



June 15, 2021

Submitted by email to: coconnolly@pa.gov

Pennsylvania Department of Environmental Protection
PADEP Pottsville District Mining Office

**Re: Hercules Cement Company, LP d/b/a Buzzi Unicem USA, Stockertown Quarry
Upper Nazareth Township & Palmer Township, Northampton County**

“The application under review by the department’s Pottsville District Mining Office is a modification to Hercules’ existing Surface Mine Permit No.7473SM2 and renewal of the National Pollutant Discharge Elimination System (NPDES) permit.”

Delaware Riverkeeper Network submits these comments on behalf of our over 25,000 members, many of whom live and work in Pennsylvania. We also have members in Northampton County and members who fish, enjoy, and have special connections with the Bushkill Creek, its natural history, its tributaries and watershed. Bushkill Creek is an important tributary that flows to the Delaware River, designated by Congress as a Wild and Scenic River with exceptional water quality, habitats, species, and recreational values. The Delaware River is the water supply for up to 17 million people, including Philadelphia and New York City.

Delaware Riverkeeper Network provided verbal testimony at the June 6 DEP Hearing regarding these permits by Deputy Director Tracy Carluccio. These comments are in addition to the verbal testimony.

Delaware Riverkeeper Network (DRN) is opposed to the deepening of the quarry. We realize that the Department of Environmental Protection has already granted approval for the deepening, despite stating in the public announcement that the deepening is a “proposed expansion” but we understand that conditions can be added to the permit. The Hercules Cement Company received DEP approval to mine 50 more feet to mean sea level and they told DEP they would start in the eastern part of the quarry pit.

We remind DEP that the obligation of the state to protect natural resources required by Article 1 Section 27 of the Pennsylvania Constitution is an additional layer of protection the state is obligated to act upon. This obligation is paramount and fundamental to all permitting decisions.

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Article 1, Section 27 of the Pennsylvania Constitution:

“The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania’s public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.”

The Hercules/Buzzi Unicem quarry pumps water from the quarry pit back into the stream at the dizzying rate of 50-65 million gallons of water every day. That is six times the amount that all of Easton uses in a day and about twice the amount of water that all of Northampton County uses each day. Withdrawals of this size are heavily regulated by layers of government regulations but not in this case. How do they get away with it?

Groundwater pumping, hydrologic connections, Bushkill Creek impacts

We have heard defensive claims from Hercules and Buzzi Unicem that the groundwater they are pumping comes from a confined aquifer, not connected to the creek, and the Bushkill was always an intermittent stream so any discharge they put into the creek is beneficial. Both of these claims are wrong.

Regarding the intermittent stream claim:

As far back as the 1974 permit from the Delaware River Basin Commission, it was documented that the Bushkill was a perennial stream. It did experience low flows but it was not intermittent.¹

As far back as 1874, the Northampton County Atlas shows the Bushkill as a perennially flowing stream, dotted with working mills that required constant water flows.² A history of the mills located on Bushkill Creek documents the mills from the Delaware River up to and including Stockertown, examining the history of 17 working mills on the Creek dating back into the early days of the region’s European settlement, as early as the late 1700’s. In fact, the Friedensthal Mill was located on the Hercules Cement/Buzzi current property.³ The Friedensthal Mill Community was a Moravian settlement with a rich history connected to the founding of both Nazareth and Bethlehem, with historical accounts of its two mills and their operation on the flowing Bushkill Creek at the quarry site.⁴

The natural history of Bushkill Creek reveals Hercules’ claims of the Bushkill Creek being an intermittent stream to be nothing more than revisionist history to fit their purposes. The water being pumped from the quarry is water that is being exposed to the surface at the bottom of the quarry pit. The quarry removes this water to perform mining activities. The amount of groundwater entering the pit has vastly increased over the years as the quarry has mined deeper and

¹ DRBC Docket # D-74-122, *Hercules Division, American Cement Corporation, Cooling Water Discharge, Stockertown Borough, Northampton County, PA*, July 31, 1974. Sheet 2.

² D.G. Beers, published by A. Pomeroy and Company, *Atlas of Northampton County, Pennsylvania*, 1874.

³ Richard Hope and Virginia Lawrence-Hope, “Easton PA: The Lower Bushkill Mills”, 2012.

