

Northern Tract Quarry Review Memo

Reviewer: Chadwick Paronish, P.G.	County: Adams
Operator Name: Specialty Granules, LLC	Township: Hamiltonban
Permit Number: 01180301	Quad. Name: Iron Springs
Mine Name: Northern Tract Quarry	Date: June 26, 2020

Mining Activity: Issued Denied Withdrawn Negative Pre-App.

Type of Activity: Surface

Mining Method: Block Cut

Industrial Mineral

Maximum Overburden: 490 feet (ft.), 740 ft. MSL

Total Permit Acreage: 112.0 acres

Mining Area: 85.0 acres

Support Area: 22.0 acres

Mineral	Acreage
Metabasalt	63.0

Receiving Streams	Class
Unnamed Tributaries to Toms Creek and Toms Creek	HQ, CWF, MF

Existing Land Use	Proposed Land Use
Forestland	Forestland and Unmanaged Natural Habitat. The Quarry pit will remain as a fresh water impoundment
Unmanaged natural habitat	

Other Mining Activities In Area
Specialty Granules, LLC- Charmian Plant- SMP No. 6477SM5
Specialty Granules, LLC- Pitts Quarry- SMP No. 01930302

I. Introduction and Timeline

A pre-application for a National Pollution Discharge Elimination System (NPDES) Permit and a Large Noncoal Surface Mining Permit were received on February 16, 2017 from Specialty Granules, LLC (SGI).

On May 26, 2017, DEP sent SGI a pre-application technical deficiency letter.

On June 13, 2017, the Department held a pre-app field conference with SGI and their consultants, Pennsylvania Game Commission (PGC), US Army Corps of Engineers, Adams County Conservation District, and Pennsylvania State Historic Preservation Office (SHPO) to discuss the pre-application for the Northern Tract Quarry.

On June 23, 2017, DEP sent SGI a follow-up pre application technical deficiency letter.

A response to the technical deficiency letter and an application for a National Pollution Discharge Elimination System (NPDES) Permit and a Large Noncoal Surface Mining Permit were received on January 5, 2018 from Specialty Granules, LLC (SGI) proposing the development and mining of metabasalt minerals from an approximately 112.3 acre portion of SGI-owned property known as the “Northern Tract” which is adjacent to the Pitts Quarry that SGI is currently operating.

On March 6 and May 18, 2018, DEP sent SGI technical deficiency letters.

On April 17, June 28, and July 18, 2018, DEP received revised application materials from SGI.

On July 23, 2018, DEP conducted a public hearing.

On November 12, 2018, SGI submitted responses and appendices to the questions raised during the public hearing.

On January 30, 2019, DEP conducted a public hearing.

On July 3, 2019, SGI submitted responses and appendices to questions raised during the public hearing.

On September 20, 2019, DEP sent SGI a technical deficiency letter.

On October 15, 2019, SGI submitted a proposal to reanalyze 40 rock samples for asbestos.

On December 11, 2019, SGI submitted its responses to DEP’s September 20, 2019 technical deficiency letter.

On January 24, 2019, DEP sent SGI another technical deficiency letter.

On February 18, 2020, SGI submitted responses to the technical deficiency letter.

On March 27, 2020, DEP sent SGI a copy of the draft permit documents.

On April 9, 2020, SGI provided a revised Asbestos Monitoring and Mitigation Plan.

On April 14, 2020, SGI provided comments for the draft permit documents.

On June 5, 2020 DEP sent SGI a revised draft mining permit and after discussions SGI sent a revised submission of an air monitoring plan.

II. Written Findings, Spreadsheets, and Calculations

DEP has completed and includes as part of its record of decision the following:

NPDES Fact Sheet (Attachment A),
NPDES Written Findings (Attachment B),

Written Findings for Special Protection Waters (HQ or EV Watershed) (Attachment C)
NT Pond 1 Effluent Characterization Screening Spreadsheet 11/22/19 (Attachment D)
NT Pond 2 Effluent Characterization Screening Spreadsheet 11/22/19 (Attachment E)
NT Pond 1 Water Quality Spreadsheet Revised 11/22/19 (Attachment F)
NT Pond 2 Water Quality Spreadsheet Revised 11/22/19 (Attachment G)
Anti-Deg Mass Balance Calculation SGI Northern Tract Quarry – SS – CHN1-US (Attachment H)
Anti-Deg Mass Balance Calculation SGI Northern Tract Quarry – SS – TC-US (Attachment I)

III. Summary of Substantive Issues

Many of these topics addressed below are also addressed in detail in the Comment Response Document (Attachment J).

The Comment Response Document is generated as part of the review and analysis of the SGI mining and NPDES permits. All public comment that was provided to DEP is catalogued extensively in the Comment Response Document, separated out by discrete issues, and responded to in detail. The overall purpose of the Comment Response Document, however, is to answer all input holistically or comprehensively rather than piecemeal, and to provide a framework and rationale for why the permits are being issued.

Operational Information

Quarry Development

The Northern Tract Quarry development consists of three (3) phases of mining. Phase 1 will consist of establishing two collection ditches which will encompass the upper portion of the Northern Tract Quarry and direct stormwater runoff back into the existing Pitts Quarry. Overburden soil and cap rock within the collection ditch perimeter can then be removed to facilitate mining of the metabasalt in the upper section of the Northern Tract Quarry.

Phase 2 development will consist of establishing a stormwater pond identified as NT Pond No. 1 and related collection ditches on the western perimeter of the Northern Tract Quarry to further increase accessibility to facilitate continued mining through incremental clearing and grubbing activities and the removal of overburden soil and cap rock material.

Phase 3 development will consist of establishing a stormwater pond identified as NT Pond No. 2 and related collection ditches on the eastern perimeter of the site and will facilitate mining of the Northern Tract Quarry to its full extents (Primary Quarry Development) as depicted in the Exhibit 9 Operations Map.

Design Summary of E & S Controls

Collection Ditches: All collection ditches are designed for the 100-year, 24-hour storm event which is far greater than the minimum required 10-year, 24-hour storm event. All ditches will be trapezoidal design with rip rap lining.

