

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	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
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	15.68	0.00	0.61	353.50

1st Qtr Notes

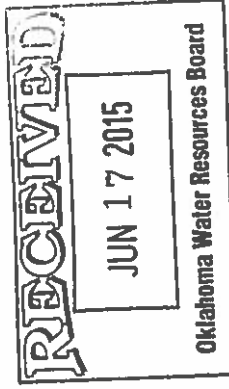
Weather Station - Data storage error

Production well transducer - battery failed

2nd Qtr Notes

3rd Qtr Notes

4th Qtr notes



January Precipitation/Evaporation Data

PIT RUNOFF ASSUMPTIONS	
Hydrologic Soil Group	D
Land Use	"gravel road"
AMC Condition	II (ave)
CN (pit fringe)	88
CN (pit)	100
S (pit fringe)	1.363636364
S (pit)	0
Pit - Direct Interception (>95 ft deep)	53.91
Pit fringe (area drains to pit)	122.04
Drainage to Pit (total area)	175.95

area draining into pit
area with direct interception
area draining into pit
area with direct interception
subject to refinement
subject to refinement

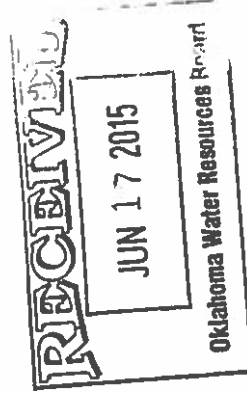
Date	Precip, in.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily Evaporation, in.
1-Jan	0.00	0.00	0.00	0.02
2-Jan	0.00	0.00	0.00	0.02
3-Jan	0.04	0.04	0.00	0.03
4-Jan	0.00	0.00	0.00	0.07
5-Jan	0.00	0.00	0.00	0.08
6-Jan	0.00	0.00	0.00	0.08
7-Jan	0.00	0.00	0.00	0.08
8-Jan	0.00	0.00	0.00	0.07
9-Jan	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

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

Blue cells contain formulas

Volume, ac-ft
Total Vol, ac-ft

7.10
7.10



February Precipitation/Evaporation Data

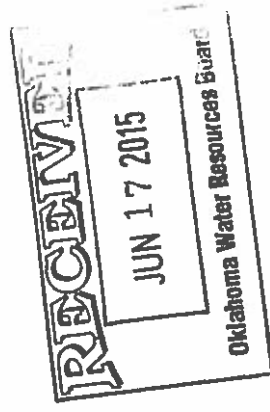
PIT RUNOFF ASSUMPTIONS	
Hydrologic Soil Group	D
Land Use	"gravel road"
AMC Condition	II (ave)
CN (pit fringe)	88
CN (pit)	100
S (pit fringe)	1.36363636
S (pit)	0
Pit - Direct Interception (>95 ft deep)	53.91
Pit fringe (area drains to pit)	122.04
Drainage to Pit (total area)	175.95

area draining into pit
area with direct interception
area draining into pit
area with direct interception
subject to refinement
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
sum	0.76	0.76	0.00	2.85

Runoff formula
 $P_e = (P - 0.2S)^2 / (P + 0.8S)$
 $S = (1000/CN) - 10$
Blue cells contain formulas

Volume, ac-ft
Total Vol, ac-ft



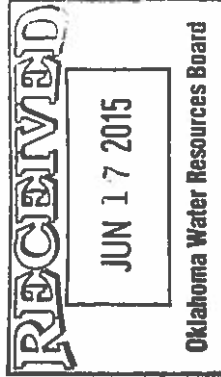
March Precipitation/Evaporation Data

PIT RUNOFF ASSUMPTIONS	
Hydrologic Soil Group	D
Land Use	"gravel road"
AMC Condition	II (ave)
CN (pit fringe)	88
CN (pit)	100
S (pit fringe)	1.363636364
S (pit)	0
Pit - Direct Interception (>95 ft deep)	53.91
Pit fringe (area drains to pit)	122.04
Drainage to Pit (total area)	175.95

