

Cogburn, Matt

From: Saucedo, Eddie <saucedoe@vmcmail.com>
Sent: Thursday, March 29, 2018 4:38 PM
To: Cogburn, Matt; Jennifer Back; Peter Burck
Cc: Eddie Saucedo
Subject: 4Q 2017 and Annual report Vulcan North Troy
Attachments: 1.0 4Q 2017 Usage Report Vulcan.pdf; 1.5 Annual 2017 Usage Report Vulcan.pdf; 2.0 4Q 2017_Creek Summary Usage Report Vulcan.pdf; 3.0 4Q 2017_Oct Precip Report Vulcan.pdf; 4.0 4Q 2017_NOV Precip Report Vulcan.pdf; 5.0 4Q 2017_DEC Precip Report Vulcan.pdf; 6.0 4Q 2017_Pump data Report Vulcan.pdf; 7.0 4Q 2017_Ship data Report Vulcan.pdf; 8.0 4Q_annual 2017 NTROY Vulcan Report.pdf; Water data gauges.zip; Water Reports.zip

Please see the attached documents.

Eddie Saucedo

Environmental Manager | Southwest Division

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2017 4th QUARTER REPORT

Report 2017

North Troy Quarry

Mill Creek, OK

Vulcan Materials Company

VMC North Troy 2017 Monitoring Report

All volumes are in acre-feet.

	Total Groundwater Entering Pit	Total Stormwater Entering Pit	Total Pit Stormwater Diverted	Total Pit Water Diverted	Pit Water Sent To Holding Basin	Groundwater Augmentation	Streamwater Augmentation	Consumptive Use of Pit Water	Streamwater Pumped From Mill Creek	Groundwater Pumped From Wells	Total Annual Groundwater Allocation, Ac-ft
January-17	284.75	15.50	15.50	261.59	18.29	260.75	0.00	4.01	0.00	0.00	219.50
February-17	282.41	20.38	20.38	284.48	33.48	276.37	0.00	4.07	0.00	0.00	219.50
March-17	289.88	4.99	4.99	287.69	44.56	220.27	30.35	3.44	0.00	0.00	219.50
1st QTR Totals	837.04	40.87	40.87	833.76	96.33	757.39	30.35	11.53	0.00	0.00	N/A
April-17	290.81	12.17	12.17	298.13	9.02	304.77	0.00	4.49	0.00	0.00	219.50
May-17	253.78	105.92	105.92	248.01	46.74	263.71	45.88	5.68	0.00	0.00	219.50
June-17	372.93	9.57	9.57	373.55	49.96	341.85	0.00	9.59	0.00	0.00	219.50
2nd QTR Totals	917.53	127.66	127.66	917.69	105.72	910.12	45.88	19.76	0.00	0.00	N/A
July-17	345.72	43.67	43.67	343.75	0.00	389.70	0.00	10.08	0.00	0.00	219.50
August-17	357.85	36.64	36.64	360.38	40.17	362.59	0.00	11.20	0.00	0.07	219.50
September-17	354.51	24.03	24.03	355.84	32.16	313.45	36.43	9.69	0.00	0.00	219.50
3rd QTR Totals	1058.08	104.34	104.34	1059.97	72.33	1065.74	36.43	30.96	0.00	0.07	N/A
October-17	380.50	6.38	6.38	378.41	34.59	356.69	0.00	9.63	0.00	1.40	219.50
November-17	338.93	0.00	0.00	340.68	45.51	224.88	72.46	7.80	0.00	0.00	219.50
December-17	326.22	6.83	6.83	327.03	30.01	307.84	0.00	7.76	0.00	1.10	219.50
4th QTR Totals	1046.65	13.21	13.21	1046.12	110.11	889.41	72.46	25.18	0.00	2.50	N/A
2017 Totals	3859.29	286.08	286.08	3857.54	384.49	3622.86	185.12	87.43	0.00	2.57	219.50

1st Qtr Notes

2nd Qtr Notes

3rd Qtr notes

4th Qtr

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2017 ANNUAL REPORT

Report 2017

North Troy Quarry

Mill Creek, OK

Vulcan Materials Company

VMC North Troy 2017 Monitoring Report

All volumes are in acre-feet.

