

SUMMARY RESPONSE TO COMMENTS
South Carolina Department of Health and Environmental Control
Bureau of Land and Waste Management
Division of Mining and Solid Waste Management

Approval of the Application and Issuance of Mine Operating Permit I-002270
Luck Stone Corporation
Chester Quarry

This summary response to comments outlines specific issues, within the jurisdiction of the South Carolina Department of Health and Environmental Control (DHEC), considered in review of Luck Stone Corporation's (Luck Stone) application to receive a Mine Operating Permit for the Chester Quarry. As discussed during the November 19, 2019, public hearing, in addition to the mine operating permit, the operator must obtain other DHEC-approved environmental permits before beginning mine operations. To construct and operate the Chester Quarry and its associated process equipment, DHEC requires an Air Quality Construction Permit, a National Pollutant Discharge Elimination System (NPDES) Permit, and a Mine Operating Permit. The NPDES permit was issued on March 19, 2020. The Mine Operating Permit and the Air Quality Construction Permit were issued on March 31, 2020. This Summary Report is specific to the technical review for the Mine Operating Permit performed under the authority of the SC Mining Act (Act).

General overview: DHEC's Mining and Solid Waste Division reviewed all information submitted in the application and reclamation plan, and supplemental information and comments received from governmental agencies and the public to determine if the application met all appropriate requirements. Having performed a thorough review of all information submitted, DHEC has approved the mine permit application and issued the mine operating permit.

The South Carolina Mining Act: The legislative purposes of the Act are that: (1) the usefulness, productivity, and scenic values of all lands and waters involved in mining within the State receive the greatest practical degree of protection and restoration; and that (2) no mining may be carried on in the State unless plans for the mining include reasonable provisions for protection of the surrounding environment and reclamation of the area of land affected by mining.

The Act provides specific criteria for review of applications for mining permits by DHEC. The Act does not supersede local zoning ordinances. Issues related to zoning (i.e., property value and industrial development) are under the jurisdiction of county and municipal planning departments and governed by zoning and land use regulations. DHEC is not authorized to consider the effect of a mining operation on property values. DHEC is required to evaluate the application promptly and to consider relevant environmental issues.

Application for the Mine Operating Permit: DHEC received the Application for a Mine Operating Permit from Luck Stone for the proposed Chester Quarry on June 6, 2019. An *Intent to Mine* notice for the Chester Quarry was advertised in the Chester News and Reporter on July 10, 2019, and July 17, 2019. The *Intent to Mine* notice was mailed to adjacent landowners, government and regulatory agencies, and other interested parties.

DHEC held a public meeting on October 17, 2019, and a public hearing on November 19, 2019. The required *Notice of Public Hearing* was mailed to interested parties and was advertised in the *Chester News and Reporter* on October 16, 2019, and October 23, 2019. Both the public meeting and public hearing were held in the Gateway Conference Center.

On February 13, 2020, DHEC provided a courtesy notice of a Draft Mine Operating Permit to all concerned citizens and received comments through February 28, 2020. This summary report responds to comments, questions, and requests received throughout the application review process, beginning at the initial application notice on July 10, 2019, and ending on February 28, 2020.

Permit Application Specifications: The mine permit application proposes to mine granite to produce crushed stone. The permitted area of this mine operation is composed of three tracts of land totaling 276.6 acres. The quarry will be excavated to a maximum depth of 50 feet above mean sea level (msl) or 500 feet below the ground surface (bgs) measured from the lowest ground surface elevation.

Land within a mine operating permit is designated according to the permitted use. The 276.6-acre *Permitted area* is comprised of *Affected areas* and *Buffer areas*. The following list provides an area description, type of activities permitted, and the designated acreage for each component of the Permitted area:

1) **Affected Area – 249.0 acres.** The affected area is comprised of all lands to be disturbed by mining activities (pit, sediment basins, haul roads, berms, processing area, overburden storage piles, etc.). The affected area is subject to reclamation requirements.

2) **Buffer Area – 27.6 acres.** A Buffer is land that is not to be disturbed by mine activity. Buffers are used to lessen potential effects on surrounding land (setbacks to property boundaries, public roads, wetlands, wildlife, etc.). Any land disturbance inconsistent with accepted silviculture practices in the buffer areas requires this Mine Operating Permit to be modified *before* any such disturbance. Appropriate silviculture practices may be utilized to manage upland buffer areas, allowing the thinning of timber under the direction of a SC Licensed Professional Forester.