Date	Precip, in.	Quarry area Runoff, in.	Fringe area Runoff, in.	Evaporation, in.	Daily
1-Mar	0.40	0.40	0.00	0.00	0.03
2-Mar	0.10	0.10	0.00	0.00	0.03
3-Mar	0.04	0.04	0.00	0.00	0.04
4-Mar	0.52	0.52	0.00	0.00	0.06
5-Mar	0.05	0.05	0.00	0.00	0.08
6-Mar	0.00	0.00	0.00	0.00	0.12
7-Mar	0.00	0.00	0.00	0.00	0.17
8-Mar	0.00	0.00	0.00	0.00	0.14
9-Mar	0.45	0.45	0.00	0.00	0.03
10-Mar	0.00	0.00	0.00	0.00	0.06
11-Mar	0.00	0.00	0.00	0.00	0.16
12-Mar	0.00	0.00	0.00	0.00	0.15
13-Mar	0.72	0.72	0.00	0.00	0.03
14-Mar	0.01	0.01	0.00	0.00	0.12
15-Mar	0.00	0.00	0.00	0.00	0.11
16-Mar	0.00	0.00	0.00	0.00	0.2
17-Mar	0.00	0.00	0.00	0.00	0.17
18-Mar	0.35	0.35	0.00	0.00	0.05
19-Mar	0.07	0.07	0.00	0.00	0.03
20-Mar	0.18	0.18	0.00	0.00	0.09
21-Mar	0.00	0.00	0.00	0.00	0.08
22-Mar	0.29	0.29	0.00	0.00	0.13
23-Mar	0.00	0.00	0.00	0.00	0.22
24-Mar	0.00	0.00	0.00	0.00	0.33
25-Mar	0.39	0.39	0.00	0.00	0.26
26-Mar	0.03	0.03	0.00	0.00	0.22
27-Mar	0.00	0.00	0.00	0.00	0.13
28-Mar	0.00	0.00	0.00	0.00	0.26
29-Mar	0.00	0.00	0.00	0.00	0.32
30-Mar	0.00	0.00	0.00	0.00	0.25
31-Mar	0.00	0.00	0.00	0.00	0.24
sum	3.60	3.60	0.00	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/day	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	Total Evaporation, ac-ft
15.291	125	325	3.8	0.00	4	50	50	0.00	0.00	4.3	475	750	0.00	0.00
22.34	125	325	4.57	0.00	4	50	50	0.00	0.00	6.41	475	750	1.84	2.18
19.07	125	325	3.6	0.00	4	50	50	0.00	0.00	5.68	475	750	3.72	3.29
	125	325		0.00	4	50	50	0.00	0.00		475	750		
	125	325		0.00	4	50	50	0.00	0.00		475	750		
	125	325		0.00	4	50	50	0.00	0.00		475	750		
	125	325		0.00	4	50	50	0.00	0.00		475	750		
	125	325		0.00	4	50	50	0.00	0.00		475	750		
	125	325		0.00	4	50	50	0.00	0.00		475	750		
	125	325		0.00	4	50	50	0.00	0.00		475	750		
	125	325		0.00	4	50	50	0.00	0.00		475	750		
	125	325		0.00	4	50	50	0.00	0.00		475	750		
	125	325		0.00	4	50	50	0.00	0.00		475	750		

Settling Cell Evaporation and Infiltration																	
FO2 East						FO2 West						FO3/FO4 South Settling Cell					
Month	Width, Ft	Length, Ft	Evaporation, ac-ft	Number of Production Days	Total Infiltration, ac-ft	Month	Width, Ft	Length, Ft	Evaporation, ac-ft	Number of Production Days	Total Infiltration, ac-ft	Month	Width, Ft	Length, Ft	Evaporation, ac-ft	Number of Production Days	Total Infiltration, ac-ft
January-15	50	330	0.00	23.00	0.00	1.80	50	350	0.00	17.00	0.00	0.03	200	435	0.46	21.00	0.54
February-15	50	330	0.00	0.00	0.00	0.00	50	350	0.00	0.00	0.00	0.03	200	435	0.47	17.00	0.57
March-15	50	330	0.00	25.00	0.00	2.15	50	350	0.00	0.00	0.00	0.03	200	435	0.73	25.00	0.81
April-15	50	330	0.00	0.00	0.00	0.00	50	350	0.00	0.00	0.00	0.03	200	435	0.00	0.00	0.03
May-15	50	330	0.00	0.00	0.00	0.00	50	350	0.00	0.00	0.00	0.03	200	435	0.00	0.00	0.03
June-15	50	330	0.00	0.00	0.00	0.00	50	350	0.00	0.00	0.00	0.03	200	435	0.00	0.00	0.03
July-15	50	330	0.00	0.00	0.00	0.00	50	350	0.00	0.00	0.00	0.03	200	435	0.00	0.00	0.03
August-15	50	330	0.00	0.00	0.00	0.00	50	350	0.00	0.00	0.00	0.03	200	435	0.00	0.00	0.03
September-15	50	330	0.00	0.00	0.00	0.00	50	350	0.00	0.00	0.00	0.03	200	435	0.00	0.00	0.03
October-15	50	330	0.00	0.00	0.00	0.00	50	350	0.00	0.00	0.00	0.03	200	435	0.00	0.00	0.03
November-15	50	330	0.00	0.00	0.00	0.00	50	350	0.00	0.00	0.00	0.03	200	435	0.00	0.00	0.03
December-15	50	330	0.00	0.00	0.00	0.00	50	350	0.00	0.00	0.00	0.03	200	435	0.00	0.00	0.03

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 JUN 17 2015
 Oklahoma Water Resources Board