SPECIALTY GRANULES LLC
PROPOSED NORTHERN TRACT QUARRY
RESPONSE TO PUBLIC COMMENTS RECEIVED AT JULY 23, 2018 PUBLIC MEETING AND RELATED PERIOD FOR SUBMISSION OF WRITTEN COMMENTS

Large Noncoal Surface Mining Permit Application No. 01180301
NPDES Permit Application No. PA0279617

Submitted: November 12, 2018

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Introduction

Specialty Granules LLC ("**SGI**") would like to provide to the Pennsylvania Department of Environmental Protection ("**PADEP**" or "**Department**") responses to certain public comments submitted concerning the pending permit applications for the proposed Northern Tract Quarry at SGI's Charmian Quarry in Hamiltonban Township, Adams County.

In April 2018, SGI submitted Large Noncoal Surface Mining Permit Application No. 01180301 (the "**Mining Permit Application**") and NPDES Permit Application No. PA0279617 (the "**NPDES Permit Application**") (collectively referred to as the "**Applications**"), proposing the development and mining of metabasalt minerals from an approximately 112.3 acre portion of SGI-owned property known as the "**Northern Tract**." In response to PADEP's initial review, the Applications were revised / updated in June 2018. The Northern Tract is located on a hill situated approximately 4,500 feet (~ 0.8 miles) northeast of what is identified on USGS maps as "Pine Mountain." The Mining Permit Application proposes mining of metabasalt materials from a 63.0 acre mining area, surrounded by an approximately 22.0 acre support/operational buffer (to be utilized for erosion and sedimentation controls, stormwater retention ponds, access roads, and similar support facilities). The Mining Permit Application provides for an additional 27.3 acres of maintained buffer, which is currently and would remain wooded, and where the only activity permitted is to add trees or replace damaged or dead trees.

Following provision of public notice, the Department conducted a public meeting on the Mining Permit Application at the Fairfield Firehall on July 23, 2018. The Department accepted additional written comments for an additional two weeks after the public meeting (i.e., until August 6, 2018); and some additional public comments were received after that date.

SGI has carefully reviewed the public comments presented at the July 23rd public meeting, and the additional written public comments submitted to date in relation to the Mining Permit Application and NPDES Permit Application. SGI appreciates the questions, comments and concerns expressed by members of the public and respects their efforts to raise issues for consideration by the Department. Although many of the issues raised in these comments were addressed in the multiple submissions that comprise SGI's applications, out of respect for the public and in an effort to answer questions and avoid misperceptions, SGI has undertaken the effort to prepare and submit detailed responses to a broad range of issues raised in those comments. In some cases, further data and information, additional explanations of the proposed mining operations and planned impact avoidance and mitigation actions, and the results of further analyses are provided as part of these responses. Accordingly, these responses and the attached Appendices are intended to further explain and supplement the information contained in the pending Applications.

SGI understands that the Department intends to hold a second public hearing on the Applications at a future time, yet to be announced. SGI supports this decision, and welcomes full public participation with respect to the proposed Northern Tract Quarry. It is the company's hope that the additional information provided in these responses will assist in better

understanding what is proposed, including the substantial efforts that SGI has taken to plan and pursue this operation in a manner that meets all applicable environmental regulations, protects environmental values, and minimizes and mitigates potential impacts.

With this introduction, SGI respectfully offers the following responses to the public comments received at the July 23, 2018 public meeting and initial written comments regarding the pending Applications. To facilitate the organization of these responses, SGI has compiled the comments provided by various organizations and individuals by topic. In each of the following sections, main section headings identify the general issue topic, and subheadings (e.g., 1.1, 1.2, etc.) breakout particular comments or responses. At the start of each main section (or subsection where appropriate), comments received from the public are summarized in italics, following by SGI's Response. (With respect to oral comments received at the July 23 public meeting, which was recorded but not formally transcribed, we have attempted to reflect what could be discerned from the recording, but would apologize in advance if any comments were misheard.) In each instance, we have identified those providing the comments (e.g., Friends of Toms Creek/Fair Shake Environmental Legal Services ("**FOTC/Fair Shake**"). Where multiple persons provided the same comment (sometimes in form letters), we have indicated "Multiple Commenters." A number of the responses refer to additional documents or materials which are provided in Appendices accompanying this combined narrative. For ease of cross-reference, the Appendices are identified by numbers and letters (i.e., Appendix 2-A) that tie back to the relevant sections of the responses provided below.

1. Hydrologic Impacts

1.1 Northern Tract Pit Excavation Impacts on Hydrology

Comments:

I'd like to know what the existing permit that they're applying for is going to allow them to go down. Are they going to be able to go down once again seven levels as deep as they are now, or are they going to be restricted? (D. Paolini)

In module 8, hydrology, it talks about ground water modeling report and which is running a simulation as to what would happen when the quarry's excavated and what's going to happen with the hydrology. So, that entire document is full of words like may, could, potential and it's all steered towards how it may not affect Toms. It may not have the potential to affect Toms Creek…. I suggest to the DEP that you can take that … ground water monitoring report, and turn it around and probably say the same kind of things only in a positive way or I should say negative way and how it's going to impact and threaten Toms Creek …. (B. Walls)

I wish I had data: Has it ever been done successfully before that a mountain is removed to create a 300' to 700' deep hole and the wetlands and HQ streams and tributaries adjacent are remaining and healthy? This is a complex question which spills over into several other concerns which are nevertheless connected:

a. Will TOMS CREEK AND ITS TRIBUTARIES still be flowing and HQ or EV during and after the mining?

b. Will the protected WETLANDS still be wetlands? Where will that wetland water be coming from and going to?

c. Will the ENDANGERED NODDING TRILIUM have its proper habitat properly watered to insure its survival?

d. Will the WATER TABLE be recharged properly so that neighbors' wells and springs still have drinking water in them? (S. deVeer and Wm. Morrison)

[R]emoving any natural rainfall using ponds and ditches, this plan would upset the hydrological balance of the watershed, prevent water from getting to the trees, plants, wetlands and streams on all sides, and prevent any groundwater recharge within the 85 acre operational area…large wetland areas and documented vernal pools… would be deprived of the water they need to survive. Also, Tom's Creek and its UNT would experience less flow …. (S. Rogers-Frost, C. Frost)

There are serious questions regarding the hydrology on Pine Hill, given that there are sensitive wetlands and a first class trout stream at the edge of the site that would be negatively affected by the removal of the mountain. People are concerned about their drinking water supplies as well. (M. Heyward)

Response:

(a) Northern Tract Quarry Development, Characteristics, and Model Results

The proposed Northern Tract quarry will be developed to a final depth of approximately 490 feet measured from the high point of site, with the bottom of the quarry pit eventually reaching elevation (El.) 740 feet above sea level. The quarry will be incrementally developed in twelve levels over 25 to 50 years, depending on market demand for aggregate products. The approximate stream bed elevation of Toms Creek adjacent to the Northern Tract ranges from El. 1015 to El. 915. The unnamed tributary to Toms Creek, located along the eastern perimeter of the proposed Northern Tract Quarry, has a stream bed elevation ranging from El. 996 to El. 915. Establishment of the maintained buffer around the Northern Tract Quarry provides that site disturbances will be at least 300 feet from Toms Creek, and 150 feet from the unnamed tributary to Toms Creek. The outer edge of the Northern Tract quarry pit itself will be situated an additional 150 feet from the streams, or 450 feet from Toms Creek and at least 300 feet from the unnamed tributary to Toms Creek.

As discussed in the Groundwater Model Report (December 19, 2017) submitted as part of the Northern Tract mining permit application, the geology in the area of the proposed Northern Tract Quarry consists of metabasalt and metarhyolite. This type of geologic material has no significant fracturing and is not permeable; water does not readily move through this type of rock in any significant quantity. Pennsylvania Geologic Survey publications for the area suggest that residential wells in the area of the SGI facility yield less than 3 gallons per minute (see **Section 1.4**) and well data suggests that even this rate cannot be sustained, which indicates a low permeable geology. Thus, creating a quarry in this type of geologic material results in the movement of very little groundwater into the quarry from the surrounding geologic material as a result of the very low permeability.

As provided in the Groundwater Model Report and as required by the PADEP, groundwater withdrawal simulations were completed for the proposed Northern Tract Quarry to evaluate impact to surrounding properties. Based on the results of the groundwater model, the hydrological cycle in the area of the proposed Northern Tract Quarry has a very small component of recharge (water that infiltrates into the ground) due to the low permeability of the geologic material. The low component of recharge results in a diminished and insignificant volume of groundwater discharging into the surrounding surface water (baseflow). The main components of the hydrologic cycle in the site area are precipitation, runoff (overland flow) into the surface waterways, and surface water flow. The contribution of the groundwater aquifer in the hydrologic cycle is minor and the anticipated impact to groundwater and baseflow as a result of the quarry operations will have little to no impact on Toms Creek, the unnamed tributaries of Toms Creek, the wetlands in the area, and the residential wells in the area.

(b) Pitts Quarry Experience

General Observations from Pitts Quarry Operations

The Northern Tract model's prediction of little to no hydrogeologic impact from the proposed Northern Tract Quarry is further supported by the characteristics observed at the operational Pitts Quarry located directly south of the Northern Tract Quarry in the same hydrogeologic and hydrologic cycle setting. SGI has been successfully operating Pitts Quarry at the Charmian Site since 1996. The operation of the Pitts Quarry is similar to the proposed operation of the Northern Tract Quarry and its associated stormwater ponds.

First, records show that very little groundwater infiltrates into and is pumped from the existing Pitts Quarry due to the extremely low permeability geologic formation. SGI's operational records, when accounting for precipitation into and evapotranspiration from the quarry, indicate groundwater inflows to Pitts Quarry on the order of 9 gallons per minute ("**gpm**"), a value which is extremely low, and consistent with what would be expected from metabasalt proximate to the quarry. There have been no observed impacts on the proximate surface waterways or wetlands from the Pitts Quarry operations. The same situation is expected from the proposed Northern Tract Quarry operations.

The two Pitts Ponds currently collect runoff from a roughly 110-acre watershed and temporarily store the stormwater runoff so that it can be pumped to the Lower Mill Pond system for ultimate discharge to Miney Branch. Discharges from the Pitts Ponds have only occurred during extreme storm events on a very infrequent basis for the life of the ponds. There have not been any observed impacts to the existing wetlands in the area, or the unnamed tributary to Toms Creek, as a result of the establishment of the Pitts Ponds. The current operations at Pitts Ponds serve as evidence that the proposed Northern Tract Ponds can be successfully implemented in a manner that does not adversely impact Toms Creek, its tributaries or adjacent wetlands.

Pitts Quarry Groundwater Monitoring Data Analysis

Skelly & Loy, in collaboration with D'Appolonia Engineering, performed a detailed analysis of groundwater elevation fluctuations with time for the purpose of evaluating whether any discernable changes to groundwater levels in adjacent areas have occurred as the result of the development and deepening over time of the currently operating Pitts Quarry. The results of that analysis, which are provided below, supplement and support the findings of the 2017 Groundwater Flow Model completed for SGI's proposed Northern Tract Quarry.

Given that the proposed Northern Tract Quarry is located immediately northeast of the Pitts Quarry and is in the same hydrogeologic setting, and because both quarries are situated in the same bedrock formations, the proposed Northern Tract Quarry would be expected to have an influence on groundwater levels similar to the active Pitts Quarry. As stated in Northern Tract permit application Modules 7 (Geology) and 8 (Hydrology), the bedrock geology at both quarries consists of metabasalt and metarhyolite, with metabasalt being the primary bedrock unit encountered along with some metarhyolite along the eastern boundary of the Charmian Site.

This type of geologic material has no significant fracturing and is not permeable; therefore, water does not readily move through this type of rock in any significant quantity.

To illustrate both the relationship between the impermeable character and poor hydraulic interconnectivity of the bedrock underlying both quarries and the overall lack of measureable hydraulic impacts anticipated to result from groundwater lowering in the proposed Northern Tract Quarry, Skelly & Loy and D'Appolonia evaluated actual groundwater elevation data acquired during deepening of the existing Pitts Quarry over the past 6 years. These data were tabulated and used to graphically illustrate the relationship between groundwater elevations and development of Pitts Quarry over time as shown on hydrographs and geologic cross-sections prepared for the Pitts Quarry.

Pitts Quarry Deepening Over Time

In 2013, the deepest pit floor elevation in the Pitts Quarry was at approximately 1,040 feet above mean sea level ("AMSL"). Since that time, the Pitts Quarry has been deepened to a pit floor depth of 990 feet AMSL which is approximately 300 feet below the original ground surface. **Appendix 1.1** provides a series of topographic site plans, one for each year from 2013 to 2018, depicting the development of the Pitts Quarry. Despite the Pitts Quarry being extended (deepened) below the pre-existing groundwater table, and below Toms Creek in some locations, there has been very little groundwater encountered in the Pitts Quarry. Further, as described below, the compilation of perimeter monitoring well depth to water data collected over the past 18 years shows no measureable lowering of the water table (groundwater elevation) as the Pitts Quarry operations have proceeded.

Geologic Cross-Sections

A total of six geologic cross-sections were developed for the Pitts Quarry, which are provided in **Appendix 1.1**. These cross-sections include transects proximate to nine of the Pitts Quarry perimeter groundwater monitoring wells, not including shallower wells that don't fully penetrate the bedrock aquifer such as MW-8S and MW-14S. These cross-sections were prepared to evaluate whether there were any observable changes in groundwater elevation through time as the Pitts Quarry was deepened during the past nearly six-year period (2013 to 2018). One cross-section was developed for each year of development from 2013 to 2018. The mean annualized groundwater elevation for each monitoring well is depicted for each of these years along with an inset table of the average annualized groundwater elevation for each well displayed on the sections. The graphical depictions of these cross-sections clearly illustrate that there has been no noticeable lowering of the water table (groundwater elevation) in the vicinity of the Pitts Quarry as a result of Pitts Quarry operations from 2013 to 2018.

Monitoring Well Hydrographs

To provide an even greater level of detail, Skelly & Loy prepared hydrographs of groundwater elevations in each of the seven perimeter groundwater monitoring wells at the Pitts Quarry and two additional perimeter monitoring wells installed proximate to the proposed Northern Tract

Quarry immediately northeast of the Pitts Quarry. These hydrographs, contained in **Appendix 1.2**, cover the same period discussed above (2013 to 2018) and beyond that provide (where available) groundwater elevation data for some wells since 2010, and for some additional wells as far back as 2000. The supporting groundwater elevation data are provided in **Appendix 1.3**.

Appendix 1.2 provides two figures which compile the hydrographs for the respective monitoring wells. The first figure presents a summary hydrograph of available groundwater elevation data recorded for all nine monitoring wells plotted against monthly rainfall totals for 2010 through October 2018. Monitoring Well MW-5, situated approximately 1,500 feet west of the Pitts Quarry, was included to serve as a control well representing the undisturbed background groundwater surface elevation well beyond the area of potential groundwater impact related to development of the Pitts Quarry.

The second figure in **Appendix 1.2** provides a similar compiled hydrograph for four of the monitoring wells (MW-1, 2, 3 and 4) for which additional data is available in the period 2000 to 2010. The vertical scales of the two hydrographs presented in **Appendix 1.2** are matched so that the hydrographs can be visually compared.

The hydrographs provided in **Appendix 1.2** show no indication of lowered groundwater elevations in any of the monitoring wells in association with SGI's continued advancement of the Pitts Quarry. While the various monitoring wells show somewhat different groundwater elevations, that is to be expected, given the topography of the areas and the fact that some of the monitoring wells are located at higher elevations, while others are at lower elevations, and groundwater elevations generally mimic the surface topography. What is important to note is that review of the long-term groundwater elevation data indicates that these data are in the same range as groundwater elevations recorded in this area as early as 2000. The monitoring well hydrographs provide a detailed illustration of the groundwater elevations recorded in each of the nine perimeter monitoring wells that are also depicted on the **Appendix 1.1** cross-sections. Together, the hydrographs and cross-sections demonstrate that while the water table may fluctuate slightly between monitoring intervals, these fluctuations are not persistent and the hydrographs of the monitoring wells are essentially "flat" over time. It is important to note that the monitoring wells respond to some degree, but not on a consistent basis, to precipitation events. While this inconsistent response is due in large part to the tightness and low permeability of the bedrock, some is also due in part to differences between the date of the water level measurement and the date(s) when precipitation events occur. Importantly, there is no observable extended downward trend indicating any measureable, noticeable or distinct lowering of the water table in the vicinity of the Pitts Quarry as a result of the downward progress of mining operations in that quarry over time.

Given that SGI's operating Pitts Quarry and proposed Northern Tract Quarry are in close proximity, located in the same geologic units, and located in the same hydrogeologic setting, it would be reasonable to expect a similar lack of groundwater impact during SGI's development of the proposed Northern Tract Quarry.

(c) Northern Tract Monitoring Program

Beyond predictive modeling and observations from past experience in the operation of the Pitts Quarry, the SGI mining application includes the additional feature of a robust long-term monitoring program. Ten monitoring wells (MW-8S, MW-8D, MW-9S, MW-9D, MW-10D, MW-11D, MW-12D, MW-13D, MW-14S, and MW-14D) are established around the perimeter of the proposed Northern Tract Quarry. Water levels in these wells were measured as part of the background data collected for the permit application, and for use in calibrating the associated groundwater model completed for the quarry. Six of these monitoring wells, including MW-8D, MW-9D, MW-10D, MW-11D, MW-13D, and MW-14D, are proposed to be maintained on an ongoing basis during the mining period. Each such monitoring well will be measured on a quarterly basis as part of the monitoring plan presented in Module 8 of the permit application. Monitoring of the water levels around the site perimeter will allow for evaluation of the affect of the Northern Tract Quarry on groundwater levels in adjacent areas as the quarry is incrementally developed. Those monitoring results will be compiled and reported to PADEP under conditions specified in the mining permit. Through this monitoring process, any unanticipated impacts can be identified, allowing timely and appropriate mitigation measures to be implemented.

1.2 Impacts on Wetland Hydrology

Comments:

[I]n module 14, which is the streams and wetlands, it indicates throughout that the wetlands associated and adjacent to Tom's Creek could potentially be drained as a reflection of the quarry for the northern tract. (B. Walls, 7/23/18 Meeting Statement)

There are four wetlands following the contours of Pine Hill, near Gum Springs and Iron Springs Roads. Removal of the mountain top from which surface waters now run, will impact the continued existence of healthy wetlands that are critical habitat for rare flora and fauna. (H. Keahey)

Response:

Module 14 does not state that the wetlands could be drained. Module 14 states that none of the wetlands will be directly affected by proposed mining activities. Of the five wetlands identified in the vicinity of the Northern Tract project, the hydrologic sources to four of the wetlands (Wetlands A, B, C, and E) are primarily surface water and seasonal groundwater interflow contributed by the Unnamed Tributary to Toms Creek, rather than groundwater or stormwater flow from the Northern Tract hillside. Thus, no direct or indirect impacts are anticipated to four of the five wetlands within or adjacent to the permit area.

Module 14 acknowledged the potential for indirect impacts to Wetland D as a result of the project. The module indicates a potential for a reduction in water contribution to Wetland D as a result of both the reduction in the run-off area (watershed) and the predicted decrease in elevation of the water table (especially in the western edge of Wetland D) adjacent Wetland D caused by the dewatering of the proposed quarry. However, Wetland D is an expansive habitat extending well beyond the Northern Tract permit boundary. Hydrologic sustenance from other sources of runoff area outside of the Northern Tract permit boundary are expected to ameliorate

the potential effects of Northern Tract quarry development. Drawing from the experience in operation of the adjacent Pitts Quarry, it is noted that no impacts have been reported to any of the wetlands as a result of the adjacent Pitts Quarry operations; and similarly no significant wetlands impacts are anticipated from the Northern Tract quarry operations.

In addition, baseline and biannual monitoring are proposed in Wetland D. If changes in the hydrologic conditions are observed, SGI will initiate additional monitoring efforts, and work with PADEP to develop and implement a mitigation strategy. Such a mitigation strategy could include, if required, development of a well or other supplemental water source to supplement the hydrologic inputs to Wetland D.

1.3 Blasting

Comments:

Blasting (explosions) could cause sinking of water table and impacts on Toms Creek and wells in area (D. Christensen)

Response:

See **Section 4** of these Responses for the response to this comment.

