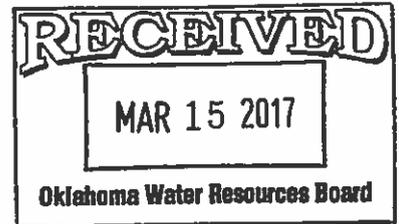


Corporate Environmental Affairs

March 14, 2017

Oklahoma Water Resources Board
3800 N. Classen
Oklahoma City, OK 73118
(405) 530-8800



**RE: Consumptive Water Use Report – 2016
Mine L.E.-1565 – Unimin Corporation – Roff Facility**

Dear Sir or Madam:

Enclosed please find Unimin Corporation's consumptive water use reports for 2016. A change was made in the volume of water pumped from the pit for each Quarter. As noted on the attached worksheets, the plant remains below our allocated equal proportionate share.

If you have any questions or require any additional information, please contact myself or Jim Bonsall at (580) 456-7772.

Respectfully,

A handwritten signature in black ink, appearing to read "R. Amiri Alexander".

R. Amiri Alexander
QC/Mine Supervisor

Attachments

CC: Plant
IRO

Consumptive Use of Pitwater Worksheet - Quarter 1 2016

Enter Values in Yellow

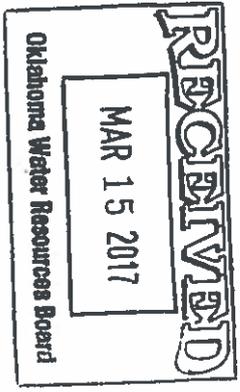
Pit Groundwater Volume		Amount (gallons)	Area of Pit: 88 (acres)	Rainfall: 7.29 (inches)
1	Total volume of water pumped from the producing mine pit(s)	469,199,500		
2	Volume of precipitation that falls onto the surface of water in the producing mining pit(s)	17,418,808		
3	Portion of total precipitation that flows over the land surfaces that drains into the mine pit water	0		
4	Other non-pit waters pumped from the producing mine pit	0		
5	Add lines 2 through 4	17,418,808		
6	Pit Groundwater Volume (Line 1 - Line 5)	451,780,692		

Defined Elements of Consumptive Use		Amount (gallons)	Tons Mined: 276,425	% Moisture: 5.0
7	Volume of pit water that is driven off (by drying) the mined material transported off the mine site	3,310,479		
8	Volume of pit water that is carried away with the mined material transported off the mining site (shipped)	0		
9	Volume of pit water that evaporates from the producing mine pit, process water ponds, and lined ponds (excluding structures used for augmentation)	557,767	ASHRAE Evaporation Model	
10	Volume of pit water that is used for other beneficial uses off the mine site (Outfall Discharges)	842,198,000	A: 95	(in/in)
11	Defined Elements of Consumptive Use of Pit Groundwater (Add Lines 7 through 10)	846,066,246	B: 37.4	(in-in)
			V: 5	(in-in)
			Pwr: 0.69	(in-in)
			Pa: 0.522	(in-in)
			Hv: 970.4	(lbs/lb)
			Evap Area: 10	(acres)

Pit Groundwater Balance		Amount (gallons)
12	Starting groundwater deficit (line 11)	451,780,692
13	Groundwater Augmentation (Volume of pit groundwater returned to the groundwater bank or sub basin)	0
14	Stream Augmentation (Volume of pit groundwater discharged to a definite stream, during flow conditions that are less than or equal to 50% exceedance or median historic flows.	842,198,000
15	Precipitation & Run-off (Volume of precipitation and surface run-off into a recharge pit or holding pond used for augmentation)	0

Additional Discharge (Volume of pit groundwater discharged to a definite stream, not meeting stream augmentation credit criteria		Amount (gallons)
16		0
17	Recycled Pit Groundwater (Volume of pit groundwater returned to a mine pit or holding basin not included on lines 7 through 10)	451,780,692
18	Other Non-Consumptive Losses (Including pit groundwater returned to the land surface from which surface run-off flows into a mine pit, and other losses not included in lines 7 through 10)	0
19	Add lines 13 through 18	0
20	Other Consumptive Use (adjusted) Line 12 minus 19	#####
		-842,198,000