Filter Socks: Will be installed on the down slope of all ditches and ponds construction to ensure no sediment will go off the permit. The filter socks will be 32” in diameter and staked approximately every ten feet.

Impoundments/Treatment Facilities

Sediment Ponds

Sediment ponds NT No. 1 and NT No. 2 are both designed to detain the runoff from a 100-year, 24-hour storm event without discharging. Therefore, the Northern Tract Ponds will have an excess available storage volume. Thus, after a storm event, the accumulated water in the Northern Tract Ponds could be allowed to remain in the pond for two to five days. Then the Northern Tract Ponds could be dewatered in the following two to five days (within seven days total), depending on the chosen pump capacities. This will allow for a staged dewatering process at the Lower Mill Pond System. Therefore, the discharge rate at the Lower Mill Ponds outfall will be unchanged considering the addition of the pumped water from the Northern Tract Ponds. Finally, once the Northern Tract Quarry is developed such that it will detain water in the bottom of the pit, the ability to complete a staged dewatering process will be improved since the water can be detained in the quarry pit for an even longer duration. Also, in the early development stages of the Northern Tract Quarry any excess water in the Northern Tract Ponds can be directed to the Pitts Quarry pit to help with the stormwater storage until the water can be directed to the Lower Mill Ponds.

The ponds will be inspected after every storm event or on a minimum weekly basis. The inspection will entail a visual inspection of the impounded water level and clarity; measurement of the sediment storage level to ascertain its level relative to the maximum permitted sediment cleanout level; and observation of other pertinent features of the pond and adjoining area (such as contributing ditches). The ponds will be dewatered by pumping within two to seven days following a storm event to the Lower Mill Ponds or the Pitts Quarry Pit if necessary. The Northern Tract Ponds will not discharge to the Toms Creek Watershed.

Land Use Information: Hamiltonban Township and Adams County

Hamiltonban Township completed the Land Use Letter dated March 27, 2018. Hamiltonban Township determined that the Northern Tract Quarry meets the provisions of the local zoning ordinance and has received zoning approval. In addition, SGI must adhere to the Hamiltonban Township Conditional Use Permit (CUP) dated April 1, 2014.

In a letter dated January 9, 2018, the Adams County Planning Commission (ACPC) determined that the Northern Tract Quarry is consistent with the Adams County Comprehensive Plan. ACPC noted that the Northern Tract Quarry is subject to the CUP with Hamiltonban Township.

DEP included the Special Conditions 1 and 2 in the SMP to require compliance with zoning and the CUP conditions.

Blasting

SGI will perform quarry blasting in accordance with its approved Module 16 Blasting Plan included in the Northern Tract Quarry permit application. In addition to the Module 16 Blasting Plan, SGI will adhere to the conditions outlined in the Hamiltonban Township CUP. The design and purpose of the blasts is to fracture rock in the immediate vicinity of the quarry bench where stone is to be extracted.

Under Special Conditions 1 and 2 in the SMP, SGI is required to follow the CUP provisions:

Hamiltonban Township CUP (Blasting)

Provide Columbia Gas with a description of the geological setting, proposed quarry operation, preliminary mine plan (benching configuration and sequencing), maximum depth of mining and blasting plans and methods and have said plans reviewed with Columbia Gas by SGI's licensed contract blaster.

Provide and review with Columbia Gas the PA-DEP regulations regarding blasting near pipelines and utility lines as well as any other SGI blasting considerations.

Complete any geo technical ground vibration studies requested by Columbia Gas to address any potential impact to the gas line from the proposed quarry/blasting. If such studies are requested, said studies to be completed by a qualified independent civil engineering firm licensed in Pennsylvania, and the study results to be reviewed by the civil engineer with Columbia Gas and SGI's contract blaster.

Incorporate the recommended blasting set-back and any monitoring requirements from Columbia Gas into the proposed mine plan to be submitted with the PA-DEP application for the mining permit.

Maintain a mining blasting set-back from the gas line that is the greater of the PA-DEP regulations and the Columbia Gas recommendation.

Noise Control Plan

The Northern Tract Quarry permit application includes information regarding mining operations and noise pollution, which can be found in Module 17.3 – Noise Pollution and Section 6: Noise, of SGI's public hearing response document dated November 12, 2018.

SGI completed a noise study of the existing Charmian Plant (to establish background) and modeled the expected noise levels resulting from the proposed Northern Tract Quarry. The study included the measurement of sound levels at seven locations around the perimeter of the Charmian Plant site. There are no established regulatory noise limits (other than those that apply solely to blasting) that will apply to the proposed Northern Tract Quarry. Instead, the Department evaluates noise data based on the expected increase over background. SGI's noise study established the existing (background) average hourly noise levels to generally be 60 A-Weighted Decibels (dBA) or less, with a few exceptions, and with a maximum reading of 64 dBA.

The study also modeled the expected sound levels from the proposed Northern Tract Quarry, which included modeling sound levels at the nine closest residences to the proposed quarry. The study modeled the expected worst case (loudest) and hourly average sound level originating from the proposed Northern Tract Quarry pit and from the eastern side of the proposed Northern Tract Quarry pit boundary. The results indicate predicted worst-case sound levels from 39 to 59 dBA at the residential receptors, and 60 to 62 dBA at the property line. The results also indicate predicted average hourly sound levels of 37 to 56 dBA at the residential receptors, and 31 to 59 dBA at the property line. This represents a negligible increase in sound levels above background and does not constitute a public nuisance.

SGI has included planned setbacks (maintained and operational buffers) in place from adjacent homes and roads to limits noise to the public. Vegetated screenings will also be used to the extent possible to help mitigate noise levels. Best management practices will also be utilized at all times to minimize the creation of noise. Intermittent blasting will be limited to daylight hours. SGI will also use best management practices and blasting plans to minimize noise levels (over pressure) associated with blasting. Such measures may include using sufficient stem length and blasting when wind and cloud cover conditions are favorable. Also, when heavy, low cloud cover is present, noise level (overpressure) values will be higher than normal in surrounding areas.