1.4 Impacts on Water Table and Wells

Comments:

Some neighbors have indicated that the well water quality has declined over the years. In the four years that we have lived here, we have also noticed this decline. This new project will further diminish the quality of our water. (M. Rogers)

Response:

As noted elsewhere in these responses, the metabasalt rock in the area of the Charmian facility is uniform competent rock that exhibits a massive texture which lacks any consistent internal structure (bedding planes and joint sets) that would facilitate water movement. Consequently, there is very limited vertical/horizontal hydraulic connectivity within the metabasalt and as such, water flow through this rock is extremely limited. The metabasalt does not possess the two important qualities for an aquifer (matrix pore space to collect/store water and the connective structure to transmit water). The poor permeability of the metabasalt results in very poor water-bearing yields for wells. In the area around the Northern Tract property, water percolating into the soil overburden above the metabasalt is mostly constrained to the interface between the overlying soils and the weathered top of the metabasalt.

A Pennsylvania Topographic and Geologic Survey report for the area prepared by Taylor and Royer suggests that residential wells in the metamorphic rocks have limited yield, with a regional median reported yield of 5 gallons per minute and 25% of domestic wells (typical of wells proximate to the proposed quarry area) having a reported yield of less than 3 gallons per

minute.[1] The same studies indicate a specific capacity of wells in the metabasalt at a very low 0.23 gallons per minute per foot of drawdown during pumping. A review of the data reported in the Taylor and Royer study indicates that the wells with higher yield (greater than 3 gpm) are either associated with distinct fault zones or are on a geologic contact with areas expected to have higher yields. These areas are not typical of the metabasalt at the SGI site. A well in that study that was proximate to the SGI site that was not in a fault zone or geologic contact reported a yield of less than 3 gallon per minute, and appears to be more representative of the hydrogeology in the vicinity of the SGI site. Typically, potable residential wells in this type of geologic formation are over-drilled (drilled to an extended depth) to provide a reservoir for groundwater to accumulate and the well to provide the residential water supplies needed on a daily basis. With such a low yield and low specific capacity, the success and long-term life of residential wells in this geologic setting is limited.

As discussed in **Section 1.1** above, the currently operational Pitts Quarry, located just south of the proposed Northern Tract Quarry in the same geologic material, has been deepened to an elevation depth of 990 feet above mean sea level (approximately 300 feet below the ground surface) and significantly below the elevations of groundwater measured in surrounding monitoring wells (see cross-sections in **Appendix 1.1**). However, there has been very little groundwater encountered in the Pitts Quarry as a result of the low permeable geologic formation. Given that very little groundwater has been encountered in the existing quarry, no or very limited groundwater movement away (drawdown) from areas adjacent to the quarry has occurred, indicating that the Pitts Quarry, even though well below the water table elevation, is not having any impact on the sources supplying residential wells in the area around the SGI facility.

Lastly, as provided in the Groundwater Model Report and as required by the PADEP, groundwater withdrawal simulations were completed for the proposed Northern Tract Quarry to evaluate impact to surrounding properties. Under worst-case assumptions, some groundwater lowering around the perimeter of the quarry is indicated by the model; however, this drawdown does not extend to a point where residential wells are located; therefore, no impact to residential wells from Northern Tract quarry dewatering is anticipated.

2. Water Quality Impacts on Tom's Creek

2.1 Public Participation Requirements

Comments:

SGI's Socio-Economic Justification was approved without public participation. … The Department's May 18, 2018 review letter to SGI regarding the Northern Tract application states that, "[i]t should be noted that the operator can discharge from these ponds since Specialty Granules, LLC submitted an Anti-Degradation Supplement for Mining Permits

[1] L.E. Taylor and D.W. Royer, *Summary Groundwater Resources of Adams County, Pennsylvania*, Pennsylvania Bureau of Topographic and Geologic Survey, Water Resources Report 52 (1981), pp. 12-13.

and their Social or Economic Justification (SEJ) was approved." Chad Paronish, DEP Geologic Specialist, to Matthew McClure, Director EHB and Mining Permit (May 18, 2018) at p. 2. (FOTC/Fair Shake)

Response:

Notwithstanding the language in the May 18, 2018 letter, PADEP has advised SGI that the SEJ has not been approved by PADEP and will not be approved until completion of the permitting process, including an additional public meeting that will explicitly consider the SEJ. Hence, all required public participation will be provided prior to SEJ approval.

2.2 Impacts on Tom's Creek Water Quality

Comments:

SGI failed to properly assess impacts to Tom's Creek as a result of proposed discharges. (FOTC/Fair Shake)

SGI has proposed not only discharging into Tom's Creek and its unnamed tributaries, but also lowering the water quality of Tom's Creek, as SGI has submitted a Social or Economic Justification ("SEJ") form as part of Module 24. (FOTC/Fair Shake)

[A]nticipated impacts to Tom's Creek have not been adequately evaluated. SGI proposes constructing two ponds capable of holding stormwater equivalent to a 100-year/24 hour storm event, which will then be pumped to ponds at the Charmian Quarry and discharged into Miney Branch. Notably, storms once considered extreme and unusual are occurring on a much more frequent basis. … Specifically, "[p]recipitation has increased about 10 percent over the past 100 years, and heavy precipitation events also have increased significantly ... precipitation is expected to increase by 8 percent annually and by an additional 14 percent during the winter." (FOTC/Fair Shake)

SGI' s application materials do not provide baseline data for Tom's Creek and its tributaries. Without baseline data, neither the Department, SGI, nor the public is able to evaluate whether proposed discharges will degrade the quality of Tom's Creek. (FOTC/Fair Shake)

The Clean Water Act states that the discharge should not add to or contribute to the pollutant load to the receiving stream. This is also a component of the Anti Degradation Rule. Just because the sediment load to the stream during a weather is high is not justification to add or contribute it's a similar pollutant load to Tom's Creek. (M. Watts, Meeting Statement)

Response:

(a) Baseline Data

In response to the FOTC/Fair Shake comment that there is not baseline data for Tom's Creek, SGI would note that pursuant to SGI's agreement with the Pennsylvania Department of Conservation and Natural Resources, SGI has been obtaining and reporting background monitoring information on Tom's Creek for seven (7) years (that is, since 2011). That monitoring includes both streamflow measurements and water quality sampling for a lengthy list

of parameters, including pH, specific conductance, temperature, dissolved oxygen, turbidity, total suspended solids, total dissolved solids, total alkalinity, total acidity, nitrogen-ammonia, phosphorous, sulfate, nitrogen as NO_2 and NO_3, E. coli bacteria, fecal and total coliform bacteria, and total and dissolved aluminum, arsenic, cadmium, copper, iron, lead, manganese, nickel, and zinc. The latest of those reports, prepared by SGI's independent consultant, AECOM, is provided in **Appendix 2.1**. That report includes a summary of all data compiled over the past seven years.

It should be noted that the background data reflected in **Appendix 2.1** was collected in the manner prescribed in the agreement with DCNR, quarterly for the first year and annually thereafter, and typically represents conditions during lower flow conditions. As indicated in SGI's mining and NPDES permit applications, the Northern Tract facilities would not discharge to Tom's Creek except during extreme precipitation events – that is, the equivalent of a 100-year, 24-hour storm. During such rare, high-flow events, runoff from the entire watershed would be expected to reflect high loadings of sediment and associated entrained contaminants. The background data collected to date does not reflect water quality under these extreme precipitation and flood runoff conditions.

Because of the rarity of such extreme runoff conditions, the proposed NPDES permit contains conditions providing for monitoring of water quality in Tom's Creek and its Unnamed Tributary adjoining the Northern Tract (both upstream and downstream of the Northern Tract ponds discharge point) during events when the Northern Tract ponds actually discharge – which will allow for a direct comparison of water quality of the discharge vs the receiving stream's response.

(b) What SGI is Proposing

It is important to understand what SGI is proposing, and what the proposed NPDES would authorize. SGI is not proposing discharges into Tom's Creek under normal operational conditions. SGI has configured and designed the surface drainage controls and stormwater ponds at the Northern Tract Quarry to only discharge during extreme storm events exceeding the equivalent of a 100-year, 24-hour design storm. SGI has demonstrated a history of successfully implementing this type of operation with the existing Pitts Ponds installed at the Pitts Quarry. At the Pitts Quarry, SGI has an NPDES Permit authorizing discharges from the Pitts Ponds to Toms Creek, but through the installation of substantial retention ponds and implementation of other stormwater controls, SGI has avoided any discharge to Toms Creek for over seven years, including during periods of very high rainfall. It is important to note that neither the existing Pitts Pond NPDES permit, nor the proposed Northern Tract NPDES permit authorizes a discharge of pumped quarry water through their respective outfalls, even in the most extreme storm events.

Although it is unlikely that they will be activated, the proposed Northern Tract Ponds have been configured with auxiliary spillways for the safe conveyance of extreme storm events. The ponds are situated at a lower elevation on the Northern Tract Quarry area to allow for passive

collection of stormwater runoff, with provision to transfer that collected stormwater to the Lower Mill Pond system.

However, given this topographic configuration and the fact that extreme storm events can occur that exceed the design capacity of these extremely robust facilities, SGI has included a Social or Economic Justification (SEJ) as part of the permit application recognizing that the potential for discharges into Tom's Creek exists and that such discharges might theoretically contain constituents in concentrations greater than those already in Tom's Creek during such events.

FOTC/Fair Shake and other commenters have raised a concern that climate change is occurring which may result in increased precipitation amounts or more frequent and intense storms. In support of that contention, FOTC/Fair Shake cite to a Department of Conservation and Natural Resources ("DCNR") report entitled Climate Change Adaptation and Mitigation Plan (2018), but in the process misquote the DCNR report. FOTC/Fair Shake claim that report states that "precipitation is expected to increase by 8 percent annually and by an additional 14 percent during the winter." What in fact the DCNR report states is: "annual precipitation is expected to be 8 percent higher by the middle of this century, and winter precipitation is expected to be 14 percent higher."[2] There is a vast difference between an 8% change that is predicted to occur over the next 30 years (by the middle of this century) and claim that an 8% change will occur annually. At the same time, SGI would respectfully note that the DCNR report only states conclusions and predictions, but does not state the basis of its predictions.

While the location, direction, amount and pace of climate change-related precipitation changes remains subject to some debate, even the sources cited by FOTC/Fair Shake, including the DCNR report, indicate that any increase is anticipated to occur gradually over the next few decades. In this context, an important point needs to be made: the Northern Tract Ponds will primarily serve to control runoff during the period of initial site development of the Northern Tract Quarry, before the quarry pit is established. As depicted in the Exhibit 9 Site Development drawings provided in the Application, runoff from the Northern Tract Quarry area during site development will be controlled by two treatment ponds, NT Pond 1 and NT Pond 2, and several collection ditches. Of the 90-acre watershed area, approximately 43.4 acres will be collected by the proposed collection ditches CD-1 and CD-2 and directed into the existing Pitts Quarry; and the remaining area will be collected by NT Pond 1 and NT Pond 2 with approximate watersheds of 18.4 acres and 28.2 acres, respectively. As the Northern Tract Quarry is developed, the newly developed quarry pit will be configured to drain into the Pitts Quarry. CD-1 and CD-2 will be eliminated as the Northern Tract Quarry is developed, and the hilltop areas that were originally directed to the NT Ponds will be excavated so that runoff will would drain into the quarry areas rather than downhill to either of the NT Ponds. Hence, the contributory watershed to NT Pond 1 and NT Pond 2 will be gradually reduced as area being mined no longer contributes, such that the only remaining runoff flowing to the NT Ponds would be coming from the support buffer area outside the pit comprising roughly 19.6 acres (5.9 acres to NT Pond 1 and 13.7 acres to NT Pond 2). Put another way, as the Northern Tract Quarry pit is created and developed, the NT Ponds will experience an approximately 50 to 70 percent reduction in

[2] DCNR Climate Change Adaptation and Mitigation Plan at 3.

drainage area by the time the type of predicted increases in precipitation cited by FOTC/Fair Shake are realized.

Additionally, the use of the 100-year, 24-hour design storm as the basis of the design of the NT Ponds provides protection from increased precipitation compared to the PADEP standard requirement to design the stormwater ponds to detain the 10-year, 24-hour storm event. The National Oceanic and Atmospheric Administration ("**NOAA**") Precipitation Frequency Data Server (Atlas 14) was used to obtain design rainfall depths for the Charmian site. The source of rainfall data for the NOAA Atlas 14 is a network of weather stations maintained by the National Weather Service that are located around the United States, including over 400 stations in Pennsylvania. The amount of data collected for each weather station spans at least 30 years with some stations containing over 100 years of data. Per the NOAA Atlas 14, the rainfall quantity of a 10-year, 24-hour precipitation event is 4.75 inches. The proposed NT Ponds are configured to store the runoff from a 100-year, 24-hour precipitation event, which equates to 8.03 inches per the NOAA Atlas 14 Server. Hence, the NT Ponds are designed considering a rainfall event that exceeds the PADEP regulatory requirement by nearly 70 percent, providing an ample margin in design basis compared to the 8 to 14 percent increase in precipitation predicted in the DCNR document cited by FOTC/Fair Shake.

(c) Anti-degradation Criteria

Contrary to the assertion of some commenters, neither the Clean Water Act nor the Department's "Anti-degradation" rules broadly prohibit all discharges or additional pollutant loadings to receiving streams, including high quality ("HQ") streams like Tom's Creek. Rather, discharges to HQ waters are permitted as long as they *either* (a) will not degrade the water quality of the receiving stream, *or* (b) are justified based on social and economic considerations. For the reasons more fully explained in SGI's Anti-degradation Supplement for Mining Permits ("Anti-degradation Supplement") in Module 24, any discharges to Tom's Creek associated with SGI's proposed Northern Tract project would satisfy *both* of these alternative requirements.

In Pennsylvania, PADEP implements Clean Water Act anti-degradation requirements through the regulations codified at 25 Pa. Code §93.4a–c. Under these antidegradation rules, for all waters (regardless of current water quality), all "existing uses," i.e., the "uses actually attained in the water body," must be maintained and protected. *Id.* §93.4a(b); §93.1 (defining "existing uses"). This is the basic level of protection provided to all waters in the Commonwealth.

For discharges to HQ waters like Tom's Creek, the water quality itself must be maintained and protected, except in accordance with 25 Pa. Code §93.4c(b)(1). Under this provision, permittees proposing a discharge to an HQ water must evaluate non-discharge alternatives, and if none is available, then any discharge must be controlled using the best available combination of cost-effective technologies (commonly referred to as "**ABACT**"). *Id.* §93.4.c(b)(1)(i)(A). Through the implementation of ABACT, the permittee must demonstrate that the discharge will maintain existing water quality of the receiving water, unless "allowing lower water quality is necessary to accommodate important economic or social development in the area in which the

waters are located." *Id.* §93.4c(b)(1)(i)(B), (iii). This is referred to as a "social or economic justification," or "SEJ."

As explained in Chapter 8 of PADEP's Water Quality Anti-degradation Implementation Guidance (Document No. 391-0300-002) ("**Anti-degradation Guidance**"), these regulations "recognize the possibility of discharges which do not cause degradation," and therefore may be permitted in HQ waters even in the absence of an SEJ. *Id.* at 60. Under the Anti-degradation Guidance, PADEP typically employs a two-part test to determine if a discharge to HQ waters will cause degradation. Part 1 is designed to evaluate whether a proposed discharge will have a measurable adverse impact on existing stream quality. Part 2 requires a "subjective evaluation" that considers multiple factors, including "the nature of the pollutants, treatment reliability, discharge duration, and physical/location concerns." *Id.* at 60-67.

As described more fully in SGI's Anti-Degradation Supplement, SGI is proposing to implement a system of stringent ABACT measures, including two oversized settling ponds, that are designed to avoid discharges to Tom's Creek except during the largest of precipitation events (those exceeding the 100 year/24 hour storm). In such high precipitation events, the major portion of the runoff from the Northern Tract area will be captured and held in the Northern Tract Ponds (e.g., the volume that equates to runoff from a 100 year/24 hour storm); and only the portion above this quantity could be discharged to Toms Creek. Currently, overland flow from the Northern Tract area enters Toms Creek during storm events untreated (e.g., without anything to capture and settle entrained sediment). While there is no means to exactly measure the current sediment load to Toms Creek from the Northern Tract area in a 100-year, 24-hour storm, compared to the future potential sediment load from only the excess portion of stormwater above the 100-year/24-hour volume, the loads after development of the Northern Tract (where the ponds are providing substantial capture and treatment) may well be less than the uncontrolled current condition.

During the extreme precipitation circumstances when a discharge from the Northern Tract ponds to Toms Creek might occur, the receiving waters of Tom's Creek would be expected to contain elevated concentrations of total suspended solids ("TSS"), the primary constituent of concern associated with discharges from the Northern Tract ponds, as a result of runoff and erosion/sediment contributions from other portions of the watershed. Since the NT Ponds will be capable of storing the runoff for storms up to the equivalent of a 100-year, 24-hour event, any discharges from the ponds during larger storm events will have received the benefit of at least some treatment via settling, and the portion of runoff discharged would only be the volume in excess of the storage capacity of the ponds. Therefore, any discharges from the Northern Tract ponds during such a storm event would be expected to contain TSS levels that are similar or potentially lower in concentration to those already present in Tom's Creek.

For this reason, the proposed NPDES Permit for the Northern Tract provides for a non-degrading discharge during such extreme storm events, based on monitoring that shows that the difference in concentrations between upstream and downstream monitoring points are not statistically significant given the natural variability of such parameters. (See Draft NPDES

Permit, Individual Permit Condition 4.) Notably, the Department has previously reflected this approach in SGI's NPDES permit for the Pitts Pond system.

If and to the extent that SGI's monitoring unexpectedly reveals degradation of water quality in Tom's Creek during extremely rare discharge events, such impact would be fully justified by the social and economic considerations described in SGI's SEJ analysis (see below discussion).

2.3 Impact on Tom's Creek Flow

Comment:

SGI's permit application materials fail to adequately address whether the proposed mining project is likely to result in loss of flow to Tom's Creek or its unnamed tributaries. According to SGI's groundwater assessment (Module 8), there is very little hydrologic communication between surface and groundwater within the permit boundary. By SGI's own evaluation, most wetlands and surface waters are primarily fed by storm events. Module 8.3 (p. 8-9). Currently, Tom's Creek and its unnamed tributaries are surrounded on all sides by mature forest. Should the Northern Tract be developed for mining, Pine Hill will become barren landscape, save for a 300 foot buffer from the center line of Tom's Creek and a 150 foot buffer from the center line of unnamed tributaries to Tom's Creek. Additionally, all runoff from this barren landscape will be directed to SGI' s 100-year/24 hour detention basin. While holding basins are necessary to protect surface waters from sedimentation, it also appears that SGI' s mining proposal will significantly impact the amount of surface water that Tom's Creek currently receives, possibly resulting in the loss of flow. (FOTC/Fair Shake)

Response:

The runoff conditions associated with the portion of Tom's Creek adjacent to the proposed Northern Tract Quarry were evaluated considering the proposed quarry development. The watershed area contributory to Tom's Creek near the intersection of Lower Gum Springs Road and Iron Springs Road is approximately 3,078 acres. The proposed Northern Tract Quarry occupies an area of approximately 66 acres, not including the related surface drainage control features and access roads. Development of the Northern Tract Quarry will result in a re-distribution of a roughly 90-acre contributory watershed from Tom's Creek to Miney Branch, resulting in a remaining watershed contributory to Tom's Creek of approximately 2,987 acres.

D'Appolonia prepared calculations, which are provided in **Appendix 2.2**, to determine the runoff volume and average annual flow rate of Tom's Creek considering the pre-development or existing conditions and proposed conditions considering the development of the Northern Tract Quarry. Using methodology from the Natural Resources Conservation Service (NRCS) Urban Hydrology for Small Watersheds (Technical Release No. 55) document, the annual runoff volume tributary to Tom's Creek for the pre-development condition was determined to be 426 million cubic feet, considering an average, annual rainfall amount of 49 inches. The associated average annual flow rate in Tom's Creek was determined to be 6,064 gallons per minute (gpm). An annual runoff volume of 413 million cubic feet and average annual flow rate of 5,870 gpm, respectively, was determined for Tom's Creek considering the proposed condition. Therefore,

development of the Northern Tract Quarry may result in a 1.6 percent decrease in runoff volume and a 3 percent decrease in average annual flow rate, which is considered negligible (e.g., within the range of measurement accuracy of a typical USGS gage)[3] and unlikely to have any impact on the water quality of Toms Creek. Even if the flow difference could be measured (which is questionable), this *de minimis* difference is justified by the Social and Economic Justification provided as part of the Application.

