1st Quarter Report 2015
North Troy Quarry
Mill Creek, OK
Vulcan Materials Company

VMC North Troy 2015 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-14	162.21	7.10	7.10	158.53	0.00	168.13	0.00	4.21	0.00	0.00	353.50
February-14	155.63	3.41	3.41	162.20	0.00	169.85	0.00	4.55	0.00	0.00	353.50
March-14	190.47	16.17	16.17	187.42	46.28	43.93	105.05	6.91	0.00	0.61	353.50
1st QTR Totals	508.30	26.69	26.69	508.14	46.28	381.91	105.05	15.68	0.00	0.61	N/A
April-14	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	353.50
May-14	#VALUE!	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	353.50
June-14	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	353.50
2nd QTR Totals	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
July-14	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	353.50
August-14	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	353.50
September-14	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	353.50
3rd QTR Totals	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
October-14	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	353.50
November-14	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	353.50
December-14	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	353.50
4th QTR Totals	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
2014 Totals	#VALUE!	26.69	26.69	508.14	46.28	381.91	105.05	15.66	0.00	0.61	353.50

1st Qtr Notes
Weather Station - Data storage error
Production well transducer - battery failed
2nd Qtr Notes

3rd Qtr Notes

4th Qtr notes

MILL CREEK 2015 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
3/4/2015	7:40 AM	3/6/2015	3:15 PM	572490000	579700000	22.13	USGS	7331200	7:30 AM	< 6	2.8
3/9/2015	6:30 AM	3/11/2015	1:30 PM	579700000	585830000	18.81	USGS	7331200	6:00 AM	< 6	3.7
3/12/2015	6:55 AM	3/14/2015	1:10 PM	585830000	593240000	22.74	USGS	7331200	6:00 AM	< 6	4.2
3/18/2015	8:30 AM	3/18/2015	9:05 AM	593240000	593330000	0.28	USGS	7331200	8:00 AM	< 6	5.1
3/26/2015	4:45 PM	3/29/2015	9:00 PM	617010000	626960000	30.54	USGS	7331200	4:00 PM	6.13	9.7
	Note: Flowrate dropped to 8.7 cfs by 6pm on March 26, 2015. Flowrate stayed below 9.0 for duration of augmentation.										
3/30/2015	1:00 PM	3/31/2015	3:30 PM	626960000	630400000	10.56	USGS	7331200	12:30 PM	6.01	5.6

MILL CREEK 2014 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
1/1/2014	No Augmentation this month										
2/1/2014	No Augmentation this month										
3/1/2014	No Augmentation this month										
4/1/2014	No Augmentation this month										
5/1/2014	No Augmentation this month										
6/1/2014	No Augmentation this month										
7/1/2014	No Augmentation this month										
8/1/2014	No Augmentation this month										
9/1/2014	No Augmentation this month										
10/1/2014	No Augmentation this month										
11/1/2014	No Augmentation this month										
12/1/2014	No Augmentation this month										

January 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)	1.363636364	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.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily Evaporation, in.
1-Jan	0.00	0.00	0.00	0.02
2-Jan	0.00	0.00	0.00	0.02
3-Jan	0.04	0.04	0.00	0.03
4-Jan	0.00	0.00	0.00	0.07
5-Jan	0.00	0.00	0.00	0.08
6-Jan	0.00	0.00	0.00	0.08
7-Jan	0.00	0.00	0.00	0.08
8-Jan	0.00	0.00	0.00	0.07
9-Jan	0.00	0.00	0.00	0.08
10-Jan	0.00	0.00	0.00	0.07
11-Jan	0.00	0.00	0.00	0.02
12-Jan	0.00	0.00	0.00	0.03
13-Jan	0.00	0.00	0.00	0.06
14-Jan	0.00	0.00	0.00	0.04
15-Jan	0.00	0.00	0.00	0.07
16-Jan	0.00	0.00	0.00	0.12
17-Jan	0.00	0.00	0.00	0.16
18-Jan	0.00	0.00	0.00	0.19
19-Jan	0.00	0.00	0.00	0.1
20-Jan	0.00	0.00	0.00	0.16
21-Jan	0.10	0.10	0.00	0.09
22-Jan	0.49	0.49	0.00	0.03
23-Jan	0.00	0.00	0.00	0.06
24-Jan	0.00	0.00	0.00	0.09
25-Jan	0.00	0.00	0.00	0.16
26-Jan	0.00	0.00	0.00	0.15
27-Jan	0.00	0.00	0.00	0.12
28-Jan	0.00	0.00	0.00	0.18
29-Jan	0.00	0.00	0.00	0.15
30-Jan	0.00	0.00	0.00	0.1
31-Jan	0.95	0.95	0.00	0.07
sum	1.58	1.58	0.00	2.75
Volume, ac-ft		**7.10**	**0.00**	
Total Vol, ac-ft		**7.10**		