Therefore, SGI will avoid blasting if predicted noise level (overpressure) values in noise-sensitive places exceed acceptable levels.

Truck Traffic

The Northern Tract Quarry permit application includes information regarding mining operations and truck traffic, which can be found in Section 5: Truck Traffic of SGI's public hearing response document dated November 12, 2018. As indicated in SGI First Responses § 5.3, SGI has hired a traffic consultant to review traffic patterns and controls near the site entrances where SGI-related truck traffic regularly travels. At the conclusion of this study SGI will make recommendations to the Township for improvements and the placement of additional signs or signals where needed. SGI will offer to fully pay for installation of this signage.

In addition, SGI submitted a permit revision application for the Charmian Plant to the Department on November 27, 2017, which was approved on October 16, 2018. The purpose of the revision was to add an alternate access road connecting their operations directly with PA Route 16. The construction of the Route 16 Access Road is currently underway and is expected to be completed by the end of 2020. The new trucking route should reduce truck traffic on roads less equipped to handle it.

Groundwater Quantity and Quality:

Groundwater Model

The proposed Northern Tract Quarry application includes a numeric groundwater model report developed using a network of nineteen (19) monitoring wells, surface water features (i.e., streams, seeps, springs, and wetlands) and aquifer testing results to predict the groundwater gradient for each level of mining. The results of the numeric groundwater model report simulated a quarry pit discharge (12th level) of 9.0 gallons per minute (gpm). The drawdown influence from groundwater pumping at the 12th level of mining shows a 10-foot drawdown that is confined by the Unnamed Tributary to Toms Creek and Toms Creek. In order to evaluate the predicted base flow stream and wetland loss, the model was simulated to calculate the predicted base flow stream and wetland loss at each level of mining (Table 9: Base Flow Stream and Wetland Loss Volumes of the Groundwater Model Report). A review of the simulated base flow loss at Stream Reach A, B, and C show at full quarry development (12th level) a total base flow loss of 20 percent (2.6 gpm) for Stream Reach A, 80 percent (2.5 gpm) for Stream Reach B, and a 23 percent (3.7 gpm) base flow loss for Stream Reach C. Toms Creek is represented by Stream Reach A, B, and C, therefore, the total base flow loss of 8.8 gpm is simulated from Toms Creek, which represents 27 percent of the total base flow (32 gpm) contributed at Stream Reach A, B, and C to Toms Creek. A review of the projected total flow loss from Toms Creek can be found in the Unnamed Tributary to Toms Creek and Toms Creek section of the review memo.

Groundwater Quality and Quantity

Module 8 of the Northern Tract Quarry permit application provides a description of the hydrology of the area with respect to the permit area. Specifically, Module 8.3(d) provides an evaluation of the effects previous mining has had on the quantity and quality of the groundwater in the area. As noted in the response for Module 8.3(d), SGI's adjacent quarry operation (Pitts Quarry) actively mines the same metabasalt of the Catoclin formation that underlies the proposed Northern Tract Quarry. Skelly and Loy (SGI's Consultant) has not identified any off-site water supplies that have been adversely impacted, contaminated, diminished or interrupted as a result of mining activities conducted at Pitts Quarry. The Groundwater Model Report also found in Module 8 provides additional details related to effects of previous mining on the quantity of the groundwater in the project area.

The Department completed a review of the most recent water quality analysis from the active Pitts Quarry and monitoring wells for the Northern Tract Quarry. The recent water quality analysis shows that water quality remains within background concentrations for each monitoring point, although monitoring wells MW5 and MW2 show fluctuations in iron concentrations ranging from 0.36 to 41.2 milligrams per liter (mg/L) for MW5 and 0.67 to 26.9 mg/L for MW2. The analysis for MW5 and MW2 with higher concentrations correlates with increased Total Suspended Solids (TSS). A review of the recent water quality analysis for the nearest receiving stream points (SS-9 and SS-10) to MW5 shows iron concentrations ranging from 0.06 to 1.2 mg/L for SS-9 and iron concentrations ranging from 0.17 to 1.3 mg/L for SS-10. A review of the recent water quality analysis for the nearest receiving stream point (SS-2) to MW2 shows iron concentrations ranging from Non-Detect (ND) to 0.26 mg/L. The background analysis for MW5 and MW2 shows that iron concentrations have been elevated when compared to the surrounding monitoring wells. A review of the recent Static Water Level (SWL) measurements for each monitoring well shows that the measured elevations remain within background levels for each monitoring well. The monitoring wells will continue to be monitored for Pitts Quarry in addition to the monitoring wells established for the Northern Tract Quarry. Based on the information provided in the Northern Tract Quarry application and current water monitoring analysis, degradation to the local hydrology is not anticipated.

Private Water Supply

The results of the numeric groundwater model report simulated for the Northern Tract Quarry show the projected drawdown for each level of mining. The simulated 12th level drawdown map (Figure 32 of the Groundwater Model Report) shows a 10-foot drawdown that is confined by the Unnamed Tributary to Toms Creek and Toms Creek. All of the private water supply wells and springs (with the exception of 15A16) within 1,000 feet of the permit boundary and inventoried for the Northern Tract Quarry are located on the opposite side of the Unnamed Tributary to Toms Creek and Toms Creek, with respect to the Northern Tract Quarry. 15A16 is currently owned by SGI and has been incorporated into the monitoring program as a groundwater monitoring well. As indicated by the simulated 12th level drawdown map, drawdown is not anticipated to occur beyond the confines of Unnamed Tributary to Toms Creek and Toms Creek.

In addition to simulating the predicted drawdown for each level of mining, the groundwater model report also simulates the reclamation potentiometric groundwater elevations contour map. Figure 33 Simulated Reclamation Potentiometric Groundwater Elevation Contour Map of the Groundwater Model Report indicates that the potentiometric groundwater elevations in the areas where the private water supplies lie will remain at the pre-mining elevations shown on Figure 13: Simulated Existing Site Conditions Potentiometric Groundwater Elevation Contour Map.