In addition to evaluating the impact of the Northern Tract Quarry on Toms Creek considering runoff events, the base flow of Toms Creek was evaluated. The PADEP Stormwater Manual defines base flow as the stream flow associated "primarily with groundwater or subsurface contributions, as opposed to storm flow which corresponds to stream levels associated with recent precipitation and surface runoff." The USGS document "Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania" defines base flow at the "part of streamflow attributed to ground-water discharge into a stream, without surface runoff…". Thus, base flow conditions exist in the absence of rainfall or snowmelt events, typically supported by the groundwater emanating from the existing soil and bedrock.

The geologic map for the area[4] "Geologic Map of the Iron Springs and Blue Ridge Summit Quadrangles" (Fauth 1978), provided in **Appendix 2.3**, shows that the geologic units within the tributary watershed to Toms Creek adjacent the Northern Tract Quarry consist of metabasalt, metarhyolite, and phyllites. These rock units are known for their very low permeability and low well yield values, indicating that groundwater does not readily move through these rock units, as discussed in Module 8 of the permit application. Water moves through rock by way of fractures, cleavage planes, or other irregularities. Due to the low permeability and low well yields, the geologic map recommends that water supply wells be located in valleys or fault zones for a higher success rate. Given that the Northern Tract Quarry is situated within a geologic formation located at a higher topographic setting and does not extend into valley areas or fault zones, the potential for influencing groundwater movement through the underlying, deeper bedrock layer is very low.

Further demonstration that the deeper bedrock in the site vicinity has limited ability to transmit groundwater is presented in a report prepared in 2010 report prepared by the Pennsylvania Department of Conservation and Natural Resources (DCNR) called "Summary of Groundwater-Recharge Estimates for Pennsylvania."[5] This report uses statistical regression equations to estimate the amount of recharge or groundwater base flow that occurs in various regions of

[3] As stated by the USGS, "as a general rule, the accuracy of most discharge [i.e., streamflow] measurements will be about 5 percent" which is qualitatively classified as a "good" measurement. USGS, Discharge Measurements at Gaging Stations, Chapter 8 of Book 3, Section A, pg. 79, available at: https://pubs.usgs.gov/tm/tm3-a8/pdf/tm3-a8.pdf.

[4] John L Fauth, Geologic Map of the Iron Springs and Blue Ridge Summit Quadrangles, Adams and Franklin Counties, Pennsylvania,(1978).

[5] Water Resources Report 70: Summary of Groundwater-Recharge Estimates for Pennsylvania, Reese, et. Al., Pennsylvania Geological Survey, Pennsylvania Department of Conservation and Natural Resources, Harrisburg, 2010.

Pennsylvania. These estimates do not account for site specific conditions, but they indicate overall regional trends. Based on Plate 6 of this report, the southwest corner of Adams County has recharge or base flow values of 4.7 to 7.0 inches, which are among the lowest values in the state. Other areas of the state with different geologic conditions have recharge or base flow values as high as 16.9 inches. Thus, the conditions in the vicinity of the Northern Tract Quarry result in a small amount of the base flow within Toms Creek being attributed to groundwater emanating from bedrock geology.

The groundwater model performed as a component of Module 8 of the permit application considered these bedrock characteristics and geologic conditions. The conclusion from the simulations of the model is that the development and removal of water from the Northern Tract Quarry will have little impact to the groundwater levels in adjacent areas. This supports the understanding of the geologic conditions cited above, in that water cannot easily pass through the bedrock on site, and the ability for water from the bedrock to support the base flow in Toms Creek is very limited.

Module 8 also states that "Typical hydrogeologic environments sustain streams and wetlands with groundwater base flow during the dry season despite groundwater levels being at their lowest. In the case of the proposed Northern Tract Quarry Expansion area, the opposite is true in that streams and wetlands are sustained primarily by storm events, water stored in the shallow soils, and resulting surface runoff occurring during the growing season and drier (low base flow) portion of the year." This is supported by comparing the historic rainfall at the site to the observed stream flows in Toms Creek.

As noted above, AECOM has completed stream flow monitoring in Toms Creek since 2011, the results of which are summarized in the report contained in **Appendix 2.1**. That flow monitoring reflects measurement of stream flows each year during what is typically a low flow period, or a period during which no significant runoff is contributing the stream flow. Typically, low flow periods occur in August, September, or October, which is recognized by the PADEP per the requirements for background sampling for monitoring points in Module 8 of the permit application. AECOM's reports indicate that in addition to the measurements and samples being collected during what is a typical low flow period, the observations were collected during a time which little to no rainfall occurred prior to the sample collection. Data collected at sampling point TC-4 as part of stream base flow monitoring of Toms Creek by AECOM from 2011 through 2017 indicates that the base flow in Toms Creek has ranged from 287 gpm to 3,962 gpm, with an average of 1,766 gpm.

The observed low flows in Toms Creek correspond well with weather trends in that very low precipitation occurred during the time when low flows were observed. Precipitation data was obtained from the Pennsylvania State Climatologist[6] for a region including Franklin, Cumberland, York, and Adams counties. As the plot provided in **Appendix 2.4** depicts, the change in precipitation depth from year-to-year, particularly in September, generally

[6] Pennsylvania State Climatologist, College of Earth and Mineral Sciences, Penn State University, http://climate.met.psu.edu/ .

corresponds with the changes in base flow in Toms Creek. In particular, the lowest observed flow in Toms Creek (287 gpm) occurred during September 2017. The precipitation amount during September 2017 was 0.88 inches which is well below the average rainfall in September for the area and corresponds to the lowest observed precipitation amount since 2005.

The observed base flows in Toms Creek correspond with precipitation data for the region in that larger seasonal precipitation amounts correspond with higher base flows and lower seasonal precipitation corresponds to lower base flows. However, the geologic conditions at the SGI facility indicate very little relationship between groundwater levels and the development/extension of quarry operations. As explained in **Section 1.4** of these Responses, the monitoring wells surrounding the currently operating Pitts Quarry show no observable downward trend in levels as the Pitts Quarry has continued to be deepened.

The available data suggests that Toms Creek base flow is heavily supported by precipitation from surface or near surface sources and does not receive significant contribution from groundwater in the metabasalt formation.

In summary, the deeper bedrock formations at the Northern Tract and vicinity consist of materials (primarily metabasalt) that do not allow for significant movement of groundwater. Water that is present in the deeper bedrock formations has limited opportunity to emanate as stream base flow in Toms Creek. Correlations of precipitation data and available base flow monitoring in Toms Creek support the conclusion that the base flow is primarily supported by runoff events and water flowing in the soils above the dense metabasalt rock formations. Since the Northern Tract Quarry is situated within a low-permeability rock formation, the contribution to base flow in Toms Creek from the deeper bedrock formations is not anticipated to be reduced as a result of developing the Northern Tract Quarry.

Again, to the extent there would be any indirect impact on the base flow of Toms Creek, that flow impact would be expected to be negligible; and allowable under the Social and Economic Justification provided as part of the Application.

2.4 Adequacy of Monitoring Plan

Comments:

SGI's proposed monitoring plan is insufficient. While SGI proposes to analyze monitoring samples for some pollutants, important pollutants specific to SGI's operations are not included. To properly monitor the unique impacts that SGI's operations may have on Tom's Creek, water sampling must also include analysis for asbestos and any chemicals or fungicides used on site. (FOTC/Fair Shake)

Response:

As indicated in the Fact Sheet accompanying the draft NPDES Permit prepared by PADEP. PADEP has included in the draft NPDES Permit provisions for monitoring samples from the Northern Tract outfalls in compliance with 40 C.F.R. §122.26(c)(i)(G). Specifically, the permit will require sampling for the pollutants listed in 40 C.F.R. Part 122, Appendix D, Table II, III and

IV “for those parameters that are expected to be present,” and pH, specific conductivity, temperature, alkalinity, acidity, iron, manganese, aluminum, sulfate, chloride, settleable solids, total dissolved solids, oil and grease, BOD5, COD, Kjeldahl nitrogen, and nitrate plus nitrogen (see draft NPDES Permit, Part A, Effluent Characterization Sampling condition. SGI will comply with those effluent characterization requirements.

It should be noted the SGI does not routinely apply chemicals or fungicides on the Charmian site. SGI currently engages a lawn service company to help maintain the property and control weeds; and as part of that service, the service company utilizes AquaNeat® (glyphosate) where needed to control weeds, and SureGuard™ in limited areas of substations and air-switches. Both of these products are registered for use in Pennsylvania. The AquaNeat® product, in particular, is designed for safe use in the vicinity of surface waters (although at the SGI property, this product is applied some substantial distance from such waters). SGI likewise engages a commercial tree service to help maintain trees across the site, which may in the future, if indicated, apply materials to the trees or roots to control insects, such as bark beetles and wooley-adelgid, which threaten tree viability. None of the commercial products used by these services, applied in accordance with manufacturer’s directions, are expected to result in contribution of toxic or deleterious contaminants to runoff from the Northern Tract.

The presence of asbestos above naturally occurring background concentrations is not anticipated. **Section 7** of these responses explains the rare occurrence of actinolite asbestiform materials in the metabasalt to be mined at the Northern Tract, and the substantial measures that SGI takes to avoid and contain any suspect minerals that may contain actinolite. As discussed in **Section 7,** ambient air sampling at the SGI facility did not detect asbestos fibers in concentrations statistically different than the national ambient background values.

2.5 Proposal to Upgrade Tom’s Creek to Exceptional Value (EV)

Comments:

Tom’s Creek is not just a high quality stream. It is a stream with exceptional values. (B. Walls, Meeting Statement)

I would ask that when a small community organization gets together, they band together, and they find a way among themselves to do some water testing and they present to you a petition that clearly supports that the value of that stream should be upgraded from high quality to exceptional value that you take that seriously and you not dismiss it for some small technical reason. (L. Whitcam, 7/23/18 Meeting Statement)

Members of the community are also the ones monitoring the water quality in Tom's Creek and petitioning to get it upgraded to Exceptional Value status (which it is - along with its sister streams, Middle Creek and Swamp Creek). (S. & H. Shivers, et al.)

[Preserve] the exceptional values of Tom’s Creek and pure surface and subsurface waters, and the restoration of degraded Miney Branch Creek. (Multiple Commenters)

Response:

The portion of Tom's Creek that runs adjacent to and downstream of SGI's operations does not qualify as an Exceptional Value ("**EV**") water. In April 2016, Fair Shake, on behalf of FOTC, submitted to PADEP a report prepared by Dr. Ben Stout (the "**Stout Report**") that purported to support the conclusion that Tom's Creek qualified as an EV water. On May 18, 2016, PADEP responded to Fair Shake's submission, explaining that the two reference streams utilized in the Stout Report were not acceptable for use in evaluating the existing quality of Tom's Creek under PADEP's Anti-degradation Guidance. Moreover, based on PADEP's own sampling effort in an appropriately selected reference stream, PADEP concluded that the relevant stretch of Tom's Creek qualified as HQ, not EV.

SGI provided a response to the Stout Report in a June 6, 2016 letter to PADEP, a copy of which is provided in **Appendix 2.6**. SGI's letter addressed several comments raised by Fair Shake and FOTC on SGI's then-pending NPDES permit renewal. As explained in great detail in that letter, the methodology used in the Stout Report wholly failed to meet the criteria for rendering an EV "existing use" determination under PADEP's Anti-degradation Guidance. Further, SGI commissioned its own independent field assessment, performed by Civil & Environmental Consultants, Inc. ("CEC"), which confirmed PADEP's conclusions that (1) neither of the two reference stream locations used by Dr. Stout could serve as valid references for an EV determination, and (2) Tom's Creek did not qualify as EV based on the data collected by PADEP at an appropriate reference location.

The deficiencies inherent in the Stout Report were not minor technicalities; rather, the Stout Report suffered from serious procedural and substantive flaws that undermined the report's ultimate conclusion regarding Tom's Creek's water quality. No new information has been submitted to PADEP since 2016 that would warrant a different conclusion now.

2.6 Adequacy of SEJ

Comments:

Employment should not be used as a basis for social and economic justification, because the local labor market is strong. (L. Whitcomb)

Response:

If and to the extent that any discharges from the proposed Northern Tract operations result in unanticipated degradation of water quality in Tom's Creek, such limited impact would be fully justified by the social and economic considerations described in SGI's SEJ analysis in Module 24. As explained in greater detail in SGI's SEJ analysis, SGI's Northern Tract operations are expected to directly support 147 good paying jobs and an estimated 735 indirect jobs, $15.1 million annually in salaries, wages and benefits, and $255,000 annually in local tax payments. Furthermore, there is a well-established market for the unique roofing granules that would be produced at the Northern Tract site, which is situated above a rare metabasalt formation that produces exceptionally competent, inert and non-toxic roofing material. There are no other

similar roofing granule quarries in the northeastern United States, and the proposed Northern Tract project is absolutely critical to the continuation of SGI's operations at the Charmian site.

Contrary to the suggestion of some commenters, it is entirely appropriate for PADEP to consider employment benefits in evaluating SGI's SEJ analysis. In fact, PADEP's Anti-degradation Guidance and SEJ Demonstration Form both require permittees to provide information concerning employment benefits as part of an SEJ demonstration. These employment benefits are a core part of almost every SEJ demonstration, for good reason – they are clear evidence of real economic benefits in the local community.

3. Miney Branch Impacts

3.1 Impacts of Transferring Water

Comments:

SGI proposes transferring all water (less than a 24 hour/100 year storm event) collected in the Northern Tract ponds to the Charmian Quarry to be discharged through NPDES No. PA0009059, which authorizes discharges into Miney Branch. Prior to authorizing the current NPDES permit, the Department must evaluate potential impacts to Miney Branch as a result of the additional water to be redirected from the Northern Tract. Not only will the discharges from the Northern Tract increase the quantity of water ultimately discharged into Miney Branch but may also change the quality of the discharged water. (FOTC/Fair Shake)

Discharging more water…into Miney Branch would harm that Tier 1 (EPA system) stream. (S. Rogers-Frost, C. Frost)

Response:

(a) Operation, Monitoring and Control of the SGI Stormwater System

The Lower Mill Pond system is a three-pond system which includes a sediment collection and cleanout area (Pond 1), a primary treatment pool (Pond 2), and a final treatment pool and freshwater storage area (Pond 3). Pond 1 is configured with seventeen pipe culverts generally ranging in diameter from 18 to 24 inches. Water passively moves through Pond 1, allowing for sediment dropout, and discharges into Pond 2 by way of culverts. Pond 2, which provides capacity for the majority of treatment, is equipped with four, 8-inch diameter perforated riser pipes to allow for gradual dewatering of water into Pond 3. Pond 3 is the final treatment pond which is equipped with a valve-controlled spillway and pumping system to allow for manual control of discharges. The Lower Mill Pond system is also equipped with larger, open channel auxiliary spillways in Pond 2 and Pond 3 to allow for passive conveyance of larger storm events.

The Lower Mill Pond system at the Charmian Site is configured to allow for the southern portion of the site to passively drain into the pond system via a network of drainage ditches and piping systems. The northern portion of the site does not passively drain into the Lower Mill Pond system. The northern portion of the site is collected in various impoundments (i.e. Pitts Ponds 1

and 2, Pitts Quarry, proposed Northern Tract Ponds 1 and 2, etc.), and then pumped through existing piping systems and drainage controls to ultimately flow through and be treated within the Lower Mill Pond system.

Water that accumulates in the Pitts Ponds and Northern Tract Ponds will be stored in those locations to allow for treatment (sediment settlement) to occur and hold the water collected from the Northern area until the stormwater from the southern area that passively drains to Lower Mill Pond system is treated and discharged through the NPDES-permitted Lower Mill Pond system outfall. Once favorable conditions exist at the Lower Mill Pond system, the clarified water that has accumulated in the Pitts Ponds and Northern Tract Ponds will be incrementally pumped towards the Lower Mill Pond system for ultimate treatment and discharge through the Lower Mill Pond system outfall.

The SGI stormwater system includes several operational controls and redundancies to allow for effective water treatment to meet NPDES effluent limits. Since the runoff from the northern portion of the site is managed by collecting and temporarily storing the runoff in various impoundments, the timing and rate of the transfer of the runoff into and through the Lower Mill Pond system is controllable. Given the operational control of runoff that is present at the Charmian site, the peak discharge rates conveyed to Miney Branch are not anticipated to change as a result of transferring the collected stormwater runoff from the Northern Tract Quarry through the Lower Mill Pond system to Miney Branch. Water accumulated in the proposed NT Ponds will initially be allowed to passively collect in the NT Ponds during the storm event and allowed to clarify through sediment settlement processes in the NT ponds. Once initial clarification of the water has occurred, the water will be pumped either to the existing Pitts Quarry for temporary storage, or to flow into the Lower Mill Pond system for treatment and release into Miney Branch.

Although additional water volume will be conveyed to the Lower Mill Pond system as a result of the Northern Tract Quarry operation, existing peak flow rates through the Lower Mill Pond system to Miney Branch during storm events will not increase as a result of the development of the Northern Tract. The pumping rates anticipated at each of the existing Northern Impoundments currently conveying water to the Lower Mill Pond system include approximately 2,100 gpm at Pitts Pond 1 and 2, 1,000 gpm at the Pitts Quarry, and 1,000 gpm at Sediment Traps 6 and 7, resulting in a total inflow rate at the Lower Mill Pond system of 4,100 gpm. This inflow rate has been successfully managed for several years while meeting (with very few exceptions) the effluent requirements of the current NPDES Permit No. PA00009059. The proposed water transfer pumping rates from the NT Ponds are 400 to 1,000 gpm at Pond 1 and 650 gpm to 1,800 gpm at Pond 2. Theoretically, the additional inflow to the Lower Mill Pond system from the proposed Northern Tract Quarry could reach 2,800 gpm. However, as previously discussed, the pumping systems and drainage controls at the Charmian Site allow for temporary storage and controlled discharge/transfer of accumulated runoff so that each pond and impoundment can be dewatered in an organized manner, with the rate of water transferred to and through the Lower Mill Pond system being controlled without increasing the existing peak stormwater flows in Miney Branch. Since the proposed NT Ponds discharge capacity is within the combined flow rate of the existing impoundments on site, conveyance of the NT Ponds to

the Lower Mill Pond system can effectively be achieved without affecting the peak rate of flow conveyed to Miney Branch.

The proposed NT Ponds are configured to temporarily store the runoff from up to a 100-year, 24-hour storm event. The accumulated runoff can then be either pumped into the Pitts Quarry for temporary storage, or pumped directly to the Lower Mill Pond system. Currently the Pitts Quarry is operational, but even in that operation, SGI can use (and has used) the lower level of the quarry for temporary storage of stormwater where necessary to control the rate of transfer to and flow through the Lower Mill Pond system. As the Northern Tract Quarry comes on line, and the Pitts Quarry operations are completed, both quarries will become available for stormwater storage providing even greater capacity should the need arise.

This staging and storing of accumulated water prior to conveyance to the Lower Mill Pond system allows SGI to manage flows such that the peak runoff rates during a storm events at the NT Ponds are not transferred to the Lower Mill Pond system coincident to the times when the peak runoff is occurring from the watershed area naturally tributary to the Lower Mill Pond system. The pumping flow rate from the NT Ponds to the Lower Mill Pond system (1,050 gpm to 2,800 gpm, depending on dewatering time of 2 to 7 days) could potentially occur during a storm event; however, the pumping rate will not be comparable to the peak flow rate that entered the NT Ponds. Notably, the peak outflow of the Lower Mill Pond system during the 100-year storm is approximately 180 cfs, or 83,034 gpm. Thus, the addition of the NT Pond pumping rate, even if it were to occur during a 100-year storm, would be negligible. The dampening effect of temporarily storing the runoff from the Northern Tract Quarry area in the NT Ponds, and also in the Pitts Quarry when needed, results in the flow conditions at the Lower Mill Pond system during storm events being relatively unchanged.