⁴ *Id.*

expanded its operations. For example, in 1974, the DRBC permit states that the quarry's dewatering pump was designed to pump 4.3 to 8.6 mgd. Today the quarry pumps 50 to 65 mgd and has reportedly stated that it pumps an average of 64 mgd consistently. The fact that the stream goes dry when the quarry stops discharging is due to the long-term impacts of quarry pumping in this karst geology, which has steeply increased over time, and is more evidence of their interference with natural ground and surface flow systems than anything else.

Regarding the claim that their pumping and operations are not impacting creek flows:

Government reports show that the water being pumped by the quarry is coming from the recharge zone of the Bushkill Creek and is the result of groundwater flow that connects the creek and quarry pit, contrary to the claims of Hercules/Buzzi Unicem.

A report by PENNDOT's Chief Geotechnical Engineer from 2017 confirmed that the artesian flow from the aquifer that feeds the Bushkill is the source of the inflow of water to the quarry pit.⁵ The PENNDOT analysis also confirms that deepening the east pit would expand the flow zone, increasing the current inflow rate into the quarry.

From the Executive Summary of the analysis:

- "While no substantial hydrogeologic evidence was provided supporting confined aquifer model as source of quarry pit inflow, from past investigations and studies the Department (PENNDOT) has layers of evidence supporting the primary source of inflow to the quarry is unconfined karst conduit flow from the recharge zone in the Bushkill Creek in the vicinity surrounding the SR33 bridges over the Bushkill Creek.
- Previous studies conducted in 2005-2006, including water quality and temperature monitoring (in the creek, sentry wells west of SR33 and in the quarry inflow zone), a quantitative brine tracer test, and a variety of other investigative and incidental evidence, supports the Bushkill Creek as the primary source of artesian inflow into the quarry. The flow was demonstrated to be the result of conduit-like groundwater flow system connecting the creek and quarry pit.
- Deepening the east pit would expose the remaining pressurized karstic conduit flow zone, increasing the exposed area of the karst conduit flow zone. The result would be an increase in the current inflow rate into the quarry."⁶

The enormous amount of pumping we see today will likely increase even more if the quarry is deepened, as planned, to mean sea level.

From the Executive Summary of the PENNDOT analysis:

- "Deepening the east pit would expose the remaining pressurized karstic conduit flow zone, increasing the exposed area of the karst conduit flow zone. The result would be an increase in the current inflow rate into the quarry.

⁵ Kerry W. Petrasic, P.E., Chief Geotechnical Engineer, PENNDOT, "District 5-0, SR33, Buzzi/Hercules Quarry Permit Application – Summary of Analysis." October 2, 2017.

⁶ *Id.* Executive Summary. P. 1.

- An increase in the conduit flow rate will result in (likely substantial) additional drawdown of the water table within and around the micropile foundations of the SR33 bridges.
- The consequences of such a drawdown would be extensive, significant and severe.
 1. As drawdown of the water table occurs, there will be an increase in effective stress (loss of buoyancy) acting on the structure foundations. Every one foot of water drawdown will increase the stress on the foundation and surrounding subsurface by 62.4 psf (equivalent to approximately one half foot of compacted soil fill). Thus a 10 foot drop in groundwater elevation would be equivalent to placing five feet of compacted fill over the entire area.
 2. High pressure flow through open karst conduit systems is turbulent. The increased turbulent flow rate will result in additional subsurface scouring, erosion and piping of supporting clay fill materials from within and surrounding karstic voids, and the existing structure foundations.
 3. The subsurface erosion will likely trigger new sinkhole formation and activity in the area, and loss of supporting soil will induce additional stresses on the structure foundations (in addition to the increase load from the resulting increase in effective stress).⁷

The PENNDOT analysis concludes that the deepening under consideration at that time by DEP not be approved. More studies and analyses were considered necessary to conclude that the “extensive, significant and severe” consequences of deepening the mining activity would not occur.

From the Conclusions in the PENNDOT report:

- “The Department (PENNDOT) is of the position that ample layers of evidence exist to confirm the Bushkill Creek Valley groundwater source model as the primary inflow to the quarry pit.
- Multiple events in the area (an incomplete list being presented above), mutually support the layers of evidence presented, and demonstrate both the risk and danger of the existing situation. Moreover, these events and layers of evidence serve as a predictor of future risks and likely consequences of continuing to extend the depth of mining in the quarry pit.”⁸

Government analysis was also provided when the deepening permit (from 50 feet to mean sea level) was being considered in 2018 by Pennsylvania Fish and Boat Commission. Fish and Boat’s Fisheries Biologist submitted comments to DEP Pottsville Mining District Office that raised serious concerns about the proposed deepening, citing fish kills and/or a dry stream bed in the Creek because of the cessation of pumping from the quarry: “The PFBC Bureau of Law Enforcement has documented 3 separate fish kills in 2017 alone, and a minimum of 12 other previous instances

⁷ *Id.* Executive Summary. P. 1.