Runoff formula
Pe = (P-0.2S)^2/(P+0.8S)
S = (1000/CN)-10

Blue cells contain formulas

February 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)	1.36363636	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.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily Evaporation, in.
1-Feb	0.12	0.12	0.00	0.06
2-Feb	0.00	0.00	0.00	0.06
3-Feb	0.00	0.00	0.00	0.13
4-Feb	0.00	0.00	0.00	0.04
5-Feb	0.00	0.00	0.00	0.04
6-Feb	0.00	0.00	0.00	0.12
7-Feb	0.00	0.00	0.00	0.17
8-Feb	0.00	0.00	0.00	0.15
9-Feb	0.00	0.00	0.00	0.15
10-Feb	0.00	0.00	0.00	0.17
11-Feb	0.00	0.00	0.00	0.13
12-Feb	0.00	0.00	0.00	0.12
13-Feb	0.00	0.00	0.00	0.17
14-Feb	0.00	0.00	0.00	0.21
15-Feb	0.50	0.50	0.00	0.12
16-Feb	0.03	0.03	0.00	0.03
17-Feb	0.00	0.00	0.00	0.09
18-Feb	0.00	0.00	0.00	0.1
19-Feb	0.00	0.00	0.00	0.16
20-Feb	0.00	0.00	0.00	0.07
21-Feb	0.00	0.00	0.00	0.12
22-Feb	0.08	0.08	0.00	0.07
23-Feb	0.00	0.00	0.00	0.04
24-Feb	0.03	0.03	0.00	0.06
25-Feb	0.00	0.00	0.00	0.09
26-Feb	0.00	0.00	0.00	0.12
27-Feb	0.00	0.00	0.00	0.04
28-Feb	0.00	0.00	0.00	0.02
		0.00	0.00	
		0.00	0.00	
		0.00	0.00	
sum	0.76	0.76	0.00	2.85
Volume, ac-ft		3.41	0.00	
Total Vol, ac-ft		3.41		

Runoff formula
Pe = (P-0.2S)^2/(P+0.8S)
S = (1000/CN)-10

Blue cells contain formulas

March 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)	1.363636364	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.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily Evaporation, in.
1-Mar	0.40	0.40	0.00	0.03
2-Mar	0.10	0.10	0.00	0.03
3-Mar	0.04	0.04	0.00	0.04
4-Mar	0.52	0.52	0.00	0.06
5-Mar	0.05	0.05	0.00	0.08
6-Mar	0.00	0.00	0.00	0.12
7-Mar	0.00	0.00	0.00	0.17
8-Mar	0.00	0.00	0.00	0.14
9-Mar	0.45	0.45	0.00	0.03
10-Mar	0.00	0.00	0.00	0.06
11-Mar	0.00	0.00	0.00	0.16
12-Mar	0.00	0.00	0.00	0.15
13-Mar	0.72	0.72	0.00	0.03
14-Mar	0.01	0.01	0.00	0.12
15-Mar	0.00	0.00	0.00	0.11
16-Mar	0.00	0.00	0.00	0.2
17-Mar	0.00	0.00	0.00	0.17
18-Mar	0.35	0.35	0.00	0.05
19-Mar	0.07	0.07	0.00	0.03
20-Mar	0.18	0.18	0.00	0.09
21-Mar	0.00	0.00	0.00	0.08
22-Mar	0.29	0.29	0.00	0.13
23-Mar	0.00	0.00	0.00	0.22
24-Mar	0.00	0.00	0.00	0.33
25-Mar	0.39	0.39	0.00	0.26
26-Mar	0.03	0.03	0.00	0.22
27-Mar	0.00	0.00	0.00	0.13
28-Mar	0.00	0.00	0.00	0.26
29-Mar	0.00	0.00	0.00	0.32
30-Mar	0.00	0.00	0.00	0.25
31-Mar	0.00	0.00	0.00	0.24
sum	3.60	3.60	0.00	4.31
Volume, ac-ft		**16.17**	**0.00**	
Total Vol, ac-ft		**16.17**		

Runoff formula
Pe = (P-0.2S)^2/(P+0.8S)
S = (1000/CN)-10

Blue cells co

Pit Sump Volumes

	West Sump					905 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-15	15.295	125	325	-3.67	0.21	4	50	50	0.00	0.01	4.3	475	750	-10.83	1.81	2.10
February-15	22.34	125	325	-6.57	0.27	4	50	50	0.00	0.01	6.41	475	750	-17.26	1.94	2.18
March-15	19.07	125	325	3.65	0.33	4	50	50	0.09	0.07	5.98	475	750	3.52	2.94	3.29
April-15		125	325	0.00	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00	0.00
May-15		125	325	0.00	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00	0.00
June-15		125	325	0.00	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00	0.00
July-15		125	325	0.00	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00	0.00
August-15		125	325	0.00	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00	0.00
September-15		125	325	0.00	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00	0.00
October-15		125	325	0.00	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00	0.00
November-15		125	325	0.00	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00	0.00
December-15		125	325	0.00	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00	0.00

Settling Cell Evaporation and Infiltration

	FO2 East						FO2 West						FO3/FO4 South Settling Cell							
	Width, Ft	Length, Ft	Evaporation, ac-ft	Number of Production Days	Infiltration Rate, Ac-ft/day	Total Infiltration, Ac-ft	Width, Ft	Length, Ft	Evaporation, ac-ft	Number of Production Days	Infiltration Rate, Ac-ft/day	Total Infiltration, Ac-ft	Width, Ft	Length, Ft	Evaporation, ac-ft	Number of Production Days	Infiltration Rate, Ac-ft/day	Total Infiltration, Ac-ft	Total Evaporation, ac-ft	Total Infiltration, ac-ft
January-15	50	330	0.09	23.00	0.08	1.88	50	350	0.00	0.00	0.22	0.00	200	435	0.46	23.00	0.03	0.81	0.54	2.50
February-15	50	330	0.00	0.00	0.08	0.00	50	350	0.10	17.00	0.22	3.79	200	435	0.47	17.00	0.03	0.45	0.57	4.24
March-15	50	330	0.14	25.00	0.08	2.05	50	350	0.00	0.00	0.22	0.00	200	435	0.72	25.00	0.03	0.81	0.85	2.71
April-15	50	330	0.00	0.00	0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00
May-15	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00
June-15	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00
July-15	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00
August-15	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00
September-15	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00
October-15	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00
November-15	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00
December-15	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00