Public Water Supply

Cambria District Mining Office contacted DEP's Southcentral Regional Office regarding the draft source water protection plan for the Fairfield Municipal Authority (FMA SWPP). The Northern Tract Quarry lies within the proposed wellhead protection Zone III and approximately 2,500 feet east of the wellhead protection Zone II boundary as shown in the proposed Figure 3-2 Source Water Protection Zones from the draft FMA SWPP currently under review. Therefore, since the Northern Tract Quarry is located outside the proposed wellhead protection Zone II for the Fairfield Municipal Authority, there are no restrictions that prohibit the proposed surface mining activities.

DEP included Special Conditions 3, 4, 5, 8 and 19 in the SMP to monitor groundwater quantity and quality.

Unnamed Tributary to Toms Creek and Toms Creek

Unnamed Tributary to Toms Creek and Toms Creek Quantity

In order to evaluate the projected total flow loss of Toms Creek (both surface and base flow), an evaluation of the overall drainage area was considered. The total contributory drainage area for Toms Creek upstream of the Northern Tract Quarry is 4.83 square miles (mi²) and the drainage area of the Northern Tract Quarry (85 acres) is 0.13 mi². The amount of surface drainage loss to Toms Creek would be 2 percent of the total drainage area to Toms Creek. The lowest stream flow from background flow measurements collected from the downstream monitoring point on Toms Creek (SS-TC-DS) is 278 gpm. The lowest stream flow of background flow measurements collected from the downstream monitoring point on the Unnamed Tributary to Toms Creek (SS-CHN1-DS) is 65 gpm. Therefore, the lowest total stream flow of background flow measurements of Toms Creek (including flow from SS-CHN1-DS) is 343 gpm.

Using the percent of drainage area loss (2 percent) due to the development of the Northern Tract Quarry, the total surface flow loss would be 7 gpm. Therefore, the combined flow loss of surface and base flow would be 16 gpm or 5 percent of the lowest background stream flow of Toms Creek. Both the stormwater and groundwater pumped from the Pitts Quarry and Northern Tract Quarry will be pumped to the adjacent Charmian Plant and discharged at outfall 001 to Miney Branch under the NPDES permit No. PA0009059. Miney Branch drains to the confluence with Toms Creek approximately 5.5 miles downstream of the Northern Tract Quarry, at which point the water pumped from the quarry operations will return to Toms Creek. Although the proposed Northern Tract Quarry will alter the hydrology locally with respect to the quarry operations, the predicted total flow loss to Toms Creek during low flow conditions is projected to be 5 percent, preserving the designated use of High Quality and flow of Toms Creek.

Unnamed Tributary to Toms Creek and Toms Creek Quality

The Northern Tract Quarry is located in the Toms Creek Watershed. There are currently two surface mine operations within the watershed located adjacent to the Northern Tract Quarry, SMP No. 01930302 (Pitts Quarry) and SMP No. 6477SM5 (Charmian Plant), both operated by SGI. A drainage divide runs approximately through the center of the Northern Tract Quarry permit and therefore the mining area of the Northern Tract Quarry will drain to two different receiving streams: Unnamed Tributary to Toms Creek on the eastern section and Toms Creek on the western section of the permit.

The water quality of the Unnamed Tributary to Toms Creek is represented by monitoring points SS-CHN1-US and SS-CHN1-DS. The water quality of background samples collected from the Unnamed Tributary to Toms Creek range in pH from 6.4 to 7.7 Standard Units (S.U.), temperature from 2.5 to 21.4 degrees Celsius (°C), Iron concentration from ND to 0.30 mg/L, Manganese concentration from ND to 0.02 mg/L, Aluminum concentration from ND to 0.18 mg/L, Sulfates concentration from 3.7 to 8.0 mg/L and Total Suspended Solids concentration from ND to 19 mg/L.

The water quality of Toms Creek is represented by monitoring points SS-TC-US and SS-TC-DS. The water quality of background samples collected from Toms Creek range in pH from 6.3 to 7.7 S.U., temperature from 2.3 to 22.3 °C, Iron concentration from ND to 0.67 mg/L, Manganese concentration from ND to 0.02 mg/L, Aluminum concentration from ND to 0.14 mg/L, Sulfate concentration from 2.8 to 6.8 mg/L, and Total Suspended Solids concentration from ND to 7 mg/L.

The quality of both Toms Creek and the Unnamed Tributary to Toms Creek exhibit low metal, total suspended solids, and sulfates concentrations.

In addition to the water quality provided with the Northern Tract Quarry application, surveys of Toms Creek were conducted in 2011 and 2014, both indicating that the existing use of High Quality – Cold Water Fishes is appropriate. These surveys support that the quality of Toms Creek has not been degraded by the active Pitts Quarry and Charmian Plant operations. The Northern Tract Quarry permit application also includes a 300-foot maintained vegetated buffer (CUP Maintained Buffer) from the present center line of Toms Creek as shown on the Operations Map (Exhibit 9).

Monitoring Plan:

The monitoring frequency for the Northern Tract Quarry will consist of quarterly sampling for each surface water monitoring point for both quality and quantity. The following surface water features are included in the monitoring plan: SS-TC-US, SS-TC-DS, SS-CHN1-US, SS-CHN1-DS, SS-4, DCNR Seep 1, Upper Seep, Pond 1, and Wetland C.

Stream Protection Condition:

Special Condition 19 of the SMP utilizes the perimeter monitoring wells in conjunction with the upstream and downstream monitoring points for Toms Creek and Unnamed Tributary to Toms Creek. The purpose of the condition is to monitor the perimeter monitoring wells, utilizing the predicted potentiometric groundwater elevations represented in Figures 15 through 23 of the Groundwater Model Report for each level of mining for comparison, as well as weekly stream monitoring during August and September, and annual macroinvertebrate surveys during August and September to ensure Toms Creek and UNT to Toms Creek are protected from impact during the most vulnerable stream flow conditions. If an impact is observed, the permittee will be required to remediate the impact.