⁸ *Id.* P. 6.

where dead fish and/or dry streambed conditions were observed, over a 16 year period, downstream of the quarry effluent (see attached spreadsheet of instances).⁹

From the PA Fish and Boat Commission Analysis:

“The PFBC does not recommend permit approval unless the following conditions are met, to more thoroughly provide data in order to better protect aquatic life in Bushkill Creek:

- 1) The applicant conducts a quantitative dye test as suggested in item #55 of the Department of Environmental Protection's November 1, 2016 technical deficiency letter, or other suitable and similar to test, to better understand quarry impacts to surface and groundwater in the vicinity of the quarry. Specifically, the PFBC is concerned with the amount of water in the quarry pit that originates from Bushkill Creek, and this aspect needs to be more accurately quantified.”¹⁰

The analysis also raised the question of impacts to Schoeneck Creek and stated they wanted to review the response from Hercules/Buzzi Unicem to DEP regarding these impacts “to better understand if the quarry has impacts to the hydrology of Schoeneck Creek.”¹¹

The tracer tests that were done after this time were not comprehensive or thorough enough to support the claims of Hercules/Buzzi Unicem that there is no connection between the groundwater and surface water of the Bushkill Creek and the quarry inflow that is daily pumped out in such huge volume. The deficiencies cited in DEP’s technical deficiency letter from that period are still outstanding. In fact, the evidence that is available proves that a hydrological system that feeds both the Bushkill Creek and the quarry are one and the same and furthermore that the regional aquifer is also connected, which can impact local water wells as well as the stream flow of the Bushkill and Little Bushkill Creeks.

What more does DEP need to recognize that the quarry is ruining the Bushkill Creek? DRN considers the weight of evidence to support the conclusion that the groundwater is connected, that the quarry has been and is now drawing down the creek and its subwatershed, as well as the aquifer that feeds it, and that further deepening will expand the problem, causing more environmental harm.

This drawdown has been operating for many years as mining operations have continued and expanded, having indelible and degrading effect on the stream and its ecosystem, and setting up an untenable situation where the quarry pumps are essential to protect the stream from dewatering and killing fish and fishlife. Not only does the quarry need to be denied permission to deepen to mean sea level but should also restore what has been lost over the decades to this High Quality Class A Wild Trout Fishery. That restoration should include consistent and naturally modeled water flow, fish and fishlife habitat, stream damage restoration including native vegetation and other riparian values that have been lost to erosion and stream destabilization,

⁹ Daniel Ryan, Fisheries Biologist, Division of Environmental Services, Pennsylvania Fish and Boat Commission, re: “Application No. 7473SM2, Hercules Cement Company, LP d/b/a Buzzi Unicem USA, Stockertown Quarry, Upper Nazareth Township & Palmer Township, Northampton County”. January 5, 2018.

¹⁰ *Id.*, P. 1.

¹¹ *Id.* P. 2.

temperature moderation, and perpetual protection of the Creek's water quality from the quarry's discharge.

DRN is appalled by the horrendous and wholly avoidable fish kills caused by the quarry. The quarry has had pump failures 15 times since 2002 that have resulted in dewatering the creek, killing fish and aquatic life. In June 2020, the quarry's pump shut down for 15 hours, killing over 2,000 fish including wild brown trout. As incomprehensible as it is, when the electric pumps are knocked out, such as by a storm, the quarry has no backup generation to keep the flow going. Why? Their excuse has been that it is too expensive for them to supply alternative generation to operate their pumping system. Delaware Riverkeeper Network contends that if Hercules/Buzzi Unicem cannot afford to operate safely and protect the creek, they should not be allowed to operate at all.