Total Reported Consumptive Use Of Pit		Amount (gallons)	at 0.2	acre-feet	for 962	acres
21	Total Reported Consumptive Use Of Pit (Add Line 11 and Line 20)	3,968,246				
	Facility's Equal Proportionate Share (EPS)	62,693,815				



Consumptive Use of Pitwater Worksheet - Quarter 2 2016

Enter Values in Yellow

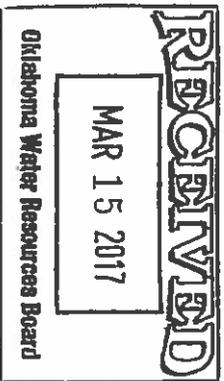
Pit Groundwater Volume		Amount (gallons)	Area of Pit: 88 (acres)	Rainfall: 15.03 (inches)
1	Total volume of water pumped from the producing mine pit(s)	298,339,100		
2	Volume of precipitation that falls onto the surface of water in the producing mining pit(s)	35,912,850		
3	Portion of total precipitation that flows over the land surfaces that drains into the mine pit water	0		
4	Other non-pit waters pumped from the producing mine pit	0		
5	Add lines 2 through 4	35,912,850		
6	Pit Groundwater Volume (Line 1 - Line 5)	262,426,250		

Defined Elements of Consumptive Use		Amount (gallons)	Tons Mined: 299,382	% Moisture: 5.0
7	Volume of pit water that is driven off (by drying) the mined material transported off the mine site	3,585,413		
8	Volume of pit water that is carried away with the mined material transported off the mining site (shipped)	0		
9	Volume of pit water that evaporates from the producing mine pit, process water ponds, and lined ponds (excluding structures used for augmentation)	557,767	ASHRAE Evaporation Model	A: 95
10	Volume of pit water that is used for other beneficial uses off the mine site (Duffall Discharge)	814,756,000		B: 37.4
11	Defined Elements of Consumptive Use of Pit Groundwater (add Lines 7 through 10)	818,899,181		V: 5
				Pw: 0.69 (in-Hg)
				Pa: 0.522 (in-Hg)
				Hv: 970.4 (ft-lb)
				Evap Area: 10 (acres)

Pit Groundwater Balance		Amount (gallons)
12	Starting groundwater deficit (line 11)	262,426,250
13	Groundwater Augmentation (Volume of pit groundwater returned to the groundwater base or sub basin)	0
14	Stream Augmentation (Volume of pit groundwater discharged to a definite stream, during flow conditions that are less than or equal to 50% exceedance or median historic flows.	814,756,000
15	Precipitation & Run-off (Volume of precipitation and surface run-off into a recharge pit or holding pond used for augmentation)	0
16	Additional Discharge (Volume of pit groundwater discharged to a definite stream, not meeting stream augmentation credit criteria)	0

CREDITS		Amount (gallons)
17	Recycled Pit Groundwater (Volume of pit groundwater returned to a mine pit or holding basin not included on lines 7 through 10)	262,426,250
18	Other Non-Consumptive Losses (including pit groundwater returned to the land surface from which surface run-off flows into a mine pit, and other losses not included in lines 7 through 10)	0
19	Add lines 13 through 18	1,077,182,250
20	Other Consumptive Use (adjusted) Line 12 minus 19	-814,756,000

Line	Description	Amount (gallons)	Area (acres)	Rate (gallons/acre)
21	Total Reported Consumptive Use Of Pit (add Line 11 and Line 20)	4,143,181	88	47.1
	Facility's Equal Proportionate Share (EPS)	62,693,815	21	2,985.4



Consumptive Use of Pitwater Worksheet - Quarter 3 2016

Enter Values in Yellow

Pit Groundwater Volume

- 1 Total volume of water pumped from the producing mine pit(s)
- 2 Volume of precipitation that falls onto the surface of water in the producing mining pit(s)
- 3 Portion of total precipitation that flows over the land surfaces that drains into the mine pit water
- 4 Other non-pit waters pumped from the producing mine pit
- 5 Add lines 2 through 4
- 6 Pit Groundwater Volume (Line 1 - Line 5)