Mine Reclamation: The Act defines reclamation as the reasonable rehabilitation of affected land (mined or otherwise disturbed) to a useful purpose and the protection of natural resources in surrounding areas. The Act does not require the land disturbed by mining to be returned to its original state. Reclamation of the mine to a specific land use is based on many factors; including, but not limited to; the method of mining, the material mined, the geology, topography, and size of the area, surrounding land uses, and the desired future use for the former mine site. Lakes or ponds, grassland, woodland, cropland, parks or recreational developments, or residential or commercial developments may be acceptable reclamation objectives.

The approved reclamation plan for the Chester Quarry states that the pit area will fill with water for reclamation as a lake. Any portion of exposed granite within the pit area with a vertical highwalls that cannot be sloped to a 3h:1v gradient and is over 10 feet in height will be fenced. Other disturbed areas (i.e., plant, processing area) will be graded and vegetated as grassland. All unconsolidated soils, e.g., saprolite overlying hard rock and overburden storage areas, will be sloped to 3h:1v gradient and vegetated. Once all mining has ends and the site meets reclamation standards, the mining permit is canceled; at that time the Mining & Reclamation Program has no further jurisdiction over land use.

Luck Stone can affect 249.0 acres throughout the life of the Mine. Based on the Mining Act's requirements (Section 48-20-110) and Regulation (R.89-200), DHEC set the reclamation bond at \$794,800 and it has been received by the Department. The reclamation bond will remain in effect with DHEC until the mine site has been reclaimed to regulatory standards and then

released. The reclamation bond is in place to ensure proper reclamation of disturbed areas.

Dewatering: Mine dewatering will be necessary when the pit floor extends below the water table and groundwater seeps into the quarry from natural joints and fractures in the rock. Where feasible, stormwater runoff will be diverted into the pit. The groundwater/stormwater will be collected in the sump(s) and pumped from the quarry to be used as process water and to supply water trucks for dust control; if excessive quantities exist, water meeting National Pollution Discharge Elimination System (NPDES) requirements will be discharged. Water discharged from the quarry to a receiving stream must be discharged through permitted NPDES outfall(s).

Groundwater – Impact on Domestic Water Well Levels: Many of the residents living in the vicinity of the Chester Quarry expressed concerns that their water wells may be impacted due to lower groundwater levels caused by dewatering of the open pit. The impact on groundwater conditions around the Chester Quarry should be minimal. Several factors limit groundwater drawdown from rock quarries, thereby reducing the potential for loss of well water for neighboring residences. Typically, dewatering lowers groundwater levels within the permit boundary and is limited beyond the permit boundary in depth and distance. Furthermore, streams act as hydrologic boundaries and limit the impacts of dewatering beyond them.

In granite aquifers, groundwater moves in natural fractures in the rock. Water wells intersect the fractures and can withdraw the groundwater. However, the transmissivity (the ability of the rock to allow water flow) of these fractures is relatively low (as compared to aquifers in sand) and are affected by their depth below the surface. Typically, 100 to 150 ft below the ground surface, the pressure of the overlying rock reduces the size of the fractures and limits the groundwater flow. Consequently, in these "tight" rock aquifers with low transmissivity, the effects of groundwater drawdown are normally limited to hundreds of feet from the edge of the pit.

To better understand the impact of dewatering and resulting groundwater flow into the pit at the Chester Quarry, Luck Stone performed a Hydrogeologic Assessment. This assessment included the development of a preliminary site conceptual model, field data collection (geologic, geophysical, and hydrogeologic), site-specific data, and a computer-aided mathematical model.

Part of the site-specific data collected was a water well inventory. This inventory consisted of a review of available DHEC files of water supply wells located within one mile of the site. The data received from DHEC showed that there are 76 wells present within a one-mile radius of the site. Most of these wells are residential water supply wells located north and west of the site. These wells range in depth from 50 to 850 feet below the ground surface (bgs), with most of the wells being 300 feet bgs or less. Additionally, site reconnaissance and a public meeting were used to gather additional information about the wells.