Lastly, flooding of Miney Branch during storm events will not be affected by the transfer of runoff from the Northern Tract Quarry to Miney Branch under the operating protocols described above. Based upon field reconnaissance and statistical analysis, Miney Branch is approximately 24 inches deep and roughly 9 feet wide at locations immediately downstream of the lower Mill Pond system. The stream channel generally becomes wider and shallower at locations further downstream with a width of roughly 20 feet and a depth of 12 to 18 inches. Thus, the flow capacity of the stream channel is approximately 100 cfs to 150 cfs, considering a bed slope ranging from 1 percent to 5 percent and using Manning's equation for open channel flow. As previously discussed, water is proposed to be conveyed from the Northern Tract Ponds to the Lower Mill Pond system, and ultimately Miney Branch, at a rate of 400 to 1,000 gpm from Northern Tract Pond 1 and 650 gpm to 1,800 gpm from Northern Tract Pond 2. Thus, the total proposed maximum flow rate from the Northern Tract Ponds will be 2,800 gpm or 6.2 cfs. However, during storm periods less than a 100-year event, the Northern Tract Ponds have the ability to store and hold stormwater when flows in Miney Branch are at their peak, and then convey that water over to the Lower Mill Pond system as Miney Branch is receding. The intermittent conveyance of 6.2 cfs from the Northern Tract Ponds to the Lower Mill Pond system for discharge to Miney Branch, which has a capacity of approximately 100 to 150 cfs, will have a negligible impact to flooding conditions in Miney Branch.

(b) Protecting the Existing Uses of Miney Branch; Monitoring and Control of Lower Mill Pond System Discharges

One public comment referred to "Tier 1 waters." To place that comment in context, it is noted that under the federal and Pennsylvania classification scheme for streams, Tier 1 waters simply means those waters whose existing instream water uses and the level of water quality necessary to protect those existing uses are to be maintained and protected. All Pennsylvania waters are "Tier 1" unless they have a higher classification, such as High Quality or Exceptional Value. As explained below, the discharges from SGI's Lower Mill Pond system to Miney Branch are and will continue to be regulated under an NPDES permit that protects the existing uses of Miney Branch; and there is no request to change the discharge limits in the NPDES Permit in connection with the addition of the Northern Track to the Mining Permit.

NPDES Permit No. PA00009059, which governs discharges to Miney Branch from the Lower Mill Pond system, established specific effluent limitations and monitoring requirements designed to protect stream water quality and instream uses. The following limitations are applied to water discharges at the Lower Mill Pond system as part of the NPDES permit:

Total suspended solids (Concentration Limits: 35.0 mg/L monthly average, 70.0 mg/L daily maximum, and 90.0 mg/L instantaneous maximum)

pH (must be between 6.0 and 9.0)

Alkalinity versus acidity (Alkalinity must be greater than acidity)

Those discharge monitoring parameters were selected by PADEP after review of effluent characterization analyses which are submitted under standard procedures with any NPDES permit application.

Under the NPDES Permit, SGI is required to collect samples of water discharged from the Lower Mill Pond system on a random basis at least twice per month to confirm that the water discharges are in accordance with the NPDES requirements. PADEP may (and does) conduct inspections and conduct random sampling at any time. The principal spillway at Lower Mill Pond 3, which is the primary discharge into Miney Branch at the NPDES Outfall, is equipped with a flow meter to allow for routine monitoring of the flowrate experienced at the outfall. All discharge monitoring data is recorded by SGI and reported quarterly to PADEP. All of that monitoring data is publicly available.

In addition to directly sampling and testing the discharged water from the Lower Mill Pond system, sampling and testing at several surface water locations is also completed as part of the NPDES monitoring. Quarterly analyses of water samples at sampling locations denoted as SS-6, SS-29, SS-13, SP-6, MW-5, and MW-6 are completed by SGI.

3.2 Hydraulic Capacity of Lower Mill Pond System

Comments:

The Department must ensure that Outfall 001, under P A0009059, has the capacity to store and properly treat stormwate1, as the SGI ponds have a history of overflowing, resulting in untreated, polluted discharges. (FOTC/Fair Shake)

I've seen the sediment ponds that discharge to Miney Branch and it's obvious that the available spatial footprint is limited to increase the capacity of the ponds you see in the discharge branch of the northern track. DEP needs to pay special attention to the calculated capacity of the lower mill con system and the tiara 55 calculations as well as the input variables. (B. Walls)

Is there sufficient evidence that Tom's Creek and Miney Creek and surrounding areas will not be damaged by water discharge practices of Specialty Granules, LLC? (B. Braun)

The current sedimentation ponds are not adequate to withstand the frequency and severity of storms that we now face. Green sludge overflowed into Miney Branch and onto residents' private property this past week during consecutive days of heavy rain. (Multiple commenters)

Response:

(a) Lower Mill Pond System Capacity

SGI's engineering consultant, D'Appolonia, has completed an evaluation of the Lower Mill Pond system considering the existing conditions at the Charmian Plant site, as well as the proposed Northern Tract Quarry. This evaluation included a determination of the Lower Mill Ponds available storage volumes to provide water treatment, and a hydrologic and hydraulic ("**H&H**") analysis to evaluate the pond's storm routing capabilities. These calculations are provided in **Appendix 3.1** – Pond Capacity Evaluation-Existing Conditions and **Appendix 3.2** – Pond Capacity Evaluation-Proposed Conditions. The results of those calculations are described below.

The PADEP Erosion and Sediment Pollution Control Program Manual provides that sediment ponds (such as the Lower Mill Pond system) should provide a sediment storage zone and a settling zone to allow for dropout of sediment in the pond. The required sediment storage zone is required to contain 1,000 cubic feet of storage for each acre of disturbed area in the contributory watershed. The associated settling zone is required to contain 5,000 cubic feet of storage for each acre in the contributory watershed, minus any applicable reductions to this volume justified by the presence of features that would improve the sediment settling performance of the pond. The PADEP Engineering Mining Manual has similar requirements in that a sediment storage zone of 2,000 cubic feet per acre of disturbed watershed, and a settling zone of 5,000 cubic feet per acre of tributary watershed, is required for a sediment pond.

D'Appolonia delineated the contributory watershed of the Lower Mill Pond system using available site topography, field reconnaissance, and aerial photography. It was conservatively

estimated that the Lower Mill Pond system, under the current site configuration, has a contributory watershed of 226 acres, of which 75 acres will ultimately be disturbed primarily as a result of reclaiming the West Ridge Quarry area. Based upon this watershed, the Lower Mill Pond system is required to have a sediment storage volume of 150,000 cubic feet (2,000 cubic feet per acre times 75 acres) and a settling volume of 1,130,000 cubic feet (5,000 cubic feet per acre times 226 acres). Pond 2 of the Lower Mill Pond system provides 1,046,412 cubic feet of sediment storage and 938,548 cubic feet of settling volume per the available site topography, pond sounding data, and the as-built construction information. Pond 3 provides 748,501 cubic feet of sediment storage and 832,197 cubic feet of settling volume. Thus, the total sediment storage and settling volume available in the Lower Mill Pond system is 1,984,960 cubic feet and 1,580,697 cubic feet, respectively, which exceeds the required storage volumes of 150,000 cubic feet and 1,130,000 cubic feet respectively.

Storm routing analyses were completed to evaluate performance of the Lower Mill Pond system during the 100-year, 24-hour storm. TR-55 methodology was used to calculate the runoff rates and volumes tributary to the pond system. Watershed areas were delineated using available site topography and aerial mapping. Curve numbers were established based upon aerial topography and field reconnaissance. A rainfall depth of 8.03 inches for the 100-year, 24-hour storm event, as obtained from the NOAA Atlas 14 Precipitation Frequency Data Server, was used in the analyses. The Autodesk Storm and Sanitary Analysis computer program was used to calculate the hydraulic capacity of the Lower Mill Pond system and route the design storm.

The H&H analyses were completed considering conditions that currently exist at the site and the proposed site conditions with the development of the Northern Tract Quarry. Development of the Northern Tract quarry generally includes: (1) establishment of erosion and sediment and drainage controls; (2) incremental clearing and grubbing activities; (3) removal of soil and rock overburden material to expose the metabasalt deposit; and (4) completion of production mining to extract metabasalt.

As the Northern Tract quarry is established and developed, the area contributing stormwater into the NT Ponds and associated collection ditches will be greatly reduced, as the quarry pit is established and precipitation that falls on the quarry area accumulates in the quarry pit instead of running off into the stormwater ponds. Stormwater collected within the quarry pit will be pumped directly toward the Lower Mill Pond system, rather than being routed through the NT stormwater ponds. Thus, the Northern Tract Quarry itself will provide additional on-site storage capacity for rainfall and snowmelt runoff once established.

Accordingly, for purposes of analysis, the primary H&H scenario considered for the Northern Tract Quarry focuses on the period during the initial site development when overburden removal is occurring, but the quarry pit is not yet established, which is the condition under which runoff volumes would be anticipated to be greatest. During this scenario, the upper portion of the quarry footprint is directed to drain into Pitts Quarry via constructed collection ditches (CD-1 and CD-2), and the lower portion of the quarry footprint is conveyed into the proposed NT Ponds through their respective collection ditches. Runoff from both of these areas will then be directed to the Lower Mill Pond system with established pumping systems per the permit requirements.

Based upon the H&H calculations completed for the Charmian Site considering existing conditions, the Lower Mill Pond system can convey the 100-year, 24-hour storm event while maintaining at least 1 foot of freeboard. The same freeboard is also maintained at the NT Ponds considering the development of the Northern Tract Quarry (even during the peak period of runoff during Northern Tract site development). As mentioned in the response to other comments, the proposed NT Ponds are designed to store the runoff from the 100-year storm so that the runoff can be pumped to the Lower Mill Pond system. The timing of the water handling at the site is such that the peak storm inflow from the southern portion of the Charmian facility to the Lower Mill Pond system occurs while the NT Ponds are still collecting and storing runoff. Accumulated water in the NT Ponds will not be pumped to the Lower Mill Pond system until after the peak flow from storm event has ended; and thus the peak water level in the Lower Mill Pond system is not affected.

(b) Other Elements of the Stormwater Management System

SGI operates and maintains several other treatment structures at the Charmian Site in addition to the Lower Mill Pond system. Pitts Pond 1 and Pitts Pond 2 are established immediately west of the Pitts Quarry, below the existing stockpiles and access roads. These ponds are designed to meet appropriate PADEP requirements for High Quality watersheds and allow for effective collection and conveyance of runoff. In addition to the Pitts Ponds, there are several existing sediment traps around the site perimeter to provide additional stormwater collection and treatment.

The existing Pitts Quarry also provides a very substantial storage area for handling runoff at the site. The presence of this quarry allows for significant operational flexibility in that many of the impoundments around the site can be pumped to this quarry so that storm runoff can be temporarily stored, allowed to clarify, and later released in a controlled manner.

SGI is continuously evaluating potential additional improvements to physical facilities and operating methods for the stormwater management system across the Charmian site:

- SGI is currently making major upgrades to the Blue Mountain Pond, a pond situated near the Lower Mill through which the entirety of the pumped water from the Pitts and Northern Tract Quarries will pass. This pond will allow for additional sediment removal capacity prior to the transferred stormwater entering the Lower Mill Pond system.

- The ponds associated with the Pitts Quarry (Pitts Ponds 1 and 2) are equipped with an emergency backup generator so that the pumps can still operate and prevent a discharge to Tom's Creek in the event of a power outage. A similar system will be installed with the Northern Tract Ponds.

- The Charmian facility has developed a storm event readiness program. The site proactively monitors upcoming weather conditions and has roles and responsibilities assigned to help prepare for large events. The program includes training and instructions on how to respond before, during, and after the storm events.

- SGI is currently obtaining input from engineers and consultants on potential design changes to the system that would increase sediment removal efficiency at the Lower Mill Pond system. Although the ponds routinely discharge in compliance with the NPDES Permit, upgrades would be targeted to provide increased performance during large storm events.

4. Blasting Impacts

Comments:

SGI further asserts that it will "use best management practices and blasting plans to minimize noise levels (over pressure) associated with blasting," see Module 17.3. Yet, again, SGI does not identify what best management practices will be utilized or what decibel reduction can be expected as a result. (FOTC/Fair Shake)

SGI' s Blast Plan, contained in Module 16, notes that buffers of anywhere between 100 to 300 feet of "forestland" will be utilized; however, there is no information on the location of this forested buffer or where the buffer will be 100 feet versus 300 feet. Although SGI points to Exhibit 9 for mapping, the map provided as Exhibit 9 does not depict a forested buffer. (FOTC/Fair Shake)

The question I have now is how far have they gone to this particular point, because the blasting which directly effects my property directly across from me is quite unnerving, and I'd like to know if the further down they go, is the blasting more significant, do you feel it more? (D. Paolini)

When the current mining operations blast, our house windows and garage doors rattle. If operations come even closer to our property, this will increase. This could lead to structural damage to our home. (M. and R. Rogers)

As SGI's current operation affects our property adversely, we fully expect said affects to worsen the closer blasting and other operations come to our property line. … What are the allowable level of decibels for blasting that must be adhered to and who monitors the blasting? Are there blasting reports available and seismograph recording available for daily blasting and the strength of such blasting? (S. Merryman)

My wife and I have been deeply disturbed by the daily earthquakes that result from SGI's blasting. Our home and land have endured structural damage as a result. (S. Merryman)

Current blasting shakes our homes, rattles windows, and releases toxic dust…particularly concerned [about] asbestos. Permitting blasting on Pine Hill will increase our exposure to greenstone dust, creates additional safety hazards, especially to traffic on Iron Springs and Gum Springs roads, and will negatively impact recreational pursuits. (H. Keahey)

Blasting (explosions) could cause sinking of water table and impacts on Toms Creek and wells in area (D. Christensen)

Kepner's Knob…is a designated rare species area…No rattlesnakes or bats are going to hang around all that blasting… (S. Roger-Frost, C. Frost)

Response:

4.1 Explanation of Existing Blasting Standards and Practices

(a) PADEP Blasting Standards and Requirements

PADEP has adopted and enforces stringent standards governing blasting conducted a non-coal surface mines. Those standards are incorporated into the Pennsylvania noncoal mining regulations, 25 Pa. Code §§77.561-77.565 and Ch. 110-111. Those regulations include the following elements:

- Section 77.561 requires that blasting operations be conducted by or under the supervisions of a competent blaster licensed and operating in compliance with 25 Pa. Code Ch. 210. SGI contracts with PADEP-licensed blaster, who plans, conducts and supervises all blasting operations at the Charmian facility.

- Blasting must be conducted in accordance with a written blasting plan, which is submitted as part of the mining application. 25 Pa. Code §77.453. The blasting plan sets forth explaining how the applicant intends to comply with the applicable standards, including (1) drilling patterns, including size, number, depths and spacing of holes; (2) charge and packing of holes; (3) types of initiation and detonation controls; (4) sequence and timing of firing holes; and (5) scaled distance.

- Section 77.562 provides that if preblast surveys are not conducted, blasting must be designed and conducted in a manner that the resulting vibrations do not exceed the peak particle velocity shown in Figure 1 of the rule at the nearest dwelling, school, church, commercial or institutional building that is not owned or leased by the mine operator.

5.

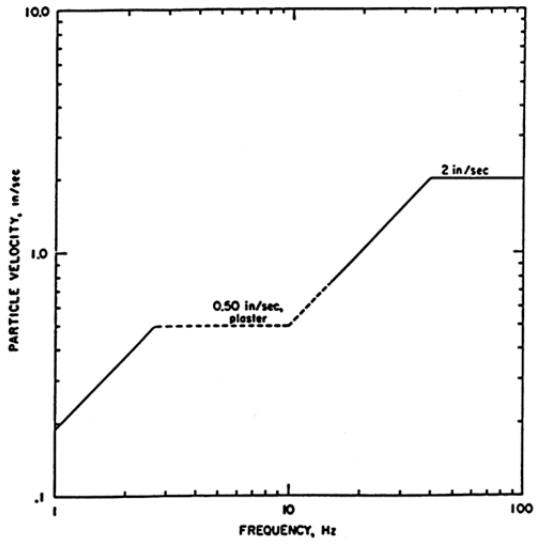

Figure 1 is commonly known as the "Z-curve" and is discussed in further detail below. In addition, §77.564(i) mandates that the peak particle velocity may not exceed 2.0 inches per second at the location of a dwelling, public building, school, church, commercial or institutional buildings, or other structure designed by PADEP.

- Airblasts (air overpressure) must be controlled so that they do not exceed 133 dBL at a dwelling, public building, school, church or commercial or institutional structure not owned by the mining operator and not leased to another person. 25 Pa. Code §77.564(f). (Note: "dBL" is defined as decibel level on a linear scale, and different than the A-weighted scale used to measure human response.)

- Records of blasting operations must be maintained and available for inspection by PADEP. 25 Pa. Code §77.565. Under the PADEP rules, SGI submits to PADEP copies of each blast event report, including seismographic records and airblast records.

When a blast detonates, some of the explosive energy not utilized in breaking rock travels through the ground in all directions as wave motion, similar to the ripple created in a pond when a stone hits the water. This wave motion, or ground vibration, travels mainly along the surface at speeds that depend upon the density and thickness of the rock and soil. Its energy level decreases rapidly with distance from the blast and normally decays to levels undetectable by humans beyond several thousand feet. Vibration represents wasted energy, and it is to the blaster's advantage to utilize as much of the energy as possible in fragmentation, thereby minimizing vibration.

The impacts of blasting are regulated through two different standards – one governing ground vibration and the other limiting airblast. As discussed below, both set of standards are based on extensive studies conducted and compiled by the U.S. Bureau of Mines, with levels established to protect structures (including typical residential dwellings) against damage.

Ground Vibration

Ground vibration is measured by means of a seismograph, which is spiked into the ground. Blasting seismographs measure ground vibration in terms of particle velocity, which is the speed at which each particle in the ground oscillates as the wave motion passes. This would be similar to measuring the speed of a fishing bobber in a pond as it moves up and down when a ripple passes under it. Particle velocity is measured in inches per second, but beyond several hundred feet from a blast the actual movement of the ground, or displacement, is generally only a tiny fraction of an inch, about the thickness of a piece of paper, or less. So it is important to understand that a particle velocity reading expressed in inches per second refers to the *speed* at which the ground moved, and not the amount of movement.

A seismograph contains three transducers that measure vibration in three directions: vertical, longitudinal, and transverse. The transducers measure ground particle movement or particle velocity inches per second ("**in/sec**"). The highest reading of the three transducers is

considered the peak particle velocity ("**PPV**"). An additional component of the reading is the frequency of the wave, measured in cycles per second, also known as hertz ("**Hz**").

Blasting standards have evolved over time, leading to what today are very stringent limits. Decades of research performed by the U.S. Bureau of Mines and others, which are reflected in U.S. Bureau of Mines Report of Investigations 8507[7] ("**RI 8507**"), resulted in development of the Z-Curve standard designed to protect against vibrations that would cause damage to residential and other structures. With exception of blasting that creates very low frequency waves (which are rare and not found in the SGI operations), RI 8507 found safe levels of ground vibration range from 0.5 to 2.0 inches per second for residential type structures. A limit of 0.75 in/sec was found safe at low frequencies for modern homes with drywall construction, while a lower limit of 0.5 in/sec was found to protect against damage to older homes with more sensitive lath and plaster construction. Pennsylvania has adopted the Z-Curve with the more stringent 0.5 inches per second limit to protect the most sensitive structures with plaster walls. (Notably, masonry takes much greater levels of vibration to reach a threshold for minor damage than drywall or plaster.)

The Z-Curve adopted by Pennsylvania depicts both the frequency and the correlating peak particle compliance level. The maximum allowable PPV in 2 in/sec. Each seismic reading plots the peak readings onto a copy of the Z-Curve. This provides a quick visual reference to confirm compliance, where compliance is shown where all the plotted peaks below the Z-Curve line.

