DOLESE

CONCRETE
SAND & GRAVEL
STONE
BLOCK
MASONRY

24 August 2020
20-ED-133

Copies to:
- Tommy Bacon
- Bryce Coffman
- David Finley
- Mark Helm
- Sara McKisson
- Leland Meiser
- Cory Shreffler
- Dan Becker
- Davis Quarry - Water Monitoring File
- Outgoing

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 2020, 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 2020.
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 2020 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 MEPS [1]. 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

DOLESE BROS. CO.
20 NW 13th Street • P.O. Box 677
Oklahoma City, OK 73101-0677
405.235.2311
dolese.com

Below, in Tables 1, 2, and 3, are shown the 2nd Quarter 2020 summary data collected at the Davis Quarry.

Table 1

Accumulation & Disposition of Pit Water during 2nd Quarter 2020

	Groundwater Acre-Feet	Surface Water Acre-Feet	Total Acre-Feet
Water Entering The Mine Pit	**638.93**	**234.76**	**873.69**
Water Diverted From The Mine Pit Into Fresh Water Lake	**638.93**	**234.76**	**873.69**
Water Removed From Fresh Water Lake	**1,003.10**	**560.34**	**1,563.44**
Water Returned To Fresh Water Lake	**1,286.66**	**718.73**	**2,005.39**
Water Returned To Land Surface Overlying ASA[2] Basin	**190.71**	**106.53**	**297.24**
Water Consumptively Used	**115.93**	**(See Table 3 for Calculations)**	

Table 2

Water Fluctuations in Fresh Water Lake during 2nd Quarter 2020

Average Size of Lake	**32.29 acres**
Gain in Water Elevation	**0.04 feet**
Gain in Lake Volume	**1.29 acre-feet**

Table 3

Consumptive Use Summary for 2nd Quarter 2020

	Activity or Location	Amount of Pit Water Used, Acre-Feet	Groundwater Content, Percent	Groundwater Component, Acre-Feet
1	North Water Well	0.00	All	0.13
2	South Water Well	0.00	All	0.18
3	Material Moisture Hauled from Site	6.61	64.16	4.24
4	Land Application for Roadway Dust Suppression	30.32	64.16	19.46
5	Evaporation from Mine Pit	0.09	73.13	0.07
6	Offsite Dewatering	143.17	64.16	91.86
	Total Groundwater Consumption from ASA at Davis Quarry = 115.93 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 **(1,186 ac. on ASA)*(0.2 ac-ft/acre) = 237.2 acre-feet on the ASA**
From Acreage off the Arbuckle-Simpson Aquifer And Excluded from the ASA Groundwater Rights **(1,630 ac. off ASA)*(2.0 ac-ft/acre) = 3,260* acre-feet off the ASA** **We have acquired some additional property that is located off the ASA. We have adjusted the figures above to reflect these changes.*

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 2020 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 2020 was 115.93 acre-feet. This equates to about 48.87% of Davis Quarry's Equal Proportionate Share (EPS) for the year.

- The calculations show the groundwater consumption to be this high for a variety of reasons. For starters, it was because plant personnel had to discharge some water from the Fresh Water Lake (FWL) due to high water conditions accumulated in the lake. The adjacent FWL was leaking back into the Mine Pit very significantly; consequently, they lowered the FWL a few feet to reduce the volume of leaking and to reduce the number of Mine Pit pump hours. Approximately 79% of the groundwater shown to be "consumed" during the quarter was as a result of this off-site dewatering.
- The remaining amount consumed during the quarter (approximately 21% of the total amount consumed) pertains to all other consumptive use activities, which includes groundwater usage from two (2) small water wells, material moisture hauled from the site, dust suppression waters, and evaporation of Mine Pit water.
- The primary reason the groundwater consumption appears to be so high is because of the leakage of the FWL back into the Mine Pit–and because every drop of this leakage is being counted as groundwater seepage, as if it came from the ground. This major leakage is visible and audible as it pours back into the Mine Pit. We continue to brainstorm about how to somehow measure this leakage, to no avail. We have recently made plans to further analyze this situation in October 2020 in ways that we have not yet tried, and we will keep you posted on our analysis.
- Our present belief is that the current floor of the Mine Pit is above the water level of the Arbuckle Simpson Aquifer. We are currently using a small electric pump to keep this Mine Pit dewatered, and it only runs intermittently. Plus, this pump is

also having to return to the FWL any storm water that enters the pit along with the FWL leakage.

- As we have mentioned as a possibility in many of the previous reports to your office, this year we will most certainly have to use some of our groundwater rights from another location within the Arbuckle Simpson Aquifer– however, it is quite possible that we have not even encountered any ASA groundwater in our Mine Pit. We simply do not want to make this determination until we have adequate documentation, especially since we have adequate and available groundwater rights in the ASA.

To recap, we have 237.2 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 we have at another site that also overlies the ASA in Murray County. These unused groundwater rights equate to approximately 266.6 acre-feet per year from 1,333 acres of land that overlies the ASA. Both the Davis Quarry property and the other land we own are located within the western lobe of the ASA. Essentially, we have 237.2 + 266.6 = 503.8 acre-feet of groundwater available to us.

During 2nd Quarter 2020, the Davis Quarry logged 20.10 inches of rainfall, as measured using rain gauges. The effective runoff into the quarry pits and lakes from these rains was estimated to be 11.04 inches. Four of the individual rainfall events during the quarter were equal to or greater than 2 inches, including the following rain gauge measurements: 3.7, 3.5, 2.2, and 2.0 inches.

The "calculated" groundwater percentage in the Fresh Water Lake was 64.16% for the 2nd Quarter 2020, and storm water comprised the other 35.84%. These percentages typically vary each quarter due to the fluctuations in rainfall amounts and intensities in addition to the amount of leakage from the FWL. Usually, the groundwater concentrations are lowest during very wet quarters like this one. However, during this quarter we received significant rainfall, but the groundwater concentration was unusually high. For instance, during 2nd Quarter 2019, the groundwater concentration in the FWL was only 9.23% compared to this quarter's concentration of 64.16%. We received nearly 22 inches of rain during 2nd Quarter 2019, similar to the 20 inches during the current quarter. The estimated runoff into the Mine Pit during the 2nd Quarter 2019 was 11.6 inches–which is very similar to the estimated 11.04 inches runoff of the current quarter. The variation in the FWL groundwater concentrations between 2nd Quarter 2019 and this quarter (9% versus 64%) does not follow the trend we have always noticed for some reason. We believe that the leakage may have increased from the FWL due to erosion of the cracks and crevasses.

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 shown in the quarterly reports. The Annual Reports also detail how we always try 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 2019, I will not outline them in these upcoming quarterly reports.

As we stated for many quarters, 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.

RECEIVED
SEP 03 2020
Oklahoma Water Resources Board

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

Sincerely,

DOLESE BROS. CO.

Daniel E. Becker

Daniel E. Becker, P.E.
Environmental Engineer

db

cc: Mr. Chris Neel, Oklahoma Water Resources Board

Email: danb@dolese.com
Telephone: 405-297-8266