Aquifer pump tests were performed to characterize the aquifer. A pumping well and observation wells were installed on the property and variable and constant rate tests were performed. These test results and the other data were used to construct a model to predict drawdown within and outside of the permit boundary. The model predicted the drawdown from the aquifers over time for pit phases I and II in three future mine pit development scenarios:

1. Phase I mine pit at a depth of 85 feet after 10 years of dewatering showed a drawdown of 5 feet slightly outside of the permit boundary to the north and south.
2. Phase I mine pit at a depth of 200 feet after 24 years of dewatering showed a drawdown of 50 feet contained within the permit boundary and the 5-foot drawdown extending further outside the permit boundary to the north and south.

3. Phase II mine pit at a depth of 450 feet after 60 years of dewatering showed a drawdown of 100 feet slightly outside of the permit boundary to the north and 50 feet again to the north and south.

The model predictions are consistent with DHEC's knowledge of operating granite quarries in South Carolina. Based on the known well locations and depths, DHEC does not anticipate any impacts to water wells around the Chester Quarry. However, groundwater monitoring wells are required to be installed and monitored for a full year before pit sump development and dewatering commence. These well levels will be monitored throughout operations as provided for with the Groundwater Monitoring Plan and as conditioned by the mine operating permit.

Groundwater Monitoring: Luck Stone will implement a Groundwater Monitoring Plan before dewatering the granite pit sump to include the installation of six monitoring wells. The general locations of the monitoring wells are shown on approved map GWM-2270-V1. The monitoring wells will be installed to monitor the groundwater table by measuring the water level in the wells. The water levels will be measured once per month. One year of water level data will be completed and submitted to DHEC before the development of the granite pit sump and subsequent dewatering.

If investigations of water supply problems show domestic water wells are impacted by the dewatering at the quarry, Luck Stone will provide an alternate water supply at no cost to the well owner. Luck Stone shall be responsible for repairing, deepening, or re-drilling such wells. Luck Stone shall supply the owner with a temporary water supply (e.g. bottled water for drinking, provisions for laundry services, etc.) until a permanent water supply is re-established. This requirement is a condition of the mine operating permit.

Water Well Survey: To further address concerns about water well impacts, an inventory of all water wells for domestic or agricultural purposes within the pre-blast survey area shall be conducted before mining begins. Additional inventories at a greater distance from the pit may be required during mining if deemed necessary by DHEC. The information collected at each well shall be used to establish the existence, condition and productive use(s) of the well. The inventory shall include the following information, where available and as able to be determined, and as access is allowed by the property owner:

- A. Location of well.
- B. Name and address of property owner, use of the well water, use of the property.
- C. Well completion details as documented from drillers logs or DHEC well form 1903.
- D. Pump details such as type and depth as documented.

Impact on springs, ponds, and lakes: Several of the residents living in the vicinity of the Chester Quarry site expressed concerns that their springs or ponds may dry up due to lower groundwater levels caused by dewatering of the open pit. Consistent with reasons stated in the *Groundwater – Impact to Domestic Water Wells* section of this document, it is unlikely that there will be impacts to adjacent springs and ponds. Furthermore, pond bottoms accumulate silt over time restricting water loss or gain through the bottom. If investigations of spring and pond problems conclusively show impacts caused by dewatering at the quarry, Luck Stone will be responsible for mitigating those impacts.

Groundwater Contamination Concerns: Comments were received regarding concerns that the groundwater would be contaminated by operations at the Chester Quarry. Quarry operations are relatively inert. Granite is drilled and blasted, and the blasting agent is consumed in the

blast. The blasted rock is loaded into haul trucks and transported to the processing plant. The plant further crushes, sizes, and washes the rock for the market. The processed rock is again loaded into haul trucks and transported offsite. Any fuel and oil used in the transportation and processing equipment is stored in lined containers with additional spill containment. Any incidental spillage is required to be properly contained and disposed of offsite. Otherwise, no chemicals are used in the quarry process. DHEC does not expect groundwater to be contaminated by operations at the Chester Quarry.

Stormwater Discharge Monitoring and Sediment Control: Chester Quarry will be permitted to discharge stormwater, mine dewater, mine equipment wash water, and process wastewater per the *NPDES General Permit for Discharges Associated with Nonmetal Mineral Mining Facilities*. This NPDES permit authorizes Luck Stone to discharge water at set outfalls, as shown on the approved mine maps while meeting permit conditions and requirements. Any process wastewater discharged from the processing plant will be subject to numeric effluent limits (total suspended solids, pH, oil and grease). The permit requirements are protective of human health and the environment. Water from the processing plant will be routed in a closed-circuit system through a series of collection ponds. These ponds allow any stone particles in the wash water to settle; the clean water is then recycled for use in the processing plant. Under normal rainfall conditions, this closed-circuit system will operate without discharging. However, in extreme or prolonged rainfall events, there is a potential for excessive volumes of water to exceed the capacity of the wash circuit system. Under these circumstances, any excess water may be discharged through the regulated outfalls.