Airblast (Air Overpressure)

Airblast (also known as air overpressure), like ground vibration, is a side effect of the use of explosives to fragment rock for mining, quarrying and excavation. Airblast consists of an impulsive sound produced by an explosive blast. Air overpressure is measured with a linear microphone, which typically is connected to the seismograph that concurrently measures ground vibration. The readings are labeled in decibels (dB). The U.S. Bureau of Mines conducted and compiled the results of numerous studies to develop what were determined to be "safe levels and appropriate measurement techniques" for protection against airblast-produced structure responses and damages. That analysis is presented in U.S, Bureau of Mines Report of Investigations 8485 ("**RI 8485**").[8] RI 8485 found safe levels of air blast at several levels, depending on frequency, but recommended that were a single value is to be used, the 133 dBL value was recommended. This value protects against potential window breakage (151+ dB) and effects on structures (180+ dB). The 133 dB value recommended in RI 8485 is the standard which the Pennsylvania blasting rules have adopted.

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[7] D. E. Suskind, et al., Structure Response and Damage Produced by Ground Vibration from Surface Mine Blasting, U.S. Dept. of the Interior, Bureau of Mines, Report of Investigations 8507, available at: https://www.osmre.gov/resources/blasting/docs/USBM/RI8507BlastingVibration1989.pdf.

[8] D.E. Suskind, et al., Structure Response and Damage Produced by Airblast From Surface Mining, U.S. Dept. of the Interior, Bureau of Mines, Report of Investigations 8485, available at https://www.osmre.gov/resources/blasting/docs/USBM/RI8485StructureResponseDamageProducedAirblast1980.pdf .

(b) SGI Blasting Practices

Basic Blasting Plan and Approach

SGI's blasting plan, which has been submitted as part of the Northern Tract mining application, sets forth SGI's plans for designing, managing and monitoring blasting activities in a manner that complies with all applicable state regulations, including the standards discussed above.

To generally describe the process, blasting activities are conducted on a "bench" (a level in the quarry), with blasting events proceeding from the inner side of the bench toward what will be the ultimate outer edge of that level. For each event, a series of parallel rows of borings are drilled – typically 6 – 10 boreholes per row, and 3 – 5 rows per event. Boreholes are typically spaced approximately 11-13 feet apart, with the amount of explosive to be placed in each borehole designed to fracture the rock in between the respective holes. Each hole is partly filled with a precisely calculated amount of explosives, and then packed with rock above the explosive to lock in energy and focus the blast to more efficient fracture the nearby rock. In a blast event, these boreholes are set off in a precisely timed sequence over a maximum of 1 second with charges separated by a minimum of 8 milliseconds, which serves to control the airblast/air overpressure and the frequency and peak particle velocity of the vibrations propagating through the ground.

SGI, in consultation with its outside blasting consultant, provides guideline parameters to the blasting contractor, such as, hole size, bench elevations, and other parameters. Above and beyond minimum PADEP requirements, SGI has developed and continues to refine certain best management practices (discussed further below) to limit impacts. Frequent meetings are held between SGI, the blasting consultant, and blasting contractor to discuss previous and future blasting areas, techniques, results and potential improvements. If the blasting contractor incurs a geological anomaly, they are instructed to notify SGI and SGI's blasting consultant, which triggers a group discussion and, where indicated, development of an adaptive blast plan.

SGI's Management Practices and Guidelines

Based on experience, over the past five years, SGI has developed and continues to refine management practices that go beyond PADEP minimum requirements. These practices include the following:

- SGI has set blasting design targets which aim to keep peak particle velocities at the nearest off-site residences or other buildings to less than 0.5 in/sec at all frequencies above 2 Hz (that is, even at higher frequencies where the Z-Curve would allow high peak particle velocities).

- SGI has set blasting design targets which aim to keep air overpressure to less than the state's 133 dBL standard. SGI has lowered that target in several steps to what is now a target of 110 dB at the nearest off-site residences or other buildings, well less than the

133 dBL allowed by the Pennsylvania regulations or the determined by the U.S. Bureau of Mines to be safe.

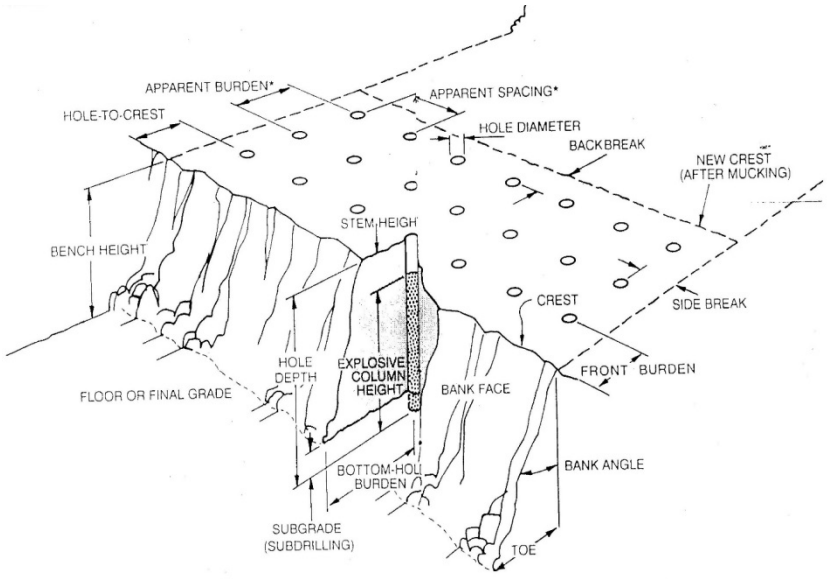
- SGI utilizes electronic detonators for precise delay time accuracy to assist in vibration control.

- SGI's plan has reduced the blast hole size from 6.5" to 5.5" and lowered the amount of explosive detonated per delay step.

- SGI's practices have reduced the total blast event size in terms of the number of rows and/or holes per row.

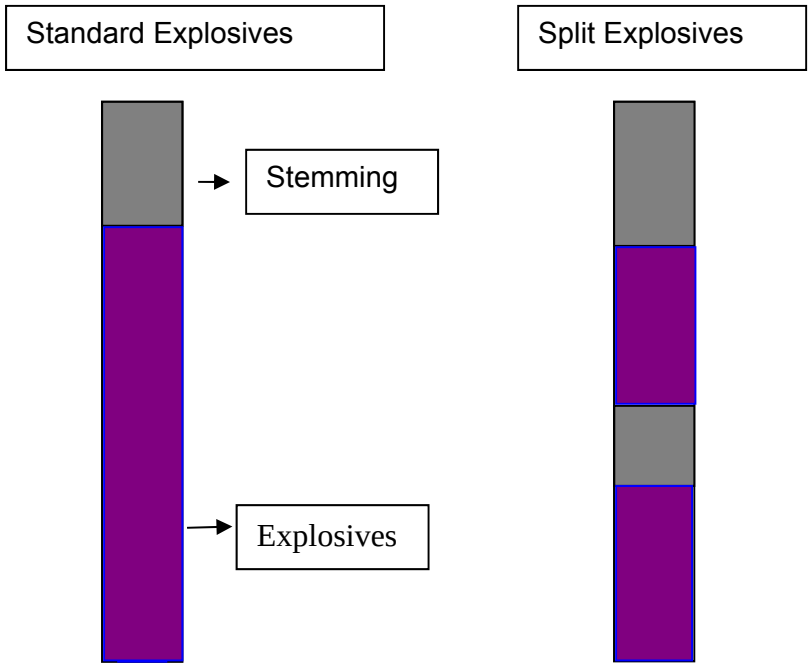
- SGI's plan inverts the burden and spacing on the front row to provide more burden on the free face (see **Figure 4.1**). "Burden" is the distance from borehole to the free face and/or direction of movement. The "spacing" is the distance between holes in a row. The typical burden is 11 feet and spacing is 13 feet, but with "inversion" the front row utilizes 13 feet of burden and 11 feet of spacing. This reduces air overpressure from the opening row. SGI uses a laser instrument to precisely locate the drill holes in order to establish the design burden and spacing.

Figure 4.1 – Burden and Spacing



- SGI's practice splits the explosive load on the front row of production borings or through noted geologic seams (see **Figure 4.2**) to assist in reducing air overpressure

Figure 4.2 – Standard vs. Split Explosive Loading



- SGI's practice calls for reducing "sub-drill" (the distance below the target bench elevation that borings are drilled to) from 4-5 feet (which is typical) to 2 feet in order to minimize fracturing on subsequent benches and reduce ground vibration (see **Figure 1**)

- SGI requires the drillers to provide an accurate drill log and note where the top of bench is fractured, seams and /or voids are observed in order to assist the blasting contractor and SGI in loading control/optimization.

- SGI's plan seeks to minimize use of angle holes, and if used, the angle is limited to 15 degrees to reduce air overpressure at the free face.

- SGI will blast on clear days and avoid blasting on overcast days, to the maximum extent feasible, for ideal air overpressure release.

- SGI practice seeks to schedule blasting after 1:00 PM to avoid temperature inversions.

- No blasting is conducted on weekends.

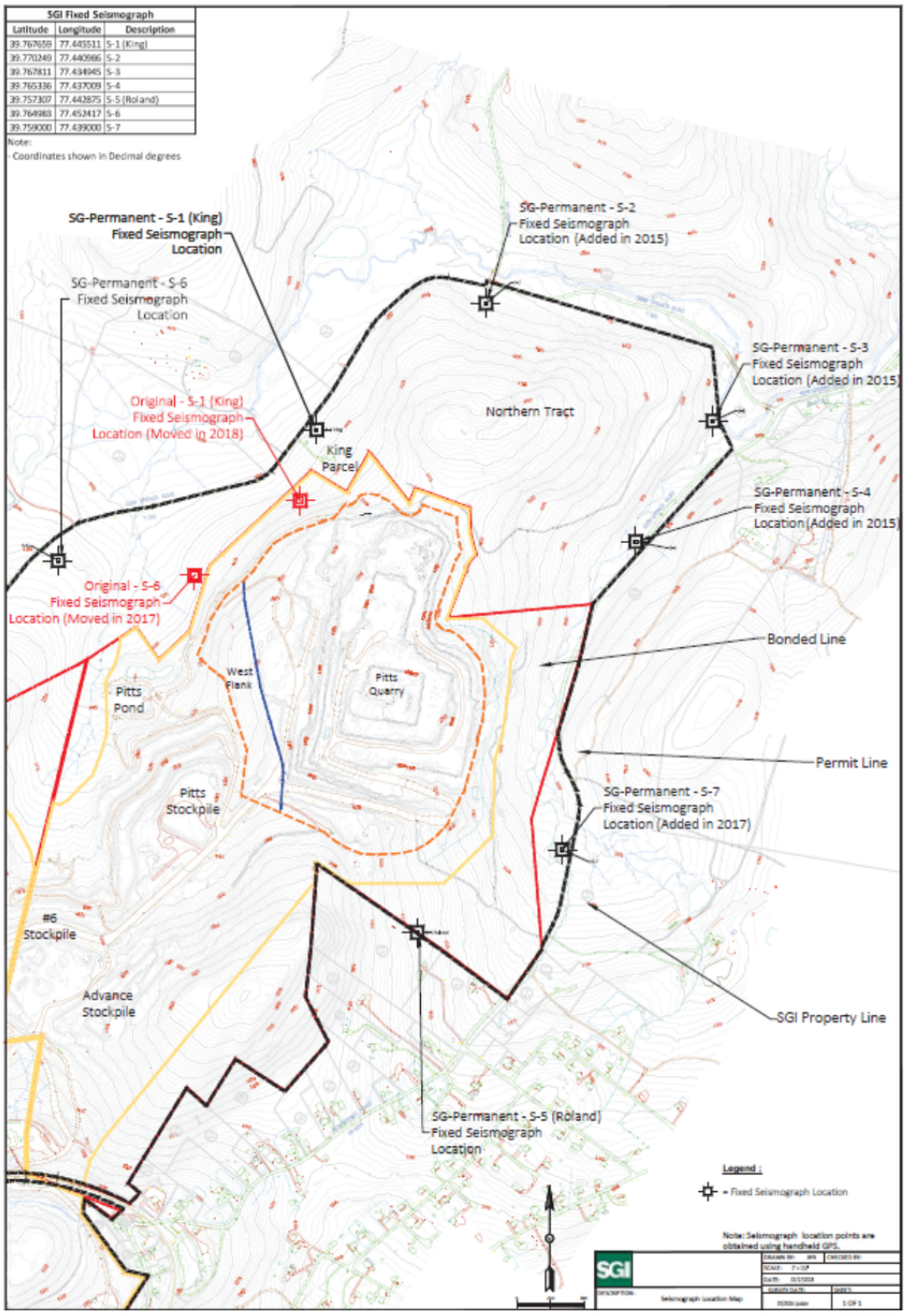
- For final walls (the outermost section of each bench), SGI practice provides for controlled smooth wall blasting techniques. Among those techniques is pre-splitting, which involves use of a light load on a close drill pattern to produce a safe smooth wall, in order to minimize fracturing the formation beyond quarry wall.

- Blasting events are videotaped for future review.

4.2 SGI's Compliance with PADEP Blasting Standards and Comparison to SGI Targets

SGI engages a third party monitoring firm to maintain a robust network for monitoring blasts. That network currently consists of seven (7) fixed monitoring stations, each equipped with a seismograph, located on property owned by SGI (e.g., closer to the blasting than off-site residences and other buildings). These fixed stations, whose locations are shown in **Figure 4.3**, are labeled S-1 through S-7. As indicated in Figure 3, the location of these monitoring points has been adjusted in some cases over time as operations have changed and the network has expanded.

Figure 4.3 – Blasting Monitoring Stations



SGI also maintains several portable seismographs which are deployed to specific off-site locations in response to complaints.

For every blasting event, the seisographic data is compiled into a blast report. That blast report plots the maximum measured value at each seismograph in the network that triggered any vibration, and compares those values against the Z-Curve. SGI has compiled all of those

readings for all blast events that have occurred from January 2014 through August 2018 date into graphs which are provided in **Appendix 4.1**. As seen in the **Appendix 4.1** graphs, the maximum PPV readings at the on-site monitoring points for the blasting events since 2014 have been below, and in most cases indeed well below, the Ch. 77 Z-Curve standards and SGI's more restrictive target of 0.5 in/sec at all frequencies. The PPV values at area residences, which are further away would be even less and well below regulatory limits.

Similarly, a review of air overpressure readings since 2014 did not find any measurements indicating an off-site propagation of airblast above the Ch. 77 133 dBL standard,[9] and of hundreds of measurements since January 2014, only a limited number exceeded SGI's voluntarily-developed lower target.

As noted above, SGI and its blasting consultant regularly review blasting records and reports in efforts to identify potential improvements to blasting plans that would further reduce these measurements.

4.3 The Limits of Rock Fracturing

Some comments indicate a concern that blasting conducted as part of the planned Northern Tract development might propagate rock fracturing beyond the SGI property, impacting Toms Creek, offsite wells and other features. In fact, as explained below, rock fracturing associated with the type of blasting used by SGI is quite limited.

As noted in the Federal Highway Administration Publication, *Rock Blasting and Over-Break Control, §10.9.2 Vibration Effects,* fracturing of the rock surrounding a blast hole is 20 to 40 times the hole diameter. Hence, a 5.5 inch hole (as called for in SGI's protocols) will only propagate cracks a maximum of 18 feet away from the hole. Information provided in R. Monhard, *Explosives and Rock Blasting (1987)* Table 7.2 indicates that based on the explosive type used by SGI and the metabasalt rock type at the Northern Tract, cracks should not exceed 14 feet from the blast hole. Moreover, SGI's blasting practices discussed above, including use of pre-split walls to provide a shear zone and pressure relief, limit the propagation of cracks beyond the planned outer boundary of the quarry benches.

In response to the question raised by Mr. Paolini, the impacts of blasting do not increase by the depth of the quarry. Vibrations generated by blasting events are a factor of confinement, distance to a structure, and pounds of explosives per delay. In utilizing blasting techniques described in SGI's blasting plan and protocols, ground vibrations and air overpressure will not increase by depth.

[9] One measurement in 2014 from one location on the SGI property measured 135 dBL, but that location was a considerable distance to the nearest off-site residence. Extrapolation to the residence would indicate an air blast value well below the legal limit of 133 dBL at the residence.

4.4 Protection of Tom's Creek

As indicated in the Northern Tract mining permit application, SGI will maintain a 300 foot buffer between the active quarry perimeter and Toms Creek. The metabasalt rock is a massive competent impervious rock with very poor structural connectivity (bedding planes, joint sets, fractures or pervasive foliation). The blasting plan and practices described above are designed to result in a limited fracture propagation from a blast hole. A maximum fracture from the hole resulting from blasting is approximately 20 feet. This, coupled with the lack of the ability of the blast fracture propagation to intercept any naturally occurring connective structures and the 300 foot buffer, essentially precludes any blasting/fracturing impacts to Toms Creek.

4.5 Concerns re Blasting Impacts on Water Table and Wells

As discussed in **Section 1** of these Responses, the metabasalt rock is uniform competent rock that exhibits a massive texture which lacks any consistent internal structural fabric (bedding planes, joint sets) that would facilitate water movement. Consequently, there is very limited vertical/horizontal hydraulic connectivity within the metabasalt and as such, water flow through this rock is extremely limited. The metabasalt does not possess the two important qualities for an aquifer (matrix pore space to collect/store water and the connective structure to transmit water). The poor permeability of the metabasalt results in very poor water-bearing yields for wells.

Given that there is no continuous bedrock structure for a water table to develop, drawdown effects of quarry development on the water table would not be evident. As discussed above, the propagation of blasting cracks from a drill hole would be a maximum of 20 feet from the hole, and considering the massive competency of the rock and the distances from the quarry to private wells, the potential impact to private wells in the surrounding area is highly unlikely.

This conclusion is supported by the experience in past operation of the Pitts Quarry and before that the West Ridge Quarry. In the past six years, SGI has received and responded to three complaints as to alleged impacts on private wells; but after investigation (by SGI and its third party consultants) of each situation, SGI did not find any instances evidencing that quarry operations have impacted the quantity or quality of water from any private well. Nevertheless, SGI has endeavored to cooperate with its neighbors and has provided some of these neighbors with assistance in addressing well performance issues.

4.6 Concern re: Impact to Kepner's Knob

As shown on Figure 4 (derived from GoogleEarth), Kepner's Knob is approximately 1.1 miles from the Northern Tract property. As noted in **Figure 4.4** below, there is a 300 foot forested buffer around the northern side of the Northern Tract, between the quarry area and Toms Creek, with Kepner's Knob further to the north.

Figure 4.4 – Kepner's Knob Distance to Northern Tract

The extrapolated ground vibration at closest point of the Northern Tract to Kepner's Knob is 0.03 in/sec, a value which is barely over the 0.02 in/sec threshold of human perception. The air overpressure is difficult to calculate due to multiple variables, but generally sound levels, including air overpressure, dissipate with the cube of the distance.[10] At a distance of 1 mile from the Northern Tract, the air overpressure reaching Kepner's Knob would be expected to be low.

4.7 SGI's Approach to Responding to Complaints Concerning Blasting

SGI has an organized process for receiving and addressing complaints concerning alleged blasting impacts. SGI has a designed complaint telephone line, which is monitored. Whether a complaint is received via that line or otherwise, the complaint is logged and a form is filed out upon notification. A call is made to the complaining party by a member of SGI management to request a visit to the home/site. A review is performed of seismic data for blasting events conducted over the time period of the complaint and videos of the blasting event. If access is granted, a visit will be conducted including documentation of all concerns. An offer will then be made to set up a portable seismic monitor at that location on the next or several blasts.

[10] International Society of Explosives Engineers, *Blaster's Handbook* (18th Ed., 2011), pg. 588.

4.8 Response to Specific Blasting Complaints

During the July 23, 2018 public meeting and in written comments, several individuals raised concerns or complaints regarding blasting impacts. With respect to a few of those individuals, SGI had previously received, investigated, and responded to complaints (as discussed below); but as to other commenters, SGI's complaint log indicates no previous contacts raising such issues.

With respect to the Paolini residence:

- SGI received a complaint on December 14, 2012. The investigation revealed that no blasting event had occurred coincident with the timeframe of this complaint.

- SGI received a compliant on January 15, 2014. The blasting monitoring reports for the subject event showed that the on-site monitoring point with the highest reading that day showed a PPV of 0.0735 in/sec (significantly less than the Pennsylvania standard of 0.5) and an air overpressure of 114.5 dB (compared to the Pennsylvania standard of 133 dBL).