	Total Groundwater Entering Pit	Total Stormwater Entering Pit	Total Pit Stormwater Diverted	Total Pit Water Diverted	Pit Water Sent To Holding Basin	Groundwater Augmentation	Streamwater Augmentation	Consumptive Use of Pit Water	Streamwater Pumped From Mill Creek	Groundwater Pumped From Wells	Total Annual Groundwater Allocation, Ac-ft
January-17	284.75	15.50	15.50	261.59	18.29	280.75	0.00	4.01	0.00	0.00	219.50
February-17	282.41	20.38	20.38	284.48	33.48	278.37	0.00	4.07	0.00	0.00	219.50
March-17	289.88	4.99	4.99	287.69	44.56	220.27	30.35	3.44	0.00	0.00	219.50
1st QTR Totals	837.04	40.87	40.87	833.76	96.33	757.39	30.35	11.53	0.00	0.00	N/A
April-17	290.81	12.17	12.17	296.13	9.02	304.77	0.00	4.49	0.00	0.00	219.50
May-17	253.78	105.92	105.92	248.01	46.74	263.71	45.88	5.68	0.00	0.00	219.50
June-17	372.93	9.57	9.57	373.55	49.96	341.65	0.00	9.59	0.00	0.00	219.50
2nd QTR Totals	917.53	127.66	127.66	917.69	105.72	910.12	45.88	19.76	0.00	0.00	N/A
July-17	345.72	43.67	43.67	343.75	0.00	389.70	0.00	10.08	0.00	0.00	219.50
August-17	357.85	36.64	36.64	360.38	40.17	362.59	0.00	11.20	0.00	0.07	219.50
September-17	354.51	24.03	24.03	355.84	32.16	313.45	36.43	9.69	0.00	0.00	219.50
3rd QTR Totals	1058.08	104.34	104.34	1059.97	72.33	1065.74	36.43	30.96	0.00	0.07	N/A
October-17	380.50	6.38	6.38	378.41	34.59	356.89	0.00	9.63	0.00	1.40	219.50
November-17	339.93	0.00	0.00	340.88	45.51	224.88	72.46	7.80	0.00	0.00	219.50
December-17	326.22	6.83	6.83	327.03	30.01	307.84	0.00	7.76	0.00	1.10	219.50
4th QTR Totals	1046.65	13.21	13.21	1046.12	110.11	889.41	72.46	25.18	0.00	2.50	N/A
2017 Totals	3859.29	286.08	286.08	3857.54	384.49	3622.66	185.12	87.43	0.00	2.57	219.50

1st Qtr Notes

2nd Qtr Notes

3rd Qtr notes

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MILL CREEK 2017 AUGMENTATION and GAUGE DATA

Start Date	Start Time	Stop Date	Stop Time	Begin Reading	End Reading	Ac - Ft pumped	Mill Creek Stream gauge Reading	Time Read	Stream height	Stream flow
3/9/2017	9:45 AM	3/11/2017	2:30 PM	1292390000	1288520000	30.35	USGS 7331200	9:30 AM	6.18	3.04
5/8/2017	6:25 AM	5/10/2017	6:40 AM	1481730000	1489190000	45.88	USGS 7331200	6:00 AM	6.18	2.97
9/13/2017	6:45 AM	9/14/2017	5:55 PM	2015540000	2020900000	16.45	USGS 7331200	6:30 AM	6.1	4.08
9/15/2017	7:45 AM	9/15/2017	5:15 PM	2023600000	2024820000	3.74	USGS 7331200	7:30 AM	6.09	3.83
9/16/2017	3:10 PM	9/18/2017	8:20 AM	2029100000	2034390000	16.23	USGS 7331200	3:00 PM	6.08	3.6
11/4/2017	6:40AM	11/6/2017	1:20 PM	2222980000	2230970000	24.52	USGS 7331200	6:30 AM	6.05	2.8
11/12/2017	9:20AM	11/13/2017	3:20 PM	2253000000	2256060000	9.39	USGS 7331200	9:00 AM	6.06	2.79
11/14/2017	8:20 AM	11/17/2017	2:50 PM	2261720000	2270320000	26.39	USGS 7331200	8:00 AM	6.06	2.78
11/20/2017	8:30 AM	11/22/2017	5:35 PM	2280210000	2284170000	12.15	USGS 7331200	8:00 AM	6.07	2.9

