



20 July 2018
18-ED-225

Mr. Matt Cogburn
Planning and Management Division
Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118

RE: **Water Monitoring Plan Report, 2nd Quarter 2018, for Dolese Bros. Co. Davis Quarry, Murray County, Oklahoma**

Dear Mr. Cogburn:

According to the Oklahoma Water Resources Board's Title 785, Chapter 30, Subchapter 15, Part 4, *Mines with Preexisting Exemptions*, Dolese Bros. Co. Davis Quarry qualifies as a mine with a preexisting exemption. As part of maintaining this exemption status, the regulations require us to do the following:

1. Adopt and implement a plan to monitor and report to the Board the accumulation and disposition of pit water during the previous calendar year;
 - The Davis Quarry has adopted and implemented such a plan, and the tables below serve to report to the Board the accumulation and disposition of pit water during 2nd Quarter 2018.
2. Make quarterly and annual reports of the measured or reasonably estimated groundwater and surface water volumes, separately stated, entering the pit, of the water that is diverted from the pit, of the disposition of the water from the pit, and of the consumptive use of the water from the pit on or before the deadlines provided by Title 82 of Oklahoma Statutes, § 1020.2(E)(1);
 - The Davis Quarry has continued to fulfill this obligation by compiling and submitting this 2nd Quarter 2018 report. The specific information requested in this section is outlined in the tables shown below.
3. At any time after March 31, 2015, demonstrate to the satisfaction of the Board within the pertinent report or reports that the mine has not consumptively used during the previous twelve-month period, from the mining site, an amount of groundwater which combined with any amounts used from permitted groundwater wells exceeds the MEPS¹. Such demonstration may require providing to the Board a copy of the mine's monitoring plan and all of the data collected and procedures used to support the calculations and results reported.
 - After 31 March 2015, the Davis Quarry will be willing to demonstrate to the Board that the mine site has not consumptively used during the previous twelve-month period from the mining site, an amount of groundwater which combined with any amounts used from permitted groundwater wells exceeds the MEPS. Example calculations used in the First Quarterly Monitoring Report for 2013 have already been submitted to the OWRB for review and analysis.

¹ Mine's Equal Proportionate Share

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Below, in Tables 1, 2, and 3, are shown the 2nd Quarter 2018 summary data collected at the Davis Quarry.

Table 1

Accumulation & Disposition of Pit Water during 2nd Quarter 2018

	<u>Groundwater</u> Acre-Feet	<u>Surface Water</u> Acre-Feet	<u>Total</u> Acre-Feet
Water Entering The Mine Pit	186.79	130.83	317.62
Water Diverted From The Mine Pit Into Fresh Water Lake	186.79	130.83	317.62
Water Removed From Fresh Water Lake	546.88	598.18	1145.06
Water Returned To Fresh Water Lake	506.25	553.73	1059.98
Water Returned To Land Surface Overlying ASA² Basin	89.49	97.89	187.38
Water Consumptively Used	101.88	(See Table 3 for Calculations)	

Table 2

Water Fluctuations in Fresh Water Lake during 2nd Quarter 2018

Average Size of Lake	32.22 acres
Loss in Water Elevation	1.60 feet
Loss in Lake Volume	51.55 acre-feet

Table 3

Consumptive Use Summary for 2nd Quarter 2018

	<u>Activity or Location</u>	<u>Amount of Pit Water Used,</u> Acre-Feet	<u>Groundwater Content,</u> Percent	<u>Groundwater Component,</u> Acre-Feet
1	North Water Well	0.00	All	0.35
2	South Water Well	0.00	All	1.56
3	Material Moisture Hauled from Site	5.45	47.76	2.60
4	Land Application for Roadway Dust Suppression	25.17	47.76	12.02
5	Evaporation from Mine Pit	0.08	58.81	0.05
6	Offsite Dewatering	178.60	47.76	85.30
Total Groundwater Consumption from ASA at Davis Quarry =		101.88 Acre-Feet		

² Arbuckle Simpson Aquifer

Below, in Table 4, please find the Groundwater Rights Summary for the Davis Quarry.