- A complaint received on December 20, 2016 was investigated. The blasting monitoring reports for the subject event showed that the on-site monitoring point with the highest reading that day showed a PPV of 0.105 in/sec (well under the Pennsylvania standard of 0.5) and an air overpressure of 112 dB (much less than the Pennsylvania standard of 133 dBL).

With respect to the Keahey residence:

- SGI received a general complaint from Mr. Keahey on November 11, 2016 concerning noise which mentioned blasting. The Keahey residence at 120 Snyder Hollow Road is over 4000 feet from the existing Pitts Quarry pit, the location were blasting events would have occurred. An examination of the blasting records for the precedent period showed events on November 10 and 11, 2016. The readings from monitoring point S1 on the SGI property (which is at least 2500 feet closer to the blasting than the Keahey property) showed a maximum PPV of 0.078 in/sec and air overpressure of 111 dB on November 10, and a PPV of 0.100 in/sec and air overpressure of 107 dB on November 11, all well less than the Pennsylvania standards.

Others:

- Since the public meeting, SGI has reached out to additional individuals/families who expressed concerns regarding blasting, and SGI has taken steps to investigate and address their concerns. SGI will continue to work with these neighbors going forward.

5. Truck Traffic

Comments:

Massive trucks rumble noisily in and out of our neighborhood on narrow country roads that are ill suited to support them. (S. Ungar)

The constant truck traffic will also destroy our roads because these roads are not built to handle the volume. The maintenance and upkeep of these roads will fall on the taxpayers. (Multiple commenters)

With regards to SGI traffic:

> *How will the trucks be monitored for emissions compliance on a daily basis? Has the existing quarry been required to do same? Who monitors and waters down or cleans streets affected by heavy traffic?*
>
> *What is required during rain to keep any residue on the roads for adjoining property owners?*
>
> *Why are there no signs leading to and from the quarry advising the community of the truck traffic?*
>
> *How many trucks will the DOT permit on any given day?*
>
> *Has a traffic study ever been done?*
>
> *Has there been an estimate of the increase to SGI traffic if the proposed mining goes forth? (S. Merryman)*

Increased operations mean increased transport or greenstone to market. Trains are used, but most transport is done by large, heavy tonnage trucks. These trucks travel on country roads winding through residential areas and through Monterey Historic District – using Old Route 16, Charmian Road, and Monterey Lane before reaching a secondary highway, Highway 16. Monterey Lane is the site or one of the oldest country clubs and golf courses in the county. Monterey Lane bisects the lands owned by Monterey Country Club. Heavy tonnage trucks transporting greenstone present an extreme safety hazard, particularly for children who frequently cross the lane on foot or bicycle to reach the clubhouse, swimming pool, and other recreational activities. Again, the trucks are operating 24/7 and, while SGI may not own the trucking companies, SGI is transporting the product and is responsible for the safety hazard. A new permit should not be approved until a solution is implemented to get these trucks off our residential roads. (H. Keahey).

Heavy, commercial trucks travel primarily on Old Waynesboro Pike through Fountaindale, as well as Charmian to Monterey Lane, to access PA Route 16 for travel to factories North and East of here. Both routes involve travel through residential areas. Both routes utilize secondary roads that are not constructed to bear the weight of regular commercial trucking and should be restricted against heavy trucks. SGI should be required to construct a road that directly accesses PA Route 16 which is constructed to handle heavy commercial trucking. (J. & C. Dull)

We currently hear trucks and equipment from the existing mine throughout the day and evening. This mining expansion will produce even more noise disruption. The constant truck traffic will also destroy our roads because these roads are not built to handle the volume. The maintenance and upkeep of these roads will fall on the taxpayers. (M. Rogers)

Recently we have begun to hear truck noise in the middle of the night when all else is quiet. (Multiple commenters)

Heavy tonnage trucks transporting greenstone present an extreme safety hazard (Multiple commenters)

High tonnage trucks should be redirected as these trucks are a nuisance and safety hazard, and have no place within a National Historic District. (Multiple commenters)

5.1 Northern Tract Operations Impact on Truck Traffic

The modifications to the Charmian Facility operations proposed as part of this Northern Tract Quarry permit application are not intended to increase production capacity at the Charmian Facility nor result in increased truck traffic. Rather, the production from the Northern Tract Quarry is a continuation of operations in the Pitts Quarry extending the life of the quarry over time.

The Northern Tract Quarry plan contained in the subject permit application has been designed such that no new site entrances will be installed on Gum Springs Rd., Lower Gum Springs Rd., or Iron Springs Road. Construction and mining equipment, deliveries, and shipments will all continue to be routed through SGI's internal haul roads and ultimately utilize the existing site entrances on Old Waynesboro Rd. The Northern Tract Quarry application will not impact the current traffic situation. However, as discussed below, SGI is nearing completion of a separate project to construct a new access road connecting the Charmian Facility directly to State Route 16, thereby allowing most trucks to bypass and avoid Old Waynesboro Road and other local roads. This Route 16 access road project is proceeding on a separate permitting track and is farther along in the permitting process. If the Route 16 access road project remains on track SGI is planning to complete a new access road directly connected to Route 16 before winter of 2019-2020.

5.2 Roads Currently Utilized / Planned Direct Connection to Route 16

All traffic related to the Charmian Facility currently accesses the site through two entrances on Old Waynesboro Road. This traffic includes product shipments, deliveries, personal vehicles, and any other activities associated with the operation of the facility. The majority of this traffic travels east or west on Old Waynesboro Road to then access State Route 16. The Charmian Facility also transports significant quantities of product via the railroad that traverses the facility.

In an effort to reduce the volume of SGI-related traffic on Old Waynesboro Road, SGI has been working for several years to acquire property and complete the necessary studies, engineering plans, and permitting required to install a new entrance and access road that directly connects the Charmian Facility with Route 16.

SGI has obtained title to the necessary adjacent real property, and is nearing completion of the permitting process to construct the access road and install an entrance and turning lanes directly onto Route 16. A permit application to PADEP was submitted on November 27, 2017. A public notice was published once a week starting on December 8, 2017 through December

29, 2017. PADEP also published a notice for the application in the Pennsylvania Bulletin on December 23, 2017. No public comments were received. PADEP issued the required permit on October 16, 2018. SGI submitted an application for a highway occupancy permit to the Pennsylvania Department of Transportation ("**PennDOT**") on August 31, 2018. SGI is working with PennDOT to obtain approval for the PennDOT highway occupancy permit and hopes to have a final PennDOT permit within 6 months.

SGI designed the new access road to avoid direct impacts to streams and wetlands. The road to the extent practicable avoids wetland and stream areas. When wetlands and streams are crossed, a typical construction practice for a road of this nature includes the placement of culvert pipes and fill for stream and wetland crossings. However, SGI designed the planned access road to incorporate a three span bridge and bottomless concrete arch crossings for the streams and wetlands in the area of the project, thereby avoiding impact to streams and wetlands where possible.

In accordance with PennDOT's safety requirements, SGI will be installing turning and access lanes from the east and west on Route 16 so that traffic utilizing the access road will not interfere with vehicle travel and safely attain merging speed. Presently, the majority of traffic from the SGI site ultimately travels on Route 16. Therefore, the proposed access road is not anticipated to cause an increase in Route 16 traffic volume, but it will substantially cut down on truck traffic on Old Waynesboro Road and other local roadways on their way to Route 16.

Once the permits are approved, SGI anticipates a 6-9 month construction period. SGI is planning for completion of this project before the winter of 2019, subject to the timing of final permit issuance.

After construction is complete, the majority of heavy truck traffic will be routed directly to Route 16 and will no longer use Old Waynesboro Road. SGI estimates an approximately 80% reduction of SGI-related truck traffic on Old Waynesboro Road and other local roads, including the roads adjacent to or near the Monterey Country Club and the Monterey Historic District.

5.3 Additional Impact Mitigation Measures

Control of local roadways is under the purview of Hamiltonban Township. SGI has worked with Hamiltonban Township to adopt the two mile section of road between the quarry and Route 16 that carries SGI related truck traffic. For many years, SGI has partnered with the Township and among other efforts SGI regularly plows and salts this section of the road in the winter. The latest joint maintenance project was conducted in 2016, when SGI helped Hamiltonban Township pave a 2,000 foot section at the eastern end where the road connects to Route 16. SGI recently purchased a street sweeper and utilizes it to clean roads near the site entrances as needed. SGI's street sweeper is a state-of-the-art sweeper utilizing a broom system and water sprays to collect debris while minimizing dust generation. (That unit is certified for PM-10 emissions control under the stringent standards of Southern California Air Quality Management District Rule 1186.) SGI will continue to work in partnership with the Township to help maintain

the portion of road utilized by SGI-related trucks. SGI dedicates a crew once a month to pick up trash on the roads on around the perimeter of the property.

Reducing SGI traffic on Old Waynesboro Road is a benefit to SGI as well as our neighbors. 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.

SGI has installed a truck wash at the Lower Mill area for loaded trucks utilizing the Gate 2 site exit/entrance. Additionally, both site entrances are paved to reduce tracking onto Old Waynesboro Road. Paved roads also allow for better sweeping efficiency.

Charmian utilizes a safety warning system on Old Waynesboro Rd. Trucks leaving the site pass a sensor near Gate 1, and this sensor activates a warning light on Old Waynesboro Road. The warning light is in place to alert drivers to slow down and watch for trucks entering the roadway.

6. Noise

Comments:

[A]nticipated noise impacts have not been adequately evaluated. … [T]he Department commits an abuse of discretion when it does not consider noise generated by a surface mine and fails to determine whether that noise constitutes a public nuisance. … In Chimel, the EHB noted that the Department considers "a continuous reading of over 68 decibels during the day and over 65 decibels at night at the property line to be a public nuisance." (FOTC/Fair Shake)

An adequate noise assessment should evaluate anticipated day and nighttime decibel levels at the property line, when spikes in noise levels are anticipated, what measures SGI will or could take to reduce noise impacts, and the noise environment that local residents are currently accustomed to. (FOTC/Fair Shake)

Although SGI asserts that "[v]egetated screenings" will be used to "help mitigate noise levels," see Module 17.3, SGI does not even attempt to quantify the noise reduction that can be attributed to the vegetated screenings or identify where these screenings will be located. (FOTC/Fair Shake)

SGI asserts that it will "use best management practices and blasting plans"…does not identify what best management practices will be utilized or what decibel reduction can be expected…application materials fail to quantify anticipated noise levels…do not provide current noise levels. (FOTC/Fair Shake)

As SGI's current operation affects our property adversely, we fully expect said affects to worsen the closer blasting and other operations come to our property line. What are the allowable levels of decibels…who monitors…are reports available? …vibration studies? (S. Merryman)

What reports have been made about noise pollution; specifically, about noise pollution from blasting and their measured decibels with regards to mandated regulations? (S. Merryman)

We currently hear trucks and equipment from the existing mine throughout the day and evening. This mining expansion will produce even more noise disruption. (M. & R. Rogers)

Specialty Granules, LLC (SGI) is operating at nuisance levels, and expansion under a new permit will increase the nuisances we endure. … From our homes we can hear haul trucks, grinding, and excavation every day and night, 24 hours a day, seven days a week. … The application to expand SGT operations on to Pine Hill, the last remaining vestige of Pine Mountain, will increase the nuisance noise we now hear. (H. Keahey)

Four generations of the Shank family have been able to enjoy the property to date, but the noise, blasting and scarring of the mountain are now a permanent part of the landscape. (C. Andes)

Response:

6.1 Applicable Standards / "Public Nuisance" Criteria

PADEP evaluates sound impacts from mining operations under Section 1917-A of Administrative Code, 71 P.S. § 510-17, which authorizes the Department to order the abatement of "nuisances." Other than with respect to blasting operations (for which PADEP regulations establish an overpressure limit of 133 dBL),[11] the Department has not established regulatory limits for sound emanating from mining operations. Rather, as explained by the Environmental Hearing Board, the Department has a duty "to consider noise impacts when reviewing an application for a surface mining permit to ensure that the Department does not permit an operation that constitutes a ***public nuisance***." *Chimel v. Department*, 2014 EHB 957, 1000 (emphasis added), *citing Plumstead Township v. Department*, 1995 EHB 741, 789.

Under Pennsylvania case law, "to constitute a nuisance based upon noise, the question is whether the noise is ***unreasonable*** and ***unnecessary*** considering ***all of the circumstances*** involved." *Gray v. Barnhart*, 601 A.2d 924, 927 n. 4 (Pa. Cmwlth. 1992) (emphasis added). As explained by the Pennsylvania Supreme Court in *Molony v. Pounds*,

> No one is entitled to absolute quiet in the enjoyment of his property. All that may be insisted upon is a degree of quietness consistent with the standard of comfort in the locality in which one dwells …. Persons living in a community or neighborhood must subject their personal comfort to the commercial necessities of carrying on trade and business, and where the individual is affected only in his taste, his personal comfort, or pleasures, or preferences, these must be surrendered to the comfort and preferences of the many …. The use of property for other than residential purposes may be, and at times is, an annoyance to dwellers in the vicinity, but the mere fact of annoyance does not establish the

[11] As explained in the responses to comments concerning blasting provided in Section 4 of these Responses, 25 Pa. Code § 77.54(f) establishes an overpressure (sound level) standard for blasting. Section 77.54(f) states: "Airblasts shall be controlled so that they do not exceed 133 dBL at a dwelling, public building, school, church or commercial or institutional structure, unless the structure is owned by the person who conducts the surface mining activities and is not leased to another person. The lessee may sign a waiver relieving the operator from meeting the airblast limitations of this subsection."

> existence of a nuisance and is not of itself a sufficient basis for an injunction against the particular use from which the alleged annoyance arises …. Where the annoyance arises from the conduct of a business which is not a nuisance per se, a strong effort will be made to conserve the rights of all parties. ***An important question is, can the noise by any reasonable means be moderated so as to accord with the degree of quietness the plaintiff has a right to enjoy, and if it can, by what means*** …. In such cases, equity will not ordinarily interfere unless the proof shows that the injury arises either from an improper conduct of the business or from one that could be remedied ….[12]

In sum, under controlling Pennsylvania precedent, when reviewing a mining permit application, PADEP considers whether the proposed activity would qualify as a public nuisance, i.e., whether the activity would generate noise that is ***unreasonable*** considering all of the circumstances. This fact-specific determination requires consideration and weighing of several factors, including, but not limited to, (a) the level and frequency of the noise, (b) where it occurs, (c) when it occurs, (d) the reasonable expectations of those impacted by the noise, (e) the utility of the noise-generating activity, and (e) the ability of the persons making the noise to reasonably control it.

The FOTC/Fair Shake comments refer to the EHB's decision in *Chimel* (cited above), for the proposition that "the Department considers 'a continuous reading of over 68 decibels during the day and over 65 decibels at night at the property line to be a public nuisance.'" In *Chimel*, the EHB actually *rejected* the position, taken by some PADEP witnesses in the case and now embraced by FOTC/Fair Shake, that activities generating continuous sound levels in excess of 68 decibels at day or 65 decibels at night *per se* constitute a public nuisance, without regard to other relevant factors. *See Chimel*, 2014 EHB at 1006–09. The EHB concluded that these rigid limits were unjustified on the record, and went on to find that the appellants had failed to meet their burden to establish that the coal breaker operations at issue in the *Chimel* case constituted a public nuisance based on other competent evidence. In any event, as discussed in **Section 6.4** below, SGI's proposed Northern Tract operations are not expected to exceed or even approach these levels.

6.2 Current Ambient Sound Levels

Epsilon Associates, Inc. ("**Epsilon**") conducted existing condition sound level measurements at the SGI Charmian Plant. The purpose of the measurement program was to determine existing condition sound levels under typical plant and quarry operations at various locations around the perimeter of the site (at the property line).

(a) Sound Level Measurement Methodology

Continuous A-weighted and one-third octave-band sound level measurements (24 hours/day) were made concurrently at seven locations over approximately a one-week period from

[12] 64 A.2d 802, 803–04 (Pa. 1949) (emphasis added) (citations omitted).

Tuesday, July 25, 2017 through Friday, August 4, 2017. The monitors were generally unattended, with personal observations made by a field technician during deployment, a nighttime site visit, and demobilization.

(b) Sound Level Measurement Locations

Seven sound level measurement locations were selected to represent sound levels at various locations around the entire perimeter of the quarry, including residences near the Northern Tract. All measurements were made on SGI property with access from the public roads.

These seven background sound level monitoring sites are described below.

- **Location 1** – Old Waynesboro Road -- was selected to represent sound levels at the closest residents southeast of the Granule Plant in the southern portion of the site. This location is approximately 50 feet back from the edge of the road.

- **Location 2** – Charmian Road -- was selected to represent sound levels at the closest residents southwest of the Granule Plant in the southern portion of the site. This location is approximately 75 feet back from the edge of the road.

- **Location 3** – Furnace Road -- was selected to represent sound levels at the nearest residences to the west of the quarry. This location is at the Adams County/Franklin County line approximately 100 feet back from the edge of the road.

- **Location 4** – Gum Springs Road -- was selected to represent sound levels at the nearest residences to the northwest of the quarry. This location is across the road from #445 approximately 50 feet back from the edge of the road.

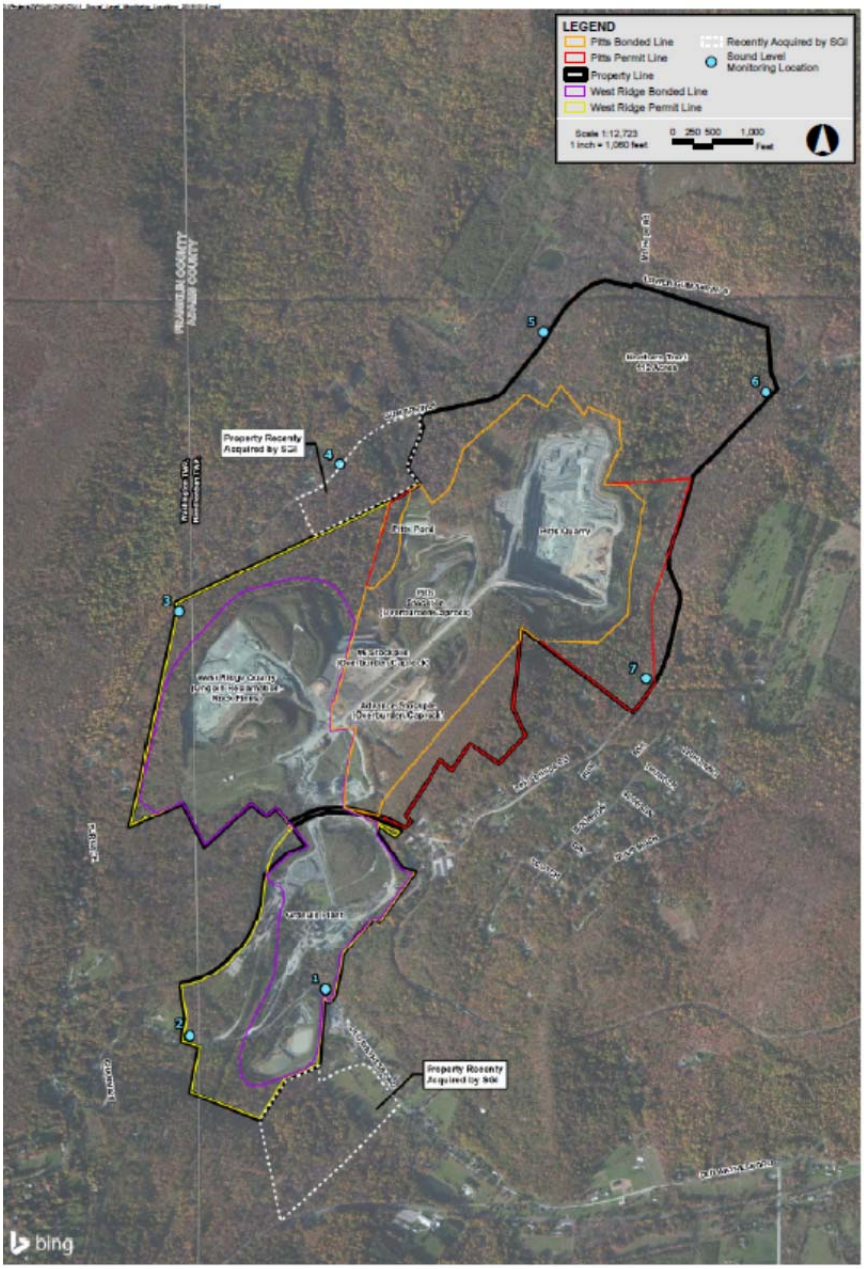
- **Location 5** -- Gum Springs Road -- was selected to represent sound levels at the west side of the Northern Tract expansion. This location is across the road from a gravel parking area approximately 75 feet back from the edge of the road.