Stormwater runoff from oil and fuel storage areas, vehicle maintenance shops, truck washes, or similar operations located at the Chester Quarry, must have proper controls to manage spills and/or to keep oils, greases, lubricants, fuels, and other deleterious substances from entering surface or ground waters. The NPDES permit requires Luck Stone to have proper Best Management Practices (BMPs) and a Stormwater Pollution Prevention Plan (SWPP) in place. Luck Stone will operate the Chester Quarry per the approved plans.

Applicability of NOAA Atlas 14 Drainage Calculations: A question was posed regarding the sediment basin calculations using the National Oceanic and Atmospheric Atlas (NOAA) atlas 14 rainfall inputs. The questionnaire asked if the 14 rainfall inputs were applicable. The NOAA inputs are comparable to the prescribed rainfalls listed in the DHEC's Best Management Practice (BMP) Handbook. The inputs are more conservative in the 2-yr, 25-yr, and 100-yr storm events and very slightly less conservative in the 10-yr rain events. Given that the NOAA atlas 14 rainfall amounts are basically the same as the rainfall amounts listed in the DHEC's BMP Handbook, The DHEC's Mining and Reclamation Sections deems the inputs acceptable and applicable.

Engineering Calculations Not Sealed: A comment was received that the sediment basin calculations had not been sealed by a professional engineer. Engineers prepared the calculation but did not seal them. The Act and Regulations do not require that the calculations be sealed.

Impacts on Rocky Creek: Concerns were received that water quality and quantity in Rocky Creek would be impacted by mining activities at the Chester Quarry. The approved stormwater design and compliance with the NPDES permit are designed to be protective of the water quality in Rocky Creek. Rocky Creek is part of the Upper Rocky Creek 12-digit watershed. This watershed consists of 38,495 acres. The Chester Quarry will affect 249 acres of the 276.6 acres of permitted area to include the process plant, overburden areas, mine pit, and haul roads. The 249-acre affected area is less than 1% of the watershed available to Rocky Creek. The watershed will have 99% of the available recharge without any potential impacts to water quantity

from the Chester Quarry. DHEC has determined that the potential for impacts on water quantity at Rocky Creek are minimal and that compliance with the NPDES permit and the implementation of the approved stormwater design will be protective of Rocky Creek's water quality.

Placing Overburden Storage in the Rocky Creek Flood Zone: The initial application proposed placing overburden storage within the flood zone of Rocky Creek. Comments and concerns were received about this activity. Luck Stone addressed this concern by removing the option. The mine operating permit does not allow for the placement of overburden within the flood zone of Rocky Creek.

Rocky Creek Crossing Details: The SC Department of Natural Resources requested that protective measures be employed during Phase II mine activity when crossing Rocky Creek. The mine operating permit is conditioned upon the operator providing design and construction details before constructing the Rocky Creek crossing. In preparing these details, the operator shall consider recommendations of SCDNR made by letter dated February 28, 2020. Design considerations of the crossing shall be made to allow animal passage, protect habitat, and prevent alteration of the natural stream/floodplain morphology. DHEC will provide these design and construction details to SCDNR for comment. DHEC must provide an approval letter before construction commences on the Rocky Creek crossing.

Wetlands Delineation / Impacts and Stream Buffers: All wetlands have been delineated within the permitted area of the Chester Quarry. The wetland delineation was completed by S&ME Environmental Consultants, Inc. (S&ME). S&ME requested a Jurisdictional Determination (JD) from the U.S Army Corps of Engineers (Corps) on August 25, 2019. The Corps has not issued the requested JD at this time. Luck Stone is prohibited from beginning mining activities until a final JD is provided and DHEC issues an approval letter.

The approved mine maps show the delineated wetlands. DHEC will review the JD from the Corps to confirm the S&ME delineation is accurately shown on the approved mine maps. As shown on the mine maps, some jurisdictional wetlands will be impacted by mine activities. These impacts will be mitigated per the permitting requirements of the Corps. Luck Stone shall provide appropriate Corps permits to DHEC before impacting the jurisdictional wetlands. Jurisdictional wetlands within the permit boundary that are barred from impact, will be protected by a minimum 50 ft, undisturbed buffer.

