



Jesse Martindale  
Sr. Environmental Engineer

March 19, 2024

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

RECEIVED  
DEC 06 2024  
OKLAHOMA WATER RESOURCES BOARD

Re: Martin Marietta Davis Quarry 2023 Q4 and Annual Report

Dear Mr. Cogburn:

Attached please find the Q4 and Annual 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
October-23	-27.86	34.16	34.16	6.30	N/A	-27.86	0.00	3.28	0.00	0.00
November-23	-0.98	8.37	8.37	7.39	N/A	-0.98	0.00	2.47	0.00	0.00
December-23	-4.72	7.39	7.39	2.67	N/A	-4.72	0.00	2.01	0.00	0.00
4th QTR Totals	-33.56	49.92	49.92	16.37	0.00	-33.56	0.00	7.76	0.00	0.00
2023 Totals	-122.31	187.52	187.52	65.20	0.00	-122.31	0.00	63.63	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



## Davis Water Balance

	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
<b>Monitoring Period, Days</b>	31	31	28	31	30	31	30	31	31	30	31	30	31
<b>Monthly Production, tons</b>	120,624	159,499	129,817	198,017	186,934	148,208	124,439	142,524	171,805	171,764	146,646	164,849	136,592
<b>Product Moisture Content</b>		3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
<b>Water Truck Loads</b>		107	20	0	41	16	19	28	81	86	47	0	8
<b>Month End Water Elevs.</b>													
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	14.61446	16.89181	15.16725
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	46.16628	46.13826	46.138441
<b>Pond Surface Acres</b>													
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		4.58	4.58	4.58	5.95	5.95	5.95	5.95	5.95	4.58	4.58	4.58	4.58
Total surface acres		5.580703	5.580703	5.58070271	6.95064059	6.9506406	6.950641	6.950641	6.9506406	5.5807027	5.58070271	5.580703	5.58070271
<b>Pond Water Volume Change</b>													
1) Freshwater pond		0.570	-1.148	3.253	-1.294	-1.801	0.641	1.860	-1.283	-1.216	0.835	2.277	-1.725
2) Pit Sump		-5.678	14.995	12.298	-3.403	2.190	4.928	-18.503	-38.568	-3.058	0.016	-0.128	0.001
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
<b>Net Volume Change</b>		-5.108	13.847	15.551	-4.697	0.389	5.569	-16.642	-39.851	-4.274	0.851	2.149	-1.724
<b>Water Inputs, ac-ft</b>													
Rural Water		0.203	0.173	0.075	0.026	0.014	0.075	0.153	0.158	0.151	0.182	0.036	0.034
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
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		5.499	18.819	22.791	7.821	14.787	16.925	38.243	1.039	11.670	34.160	8.371	7.393
<b>Total Water Input</b>		<b>5.702</b>	<b>18.992</b>	<b>22.866</b>	<b>7.847</b>	<b>14.800</b>	<b>17.000</b>	<b>38.395</b>	<b>1.197</b>	<b>11.822</b>	<b>34.342</b>	<b>8.407</b>	<b>7.428</b>
<b>Water Usage, ac-ft</b>													
Product moisture content		4.108	3.343	5.100	4.814	3.817	3.205	3.670	4.424	4.423	3.777	4.245	3.518
Haul road dust control		1.313	0.246	0.000	0.503	0.196	0.233	0.344	0.994	1.056	0.509	0.000	0.098
Evaporation losses		1.020	1.104	1.029	2.090	2.228	2.651	3.092	3.032	1.734	1.349	1.030	0.817
Misc usage		-	-	-	-	-	-	25.31	-	-	-	-	-
<b>Total Water Usage, Ac-ft</b>		<b>6.441</b>	<b>4.693</b>	<b>6.128</b>	<b>7.408</b>	<b>6.241</b>	<b>6.089</b>	<b>32.414</b>	<b>8.451</b>	<b>7.213</b>	<b>5.635</b>	<b>5.275</b>	<b>4.433</b>
<b>Net Water Input</b>		<b>-0.740</b>	<b>14.299</b>	<b>16.737</b>	<b>0.440</b>	<b>8.559</b>	<b>10.911</b>	<b>5.981</b>	<b>-7.254</b>	<b>4.609</b>	<b>28.707</b>	<b>3.131</b>	<b>2.995</b>
<b>emergency storage of precipitation and runoff, ac-ft</b>													
<b>Groundwater Inflow</b>		-4.368	-0.452	-1.186	-5.136	-8.170	-5.342	-22.623	-32.597	-8.882	-27.856	-0.982	-4.718
<b>Groundwater Inflow, Avg Ac-ft/Day</b>		-0.141	-0.016	-0.038	-0.171	-0.264	-0.178	-0.730	-1.052	-0.296	-0.899	-0.033	-0.152
<b>Groundwater Inflow, Avg Gallons/Day</b>		-45,912	-5,265	-12,470	-55,786	-85,880	-58,022	-237,800	-342,633	-96,478	-292,805	-10,670	-49,597