- **Location 6** -- Gum Springs Road -- was selected to represent sound levels at the nearest residences to the east side of the Northern Tract expansion. This location is approximately 50 feet back from the edge of the road.

- **Location 7** – Iron Springs Road -- was selected to represent sound levels at the nearest residences to the east of the quarry. This location is across the road from #2150 approximately 125 feet back from the edge of the road

An aerial photograph of the site is shown in **Figure 6.1**, identifying the SGI property boundary, nearby roads, area residences, and background monitoring locations.

Figure 6.1 – Sound Level Measurement Locations



(c) Sound Level and Meteorological Measurement Equipment

Seven (7) Larson Davis (LD) Model 831 integrating sound level meters, tripod-mounted at a height of approximately five feet (1.5 meters) above ground level and fitted with the manufacturer's environmental windscreen, were used to measure the sound levels. Each meter, connected to a microphone via an extension cable and housed in an environmental

suitcase, was programmed to log statistical A-weighted broadband and unweighted one-third octave band sound level data over one-hour intervals with a one-minute time history.

All sound monitoring instrumentation met the "Type 1 - Precision" requirements set forth in ANSI S1.4-1983 as specified in the ANSI S12.18-1994 methodology as well as those in ANSI S1.11-2004 (octave filter standard) for acoustical measuring devices.

The measurement equipment was calibrated in the field before and after the surveys with the manufacturer's acoustical calibrator (CAL200), which meets the standards of IEC 942 Class 1L and ANSI S1.40-1984. All calibrations were within 0.5 dB from the most recent calibration. The meters were calibrated and certified as accurate to standards set by the National Institute of Standards and Technology by an independent laboratory within the prior 12 months.

One HOBO H21-002 micro-weather station (manufactured by Onset Computer Corporation) was used to continuously measure the ground-level wind speed at Location 7. The wind sensors were mounted at a height of approximately 1.5 meters above ground level and data were logged every hour. Ground-level winds throughout the program were below 5 m/s which is the maximum speed for valid sound level data according to ANSI S12.18-1994. Weather data from the Camp David (MD) National Weather Service (NWS) station were archived to determine periods of precipitation during the program.

(d) Sound Level Measurement Results

Current noise sources in the area surrounding the SGI site include: existing quarry operations; quarry and non-quarry vehicle traffic along local roads; aircraft flyovers; residential yard equipment; air conditioning units; insect noise; rustling vegetation; and birds. Hourly A-weighted broadband sound pressure level data from the continuous sound level monitoring stations at Locations 1 through 7 are presented in graph provided in **Appendix 6.1**. These include the sound from all quarry and non-quarry activity combined.

Periods of precipitation as recorded by the National Weather Service are indicated in the **Appendix 6.1** graph. Sound levels during these precipitation periods were excluded from analysis. Ground level wind speeds greater than 5 m/s (11 mph) were not observed during the sound level measurement program by the wind station at Location 7. Due to zero periods reaching this threshold, there were no periods removed from the dataset due to wind speed levels.

The continuous sound levels in the **Appendix 6.1** graph are presented as equivalent sound levels (L_{eq}) which is one of the most common sound metric used in community sound level surveys. The L_{eq} level is the energy averaged, A-weighted sound pressure level that occurs over a given time period, *i.e*., the steady, continuous sound level which has the same acoustic energy as the time-varying sound levels over the same time period. The L_{eq} has been shown to provide both an effective and uniform method for comparing time-varying sound levels and is routinely employed. In addition, the maximum sound level (L_{max}) can be used to quantify the

maximum instantaneous sound pressure level generated by a source. This would be a useful metric when describing very short-term sound levels from a blast for example.

During the sound level measurement program, the Coloring Plant was down for maintenance during the following times:

- 7/27/2017 6:45 AM – 2:12 PM
- 7/29/2017 2:58 PM – 7/30 11:19 PM
- 8/3/2017 6:46 AM – 2:12 PM

During the sound level measurement program, the Lower Mills Granule Plant was down for maintenance during the following times:

- 7/29/2017 2:12 PM – 7/31 12:14 AM
- 8/1/2017 7:22 AM – 3:07 PM

During the sound level measurement program, SGI Charmian Quarry conducted a blast during the following times (each of which is denoted in the **Appendix 6.1** graph):

- 7/26/2017 1:44 PM
- 7/27/2017 1:43 PM
- 8/1/2017 1:41 PM

A review of the data depicted in **Appendix 6.1** shows that sound levels at all seven locations along the property line were generally 60 dBA or below. A few brief hours of 60-64 dBA occurred at 8 PM of some evenings, when insect activity increased dramatically. The graph shows the variability of the sound levels which can vary from ~25 dBA to 64 dBA at various points along the SGI property boundary. Sound levels were also lower during periods when the Granule Plant and Coloring Plant were shutdown. Short term sound levels due to blasting did not affect the continuous L_{eq} sound levels. In fact, even on a short-term scale, the A-weighted L_{max} during a blast is difficult to distinguish from other non-blast A-weighted L_{max} events. This is due to the fact that sound energy from blasting is very low frequency which does not contribute to the A-weighted scale which is most relevant to human hearing.

6.3 Noise Mitigation Practices

SGI has undertaken and will continue to implement a series of measures to limit and mitigate the propagation of sound levels from the quarry and processing operations at the Charmian Facility. These measures include, to the extent feasible and cost-effective, (i) substitution over time of newer, quieter equipment; (ii) installation of engineering controls; (iii) implementation of operational practices and administrative controls. The measures that SGI has undertaken, and

the additional measures that SGI proposes to undertake in connection with the development and operation of the Northern Tract Quarry, are explained below.

(a) Measures Related to Northern Tract

The following measures are pertinent to operations at the proposed Northern Tract Quarry (it being noted that a number of the measures are currently in practice at other portions of the SGI facility):

- ***Blasting Practices.*** Section 4.1(b) of these responses provides a listing of the blasting designs and practices which SGI has developed and is implementing that go beyond PADEP minimum requirements. With respect to limiting air overpressure, those measures include: (1) setting blasting design targets which aim to keep air overpressure to less than the state's 133 dBL standard; (2) only blasting on weekdays, scheduling blasting after 1:00 PM to avoid temperature inversions, and limiting blasting to hours before 5 PM Monday-Friday; (3) to the maximum extent feasible, blasting on clear days and avoiding blasts on overcast days; (4) reducing the blast hole size and lowering the amount of explosive detonated per delay step; (5) reducing the total blast event size in terms of the number of rows and/or holes per row; (6) inverting the burden and spacing on the front row; (7) splitting the explosive load on the front row of production borings or through noted geologic seams; (8) minimizing the use of angle holes, and if used, limiting the angle to 15 degrees. As detailed in Section 4.1 of these responses, these practices have been successful in assuring that the very short term overpressure and associated sound levels associated with blasting are minimized and kept below state standards at the nearest residential structures. SGI will continue to evaluate and adjust blasting practices as appropriate over time to further improve blasting efficiency and minimize impacts on surrounding landowners.

- ***Limitations on Development Operations at Night.*** At the Northern Tract Quarry, the period when sounds would have the highest potential for propagating would be during the initial development activities, as the overburden is removed, support facilities (such as stormwater impoundments) are installed, and the initial rock removal occurs – that is, before creation of the 4th level bench, after which mining activities will be occurring below the rim of the quarry within an excavated pit area, with a substantial section of rock and earth in the surrounding hill creating a berm that would be a barrier or buffer to direct sound transmission. During this initial development period, construction activities (e.g., earthmoving) will only occur during the hours of 6 AM to 6 PM Monday – Friday and any mining activities would be subject to the limitations discussed in the next bullet.

- ***Limitations on Rock Drilling at Night***. Recognizing that rock drilling can be a potentially significant source of sound generation, SGI limits rock drilling operations to the hours of 7:00 am to 5:00 pm, Monday through Friday.

- ***Rock Drill Equipment Improvements and Practices.*** SGI limits drilling of rock (to create blasting holes) to daylight hours during the normal work week. The current rock drill equipment used at the Charmian Facility is a Gill Beetle Drilling Rig which consists of two

separate parts: a mobile air compressor and the rock drill itself. The sound levels from the Ingersoll Rand equipment were measured to be 77 dBA at 140 feet. SGI has acquired and is currently utilizing a newer rock drill set (Atlas Copco Smart Rock D60) at another of its facilities, which has been measured to generate sound levels approximately 4 dBA lower than the current equipment. In conjunction with development and operation of the Northern Tract Quarry, SGI is committed to acquiring and/or requiring its drilling contractors to utilize rock drill equipment that are the equivalent of the Atlas Copco Smart Rock D60 in terms of sound levels while operating in areas that are not protected by the quarry rim.

In operation of the rock drill, SGI currently utilizes a rubber skirt or equivalent around the drill head to help limit the propagation of sound from the drill penetrating the rock.

- ***Loader Equipment.*** SGI operates a fleet of high quality loading equipment. This equipment is maintained in accordance with manufacturer's recommendations. This includes preventative maintenance and major component rebuilds. A rigorous maintenance program ensures that equipment continues to perform as designed throughout its useful life. Although very few companies offer sound attenuation enclosures for large operating equipment, SGI is examining options to reduce operating sound levels from equipment which will be used on the Northern Tract. After market sound attenuation equipment being evaluated reportedly would reduce sound levels by 2-3 decibels. If utilization of such attenuation equipment appears favorable, SGI will endeavor to install it on loading equipment being used at the most sensitive times of the Northern Tract development (i.e., nighttime activities during that period when work is being performed at or near the elevation of the quarry rim).

- ***Loading Operations***. At the Northern Tract Quarry, SGI anticipates that night-time operations would generally be limited to one Loader and two Haul Trucks, operated to convey rock from the quarry site to the processing facilities. To limit sound generation during haul truck loading operations, SGI requires that Loader operators minimize the drop height into the truck bed.

- ***Pumping Equipment***. No permanently installed noise generating equipment is planned for the Northern Tract operation. The only fixed equipment installed will be in support of the pumping systems for ponds and the quarry itself. The pumps at the NT Ponds 1 and 2 will be electric, and therefore very quiet. Backup generators will be used only in emergency conditions, and will be purchased with sound attenuating enclosures, which are extremely effective at controlling noise. A portable pump will be utilized in the lowest levels of the quarry to remove any accumulation of rainfall. This unit will run intermittently and will also be purchased with a sound attenuating enclosure (Godwin Silenced Dri-Prime or equivalent). This unit will further benefit from being operated below grade where the Quarry rim will provide additional sound attenuation.

(b) Measures Related to Other Elements of the Charmian Facility

In addition to the above described measures, SGI has undertaken or is evaluating the following noise mitigation measures relating to the remainder of the Charmian Facility:

- ***Proposed Direct Connection to Route 16.*** As discussed in **Section 5** of these Responses, SGI has been working for several years to install a new entrance and access road that directly connects the Charmian Facility with Route 16. PADEP recently approved permits for this project, and a highway occupancy permit applications for this project is currently pending before the Pennsylvania Department of Transportation. Subject to the timing of permit issuance, SGI is anticipating completion before the winter of 2019. After construction is complete, the majority of heavy truck traffic will be routed directly to Route 16 and will no longer use Old Waynesboro Road. SGI estimates an approximately 80% reduction of SGI-related truck traffic on Old Waynesboro Road and other local roads. Completion of this project should result in a significant reduction in truck related sound levels experience by residences along Old Waynesboro Road.

- ***Headlap Plant.*** The Headlap Plant generates notable sound levels, but has been located near the center of the property in a manner such that it is not a significant source of off-site sound level propagation. Nonetheless, SGI is evaluating options to control noise from the dust collector at the loadout bin to reduce the generation of noise.

- ***Portable Crushing Plant.*** The Portable Crushing Plant is currently situated on the Charmian facility in a manner that it is not a significant contributor to off-site sound levels.

- ***Coloring and Crushing Plants.*** Dust collection systems are essential to the control of particulate (dust) emissions. SGI operates numerous dust collection systems at Charmian's coloring and crushing plants. These units consist of ducts, fans, and filtration systems. These units are a significant component of the off-site noise at Charmian. SGI is evaluating these units for retrofit with noise control equipment, where practical. Potential measures include mufflers for fan exhausts, insulation to reduce vibration noise, and noise curtains to reduce motor noise. These units and potential mitigation measures will be evaluated on a case by case basis, and these types of measures will be considered on new installations as well.

- ***Other Equipment.*** As equipment comes to the end of its useful life and is slated for replacement, SGI will continue to evaluate the potential availability of quieter equipment models. For each piece of equipment that is a significant generator of sound, SGI will evaluate then available models offered by various manufacturers that are capable of meeting operational requirements, including manufacturer specifications for sound level generation and control.

6.4 Projection of Sound Levels During Operation of Northern Tract Project

The sound levels associated with the future quarry activities in the northern tract were predicted using the Cadna/A sound level calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). The benefits of this software are a more refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections (if applicable), drop-off with distance, and atmospheric absorption. The Cadna/A software allows for calculation of sound from multiple sources as well as computation of diffraction. Other inputs and significant parameters employed in the model are described below:

(a) Sound Sources

As described in **Section 6.2** above, Epsilon visited the SGI Charmian Quarry on July 27, 2017 and made a series of sound source (sound pressure level) measurements near each of the major sound producing quarry buildings and mobile equipment. Epsilon also visited another SGI quarry on August 29, 2018 to document sound levels of an Atlas Copco Smart Rock D60 rock drill,13 which was found to be a quieter unit than the existing rock drills at the Charmian Quarry. As described in **Section 6.3** above, SGI plans to use Atlas Copco or a rock drill producing similar noise levels in the Northern Tract as part of its sound mitigation plan. All of the sound measurements were made with equipment operating at their maximum load. These sound pressure level measurements were converted into sound power levels and entered into the acoustic model.

(b) Model Setup

Stationary Sources: For all modeling analysis, the existing stationary sources of sound were included in the model. These sources were: the coloring plant, granule plant, headlap plant, primary crusher, secondary crusher, portable crushing plant, undersized materials processing plant, and a dust collector at the loadout area.

Daytime Mobile Sources: For all daytime modeling analysis, the following set of mobile equipment was assumed to be operating: Two impact hammers, two rock drills, three haul trucks, and one front end loader. Equipment specific to the northern tract were: one rock drill, one impact hammer, one front end loader, and two haul trucks. The remaining mobile equipment was assumed to be operating at other locations within the quarry.

Nighttime Mobile Sources: For all nighttime modeling analysis, the following set of mobile equipment was assumed to be operating in the northern tract: one front end loader, and two haul trucks.

[13] The Atlas Copco Smart Rock D60 rock drill was found to be a quieter unit than the existing rock drills at the Charmian Quarry. SGI plans to use this style rock drill in the northern tract as part of their sound mitigation plan.

Model Receptor Locations: A dataset containing the locations of the closest homes to the Northern Tract was provided by SGI. Nine of the closest residences to the Northern Tract, and four additional receptor points on the property line around the Northern Tract were entered into the Cadna/A model. These receptors were modeled as discrete points at a height of 1.5 meters (5 feet) above ground level ("**AGL**") to simulate what would be received by the ears of a typical standing person.

Modeling Grid: A modeling grid with 10-meter spacing was calculated for the entire Project Area. The grid was modeled at a height of 1.5 meters (5 feet) AGL for consistency with the discrete modeling points. This modeling grid allowed for the creation of sound level isolines.

Terrain Elevation: Elevation contours for the model were directly imported into Cadna/A which allowed for consideration of terrain shielding where appropriate. The terrain height contour elevations for the modeling domain were generated from elevation information derived from the National Elevation Dataset ("**NED**") developed by the U.S. Geological Survey.

Source Sound Levels: Maximum broadband sound power levels for the stationary and mobile equipment described above was input to the model.

Meteorological Conditions: A temperature of 10ºC (50ºF) and a relative humidity of 70% was assumed in the model.

Ground Attenuation: Spectral ground absorption was calculated using a G-factor of 0.5 which corresponds to "mixed ground" consisting of both hard and porous ground cover. This method yields more conservative results (i.e., higher sound levels) as the vast majority of the area is actually woods/forest.

Modeling Assumptions: Several modeling assumptions inherent in the ISO 9613-2 calculation methodology, or selected as conditional inputs by Epsilon, were implemented in the Cadna/A model to ensure conservative results (i.e., higher sound levels), and are described below:

- All modeled sources were assumed to be operating simultaneously corresponding to the greatest sound level impacts.

- As per ISO 9613-2, the model assumed favorable conditions for sound propagation, corresponding to a moderate, well-developed ground-based temperature inversion, as might occur on a calm, clear night or equivalently downwind propagation.

- Meteorological conditions assumed in the model (Temperature (T) =10℃ / Relative Humidity (RH)=70%) were selected to minimize atmospheric attenuation in the 500 Hz and 1 kHz octave bands where the human ear is most sensitive.

- No additional attenuation due to tree shielding, air turbulence, or wind shadow effects was considered in the model.

Locations of the modeling receptors are shown on **Figure 6.2**, and locations of the stationary and mobile equipment are shown on the sound contour figures (**Figures 6.3** to **6.10**), which are provided in **Appendix 6.2**.

(c) Modeling Scenarios

Sound levels from the Charmian Quarry during future Northern Tract activities were analyzed under a variety of different scenarios. These scenarios were designed to predict both worst case and average hourly sound levels for both day and night periods. Additionally, the mobile equipment planned for operation in the Northern Tract was analyzed in two different locations. The mobile equipment used in the Northern Tract was assumed to be operating both at a central location of the future quarry area, and alternatively at the eastern side of the mining area boundary (representing an area closest to the homes in that direction). **Table 6.1** presents the resulting eight scenarios:

Table 6.1 - Sound Modeling Scenarios

Scenario	Sound Level Type	Time of Day	Northern Tract Mobile Equipment Location
1	Worst Case	Day	Center of Quarry Pit
2	Worst Case	Night	Center of Quarry Pit
3	Worst Case	Day	Eastern side of Quarry Pit Boundary
4	Worst Case	Night	Eastern side of Quarry Pit Boundary
5	Average Hourly	Day	Center of Quarry Pit
6	Average Hourly	Night	Center of Quarry Pit
7	Average Hourly	Day	Eastern side of Quarry Pit Boundary
8	Average Hourly	Night	Eastern side of Quarry Pit Boundary

Worst case sound level predictions were calculated by inputting the sound power levels of each sound source and calculating the cumulative sound level results. The worst case scenarios represent a momentary worst case sound level that would be experienced at areas around the Northern Tract quarry if all associated equipment was operating at their maximum load simultaneously.

Average hourly sound level predictions were calculated by inputting the sound power levels of each sound source and then applying a usage factor correction to each of the mobile sound sources. These usage factors were based upon the expected percentage of time over a one-hour period that each piece of equipment would be operating at maximum capacity. The usage factors for each of the mobile sources are presented in the **Table 6.2**, and are based on site specific observations from SGI.

Table 6.2 – Charmian Quarry Mobile Equipment Usage Factors

Equipment	Charmian Quarry Usage Factor
Impact Hammer	30%
Front End Loader	80%
Rock Drill	50%
Haul Truck	10%

(d) Sound Level Modeling Results

All modeled sound levels, provided as output from the Cadna/A modeling software, are expressed as A-weighted equivalent sound levels (L_{eq}, dBA). **Table 6.3** presents the predicted worst case sound levels at all modeling receptors for both daytime and nighttime periods with equipment centrally located and with equipment located near the eastern quarry pit boundary of the northern tract. **Table 6.4** presents the predicted average hourly sound levels for the same scenarios.