Ground Vibration from Blasts: Concerns were expressed that ground vibration from blasting would damage homes, other structures, and cemeteries. Explosives technology in mining has greatly improved, providing greater reliability and more precise control over the detonation of explosives. As a result, the safety to the public and protection to property has significantly increased over the years. To protect people and property outside the mining areas, the Act restricts the magnitude and intensity of rock blasting. The Fire Marshall's Office (SC Department of Labor Licensing and Regulation) requires blasters to be tested, certified, and licensed by the State. All blasting operations in South Carolina must be overseen by a licensed blaster. Beginning about 1930, the former US Bureau of Mines (USBM), Department of the Interior, devoted many years of research and testing on structural effects from blasting. As a result, it is now recognized that the potential for damage to buildings caused by ground vibration from blasting is most closely correlated to the measure of Peak Particle Velocity (PPV). PPV is measured in inches per second (*ips*) in three mutually perpendicular directions within the ground at the nearest structure (not of the structure itself).

Seismic waves travel in all directions from the source of the blast. The PPV of these waves is

mostly dependent on the quantity or weight of explosives detonated at the same time. With today's blasting technology, each blast-hole charge can be fired individually, which significantly aids in controlling the blast and PPV. Even though the resultant blast sounds like one explosion, it is actually a series of smaller explosions - the time separation between two blast-holes need be only 8 milliseconds. Based on the USBM's research and recommendations, the Act sets the allowable PPV limit to 1.0 ips at the nearest residence or other structure not within the permitted area. Blasters at commercial mines and quarries are required to design and load blasts not to exceed the statutory PPV limit of 1.0 ips. All blasts less than 1.0 ips PPV must follow the Regulations. Luck Stone must ensure all blasting operations will be designed, with an appropriate added factor of safety, to meet the 1.0 ips regulatory limit. Each blast shall be monitored for compliance using at least one seismograph. Blasting records, including the company's seismograph records, will be maintained per Regulation R.150B and be available for DHEC review.

Comments were also received concerning blasting's effect on both domestic animals and wildlife on adjacent properties. Historically, there have been no noted adverse effects on animals. Blasting operations are conducted to minimize noise. The noise heard from blasting is created by the explosive release of gases during detonation. Blasts are designed to hold these gases in the drilled blast hole and the energy created from the blast fragments the rock. Depending on the design of the blast, the upper 5' - 10' of the blast holes are loaded with crushed stone (call "stemming") to prevent gases from escaping. Consequently, this creates a low-frequency rumbling. Animals may be startled at times, but they quickly adapt as indicated by prevalent signs of wildlife (e.g., deer and turkey tracks and droppings) at quarry sites.

Pre-Blast Survey: Regulation R.89-150 requires a pre-blast survey of all structures within one-half mile (2,640 feet) of any proposed blasting area. An independent contractor performs this survey, with the permission of the landowner and at the expense of the mine operator. The survey will document the pre-blast conditions of all structures within the half-mile area. The owner shall have the right to be present during their structure's survey. The survey is a condition of the permit and shall be conducted before initial blasting occurs. The structure's owner, the mining company, and DHEC receive a copy of the survey.

Minimum Distance from Structures and Contiguous Property Boundaries: Regulation R.89-150.I require the operator to maintain a minimum distance between the nearest point of blasting and any structures not owned by the operator. The regulation requires DHEC to establish the minimum distance after considering the method of mining, site conditions, the proposed direction of blasting, type and use of neighboring structures, previous blasting record, and/or other factors deemed appropriate by DHEC. DHEC has established 1,000 feet as the minimum distance for the Chester Quarry permit.

Flyrock: Flyrock is a rock thrown into the air in an uncontrolled manner that travels outside the protected area. Flyrock leaving the permitted area or property controlled by the mining company is a violation of the Act. Flyrock is very controllable; quarries operate each day throughout South Carolina and the United States without incident. Flyrock is avoided by using a proper blast design and observing standard drilling and explosive loading procedures. As mentioned earlier, South Carolina requires all blasting operations to be supervised by licensed blasters. Proper support from reputable explosives manufacturers and technical consultants provide added safety. Luck Stone will contract all blasting operations at the Chester Quarry with a licensed blaster. The licensed blaster will provide the blast design and oversee blasting operations and explosives handling.