Social or Economic Justification

SGI followed appropriate Department guidance and completed an Anti-Degradation Supplement for Mining Permits, required when permitting within a special protection watershed. In the Anti-Degradation Supplement, SGI indicated that non-discharge alternative use at the proposed Northern Tract Quarry will not account for the entire discharge and completed the Social or Economic Justification (SEJ) application.

The information contained in the SEJ application effectively demonstrated that the combination of water quality protection measures (non-discharge alternatives use scaled to account for all precipitation events less than a 100 year/24 hour storm), limited extent of geologic resource (the proposed Northern Tract Quarry is an extension of one of 12 existing quarries of similar geologic material in North America, and the only existing quarry of similar geologic material in the northeastern United States), and local economic benefit (the maintenance of 147 jobs, 91% of which are filled by employees who live within 30 miles of the proposed quarry location, and the payment of \$255,000 in combined property and sales taxes to the local economy) meet the regulatory standard for social or economic justification for water quality degradation. It should be emphasized that the approval of this SEJ does not mean that water quality will be degraded, only that if some degradation were to take place, it would be socially and economically justified. This degradation would only be possible in the event of a precipitation event greater than a 100 year/24 hour storm.

No Presumptive Evidence of Potential Pollution of Waters of the Commonwealth

After its review of SGI's application, public comment, and exercising its own due diligence, the Department has concluded that there is "no presumptive evidence of potential pollution of the waters of this Commonwealth" by permitting this quarry. 25 Pa. Code § 77.126(a)(3). As documented in the NPDES Fact Sheet and Written

Findings, the permittee will utilize two sedimentation ponds identified as NT Pond No. 1 (outfall 001) and NT Pond No. 2 (outfall 002) to manage stormwater. These sedimentation ponds will be designed to detain runoff from a 100-year, 24-hour storm event without discharging as described in the Impoundments/Treatment Facilities section above. The permittee will use the over designed sedimentation ponds to detain stormwater and also detain pit water (groundwater) in the pit sump that will be pumped to the Charmian Plant NPDES permit No. PA0009059 for discharge to Miney Branch. These procedures will allow the operator to effectively use a non-discharge alternative by not discharging to Toms Creek during precipitation events less than or equal to a 100-year, 24-hour storm event. The permittee has also effectively demonstrated this process at the active Pitts Quarry operation. The NPDES permit for the Northern Tract Quarry also contains an Individual Permit Condition (Condition No. 4) that the operator must not cause or contribute to degradation of Unnamed Tributary to/and Toms Creek in the event of a discharge from the emergency spillways for outfalls 001 and 002. This condition also requires that the operator conduct sampling during a discharge event that will be evaluated to determine reasonable potential for an exceedance of the corresponding water quality criterion for TSS. Should a reasonable potential for an exceedance be established, water quality based effluent limits will be calculated and implemented during precipitation events, as described above, and the permit will be revised at that time to include these limits. Therefore, the Department finds no presumptive evidence of potential pollution of the waters of this Commonwealth.

Geology

SGI has provided geologic logs for seventeen (17) drill holes and ten (10) monitoring wells that were used to characterize the local geologic structure of the proposed Northern Tract Quarry. Geologic cross-sections (A-A' and B-B') can be found on Exhibit 7.1 (Geologic Cross-Sections) prepared using both drill hole and monitoring well geologic logs. The geologic drill logs show that the subsurface material within the mining area consists of overburden soils, weathered bedrock (cap rock), metabasalt, and metarhyolite. Module 7 describes the metabasalt as dark green with purplish banding and a platy, agglomeritic, porphyritic texture. The metabasalt contains chlorite, epidote, and quartz inclusions, porphyroblasts of epidote and quartz, epidote and feldspar phenocrysts, and veining comprised of calcite and quartz. The metarhyolite occurs as layers within the metabasalt and described as a purplish rock with quartz veining, epidote porphyroblasts, and epidote and chlorite inclusions.

The local geologic structure is described in Module 7, consisting of southwest-plunging folds, and southeast-dipping flow cleavage with related downdip lineation. These structural features are impressed upon all rocks of the area except those of post-paleozoic age. All folds in the project area are coaxial, except for locally developed, small kink folds and bands produced by the crinkling of the regional cleavage by a later slip cleavage, and those associated with the Tunnel Hill fault. Folds in the area are the product of flexural-slip and passive mechanisms. Major faults are primarily high-angle reverse faults (Fauth, 1978). The metarhyolite overlies the metabasalt in wells MW-9S/D and MW-10D confirming the presence of a thrust fault trending from southwest to northeast and extending across the easternmost portion of the proposed Northern Tract Quarry.

Rock Core Sampling for Naturally Occurring Asbestos (NOA)

The Department determined that the potential for NOA exists within the Northern Tract Quarry permit area and requested that SGI characterize the presence of NOA. SGI provided analysis of 40 samples collected from the 17 rock core holes drilled within the mining area of the Northern Tract Quarry. The location of each sample can be found in Exhibit A: Core Sample Locations of the public hearing response document dated February 18, 2020. The 40 samples collected, which were analyzed for NOA, represent each rock core boring and each 50-foot mining interval throughout the mining area. The samples were analyzed in April 2017 using polarized light microscopy (PLM) method EPA/600/R-93/116, with a detection limit of 0.1%. The sample results were reported to the Department on November 12, 2018; of the 40 samples, three detected the presence of actinolite, with a maximum concentration of 0.5%.