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October Precipitation/Evaporation 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)	11363636	area draining into pit
S (pit)	0	area with direct interception
Pit - Direct Interception (>95 ft deep)	53.91	subject to refinement
Pit fringe (area drains to pit)	122.04	subject to refinement
Drainage to Pit (total area)	175.95	subject to refinement

Date	Quarry area Precip, in.	Fringe area Runoff, in.	Daily Runoff, in.	Evaporation, in.	
1-Oct		0.00	0.00	0.22	Runoff formula
2-Oct		0.00	0.00	0.26	$P_e = (P - 0.2S)^2 / (P + 0.8S)$
3-Oct		0.00	0.00	0.15	$S = (1000/CN) - 10$
4-Oct	0.40	0.40	0.00	0.09	
5-Oct		0.00	0.00	0.21	Blue cells contain formulas
6-Oct		0.00	0.00	0.24	
7-Oct		0.00	0.00	0.18	
8-Oct		0.00	0.00	0.18	
9-Oct		0.00	0.00	0.23	Oct. Precip
10-Oct	0.31	0.31	0.00	0.15	N. Troy Rain gauge
11-Oct		0.00	0.00	0.11	
12-Oct		0.00	0.00	0.18	
13-Oct		0.00	0.00	0.22	
14-Oct		0.00	0.00	0.25	
15-Oct		0.00	0.00	0.26	
16-Oct		0.00	0.00	0.12	
17-Oct		0.00	0.00	0.15	
18-Oct		0.00	0.00	0.22	
19-Oct		0.00	0.00	0.18	
20-Oct		0.00	0.00	0.19	
21-Oct		0.00	0.00	0.12	
22-Oct	0.71	0.71	0.00	0.14	
23-Oct		0.00	0.00	0.16	
24-Oct		0.00	0.00	0.18	
25-Oct		0.00	0.00	0.15	
26-Oct		0.00	0.00	0.24	
27-Oct		0.00	0.00	0.17	
28-Oct		0.00	0.00	0.11	
29-Oct		0.00	0.00	0.13	
30-Oct		0.00	0.00	0.17	
31-Oct		0.00	0.00	0.09	
sum	1.42	1.42	0.00	5.44	
Volume, ac-ft		6.38	0.00		
Total Vol, ac-ft		6.38			Pan Evaporation from Sulphur Mesonet

* Used Mesonet Pan Evaporation - Sulphur

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November Precipitation/Evaporation 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)	11363636	area draining into pit
S (pit)	0	area with direct interception
Pit - Direct Interception (>95 ft deep)	53.91	subject to refinement
Pit fringe (area drains to pit)	122.04	subject to refinement
Drainage to Pit (total area)	175.95	subject to refinement

Date	Precip, in.	Runoff, in.	Evaporation, in.	Daily
1-Nov	0.00	0.00	0.17	Runoff formula
2-Nov	0.00	0.00	0.27	Pe = (P-0.2S)^2/(P+0.8S)
3-Nov	0.00	0.00	0.07	S = (1000/CN)-10
4-Nov	0.00	0.00	0.16	
5-Nov	0.00	0.00	0.22	Blue cells contain form
6-Nov	0.00	0.00	0.04	
7-Nov	0.00	0.00	0.06	
8-Nov	0.00	0.00	0.03	
9-Nov	0.00	0.00	0.06	Nov. Precip
10-Nov	0.00	0.00	0.11	N. Troy Rain gauge
11-Nov	0.00	0.00	0.12	
12-Nov	0.00	0.00	0.1	
13-Nov	0.00	0.00	0.06	
14-Nov	0.00	0.00	0.14	
15-Nov	0.00	0.00	0.08	
16-Nov	0.00	0.00	0.04	
17-Nov	0.00	0.00	0.19	
18-Nov	0.00	0.00	0.16	
19-Nov	0.00	0.00	0.06	
20-Nov	0.00	0.00	0.18	
21-Nov	0.00	0.00	0.16	
22-Nov	0.00	0.00	0.11	
23-Nov	0.00	0.00	0.09	
24-Nov	0.00	0.00	0.21	
25-Nov	0.00	0.00	0.16	
26-Nov	0.00	0.00	0.11	
27-Nov	0.00	0.00	0.19	
28-Nov	0.00	0.00	0.17	
29-Nov	0.00	0.00	0.05	
30-Nov	0.00	0.00	0.08	
31-Nov	0.00	0.00	0.00	
sum	0.00	0.00	3.65	
Volume, ac-ft	0.00	0.00		
Total Vol, ac-ft.	0.00			Pan Evaporation from Sulphur Mesonet