Blast Monitoring: DHEC currently monitors blasting operations in mines and quarries throughout the State. Monitoring includes periodic checks of blasting records of the mining companies and the use of calibrated seismographs at quarries to monitor blasting operations for compliance. Seismographs record the PPVs in the horizontal, traverse, and vertical directions. Seismographs also records the Air Blast created by explosive detonations. In South Carolina, air blasts are not directly limited by regulation. However, it has been found that by limiting the PPV, the air blast is also controlled, preventing it from reaching damaging levels. DHEC responds to all complaints and inquiries from citizens regarding blasting. Typically, the agency seismograph is set up, without the knowledge of the mining company, to record the level of blasting-induced ground vibrations near the residence of a concerned party.

Proximity of Quarry to Schools, Churches, Residential Homes, and Recreational Areas:

Comments were received regarding the proximity of the Chester Quarry to the Chester Park School Complex, Career Center, Craighbrow and Quail Hollow Neighborhoods, Orr Baptist Church, Chester Golf Club, Horizons Christian Academy, Cottages of Chester Village, Chester Nature Park, and Softball fields. DHEC has considered the distance from these locations and found that the Chester Quarry is located at a safe distance away for the locations and has appropriate buffers in place to avoid impacting these locations.

Buffers, Setbacks, Vegetative Filter: Buffer areas provide distance between the mining operation and the neighboring properties and wetlands. The Act and Regulations do not have specific requirements for buffer areas. The size of the buffer and setback from the permit boundary is dependent upon the nature of the mine, the neighboring land use, and the purpose of the buffer area.

The Chester Quarry will have 27.6 acres of the 276.6 acres of permitted area designated as buffer. The buffer width or setback from the permit boundary ranges from 50 feet to 75 feet in width. Permit boundary buffers of 50 feet in width are provided to the west along Rocky Creek, to the east property boundary, and the south along Highway 9. The buffer to the north is 75 ft in width with a 15-foot-tall vegetated earthen berm. This berm will provide additional noise and visual screening to residences to the north of the boundary.

The vegetation in the buffer will remain in its current state or be enhanced to provide for visual screening. Appropriate silviculture practices may be utilized to manage buffer areas that will allow thinning of timber under the direction of a SC licensed Professional Forester. Any land disturbance not consistent with accepted silviculture practices in the buffer areas requires modification of the mine operating permit before such disturbances occur. All protected streams and wetlands that will not be impacted and mitigated will have a minimum 50 ft buffer. Reasonable access to permitted NPDES outfalls is allowed within the buffer area.

In addition to the undisturbed buffer, 41.7 acres of permitted land will be utilized as a vegetative filter. This vegetative filter will be located between the quarry pit and undisturbed buffer along Rocky Creek and the property boundary. This land will only be affected, as needed, for maintenance to sediment and erosion control best management practices.

Noise: With quarry operations, the source of noise includes various working machinery at the site, plus an occasional low "boom" when blasts occur. The level of noise perceived at residences is usually related to the distance from the sound's source, weather conditions, topography, and the type and condition of the equipment used. Equipment such as trucks, dozers, and loaders normally have an average noise level determined by the manufacturer. Most of the equipment averages 75 to 90 decibels (db) at fifty feet. Sound decreases

(attenuates) with distance at the rate of about 3 to 5 db each time the distance between the source and the person hearing it is doubled.

The combination of undisturbed vegetated buffers, topography, maintenance of equipment, and distance from the operation will consequently reduce the potential for sound heard offsite. There will be instances when the public will hear equipment (back up alarms, trucks, etc.). Although no government standards exist for environmental noise emitted from this type of industry. The Mine Safety and Health Administration (MSHA) does have noise standards applicable for worker safety to protect hearing. Therefore, noise limited at the source to protect workers has the added benefit of limiting environmental noise beyond the permit area.

Truck Traffic: A common concern expressed by the public regarding mining operations is the increase of truck traffic hauling mined material. The Act does not authorize DHEC to regulate truck traffic on roads outside the permit boundary. DHEC has jurisdiction to evaluate impacts on public roads only as it pertains to the physical effects from an operation (e.g. blasting, undermining, etc.). The quarry operator is responsible for cleaning any soil tracked beyond the gate onto the road surface.