Defined Elements of Consumptive Use

- 7 Volume of pit water that is driven off (by drying) the mined material transported off the mine site
- 8 Volume of pit water that is carried away with the mined material transported off the mining site (shipped)
- 9 Volume of pit water that evaporates from the producing mine pit, process water ponds, and lined ponds (excluding structures used for augmentation)
- 10 Volume of pit water that is used for other beneficial uses off the mine site (Outfall Discharges)
- 11 Defined Elements of Consumptive Use of Pit Groundwater (add Lines 7 through 10)

Pit Groundwater Balance

- 12 Starting groundwater deficit (line 11)
- 13 Groundwater Augmentation (Volume of pit groundwater returned to the groundwater base or sub basin)
- 14 Stream Augmentation (Volume of pit groundwater discharged to a definite stream, during flow conditions that are less than or equal to 50% exceedance or median historic flows.
- 15 Precipitation & Run-off (Volume of precipitation and surface run-off into a recharge pit or holding pond used for augmentation)
- 16 Additional Discharge (Volume of pit groundwater discharged to a definite stream, not meeting stream augmentation credit criteria)
- 17 Recycled Pit Groundwater (Volume of pit groundwater returned to a mine pit or holding basin not included on lines 7 through 10)
- 18 Other Non-Consumptive Losses (including pit groundwater returned to the land surface from which surface run-off flows into a mine pit, and other losses not included in lines 7 through 10)
- 19 Add lines 13 through 18
- 20 Other Consumptive Use (adjusted) Line 12 minus 19

Total Reported Consumptive Use Of Pit

- 21 Total Reported Consumptive Use Of Pit (add Line 11 and Line 20)
- Facility's Equal Proportionate Share (EPS)

Amount (gallons)

250,525,755
20,501,148
0
0
20,501,148
240,024,607

Area of Pit: 88 (acres)

Rainfall: 8.58 (inches)

Amount (gallons)

3,624,168
0

Tons Mined: 302,618 % Moisture 5.0

ASHRAE Evaporation Model

A: 95
B: 37.4 (in/hr)
V: 5 (in-Hg)
Pw: 0.69 (in-Hg)
Pa: 0.522 (in-Hg)
Hw: 970.4 (ft/ft)
Evap Area: 10 (acres)

Amount (gallons)

557,767
833,280,000
837,461,935

CREDITS

240,024,607
0
240,024,607
0
1,073,304,607
-833,280,000

Amount (gallons)

4,181,935
62,683,815

at 0.2 acre-feet for 962 acres

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MAR 15 2017

Oklahoma Water Resources Board

Consumptive Use of Pitwater Worksheet - Quarter 4 2016

Enter Values in Yellow

Pit Groundwater Volume	
1	Total volume of water pumped from the producing mine pit(s)
2	Volume of precipitation that falls onto the surface of water in the producing mining pit(s)
3	Portion of total precipitation that flows over the land surfaces that drains into the mine pit water
4	Other non-pit waters pumped from the producing mine pit
5	Add lines 2 through 4
6	Pit Groundwater Volume (Line 1 - Line 5)

Defined Elements of Consumptive Use

7	Volume of pit water that is driven off (by drying) the mined material transported off the mine site
8	Volume of pit water that is carried away with the mined material transported off the mining site (shipped)
9	Volume of pit water that evaporates from the producing mine pit, process water ponds, and lined ponds (excluding structures used for augmentation)
10	Volume of pit water that is used for other beneficial uses off the mine site (Outfall Discharge)
11	Defined Elements of Consumptive Use of Pit Groundwater (Add Lines 7 through 10)

Pit Groundwater Balance

12	Starting groundwater deficit (line 11)
13	Groundwater Augmentation (Volume of pit groundwater returned to the groundwater base or sub basin)
14	Stream Augmentation (Volume of pit groundwater discharged to a definite stream, during flow conditions that are less than or equal to 50% exceedance or median historic flows.
15	Precipitation & Run-off (Volume of precipitation and surface run-off into a recharge pit or holding pond used for augmentation)
16	Additional Discharge (Volume of pit groundwater discharged to a definite stream, not meeting stream augmentation credit criteria)
17	Recycled Pit Groundwater (Volume of pit groundwater returned to a mine pit or holding basin not included on lines 7 through 10)
18	Other Non-Consumptive Losses (Including pit groundwater returned to the land surface from which surface run-off flows into a mine pit, and other losses not included in lines 7 through 10)
19	Add lines 13 through 18
20	Other Consumptive Use (adjusted) Line 12 minus 19