Table 4
Summary of Groundwater Rights for Davis Quarry

From Acreage on the Arbuckle-Simpson Aquifer And Included in the ASA Groundwater Rights $(1,083 \text{ ac.} + 113 \text{ ac. on ASA}) * (0.2 \text{ ac-ft/acre}) = 239.2 \text{ acre-feet on the ASA}$
From Acreage off the Arbuckle-Simpson Aquifer And Excluded from the ASA Groundwater Rights $(937 \text{ ac.} - 135 \text{ ac.} + 10 \text{ ac. off ASA}) * (2.0 \text{ ac-ft/acre}) = 1,624 \text{ acre-feet off the ASA}$

Based on the plan that we have adopted and implemented to monitor and report the accumulation and disposition of pit water, based on our actual consumptive use of groundwater quantities, and based on the timely submittal of all reports including this 2nd Quarter 2018 report, we believe that the Davis Quarry is in full compliance with all of the regulations that allow us to maintain its preexisting exemption.

General Information

Our calculations show that Davis Quarry's total estimated groundwater consumption for 2nd Quarter 2018 was 101.88 acre-feet. This equates to about 42.6% of Davis Quarry's Equal Proportionate Share (EPS) for the year.

- The calculations show the groundwater consumption to be this high because we were required to discharge off-site some water from the Fresh Water Lake (FWL) due to high water conditions as a result of rainfall received during the quarter. Approximately 84% of the groundwater shown to be "consumed" during the quarter was as a result of off-site dewatering.
- While some parts of the state have been dry, Davis Quarry has received over 25 inches of rainfall during the first six (6) months of the year. The average annual rainfall for Davis, Oklahoma, is about 36 inches per year. Essentially, the facility has received about 70% of the average annual rainfall during the first half of the year.
- The remaining amount that we consumed during the quarter (approximately 16% of the total amount consumed) pertains to all other consumptive use activities, which include groundwater usage from two (2) small water wells, material moisture hauled from the site, dust suppression waters, and evaporation of Mine Pit water.

During the first half of the year, Davis Quarry has consumed a total of 122.23 acre-feet of groundwater, which is 51% of Davis Quarry's available water rights. Please note that we have 239.2 acre-feet per year of groundwater rights available over the ASA at the Davis Quarry location, but our total available water rights for this site could also include other significant unused groundwater rights that we have at another site that overlies the ASA in Murray County. Both the Davis Quarry and the other site we own are located within the western lobe of the ASA.

During 2nd Quarter 2018, the Davis Quarry logged nearly 13 inches of rainfall, as measured using rain gauges. The effective runoff into the quarry lakes created from these rains was estimated to be 6.15 inches. Three of the individual rainfall events during the quarter were rather significant. One was measured at 3.10 inches, and the other larger rains were measured at 2.1 and 1.8 inches, which contributed to a significant percentage of the runoff into the Mine Pit; that is, about 72% of the actual runoff for the quarter.

The "calculated" groundwater percentage in the Fresh Water Lake was 47.76% for the 2nd Quarter 2018, and storm water comprised the other 52.24%.

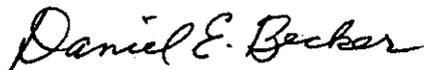
In the Annual Water Monitoring Reports for this quarry, we have always included more of the details regarding the water calculations and how they were performed, than are in the quarterly reports. The annual reports also detail how we have always tried to use the least controversial methods of calculating and estimating groundwater consumption at this facility. Since these detailed explanations were just covered in the annual report for 2017, I will not outline them in these quarterly reports.

As we stated last quarter, water management always has been and continues to be very important to us at Dolese Bros. Co., especially at the Davis Quarry. We understand that the Arbuckle Simpson Aquifer is a unique aquifer that must be protected. Our plant personnel make daily efforts to responsibly manage the waters within our quarry boundaries so that when they return to their nearby homes and properties, these same quality waters will be available for their personal and community uses.

Please contact me if you have any questions or comments concerning this submittal. Thank you.

Sincerely,

DOLESE BROS. CO.



Daniel E. Becker, P.E.
Environmental Engineer

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cc: Mr. Chris Neel, Oklahoma Water Resources Board