Other concerns with road systems, including the use of the roads, are under the jurisdiction of the S.C. Department of Transportation (SCDOT), S.C. Public Service Commission, or Chester County Department of Public Works. Luck Stone will upgrade the access to Highway 9 per SCDOT requirements to enhance the safety of vehicular traffic in the area.

Air Quality Impacts: Comments were received concerning the adverse health effects the Chester Quarry may cause by dust emissions. Specifically, concern was expressed about the exposure to crystalline silica, which is a component of granite dust, causing respiratory problems. Comments were also received regarding dust causing harm to plants and bees. The Quarry is required to have an Air Quality Construction permit and a fugitive dust control plan before mine processing commences. DHEC's Bureau of Air Quality has responded to these concerns in more detail in their response to comments.

Zoning: Concerns were raised about the location of this mine given the various surrounding land uses. Appropriate or compatible land use is determined at the local level. DHEC has no authority regarding zoning in Chester County. Specifically, the S.C. Mining Act states the following in Section 48-20-250: "*No provision of this chapter supersedes, affects, or prevents the enforcement of a zoning regulation or ordinance within the jurisdiction of an incorporated municipality or county or by an agency or department of this State, except when a provision of the regulation or ordinance is in direct conflict with this chapter.*"

Endangered or Threatened Species: Comments and concerns were received regarding the presence of endangered or threatened species within and outside the permit boundary of the Chester Quarry. A *Protected Species Assessment* was prepared by S&ME and was submitted with the application for a mine operating permit. The study found that there was potential habitat observed in Rocky Creek and the smaller perennial tributary for the Carolina Heelsplitter. A mussel survey was performed by Alderman Environmental Services (Alderman) in March of 2019. The survey deemed the on-site tributaries to be poor habitat for the Carolina Heelsplitter and none were observed.

The United States Fish and Wildlife Service (Service) requested by letter dated October 10, 2019, that an expanded mussel survey effort be completed downstream of Highway 9 covering the main stem of Rocky Creek to the confluence with Grassy Run Branch. On November 14, 2019, the Service, SCDNR, and Alderman performed the requested downstream survey. The

Service found that it was extremely unlikely that the Carolina Heelsplitter occurs in Rocky Branch within the surveyed reach.

Throughout the comment period, SCDNR has recommended that best management practices for sediment erosion control and maintenance of undisturbed forested buffers be maintained along Rocky Creek and the remaining undisturbed wetlands and tributaries on-site. In addition to undisturbed buffer, the approved plans require additional vegetative filters of various widths adjacent to Rocky Creek. These filters will remain undisturbed and will only be affected to conduct maintenance as needed.

Historic and Cultural Resources: A *Cultural Resource Survey of the Chester Greenfield Site* dated February 2019 was conducted by S&ME. The survey identified two archaeological sites, one isolated find, and five above-ground resources. The two archaeological sites are identified as (38CS418 and 38CS419), the one isolated find is labeled (IF-1), and the five above-ground resources are identified as followed: (0023, 0299, 0300, 0301, 0302). These finds were all recommended not eligible for inclusion in the National Register of Historic Places (NRHP). The State Historic Preservation Office (SHPO) reviewed the survey and concurred with the findings of the survey and recommended that an additional cultural resources survey is not necessary.

The Dunovant and Milling Family Cemeteries were brought to the attention of DHEC and SHPO by concerned citizens. The Cemeteries are located on land outside of the permitted area to the south and west. The cemeteries were not located during the *Cultural Resource Survey of the Chester Greenfield Site*. SHPO has recommended and DHEC concurs that the cemeteries be recorded, delineated, and evaluated for their eligibility for listing in the NRHP. Given the distance from the excavation and blasting activities, DHEC has determined that the Chester Quarry's construction and operating plans are satisfactory to protect these potential resources.

Life of Mine Permit: Comments and concerns were received regarding the 100-year duration of the permit. Mine operating permits are issued for the life of the mine. The 100-year timeframe is an estimate of the mine life based on granite reserves. The mine may not operate for 100-years and it may operate longer. The timeframe is dependent on market demands, reserves, and the rate of mining. The permit remains active and the reclamation schedule is updated as needed through the years.

Climate Change: DHEC received question about whether climate change was addressed when considering issuing a life of mine permit. The Act does not address climate change as a consideration when reviewing applications. The permit decision is based on DHEC's technical review of the permit application and the Act and Regulations promulgated at the time of the DHEC's review.

