281
Pond Surface Acres										
1) Freshwater pond		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2) Pit Sump		4.58	4.58	4.58	5.95	5.95	5.95	5.95	5.95	4.58
Total surface acres		5.580703	5.580703	5.58070271	6.95064059	6.9506406	6.950641	6.950641	6.9506406	5.5807027
Pond Water Volume Change										
1) Freshwater pond		0.570	-1.148	3.253	-1.294	-1.801	0.641	1.860	-1.283	-1.216
2) Pit Sump		-5.678	14.995	12.298	-3.403	2.190	4.928	-18.503	-38.568	-3.058
3) Change in settling pond storage		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Net Volume Change		-5.108	13.847	15.551	-4.697	0.389	5.569	-16.642	-39.851	-4.274
Water Inputs, ac-ft										
Rural Water		0.203	0.173	0.075	0.026	0.014	0.075	0.153	0.158	0.151
Lake Water		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
Precipitation		5.499	18.819	22.791	7.821	14.787	16.925	38.243	1.039	11.670
Total Water Input		5.702	18.992	22.866	7.847	14.800	17.000	38.395	1.197	11.822
Water Usage, ac-ft										
Product moisture content		4.108	3.343	5.100	4.814	3.817	3.205	3.670	4.424	4.423
Haul road dust control		1.313	0.246	0.000	0.503	0.196	0.233	0.344	0.994	1.056
Evaporation losses		1.020	1.104	1.029	2.090	2.228	2.651	3.092	3.032	1.734
Misc usage		-	-	-	-	-	-	25.31	-	-
Total Water Usage, Ac-ft		6.441	4.693	6.128	7.408	6.241	6.089	32.414	8.451	7.213
Net Water Input		-0.740	14.299	16.737	0.440	8.559	10.911	5.981	-7.254	4.609
emergency storage of precipitation and runoff, ac-ft										
Groundwater Inflow		-4.368	-0.452	-1.186	-5.136	-8.170	-5.342	-22.623	-32.597	-8.882
Groundwater Inflow, Avg Ac-ft/Day		-0.141	-0.016	-0.038	-0.171	-0.264	-0.178	-0.730	-1.052	-0.296
Groundwater Inflow, Avg Gallons/Day		-45,912	-5,265	-12,470	-55,786	-85,880	-58,022	-237,800	-342,633	-96,478

July 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)	73.32	subject to refinement
Pit fringe (area drains to pit)	91.38	subject to refinement
Drainage to Pit (total area)	164.70	subject to refinement

Quarry area Fringe area

Date	Precip, in.	Runoff, in.	Runoff, in.	Evapor, in/day
1-Jul	0.03	0.03	0.00	0.14
2-Jul	0.00	0.00	0.00	0.21
3-Jul	1.50	1.50	0.58	0.15
4-Jul	0.00	0.00	0.00	0.18
5-Jul	0.00	0.00	0.00	0.15
6-Jul	0.00	0.00	0.00	0.15
7-Jul	0.25	0.25	0.00	0.13
8-Jul	0.13	0.13	0.00	0.18
9-Jul	0.48	0.48	0.00	0.16
10-Jul	0.00	0.00	0.00	0.17
11-Jul	1.62	1.62	0.67	0.17
12-Jul	0.00	0.00	0.00	0.17
13-Jul	0.00	0.00	0.00	0.17
14-Jul	0.08	0.08	0.00	0.11
15-Jul	0.00	0.00	0.00	0.10
16-Jul	0.61	0.61	0.00	0.15
17-Jul	0.00	0.00	0.00	0.19
18-Jul	0.00	0.00	0.00	0.25
19-Jul	0.00	0.00	0.00	0.24
20-Jul	0.00	0.00	0.00	0.21
21-Jul	0.00	0.00	0.00	0.15
22-Jul	0.00	0.00	0.00	0.18
23-Jul	0.00	0.00	0.00	0.19
24-Jul	0.00	0.00	0.00	0.19
25-Jul	0.00	0.00	0.00	0.22
26-Jul	0.00	0.00	0.00	0.23
27-Jul	0.00	0.00	0.00	0.20
28-Jul	0.00	0.00	0.00	0.21
29-Jul	0.00	0.00	0.00	0.20
30-Jul	0.00	0.00	0.00	0.20
31-Jul	0.00	0.00	0.00	0.00
		4.70	1.25	
Volume, ac-ft		28.72	9.53	5.338
Total Vol, ac-ft		38.24		