DRN heard from a representative of Hercules at the June 2 DEP Hearing regarding the deepening of the quarry that the company has decided to install backup generators in case a storm, breakdown, maintenance requirement, or other incident knocks out their electric-driven pumping system. This is welcomed news but should not be relied upon unless the backup generators are mandated in the permit for the quarry. DRN advocates that the backup generators be added as a condition to the existing Surface Mine Permit No.7473SM2 and renewal of the National Pollutant Discharge Elimination System (NPDES) permit, which DEP has stated is the subject of this public comment period and the June 2 Hearing. Furthermore, DRN advocates that the requirement for a backup pumping system with alternative energy source be made a perpetual requirement, beyond the life of the mining at the quarry, to provide the needed protection for the creek and the life within it. In addition, DRN advocates that the redundant pumping system be powered by solar, wind, or other non-fossil fuel that emits greenhouse gases, for the backup generation. This renewable source of energy could provide clean power without the emission of hazardous air pollutants, carbon, or other greenhouse gases, avoiding air pollution.

The dewatering of Bushkill Creek caused by lack of pumping at the quarry is an egregious violation. As stated, 15 times since 2002 the creek has been dewatered due to a stop in pumping, altering the water quality of the Bushkill Creek, in violation of Pennsylvania's Clean Streams Law.¹² It is also a violation of Special Condition #2 of the in-force Hercules' Surface Mining Permit issued by DEP in 2015, an addendum to the earlier 1974 permit.¹³

A Notice of Violation was issued by DEP to Hercules Cement Company for the cessation of pumping that caused reduction in flow of the Bushkill Creek on January 22 and 23, 2011.¹⁴ Notices of Violation have been issued over the years to Hercules but not for most of the dewatering events.

¹² <https://bit.ly/3wszZh0>

¹³ <https://bit.ly/3xiA46M>

¹⁴ *Id.* P. 2

There have been other violations that have occurred, documented by DEP, all related to environmental damage or safety threats.¹⁵ However, the lack of notices of violations for many of the violations at the quarry and the lack of fines and other enforcement actions that require some retribution to try to atone for the loss of life and environmental damages is, to understate it, perplexing. DRN does not understand why DEP is not vigorously enforcing the law and permit conditions the quarry is subject to, and why fines with substantial financial force have not been levied. DRN contends this lack of enforcement and punishment has led to a culture of *laissez-faire* that has enabled continued bad actions and impacts at and by the quarry. It has also affected support for an attitude by Hercules/ Buzzi Unicem that has led to unsubstantiated claims being accepted without critical analysis by DEP and a resistance to change on the part of Hercules/Buzzi Unicem that has controlled what occurs in Bushkill Creek.

This is completely unacceptable and is an affront to the Commonwealth's laws, regulations, and public safety. It has caused the loss of fish and fishlife in what is supposed to be a protected stream, diminishing not only the creek and the public's enjoyment of the creek, but the Commonwealth's Special Protection Waters Program. This intolerable situation flouts Article 1 Section 27 of the Pennsylvania Constitution, the Environmental Rights Amendment.

As demonstrated by the dates of the current permits, the Hercules surface mining permit is old and needs new scientific and technical studies to assure environmentally protective operations at the quarry and regarding the quarry's impacts on Bushkill Creek, its subwatershed, and the regional aquifer.

The Bushkill Creek's flow has not been well documented because monitoring stations are not strategically placed to record the flows above the quarry and below and on the Little Bushkill and Schoeneck Creeks. The USGS gauges and the monitoring that has been done by volunteers has gathered important data along the Bushkill but it cannot provide the essential data needed to help calculate the inflow of the creek to the quarry and sinkholes (and the exact location of streamflow loss) and the creek's flow downstream of the quarry's discharge and of its tributaries. Round-the-clock monitoring stations that can provide measurements of flow and velocity above and below the quarry's inflow and discharges at a minimum (and should be considered for known locations of streamflow loss or swallow holes) are needed and should be required by DEP in the surface mining permit and/or the NPDES permit, paid for by Hercules/Buzzi Unicem and disclosed online in electronic format. Real time modem display is available today and DRN advocates that the permit require this transparency and accessibility for the public.

Monitoring wells of local groundwater at various depths and locations designed by an independent hydrogeologist should also be required to measure the static water levels of groundwater. Hercules/ Buzzi Unicem should be required to install, maintain, and provide real-time public access to online data from data loggers in the monitoring wells. Consideration should also be

¹⁵ *Id.* P. 2

given to offering residents within the potential zone of influence that data loggers could be installed in their drinking water wells to measure the direct impact on local water supplies.