Following a review of these results, the Department required, in a technical deficiency letter dated September 30, 2019, that the 40 samples be re-analyzed using transmission electron microscopy (TEM). SGI responded on October 15, 2019, proposing to re-analyze the 40 samples using a procedure based on the following: CARB 435, ASTM D5756, AHERA, EPA 600/R-93/116, and ISO 22262-2. This procedure was approved by the Department on December 4, 2019. The sample results were reported to the Department on January 17, 2020; of the 40 samples, eight detected the presence of actinolite, with a maximum concentration of 6.2%. Additionally, the Department collected 5 samples from SGI's rock cores on December 19, 2019 in addition to 5 split samples collected the same day, which were sent to an independent laboratory for analysis via PLM and TEM. Of the 10 PLM results of the Department's samples, eight detected the presence of actinolite, with a maximum concentration of 5.25%. Of the 10 TEM results of the Department's samples, eight detected the presence of actinolite, with a maximum concentration of 13.0%. Upon completion of the NOA testing, SGI prepared a map to show the location of the NOA occurrence and the primary burial locations. These locations can be found on Exhibit B: Suspect Material Location of the public hearing response document dated February 18, 2020.

The results of the NOA testing show that NOA in the form of actinolite is present throughout the mining area at concentrations ranging from 0.1 to 13.0%, with the higher percentages found near the thrust fault trending from the southwest to northeast on the easternmost portion of the Northern Tract Quarry. The permit will include a monitoring plan for asbestos that includes regular perimeter monitoring, periodic activity-based monitoring, and source material monitoring to ensure that asbestos does not leave the permit area in harmful concentrations. The activity-based monitoring will include the monitoring of truck traffic within the permit area.

DEP included Special Condition 16 in the SMP to require SGI to implement its Mineral Identification and Management Guide at its existing quarries and at the Northern Tract Quarry.

Air Quality

DEP is aware that there are multiple potentially applicable methods for measurement of exposure to Naturally Occurring Asbestos. These methods consist of but are not limited to the following:

Method	Fiber Definition
Fiber-NIOSH 7400 (PCM)	Longer than 5 µm with a length to width ratio equal to or greater than 3:1.
Fiber-NIOSH 7402 (TEM)	All particles with a diameter greater than 0.25 µm that meet the definition of a fiber (AR greater than or equal to 3:1, longer than 5 µm).
Fiber-OSHA ID-160 (PCM)	A particle that is 5 µm or longer with a length to width ratio of 3:1 or longer.
Fiber-Yamate (TEM)	Particle with an AR of 3:1 or greater and with substantially parallel sides.
Fiber-AHERA (TEM)	A structure greater than or equal to 0.5 µm in length with an AR (length to width) of 5:1 or greater and having substantially parallel sides.
Fiber (fiber)-ISO 10312 (TEM)	An elongated particle that has parallel or stepped sides. For the purposes of this international standard, a fiber is defined to have an AR equal to or greater than 5:1 and a minimum length of 0.5 µm.
Bundle-NIOSH 7400 (PCM)	Not defined in method.
Bundle-NIOSH 7402 (TEM)	Not defined in method.

Bundle-OSHA ID-160 (PCM)	Not defined in method.
Bundle-Yamate (TEM)	Paniculate composed of fibers in a parallel arrangement, with each fiber closer than the diameter of one fiber.
Bundle-AHERA (TEM)	A structure composed of three or more fibers in a parallel arrangement with each fiber closer than one fiber diameter.
Bundle-ISO 10312 (TEM)	A structure composed of parallel, smaller diameter fibers attached along their lengths. A fiber bundle may exhibit diverging fibers at one or both ends.

In its February 2020 response to DEP’s technical deficiency letter, SGI submitted Exhibit I “Updated Asbestos Air Monitoring and Mitigation Plan.” Page 7 of Exhibit I, Section 6.0 “Analytical Methods” states that SGI proposes to use the following:

The analytical methods and laboratory analysis for asbestos in air analysis to be utilized as part of this plan will include both PCM and TEM methodology, as referenced above in Section 4. Methods 7400 and 7402 have sample volumes and flow rates that are specified and consistent with the field sampling procedures described in Section 4.0 above.

The PCM method (Method 7400) is used to count all visible fibers longer than 5 µm, including non-asbestos fibers. This test may over predict the actual potential asbestos in the air, consequently, the PCM method will provide a worst-case indication of the number of fibers in the sample areas. TEM analysis (Method 7402) can identify and differentiate asbestos fibers from non-asbestos fibers and will be used if any PCM results indicate more than 0.01 fibers/cc.

After consideration of all of the various methodologies and SGI submittals, DEP has determined that for ambient air testing it is necessary for SGI to use ISO 10312-2019-10 “Ambient Air – Determination of Asbestos Fibers – Direct Transfer Transmission Electron Microscopy Method,” as modified by Page C-3 of EPA’s “OSWER Directive #9200.0-68, September 2008, Framework For Investigating Asbestos-Contaminated Superfund Sites,” which states that under the ISO method, two specific counting schemes are detailed. The first scheme is more general and allows for the counting of fibers that are 0.5 µm in length or greater and have aspect ratios of 5:1 or greater. In routine practice, TEM is able to resolve fibers down to approximately 0.1 µm in width, as compared to the resolution for routine PCM (0.25 µm). Therefore, short thin fibers that would not be detected using PCM will be detected using TEM under the general counting scheme. That requires reporting of a minimum length of 0.5 µm for fibers and bundles. The analysis should also include reporting of cleavage fragments and other structures at a minimum length of 0.5 µm. Fibers should have a minimum aspect ratio of 3:1. All air sampling durations will be established to assure an adequate sample volume to achieve a reporting limit of 0.005 f/cc or lower, in order to show whether the sampling results meet DEP’s target level of concern for SGI of 0.01 f/cc.

DEP required edits to SGI’s Asbestos Monitoring and Mitigation Plan to implement these changes. The revised plan allows SGI to use PCM testing concurrently with ISO 10312 testing for a period of time in order to compare the results of the two methods.

In addition to the testing and sampling methods, the Department included Special Conditions 14 through 18 to implement the Asbestos Monitoring and Mitigation Plan and require additional dust suppression measures by SGI.