* Used Mesonet Pan Evaporation - Sulphur

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PROGRESS

December Precipitation/Evaporation Data

PIT.RUNOFF ASSUMPTIONS		
Hydrologic Soil Group	D	
Land Use	gravel road	
AMC Condition	II (avs)	
CN (pit fringe)	88	area draining into pit
CN (pit)	100	area with direct interception
S (pit fringe)	11363836	area draining into pit
S (pit)	0	area with direct interception
Pit - Direct Interception (>95 ft deep)	53.91	subject to refinement
Pit fringe (area drains to pit)	122.04	subject to refinement
Drainage to Pit (total area)	175.95	subject to refinement

Date	Quarry are Precip, in.	Fringe are Runoff, in.	Daily Runoff, in.	Evaporation, in.	
1-Dec		0:00	0:00	0.11	Runoff formula
2-Dec		0:00	0:00	0.11	Pe = (P-0.2S)^2/(P+0.8S)
3-Dec		0:00	0:00	0.14	S = (1000/CN)-10
4-Dec		0:00	0:00	0.28	
5-Dec		0:00	0:00	0.14	Blue cells contain form
6-Dec		0:00	0:00	0.08	
7-Dec		0:00	0:00	0.08	
8-Dec		0:00	0:00	0.05	
9-Dec		0:00	0:00	0.08	Dec. Precip
10-Dec		0:00	0:00	0.11	N. Troy Rain gauge
11-Dec		0:00	0:00	0.17	
12-Dec		0:00	0:00	0.08	
13-Dec		0:00	0:00	0.11	
14-Dec		0:00	0:00	0.09	
15-Dec		0:00	0:00	0.05	
16-Dec	0.04	0:04	0:00	0.15	
17-Dec	0.16	0:16	0:00	0.02	
18-Dec		0:00	0:00	0.03	
19-Dec	1.12	1:12	0:00	0.02	
20-Dec		0:00	0:00	0.03	
21-Dec		0:00	0:00	0.15	
22-Dec	0.16	0:16	0:00	0.05	
23-Dec	0.04	0:04	0:00	0.04	
24-Dec		0:00	0:00	0.05	
25-Dec		0:00	0:00	0.07	
26-Dec		0:00	0:00	0.07	
27-Dec		0:00	0:00	0.05	
28-Dec		0:00	0:00	0.04	
29-Dec		0:00	0:00	0.05	
30-Dec		0:00	0:00	0.04	
31-Dec		0:00	0:00	0.05	
sum	1:52	1:52	0:00	2:51	
Volume, ac-ft		6:83	0:00		
Total Vol, ac-ft		6:83			Pan Evaporation from Sulphur Mesonet

* Used Mesonet Pan Evaporation - Sulphur

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October Shipments		November Shipments		December Shipments				
	Tons Shipped	Ac-ft of water shipped		Tons Shipped	Ac-ft of water shipped		Tons Shipped	Ac-ft of water shipped
Base Products Coarse	844	0.021	Base Products Coarse	850	0.021	Base Products Coarse	934	0.023
Aggregates Fine	296,103	3.559	Aggregates Fine	249,940	3.004	Aggregates Fine	217,393	2.613
Aggregates	12,758	0.405	Aggregates	5,078	0.161	Aggregates	5,163	0.164
	309,705	3.985		255,868	3.186		223,490	2.800