An issue that is missing entirely from the permitting for the quarry is the recognition that the swings in amount and velocity of flow and the quality of the discharged water from the quarry to the Bushkill Creek is not healthy for its fish and fishlife. There is no minimum flow required in Hercules/Buzzi Unicem's National Pollutant Discharge Elimination System (NPDES) permit but there should be a flow regime required for the protection of the life in the stream. The result is no stability in flow, an up-and-down fluctuation of stream flow velocity and depth based only on the quarry's needs. This point regarding the need for a minimum flow requirement was made by Pennsylvania Fish and Boat Commission in their biologist's 2018 analysis of the Hercules/Buzzi Unicem application to mine deeper.¹⁶

From the PA Fish and Boat Commission Analysis:

- 1) "If the quantitative dye or other suitable test suggests that surface water from the Bushkill Creek enters the quarry pit, then the PFBC recommends to the Department that the proposed permit include a mandatory minimum water discharge, equal to the quantity of water that enters the quarry pit, in order to maintain aquatic life in Bushkill Creek. This discharge should also have limits on the amount of turbidity and/or conductivity being discharged to Bushkill Creek."¹⁷

DRN advocates that not only a minimum flow but also a flow based on the natural flow regime of the creek is necessary in order to provide healthy conditions for the species that live in the creek. A natural flow regime models the needs of resident species and takes into account the iterative or changing variations that support the different life stages of a species. These include seasonality, temperature, dissolved oxygen, substrate environment, and water quality parameters such as conductivity and turbidity. DRN contends that the special needs of this wild trout fishery mandate the need for a healthy and species-driven environment and ecological conditions. This has been lacking from the management of the quarry and the stream has been injured, along with the life within it, for many, many years.

It is essential that this wrong be corrected and that the fish, benthic creatures and other aquatic life of the creek are finally given the protection they deserve. Furthermore, a flow regime requirement must be put into place in perpetuity, requiring that the pumping by Hercules/Buzzi Unicem continue to provide a natural beneficial flow regime after the quarry is closed. The requirement for perpetual pumping according to a natural flow regime with a minimum flow requirement should be part of a comprehensive reclamation plan once the quarry is closed that restores the entire quarry site to a natural condition that supports healthy habitats, native and diverse vegetation, and clean water by utilizing natural systems that provide aquifer recharge,

¹⁶ Daniel Ryan, Fisheries Biologist, Division of Environmental Services, Pennsylvania Fish and Boat Commission, re: "Application No. 7473SM2, Hercules Cement Company, LP d/b/a Buzzi Unicem USA, Stockertown Quarry, Upper Nazareth Township & Palmer Township, Northampton County". January 5, 2018. P. 1.

¹⁷ *Id.*

stream protection, wetlands restoration, and other environmental benefits. The damage done over the decades by the quarry and its operations has created a debt that Hercules/Buzzi Unicem must pay back.

DRN finds it incomprehensible that the quarry operations that result in all of this pumping occurs solely to serve the quarry's interest, without consideration of the needs of the creek and its living systems or the people who enjoy and use the creek. That means this excessive pumping and its cascade of impacts serve the private interests of a business above environmental and public interest protection. This cannot continue if the quarry is going to continue to mine. It certainly cannot be tolerated that Hercules/Buzzi Unicem mine to a greater depth, deepening their negative impacts.

CONCLUSION

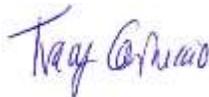
Hercules/Buzzi Unicem are violating state law, current permit conditions, DEP regulations, and Article 1 Section 27 of the Pennsylvania Constitution by continuing to operate while damaging the Bushkill Creek, the aquifer, water quality, the public interest, and the regional environment, including fish and fishlife. This must be remedied to eliminate the drawdown of water from the regional aquifer that is shared with the Bushkill Creek, the surface waters of the creek, and the water systems of its watershed. If changes cannot be made to remedy this intolerable damage, the quarry's permit to operate should be revoked. If changes are made as conditions to current permits, as advertised by DEP as the potential outcome of this public process, and these changes are made as outlined in this comment, then the modifications to the permits should be made effective immediately to avoid any further degradation or destruction of the Bushkill Creek, its subwatershed, the hydrologically connected water systems and the downstream Delaware River.

Delaware Riverkeeper Network concludes that the request from Hercules/Buzzi Unicem to deepen the quarry to mean sea level should be denied, based on DRN's research, the information available, including that from government agencies, and other sources.

Thank you for the opportunity to comment.



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