Wetlands

The Northern Tract Quarry permit application has identified five (5) wetlands within the permit area. These wetland areas have been surveyed and are labeled A thru E on the Exhibit 6.2 and Exhibit 9 maps. These wetlands are located along the Unnamed Tributary to Toms Creek on the southeastern portion of the Northern Tract Quarry permit area. The hydrologic sources to these wetlands are primarily associated with the surface water and seasonal groundwater interflow contributed from the Unnamed Tributary to Toms Creek. The groundwater model simulations suggest that impacts related to diminished baseflow (bedrock groundwater recharge) to existing wetlands and the Unnamed Tributary to Toms Creek corridor as a result of lowering the potentiometric surface will be negligible during the development of the Northern Tract Quarry. However, Wetland D may have indirect impacts due to the percentage of surface drainage area loss and lack of groundwater seepage hydrology. Since indirect impacts to Wetland D may occur, the Northern Tract Quarry permit includes an annual wetland monitoring plan.

DEP included Special Condition 11 in the SMP providing for a comprehensive vegetation survey and potential mitigation strategies.

Pennsylvania Natural Diversity Inventory (PNDI)

Pennsylvania Fish and Boat Commission (PFBC)

Timber Rattlesnake – The Northern Tract Quarry permit application includes a Habitat Assessment for the Timber Rattlesnake as requested by the PFBC. The permittee completed the Habitat Assessment and concluded that potential denning habitat conditions were likely present within the proposed permit area. A Presence/Absence Survey was completed during the spring of 2016. In letters dated July 11, 2016 and May 14, 2019, the PFBC determined that it does not anticipate any direct adverse impacts to the Timber Rattlesnake from the Northern Tract Quarry operations.

Department of Conservation and Natural Resources (DCNR)

Trillium cernuum (Nodding Trillium) – The Northern Tract Quarry permit application includes a Botanical Survey for the Nodding Trillium that delineates the population boundaries. This survey was completed on April 20-21, 2016. The results of the survey can be found on the Species of Concern Figure 2 - Nodding Trillium Survey Map. In letters dated September 22, 2016 and April 1, 2019, DCNR determined that no impacts were anticipated per the April 20-21, 2016 survey. However, DCNR noted that a few individuals (18 out of a total of 1,522 individuals surveyed) were found within the 150-foot-wide Operational Buffer allocated for non-extractive mining support activities. As such, DCNR requested a long-term monitoring plan for the remaining individuals.

DEP included Special Condition 10 in the SMP that requires periodic monitoring for the Nodding Trillium beginning immediately following initiation of mining activities.

United States Fish and Wildlife Services (USFWS)

Bog Turtle – The Northern Tract Quarry permit application includes a Phase I Bog Turtle Habitat Evaluations and Jurisdictional Wetland-Watercourse Evaluations report dated April 8, 2016. Initially, USFWS responded to the report on May 11, 2016 and August 14, 2017 indicating that it concurred with the survey results and concluded that implementation of the proposed project will have no effect on bog turtles. SGI completed an updated PNDI review on December 21, 2017 to comply with the two-year term for PNDI clearance. The USFWS responded on January 8, 2018 indicating that it concurred with the survey results and concluded that implementation of the proposed project will have no effect on bog turtles. However, on February 21, 2019, the USFWS issued a follow-up letter documenting that a 2016 bog turtle record was not yet included in the State's

PNDI system. In addition, the wetland in question was not included in the December 16, 2015 Phase I survey report. The USFWS requested a field visit of the site to better understand possible impacts to the wetland's hydrology. A field meeting was held on March 18, 2019 to discuss the location of the wetland with respect to the Northern Tract Quarry. The USFWS responded in a letter dated April 2, 2019 that the Service concurs with DEP's conclusion and we conclude that the effect of the proposed project on bog turtles will be insignificant or discountable.

Indiana and Northern Long-eared Bat – The Northern Tract Quarry permit application includes a Mist-Net Survey Report dated November 10, 2017 to determine the presence or probable absence of the federally endangered Indiana and Northern Long-eared Bats. The mist net survey was completed on October 7–14, 2017. In a letter dated January 19, 2018 and updated response on May 31, 2019, the USFWS reviewed the results of the mist-net survey and determined that the USFWS does not expect adverse effects to hibernating bats from the proposed project. The USFWS, however, recommended confining any tree removal activities to the winter months (November 15 through March 31) to avoid killing or injuring breeding bats.

The Northern Tract Quarry permit application includes a 300-foot CUP Maintained Buffer from the present center line of Toms Creek as shown on the Exhibit 9. The CUP Maintained Buffer will be monitored by SGI for the purpose of adding/replacing damaged or dead trees.

DEP included Special Condition 9 in the SMP to specify when SGI may conduct tree clearing.

Cultural and Historic Resources

Pennsylvania State Historic Preservation Office (PA SHPO)

The Northern Tract Quarry permit application includes a project review form that was provided to PA SHPO on February 19, 2016. PA SHPO responded to the project review form on March 8, 2016 indicating that there was a high probability that significant archeological sites are located within the project area. Although there are no recorded archaeological sites within the project boundaries, the soil type, topographic setting, slope direction, and distance to water of the project area are similar to the settings of known archaeological sites in the vicinity. A Phase I archaeological survey of the project area to locate potentially significant archaeological resources was recommended but not required.

SGI completed a Phase I archeological survey of the Northern Tract Quarry dated March 22, 2018. In a letter dated April 23, 2018, the PA SHPO responded to the Phase I Archaeological Survey Report and agreed with the recommendations of the report that the Copper Mine Site (36ADO570) and William Smith House Site (36AD0571) are eligible for inclusion on the National Register of Historic Places. PA SHPO opined that no further archaeological work is necessary for this project.

In an email dated January 25, 2019, PA SHPO also commented on the public comments received regarding the Confederate Retreat Path, determining that the opinion stated in their April 23, 2018 letter remains the same. The surveys conducted on the subject property, augmented by on-the-ground field views, have been thorough. No National Register eligible resources were found. In addition, there is no tangible, archaeological footprint of the path referenced in the letter and there are no archaeological sites or standing structures associated with them on the property.