Consumptive Use

	January	February	March	April	May	June	July	August	September	October	November	December
Water Truck Usage	1.31	0.25	-	-	0.50	0.20	0.23	0.34	0.99	1.06	0.51	0.10
Moisture Content of Product Shipped	2.25	2.22	3.22	2.98	3.24	3.24	2.95	2.74	3.46	2.60	2.77	2.47
Misc on site use	-	-	-	-	-	-	-	-	-	-	-	-
Misc off site	-	-	-	-	-	-	-	25.31	-	-	-	-
Total	3.57	2.46	3.22	3.48	3.44	3.44	3.19	28.39	4.46	3.66	3.28	2.47
												2.01

Shipped Tons

	January	February	March	April	May	June	July	August	September	October	November	December
Base	23,239	16,326	23,066	17,047	35,888	17,767	16,317	21,485	13,441	27,961	27,249	18,761
Coarse Aggregate	74,255	83,049	120,556	102,832	86,233	84,072	72,279	107,489	90,009	82,763	80,642	69,444
Fine Aggregate	17,010	17,476	25,930	30,740	31,434	37,368	37,166	39,547	27,780	24,974	17,576	12,602
Total	114,504	116,851	169,552	150,619	153,555	139,207	125,762	168,521	131,229	135,698	125,467	100,807
Moisture Shipped	2.25	2.22	3.22	2.98	3.24	2.95	2.74	3.46	2.60	2.77	2.47	1.92



## 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)	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 areaFringe area**

Date	Precip, in.	Runoff, in.	Runoff, in.	Evapor, in/day
1-Oct	0.00	0.00	0.00	0.24
2-Oct	0.00	0.00	0.00	0.13
3-Oct	0.00	0.00	0.00	0.13
4-Oct	0.99	0.99	0.00	0.08
5-Oct	0.02	0.02	0.00	0.09
6-Oct	0.00	0.00	0.00	0.11
7-Oct	0.00	0.00	0.00	0.12
8-Oct	0.00	0.00	0.00	0.14
9-Oct	0.00	0.00	0.00	0.13
10-Oct	0.00	0.00	0.00	0.13
11-Oct	0.00	0.00	0.00	0.07
12-Oct	0.00	0.00	0.00	0.07
13-Oct	0.00	0.00	0.00	0.13
14-Oct	0.00	0.00	0.00	0.10
15-Oct	0.00	0.00	0.00	0.06
16-Oct	0.00	0.00	0.00	0.10
17-Oct	0.00	0.00	0.00	0.11
18-Oct	0.00	0.00	0.00	0.13
19-Oct	0.00	0.00	0.00	0.14
20-Oct	0.00	0.00	0.00	0.15
21-Oct	0.00	0.00	0.00	0.12
22-Oct	0.00	0.00	0.00	0.08
23-Oct	0.03	0.03	0.00	0.04
24-Oct	1.68	1.68	0.71	0.02
25-Oct	0.59	0.59	0.00	0.03
26-Oct	0.00	0.00	0.00	0.10
27-Oct	0.06	0.06	0.00	0.06
28-Oct	0.76	0.76	0.00	0.01
29-Oct	0.57	0.57	0.00	0.01
30-Oct	0.00	0.00	0.00	0.08
31-Oct	0.00	0.00	0.00	0.00
		4.70	0.71	
Volume, ac-ft		28.72	5.44	2.9
Total Vol, ac-ft		34.16		