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Monthly Water Data, ac-ft

	Water Diverted From Pit	Storm Water Entering Pit	Net Sump Volume Change	Groundwater Sent To Holding Basin	Groundwater Sent To Infiltration Areas	Groundwater Used For Stream Augmentation	Evaporation	Moisture Content of Product Shipped	Water Truck Usage	Misc Pit Water Use On Site	Misc Pit Water Use Off Site	Production Well Permit 2002-602	North Well Permit 20060601A
January-17	277.09	15.50	3116	18.29	258.80	0.00	0.00	2.50	1.51	0.00	0.00	0.00	0.00
February-17	304.86	20.38	2107	33.48	271.38	0.00	0.00	3.11	0.96	0.00	0.00	0.00	0.00
March-17	292.68	4.99	2118	44.56	217.77	30.35	0.00	2.56	0.88	0.00	0.00	0.00	0.00
April-17	308.30	12.17	5131	9.02	299.28	0.00	0.50	2.84	1.15	0.00	0.00	0.00	0.00
May-17	353.93	105.92	5177	46.74	261.32	45.88	0.65	3.79	1.25	0.00	0.00	0.00	0.00
June-17	383.12	9.57	2062	49.96	336.16	0.00	0.66	3.84	5.28	0.00	0.00	0.00	0.00
July-17	387.42	43.67	1197	0.00	387.42	0.00	0.72	3.78	5.58	0.00	0.00	0.00	0.00
August-17	397.02	36.84	2153	40.17	356.85	0.00	0.55	3.35	7.29	0.00	0.00	0.07	0.00
September-17	379.87	24.03	1133	32.16	311.28	36.43	0.50	2.72	6.46	0.00	0.00	0.00	0.00
October-17	384.79	6.38	2109	34.59	351.20	0.00	0.45	3.98	5.19	0.00	0.00	1.40	0.00
November-17	340.68	0.00	2075	45.51	222.71	72.46	0.30	3.19	4.31	0.00	0.00	0.00	0.00
December-17	333.86	6.83	2081	30.01	303.85	0.00	0.21	2.80	4.75	0.00	0.00	1.10	0.00

Pit Sump Volumes

	West Sump					#05 Sump					New Freshwater Pond					
	Month End Depth-to-Water, Ft	Width, Ft	Length, Ft	Sump Volume Change, Ac-ft	Evaporation, ac-ft	Month End Depth-to-Water, Ft	Width, Ft	Length, Ft	Sump Volume Change, Ac-ft	Evaporation, ac-ft	Month End Depth-to-Water, Ft	Width, Ft	Length, Ft	Pond Volume Change, Ac-ft	Evaporation, ac-ft	Total Evaporation, ac-ft
January-17	11.432	125	325	3116	0.24	4	50	50	0.00	0.01	4.29	750	750	0.00	0.00	0.25
February-17	13.649	125	325	2107	0.34	4	50	50	0.00	0.02	4.036	750	750	0.00	0.00	0.38
March-17	11.309	125	325	2118	0.51	4	50	50	0.00	0.03	2.996	750	750	0.00	0.00	0.54
April-17	17.006	125	325	5131	0.47	4	50	50	0.00	0.03	4.603	750	750	0.00	0.00	0.50
May-17	10.822	125	325	5177	0.61	4	50	50	0.00	0.04	5.104	750	750	0.00	0.00	0.65
June-17	11.483	125	325	2062	0.62	4	50	50	0.00	0.04	4.076	750	750	0.00	0.00	0.66
July-17	9.367	125	325	1197	0.67	4	50	50	0.00	0.04	3.497	750	750	0.00	0.00	0.72
August-17	12.08	125	325	2153	0.52	4	50	50	0.00	0.03	4.015	750	750	0.00	0.00	0.55
September-17	13.501	125	325	1133	0.47	4	50	50	0.00	0.03	3.506	750	750	0.00	0.00	0.50
October-17	11.264	125	325	2109	0.42	4	50	50	0.00	0.03	4.335	750	750	0.00	0.00	0.45
November-17	12.068	125	325	2075	0.28	4	50	50	0.00	0.02	3.72	750	750	0.00	0.00	0.30
December-17	12.94	125	325	2081	0.20	4	50	50	0.00	0.01	3.66	750	750	0.00	0.00	0.21

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