Post Mining Land Use and Reclamation

Reclamation Plan

The post-mining land use and reclamation plan for the proposed Northern Tract Quarry will consist of an unmanaged water impoundment surrounded by forestland providing wildlife habitat and access to water in the impoundment for fire suppression and emergency services (Hamiltonban Township – Conditional Use Permit). A detailed outline of the proposed reclamation plan can be found in Module 20 of the Northern Tract Quarry permit application. The previously mined Charmian Quarry is currently being backfilled using the overburden soils and crushing by-products (rock fines) and blasted cap rock from the existing Pitts Quarry. Likewise, Pitts Quarry will be backfilled using the overburden soils and crushing by-products (rock fines) and blasted cap rock from the proposed Northern Tract Quarry.

Reclamation Timetable

The Northern Tract Quarry is projected to be in operation for approximately fifty-five (55) years. A detailed Timetable can be found in Module 10.6 -Reclamation Timetable of the permit application. The timetable may vary depending on specific site conditions encountered during construction, weather, market demand for the aggregate products, and related factors.

Pennsylvania Constitution Article I, Section 27

Article I, Section 27 of the Pennsylvania Constitution is a central consideration during DEP's review of environmental permit applications.

Regarding the SGI surface mining and NPDES permit applications, DEP has fully considered the environmental effects of its action to approve the applications and has determined that these approvals will not result in the unreasonable degradation, diminution, depletion or deterioration of the environment.

The permit application process itself regulatorily required SGI to provide extensive detailed information related to the environmental effects of the proposed Northern Tract Quarry, including general environmental resource information, a description of the hydrology and geology, groundwater and surface water information, vegetation, alternative water supply information, and land use considerations. 25 Pa. Code §§ 77.401-77.410.

In addition, as extensively catalogued and detailed elsewhere in the Comment Response Document, this Review Memorandum, and other findings issued concurrent with the SGI permits, DEP specifically required SGI to provide multiple rounds of additional and updated information as a result of the application review, public participation, multiple DEP technical deficiency letters, and DEP's awareness of historic resource issues, hydrologic and stormwater management matters unique to the SGI site, air quality concerns, general nuisance questions, surrounding natural resource and recreation concerns as well as the potential impact on the proposed activities on the local economy, and the presence of naturally occurring asbestos (NOA).

The information was provided over an extended review period of several years, with multiple public hearings conducted and considerable public participation provided. Meanwhile, throughout the SGI application process, DEP's Cambria District Mining Office – which has considerable knowledge of and experience with oversight of the SGI operation – coordinated internally with other DEP mining offices, other DEP regional offices, and various programs within DEP's Central Office to evaluate the multiple mining and air quality issues raised as a result of this permit application. DEP thus brought to bear its own team of expert geologists, engineers, and other technical professionals to address the various issues raised by the SGI applications.

In addition, DEP received input from multiple resource agencies, many of whom are also Article I, Section 27 trustees, such as the Pennsylvania Fish and Boat Commission, the Pennsylvania Department of Conservation and Natural Resources, the Pennsylvania Historical and Museum Commission, the Pennsylvania Department of Health, the U.S. Fish and Wildlife Service, the U.S. Mine Safety and Health Administration, and the U.S. EPA.

By coordinating its action with multiple other DEP offices and other agencies, as well as with the Air Quality Program which issues permits for the processing activities at the existing Charmian facility, DEP has pursued issuance of the SGI permits in a holistic fashion. Further, the review and permitting was done in an impartial manner that gave due regard to the interests of both the current citizens and future citizens of Pennsylvania. Because of the presence of NOA in the bedrock in the area of SGI's facility, DEP provided an enhanced level of scrutiny that involved increased interaction with and reliance upon all stakeholders. As a result of that process, the Cambria District Mining Office in consultation with other DEP offices applied its geologic, engineering, and other technical expertise to the voluminous data and other information and determined that SGI's quarrying activities would present no undue risk to public health or the environment.

Nonetheless, the SGI permit also contains numerous detailed special conditions to address the specific issues presented by the SGI application for the Northern Tract Quarry. These special conditions and other requirements of the permit build in multiple layers of protection and conservatism, including a groundwater monitoring well network, monitoring of wetlands and certain species, air quality monitoring, enhanced dust mitigation measures, additional record keeping requirements, and an Asbestos Air Monitoring and Mitigation Plan.

In addition, because NPDES permits expire every five years, any issues that may arise in the interim will be part of DEP's periodic consideration. DEP may also revisit the conditions of the NPDES permit at any time if circumstances warrant and need not wait until another renewal period has passed.

Further, as the depth of quarrying increases, SGI must provide updated monitoring and hydrologic information for DEP's consideration. As with the NPDES permit, DEP may revisit the mining permit at any time if circumstances warrant.

By pursuing a vigorous review of the SGI permit application, DEP met its Article I, Section 27 obligations and satisfied its trustee duties by acting with prudence, loyalty and impartiality with respect to the beneficiaries of the natural resources impacted by the DEP decision.

IV. Conclusion:

Having considered the application, the updates to the application, and the relevant statutes, regulations, policies, and Pennsylvania Constitutional obligations, I recommend the issuance of the NPDES and Surface Mining Permit.

Attachments (see list on the next page)

Cc: File

Table of Contents for Attachments to DEP's SGI Review Memo

Item	Description
A	DEP has completed a NPDES Fact Sheet
B	NPDES Written Findings
C	Written Findings for Special Protection Waters (HQ or EV Watershed)
D	NT Pond 1 Effluent Characterization Screening Spreadsheet 11/22/19
E	NT Pond 2 Effluent Characterization Screening Spreadsheet 11/22/19
F	NT Pond 1 Water Quality Spreadsheet Revised 11/22/19
G	NT Pond 2 Water Quality Spreadsheet Revised 11/22/19
H	Anti-Deg Mass Balance Calculation SGI Northern Tract Quarry – SS – CHN1-US
I	Anti-Deg Mass Balance Calculation SGI Northern Tract Quarry – SS – TC-US
J	Public Comment and Response Document