## 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)	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	Evapor, in/day
Date	Precip, in.	Runoff, in.	Runoff, in.	
1-Nov	0.00	0.00	0.00	0.15
2-Nov	0.00	0.00	0.00	0.09
3-Nov	0.00	0.00	0.00	0.10
4-Nov	0.00	0.00	0.00	0.09
5-Nov	0.00	0.00	0.00	0.09
6-Nov	0.00	0.00	0.00	0.11
7-Nov	0.00	0.00	0.00	0.12
8-Nov	0.00	0.00	0.00	0.12
9-Nov	0.57	0.57	0.00	0.01
10-Nov	0.00	0.00	0.00	0.07
11-Nov	0.00	0.00	0.00	0.06
12-Nov	0.00	0.00	0.00	0.08
13-Nov	0.00	0.00	0.00	0.09
14-Nov	0.00	0.00	0.00	0.09
15-Nov	0.00	0.00	0.00	0.08
16-Nov	0.00	0.00	0.00	0.05
17-Nov	0.00	0.00	0.00	0.01
18-Nov	0.00	0.00	0.00	0.07
19-Nov	0.26	0.26	0.00	0.02
20-Nov	0.03	0.03	0.00	0.05
21-Nov	0.00	0.00	0.00	0.05
22-Nov	0.00	0.00	0.00	0.08
23-Nov	0.00	0.00	0.00	0.09
24-Nov	0.00	0.00	0.00	0.07
25-Nov	0.16	0.16	0.00	0.04
26-Nov	0.04	0.04	0.00	0.06
27-Nov	0.00	0.00	0.00	0.07
28-Nov	0.00	0.00	0.00	0.10
29-Nov	0.00	0.00	0.00	0.09
30-Nov	0.31	0.31	0.00	0.02
		0.00	0.00	
		1.37	0.00	
Volume, ac-ft		8.37	0.00	2.22
Total Vol, ac-ft		8.37		



## 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)	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 areaFringe area**

Date	Precip, in.	Runoff, in.	Runoff, in.	Evapor, in/day
1-Dec	0.00	0.00	0.00	0.01
2-Dec	0.00	0.00	0.00	0.01
3-Dec	0.00	0.00	0.00	0.07
4-Dec	0.00	0.00	0.00	0.07
5-Dec	0.00	0.00	0.00	0.08
6-Dec	0.00	0.00	0.00	0.09
7-Dec	0.00	0.00	0.00	0.11
8-Dec	0.00	0.00	0.00	0.06
9-Dec	0.00	0.00	0.00	0.07
10-Dec	0.00	0.00	0.00	0.07
11-Dec	0.00	0.00	0.00	0.06
12-Dec	0.00	0.00	0.00	0.06
13-Dec	0.00	0.00	0.00	0.06
14-Dec	0.53	0.53	0.00	0.02
15-Dec	0.00	0.00	0.00	0.07
16-Dec	0.00	0.00	0.00	0.08
17-Dec	0.00	0.00	0.00	0.06
18-Dec	0.00	0.00	0.00	0.06
19-Dec	0.00	0.00	0.00	0.03
20-Dec	0.11	0.11	0.00	0.02
21-Dec	0.02	0.02	0.00	0.02
22-Dec	0.01	0.01	0.00	0.02
23-Dec	0.53	0.53	0.00	0.03
24-Dec	0.00	0.00	0.00	0.08
25-Dec	0.00	0.00	0.00	0.08
26-Dec	0.00	0.00	0.00	0.07
27-Dec	0.00	0.00	0.00	0.03
28-Dec	0.00	0.00	0.00	0.07
29-Dec	0.00	0.00	0.00	0.09
30-Dec	0.00	0.00	0.00	0.05
31-Dec	0.01	0.01	0.00	0.05
		1.21	0.00	
Volume, ac-ft		7.39	0.00	1.757
Total Vol, ac-ft		7.39		