Total Reported Consumptive Use Of Pit

21	Total Reported Consumptive Use Of Pit (add Line 11 and Line 20)
	Facility's Equal Proportionate Share (EPS)

Amount (gallons)	184,216,800	Area of Pit: 82.2 (acres)	Rainfall: 3.74 (inches)
	8,347,408		
	0		
	0		
	8,347,408		
	175,869,392		
Amount (gallons)	3,239,341	Tons Mined: 270,485	% Moisture: 5.0
	0		

557,767	ASHRAE Evaporation Model	A: 95
740,555,550		B: 37.4
744,352,659		V: 5
Amount (gallons)		Pw: 0.69 (in-Hg)
		Pa: 0.522 (in-Hg)
		Hr: 970.4 (hr/Day)
		Evap Area: 10 (acres)

CREDITS

175,869,392
0
916,424,942
-740,555,550

Amount (gallons)

3,797,109	at	0.2	acres-ft	for	962	acres
62,693,815						

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Oklahoma Water Resources Board

Consumptive Use of Pitwater Worksheet - 2016 Annual

Enter Values in Yellow

Pit Groundwater Volume		Amount (gallons)	Area of Pit: 88 (acres)	Rainfall: 34.64 (inches)
1	Total volume of water pumped from the producing mine pit(s)	1,212,281,155		
2	Volume of precipitation that falls onto the surface of water in the producing mining pit(s)	82,180,214		
3	Portion of total precipitation that flows over the land surfaces that drains into the mine pit water	0		
4	Other non-pit waters pumped from the producing mine pit	0		
5	Add lines 2 through 4	82,180,214		
6	Pit Groundwater Volume (Line 1 - Line 5)	1,130,100,941		

Defined Elements of Consumptive Use

Line	Description	Amount (gallons)	Tons Mined: 1,148,910	% Moisture: 5.0
7	Volume of pit water that is driven off (by drying) the mined material transported off the mine site	13,759,401		
8	Volume of pit water that is carried away with the mined material transported off the mining site (shipped)	0		
9	Volume of pit water that evaporates from the producing mine pit, process water ponds, and lined ponds (excluding structures used for augmentation)	2,231,070		
10	Volume of pit water that is used for other beneficial uses off the mine site (Outfall Discharges)	3,230,789,550		
11	Defined Elements of Consumptive Use of Pit Groundwater (add Lines 7 through 10)	3,246,780,021		

Pit Groundwater Balance

Line	Description	Amount (gallons)	ASHRAE Evaporation Model	Evap Area: 10 (acres)
12	Starting groundwater deficit (line 11)	1,130,100,941	A: 95	
13	Groundwater Augmentation (Volume of pit groundwater returned to the groundwater base or sub basin)	0	B: 37.4 (in/hr)	
14	Stream Augmentation (Volume of pit groundwater discharged to a definite stream, during flow conditions that are less than or equal to 50% exceedance or median historic flows.	3,230,789,550	V: 5 (in-hr)	
15	Precipitation & Run-off (Volume of precipitation and surface run-off into a recharge pit or holding pond used for augmentation)	0	Pw: 0.69 (in-hr)	
16	Additional Discharge (Volume of pit groundwater discharged to a definite stream, not meeting stream augmentation credit criteria)	0	Pa: 0.522 (in-hr)	
17	Recycled Pit Groundwater (Volume of pit groundwater returned to a mine pit or holding basin not included on lines 7 through 10)	1,130,100,941	Mv: 970.4 (in/hr)	
18	Other Non-Consumptive Losses (Including pit groundwater returned to the land surface from which surface run-off flows into a mine pit, and other losses not included in lines 7 through 10)	0		
19	Add lines 13 through 18	4,360,890,491		
20	Other Consumptive Use (adjusted) Line 12 minus 19	-3,230,789,550		

Total Reported Consumptive Use Of Pit

21	Total Reported Consumptive Use Of Pit (add Line 11 and Line 20)	15,990,471		
	Facility's Equal Proportionate Share (EPS)	62,653,815	at 0.2	acres for 962 acres