Land and Property Value/Economic Impact: Comments were received regarding the impact on property values and the possible economic impact. All zoning decisions are made at the local level by a city or county zoning authority, usually before a permit request is received. DHEC cannot dictate where a facility locates, or factor property value impacts into permitting decisions. Contact your local city or county council representatives for more information on how to get involved in local zoning and planning issues.

Economic Benefit and Job Creation: Comments were received regarding the perceived low economic impact and low numbers of jobs created. DHEC is not authorized to make permit decisions based upon these factors. The permit decision is based upon DHEC's technical review of the permit application and the Act and Regulations promulgated at the time of the DHEC's

review.

Community / Quality of Life: Comments were received regarding the potential impacts on the community's way of life. DHEC cannot make its permit decisions based on these factors. The permit decision is based upon DHEC's technical review of the permit application and the Act and Regulations promulgated at the time of the DHEC's review.

Request for a Social Impact Study: A request was received that DHEC perform a social impact study. The Act does not address social impacts as a consideration when reviewing applications. The permit decision is based upon DHEC's technical review of the permit application and the Act and Regulations promulgated at the time of the DHEC's review.

Coordinating the Issuance of Required Permits: A request was made for DHEC to issue the required Air, Water NPDES, and Mine Operating Permits on the same day. DHEC has issued the permits on the same day as requested.

Operating Hours: DHEC does not have the authority to regulate operating hours at mine sites. Some equipment maintenance or non-production related activities may be ongoing after daylight hours. Working on weekends is not typical, but may at times be necessary, depending upon production schedules.

Interviews with Neighbors of other Luck Stone Operations: Comments were submitted summarizing interviews and phone conversions with neighbors who live near Luck Stone Operations occurring out of state. The Act and Regulations do not authorize DHEC to consider a company's out of state compliance when reviewing applications. The permit decision is based upon DHEC's technical review of the permit application and the Act and Regulations promulgated at the time of the DHEC's review.

General Opposition and Support: DHEC received several comments requesting denial of the permit. Comments in support of the facility were also received. DHEC appreciates all comments made regarding Luck Stone. However, DHEC does not have the authority to make permitting decisions based upon community, business, employee, or customer approval or disapproval of a company/facility. DHEC's decision is based upon the technical review of an application and the regulatory requirements promulgated at the time of an application's review.

Independent Peer Review: Requests were made for DHEC to perform independent peer review on supporting documents related to the Chester Quarry. It is DHEC's responsibility to determine if the mining operation applied for has plans that include reasonable provisions for the protection of the surrounding environment and reclamation of the area of land affected by the mine. DHEC depends on an applicant's application information, information from consultants, as well as comments from the public and other state and federal agencies to make a permit determination. After review of the application and reclamation plan, comments from state and federal agencies, and public comments it is determined that the applicants' plan has reasonable provisions. Therefore, no independent studies are necessary.

Public Comment Period / Extension Request: A request was made to extend the public comment period and not make a permitting decision at the end of the February 28, 2020, comment period on the draft mine operating permit. The application for the Chester Quarry was received in June 2019 and placed on public notice in July 2019. DHEC's Mining and Reclamation Section received comments for approximately eight (8) months. Because of the lengthy comment period, DHEC did not find it necessary to extend the period for comment.

Comments Missing from the File in a Freedom of Information (FOI) Request: A comment was received by an interested person during the comment period, who requested to view comments from the file. This person was aware of a comment that had been emailed to DHEC; however, that comment was not in the file when the requester received the FOI information. Comments get added to file periodically throughout and after the comment period. At the time that the DHEC's FOI office provided the comment file to the requester, it was missing one comment that the requester was aware of. That comment has since been placed in the file.

Revisions of the Mine Map and Application: Prior to approval of the mine permit application and issuing the permit, the following revisions were required:

- Updated wetland delineation information was placed on the map. Due to the updated delineation the acreages on the map, the application, and permit were adjusted as follows;
 - Affected acreage was decreased from 251.6 to 249.0 acres
 - Buffer acreage was increased from 25.0 to 27.6
- The application was revised to reflect the acreage adjustment and adjust the response to question #5 regarding wetland impacts.
- The entrance road was adjusted to avoid wetlands impacts.
- Overburden placement in the flood zone has been removed.