August 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)	73.32	subject to refinement
Pit fringe (area drains to pit)	91.38	subject to refinement
Drainage to Pit (total area)	164.70	subject to refinement

Quarry area Fringe area

Date	Precip, in.	Runoff, in.	Runoff, in.	Evapor, in/day
1-Aug	0.00	0.00	0.00	0.19
2-Aug	0.00	0.00	0.00	0.22
3-Aug	0.00	0.00	0.00	0.25
4-Aug	0.00	0.00	0.00	0.21
5-Aug	0.00	0.00	0.00	0.19
6-Aug	0.00	0.00	0.00	0.16
7-Aug	0.00	0.00	0.00	0.16
8-Aug	0.00	0.00	0.00	0.11
9-Aug	0.01	0.01	0.00	0.12
10-Aug	0.00	0.00	0.00	0.16
11-Aug	0.00	0.00	0.00	0.16
12-Aug	0.03	0.03	0.00	0.15
13-Aug	0.00	0.00	0.00	0.20
14-Aug	0.00	0.00	0.00	0.13
15-Aug	0.00	0.00	0.00	0.17
16-Aug	0.00	0.00	0.00	0.17
17-Aug	0.00	0.00	0.00	0.19
18-Aug	0.00	0.00	0.00	0.17
19-Aug	0.00	0.00	0.00	0.27
20-Aug	0.00	0.00	0.00	0.19
21-Aug	0.00	0.00	0.00	0.17
22-Aug	0.00	0.00	0.00	0.17
23-Aug	0.00	0.00	0.00	0.14
24-Aug	0.00	0.00	0.00	0.17
25-Aug	0.00	0.00	0.00	0.13
26-Aug	0.13	0.13	0.00	0.16
27-Aug	0.00	0.00	0.00	0.12
28-Aug	0.00	0.00	0.00	0.16
29-Aug	0.00	0.00	0.00	0.15
30-Aug	0.00	0.00	0.00	0.15
31-Aug	0.00	0.00	0.00	0.15
		0.17	0.00	
Volume, ac-ft		1.04	0.00	5.235
Total Vol, ac-ft		1.04		

September 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)	73.32	subject to refinement
Pit fringe (area drains to pit)	91.38	subject to refinement
Drainage to Pit (total area)	164.70	subject to refinement

Quarry area Fringe area

Date	Precip, in.	Runoff, in.	Runoff, in.	Evapor, in/day
1-Sep	0.00	0.00	0.00	0.15
2-Sep	0.00	0.00	0.00	0.16
3-Sep	0.00	0.00	0.00	0.15
4-Sep	0.00	0.00	0.00	0.17
5-Sep	0.00	0.00	0.00	0.17
6-Sep	0.67	0.67	0.00	0.15
7-Sep	0.00	0.00	0.00	0.17
8-Sep	0.05	0.05	0.00	0.14
9-Sep	0.00	0.00	0.00	0.14
10-Sep	0.00	0.00	0.00	0.15
11-Sep	0.09	0.09	0.00	0.07
12-Sep	0.29	0.29	0.00	0.02
13-Sep	0.01	0.01	0.00	0.05
14-Sep	0.51	0.51	0.00	0.05
15-Sep	0.00	0.00	0.00	0.07
16-Sep	0.00	0.00	0.00	0.12
17-Sep	0.00	0.00	0.00	0.14
18-Sep	0.00	0.00	0.00	0.17
19-Sep	0.01	0.01	0.00	0.09
20-Sep	0.00	0.00	0.00	0.11
21-Sep	0.28	0.28	0.00	0.05
22-Sep	0.00	0.00	0.00	0.13
23-Sep	0.00	0.00	0.00	0.14
24-Sep	0.00	0.00	0.00	0.12
25-Sep	0.00	0.00	0.00	0.14
26-Sep	0.00	0.00	0.00	0.14
27-Sep	0.00	0.00	0.00	0.15
28-Sep	0.00	0.00	0.00	0.15
29-Sep	0.00	0.00	0.00	0.14
30-Sep	0.00	0.00	0.00	0.14
		0.00	0.00	
		1.91	0.00	
Volume, ac-ft		11.67	0.00	3.728
Total Vol, ac-ft		11.67		