Table 6.3 – Worst Case Sound Levels at Modeling Receptors

	Equipment Centrally Located		Equipment Located at Eastern Side of Quarry Pit Boundary	
Receptor ID	Daytime (dBA)	Nighttime (dBA)	Daytime (dBA)	Nighttime (dBA)
R1	54	54	54	54
R2	49	49	49	49
R3	47	44	42	40
R4	52	50	59	56
R5	52	50	59	57
R6	52	50	59	56
R7	48	42	47	39
R8	45	41	46	42
R9	48	42	48	42
PL North	61	58	37	33
PL Sound	57	43	57	43
PL East	48	46	62	60
PL West	46	43	39	35

Table 6.4 – Average Hourly Sound Levels at Modeling Receptors

	Equipment Centrally Located		Equipment Located at Eastern Side of Quarry Pit Boundary	
Receptor ID	**Daytime (dBA)**	**Nighttime (dBA)**	**Daytime (dBA)**	**Nighttime (dBA)**
R1	54	54	54	54
R2	49	49	49	49
R3	44	42	41	40
R4	49	48	56	54
R5	50	48	56	54
R6	50	48	55	53
R7	44	40	43	37
R8	42	40	43	40
R9	44	40	44	40
PL North	57	56	34	31
PL Sound	53	41	53	41
PL East	45	44	59	57
PL West	42	40	37	35

Sound contour figures corresponding to each of the worst case and average hourly scenarios were generated and are presented in **Figures 6.3 – 6.10**. The sound contour figures show the extent of the 65 dBA sound contour line for nighttime scenarios, and the 68 dBA sound contour line for daytime scenarios.

In brief summary:

- The model indicates that the predicted worst case sound levels at the modeled off-site residential receptors ranged from 42 to 59 dBA daytime, and 39 to 57 dBA nighttime.

- The predicted worst case sound levels at the modeled property line receptor points were 62 dBA daytime and 60 dBA nighttime.

- The predicted average hourly sound levels at modeled residential receptors ranged from 41 to 56 dBA daytime and between 37 to 54 dBA nighttime.

- The predicted average hourly sound levels at the modeled property line receptor points ranged from 34 to 59 dBA daytime and from 31 to 57 dBA nighttime.

- In reference to the numeric criteria cited in the FOTC/Fair Shake comments (although those values that have not been adopted by the Environmental Hearing Board), the plots of sound

level contours from both the worst case and average hourly model runs show that the 68 dBA daytime contour line generated from Northern Tract operations, and the 65 dBA nighttime contour line from Northern Tract operations, are contained well within the SGI property line.

7. Asbestos

Comments:

The application must be denied because air pollution as a result of naturally occurring asbestos has not been properly evaluated. (FOTC/Fair Shake)

The Department's thorough analysis of anticipated air quality impacts is particularly important in this Application, as SGI indicates in Module 17 that an Air Quality General Permit for Portable Nonmetallic Mineral Processing Plants is "not applicable." (FOTC/Fair Shake)

We have seen no health studies regarding the effects on area residents of breathing silica and naturally occurring asbestos in the greenstone dust from the mine. Now our roads are paved with greenstone as well, covering our houses and cars with the same dust. These air quality and health studies must be done. (Multiple commenters)

We are particularly concerned that asbestos, which in 1942 was found in greenstone deposits at Charmian, is contaminating our air, water, soil and homesteads. It is documented that naturally occurring asbestos permeates greenstone. (Multiple commenters)

Greenstone, which is made up of chlorite, various green amphiboles, and actinolite, is being processed near our neighborhoods, transported through our neighborhoods, and used by manufacturers in our roofing shingles. According to the Mesothelioma Center website, actinolite in its fibrous form, the form found most prevalently in the Appalachian Mountains, is asbestos. Not only that, it is a particularly dangerous form of asbestos known as amphibole asbestos. This asbestos is composed of sharp, needle-shaped fibers and it takes much less exposure to this type of asbestos to cause cancer. Even incidental exposure to trace amounts of amphibole asbestos in end products such as roofing shingles is still hazardous enough to cause asbestos related illnesses. Children are particularly vulnerable to this type of asbestos. (J. Dull)

I attended the SGI/DEP meeting in Fairfield, PA on Monday, July 24, 2018 and was alarmed to find that DEP did not bring a toxicologist or epidemiologist who could clearly articulate the safe levels of actinolite with asbestos are in the water we drink and bathe in and in the air we breathe since SGI has been mining and plans to continue to mine actinolite at the Pine Hill mine at their Hamiltonban mine. (A. Young)

The Health of the community is threatened by the heavy dust (probably laced … with asbestos) and definitely laced with very fine silica, both of which caused a friend's grandfather to die of Mesothelioma because he worked at the Grit Mill before they required masks. (S.Roberts-Frost)

According to the notes of mesothelioma center website actinolite in its fibrous form, the form most prevalently found in the Appalachian Mountains is asbestos. Not only that it is a particularly dangerous form of asbestos known as amphibole asbestos. This is asbestos is composed of sharp needle shaped fibers and it takes much less exposure to this type of asbestos to cause cancer. Even incidental exposure to trace amounts of

amphibole asbestos in end products such as roofing shingles is still hazardous enough to cause asbestos related illnesses. Children are particularly vulnerable to this type of asbestos. These asbestos fibers which are carried by wind and water can present a hazard within the vicinity of green stone mining. So, I wonder are truck services spreading these fibers to our residential streets? Are these asbestos fibers being carried home on the clothing of truckers and mine workers to their families? IS SGI in the Department of Environmental Protection Air Program? If so what analysis of fugitive air particles has ever been done? (J. Dull)

7.1 The Nature of Geologic Materials Being Mined by SGI and the Relative Rarity of Actinolite

The metabasalt mined at the Charmian facility is a fine grained very uniform and competent rock of high quality. Metabasalt is a volcanic (igneous) basalt that has undergone natural refinement to its mineralogy and ultimately its chemical composition through the process of metamorphism. The metamorphic process has produced a massive and homogeneous formation, which is inert, durable, and weather resistant. These unique qualities are preferred in manufacturing roofing granules.

Actinolite is a naturally-occurring mineral that is sometimes associated with mafic (dark-colored, mainly ferromagnesian minerals) and occurs in some igneous rock formations, but most commonly in metamorphic rock. Actinolite occurs in two forms – fibrous and massive. Fibrous actinolite is composed of asbestiform fibers – where "asbestiform" denotes a mineral that grows in a fibrous aggregate of high tensile strength, flexible, long, and thin crystals that readily separate forming what is known as "asbestos." It is important to note that the vast majority of actinolite is massive, not fibrous, and thus the majority of actinolite is ***not*** asbestiform.[14]

The occurrence of actinolite in the metabasalt formations at Charmian is rare, with actinolite typically occurring along fracture planes and joint planes. As described below, SGI has developed and implemented protocols for identifying and avoiding suspect minerals potentially containing actinolite. During the 22 years of operating the current Pitts Quarry at Charmian since it opened in 1996, SGI has identified minor occurrences of suspect minerals. Although not necessarily actinolite, in an abundance of caution, the suspect minerals were isolated and handled as if they might contain asbestiform minerals. The special handling of these minerals is designed to protect human health and safety and to prevent them from being released into the environment, crushed or processed.

7.2 Analytical Methods Used for Identifying Asbestos

Depending on the type of material that is to be analyzed for asbestos content, there are a variety of analytical procedures that can be used. For samples of bulk materials (such as products, ore/rock and settled dust), the analytical procedures typically used include x-ray

[14] E.B. Ilgren, The Biology of Cleavage Fragments: A Brief Synthesis and Analysis of Current Knowledge (June 19, 2004), available at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1017.7495&rep=rep1&type=pdf .

powder diffraction, optical microscopy (generally polarized light microscopy), followed by electron microscopy (either scanning electron microscopy or transmission electron microscopy). For samples of airborne particulate, optical microscopy (usually phase contrast microscopy) followed by electron microscopy (typically either scanning electron microscopy or transmission electron microscopy) are employed.

For typical occupational safety samples, an optical microscopy technique called phase contrast microscopy ("**PCM**") is used to count fibers that are collected on filters. PCM counts all fibers; *it cannot identify a fiber as asbestos*. A portion of the filter containing the particles is excised and placed on a glass slide. The filter is made transparent to allow the viewing of the collected particles. Using a magnification of 400X, the PCM counts all particles that appear to be fibers and that are at least 5 µm long and have an aspect ratio (length:width) of 3:1 or greater. The PCM cannot differentiate between various minerals and cannot differentiate between minerals and non-minerals (such as cotton fibers). PCM analyses are typically used to document the amount of airborne fibers in accordance with various Federal regulations, in particular OSHA (29 CFR §1910.1001) and MSHA (30 CFR §71.702).

Electron microscopy is a more refined and accurate method for determining the presence of asbestiform fibers. For these purposes, the primary technique used to observe particles in an electron microscope which passes an electron beam through a particle and the particle is observed (essentially) as a shadow on a phosphor screen. This is referred to as transmission electron microscopy ("**TEM**").

7.3 SGI's Precautions Against Mining and Processing Actinolite

(a) Overview of SGI's process

SGI implements a number of practices to avoid mining and processing potential suspect minerals potentially containing actinolite of all types, in order to minimize risks of employee and community exposure to asbestos as a result of activities at the Charmian Plant. These measures include:

- Preliminary exploration rock drill cores are conducted prior to mining and analyzed for the presence of actinolite and other potential asbestiform minerals. This information is tracked throughout mining activities to ensure any areas of concern are appropriately identified in the mine planning process, so that appropriate avoidance and management precautions are taken.
- SGI has developed and implemented a Suspect Minerals Identification and Management Guide, which establishes procedures for identifying, avoiding and managing any materials potentially containing asbestiform minerals.

(b) Pre-mining surveys and results of premining survey (core results) for Northern Tract

With respect to the proposed Northern Tract quarry, SGI drilled 17 rock cores during the exploration phase of the proposed quarry area. Those cores were drilled to test the entire strata proposed to be mined with depths ranging from approximately 90 feet to 470 feet, with and average depth of approximately 210 feet. The depth of the core hole was based on the starting surface elevation, and the elevation of the final configuration of that particular location within the quarry. From these cores, SGI collected 40 separate rock samples, which were sent to an outside laboratory for testing. As indicated in the laboratory report provided in **Appendix 7.1**, three out of 40 samples were identified as containing very small (0.2 to 0.5% of the sample) quantities of actinolite. Based on the results of these samples, mining activities will be planned to properly identify, avoid and manage those materials.

(c) Suspect minerals identification and management protocol

SGI's suspect minerals identification and management procedures, which have been formally memorialized in a guide issued to all of its quarries (**Appendix 7.2**), provide specific procedures and responsibilities for identifying, avoiding and managing materials suspected of containing mineral fibers.

As part of this process, SGI employs trained geologists that conduct routine site inspections and look for suspect minerals in the active working areas of the quarry, albeit those materials have been rare in the current quarry. In addition, SGI trains key quarry personnel on identifying suspect minerals in the quarry (which are referred to as Designated Site Personnel in the protocol provided in Appendix 7.2.). These individuals are required to notify mine management and the geologists if they identify the potential presence of suspect minerals. These personnel are given training on the protocol and refresher training annually.

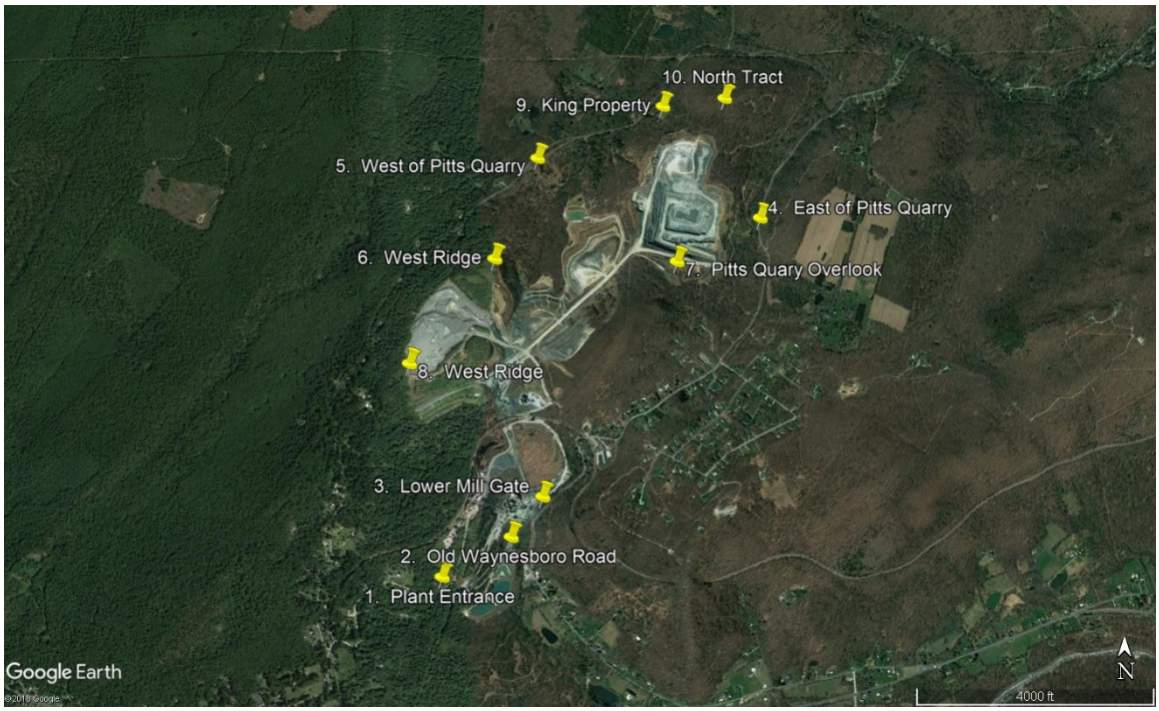
If the geologist concludes from the inspection of suspect minerals that mineral fibers may be present in the rock, it will be isolated for special handling. The material will be wetted to prevent dust formation and segregated to an onsite location where it will be marked and capped to prevent disturbance. Inspections are conducted to ensure that the dust control measures are effective throughout this process.

7.4 Results from Ambient Air Monitoring

In response to public questions and comments, SGI commissioned R.J. Lee Group ("**RJLG**") to conduct ambient air monitoring at the Charmian site. RJLG's full report, which describes the sampling methods utilized and results, is provided in **Appendix 7.3**. The following is a brief summary.

RJLG placed a total 10 Passive Aerosol Samplers ("**PAS**") along the perimeter (but still on) of the SGI property. The sample locations are shown in **Figure 7.1**.

Figure 7.1 – Aerial Map Showing Location of Samplers



Each sampler station comprised two samplers: one was an adhesive sampler designed to collect large, non-respirable particles; the second was a passive monitor that collects respirable-sized particles. Through a series of studies, the PAS sampler has been found to be a useful sampler for the measurement of ambient particulate matter concentrations (PM_{10}, $PM_{2.5}$, $PM_{10-2.5}$).[15,16]

Each such sampler was attached to or mounted on a pole. Each sample collected ambient airborne particulate for 8 days (August 28 – September 6, 2018) and was evaluated to determine particulate concentrations. Samples were collected during a period of normal operations at the SGI facility with normal traffic on roadways.

Each passive monitor was examined using computer-controlled scanning electron microscopy ("**CCSEM**"). Particles analyzed by CCSEM were classified into particle types according to their elemental composition and morphology. Particles have an aspect ratio (ratio of length to diameter) greater than 3:1 were provisionally classified as a "fiber" and were evaluated in more detail by examining the digital images and elemental spectra collected during the CCSEM analysis.

[15] E. Sawvel, et.al. (2015). "Passive sampling to capture the spatial variability of coarse particles by composition in Cleveland, OH", *Atmospheric Environment*, 105, p. 61-69;

[16] J. Wagner and G. Casuccio (2014). "Spectral imaging and passive sampling to investigate particle sources in urban desert regions", *Environmental Science: Processes & Impacts*, 16, p. 1745-1753.

Based on these data, the airborne dust concentrations (non-carbonaceous particles) were below 50 μg/m^3. The measured particulate emissions at the SGI facility produced ambient air concentrations of PM_{10} that were less than the average for the northeastern U.S. and less than ambient national ambient air standards.

Average ambient background air concentrations in the U.S. have been reported in published studies to be 0.00022 fibers per cubic centimeter (f/cm^3).[17] For SGIs recent samples, one asbestiform fiber was found in two of the passive monitor samples, Site 1 Pant Entrance) and Site 2 (Old Waynesboro Road at Box Culvert) which equates to a concentration of about 0.0006 f/cm^3. By way of comparison, the Occupational Safety and Health Administration ("**OSHA**") and the Mine Safety and Health Administration ("**MSHA**") standard for worker exposure is 0.1 f/cm^3 as a time weighted average. The remaining eight samplers (including those around the active quarry operations) were found to contain no asbestiform fibers. The median concentration of asbestiform fibers found in the ten samples was 0.00012 f/cm^3. These values are not statistically different than average ambient air concentrations in the U.S.

7.5 Response to Claims that SGI Employees Have Suffered from Mesothelioma

There has been no claim from a Charmian employee claiming to have acquired mesothelioma from working at the mine.

8. Air Quality

Comments:

Is there sufficient evidence about airborne particulates in relation to current operations of the mine; is there sufficient evidence that air quality will not be affected by expanded operations? (Multiple commenters)

We have seen no health studies regarding the effects on area residents of breathing silica and naturally occurring asbestos in the greenstone dust from the mine. Now our roads are paved with greenstone as well, covering our houses and cars with the same dust. These air quality and health studies must be done. (Multiple commenters)

Is SGI in the Department of Environmental Protection Air Program? If so what analysis of fugitive air particles has ever been done? Have tests been done as part of the approval process for this permit? (J. Dull)

[SGI] should operate in a responsible manner that … controls dust so neighbors aren't having their houses coated with greenstone dust. (L. Whitcam)

Studies related to health concerns with breathing dust. (J. Painter)

Is there sufficient evidence about airborne particulates in relation to current operations of the mine? (Multiple commenters)

[17] A. Abelmann, M. Glynn, J. Pierce, P. Scott, S. Serrano, and D. Paustenbach (2015). "Historical ambient airborne asbestos concentrations in the United States – an analysis of published and unpublished literature (1960s–2000s)", *Inhalation Toxicology*, 27, p. 754-766.

Is there sufficient evidence that air quality will not be affected by expanded operations? (Multiple commenters)

Has there been any bacteriological contamination (i.e., road, dust, friable) testing done, are reports available, and has the PADEP received and reviewed them? (S. Merryman)

The Health of the community is threatened by the heavy dust (probably laced with asbestos) and definitely laced with very fine silica, both of which caused a friend's grandfather to die of Mesothelioma because he worked at the Grit Mill before they required masks. (S. Rogers-Frost)

8.1 Regulation of SGI's Air Emissions

SGI's Charmian facility operates under PADEP State Only Operating Permit No. 01-05016. This permit covers all aspects of air quality obligations at the site. The permit covers and regulates all potential emission sources at the site and requires control measures and monitoring as appropriate.

In general, the processes and equipment with the most potential to emit contaminants to the atmosphere are controlled by dust collectors and/or wet suppression spray systems. The collection systems are designed to separate fine particulate matter from the air and reduce process emissions.

The following are examples of restrictions imposed by the operating permit:

- Air pollution control equipment (such as the dust collection systems) are subject to specific performance standards (e.g., emission rates for particulate matter), coupled with work practices, inspection and monitoring requirements to assure the equipment continues to operate properly. For example, SGI is required to monitor differential pressure (an indicator of operating performance) for all dust collection and air cleaning.

- SGI may not operate any air emissions sources without the proper operation of the associated emissions control systems.

- Emission of fugitive particulate matter may not cause emissions visible at the point the emissions pass the property line. This restriction applies to sources from the operations as specified in the permit.

- SGI may not emit into the outdoor atmosphere any malodorous air contaminants in a manner that the malodors are detectable outside SGI's property.

- Emissions of visible air contaminants may not result in opacity equal to or greater than 20% for more than three minutes in any hour or 60% at any time (excluding water vapor).

- SGI is required to conduct a weekly inspection around the plant during daylight hours to detect visible emissions, fugitive emissions and malodors.

- SGI sends several employees each year to be certified under EPA Method 9 for measurement of visible opacity from air emissions. These employees conduct routine onsite monitoring to ensure the effectiveness of the collection systems.

In addition to the requirements in the permit, SGI employs a number of industry best practices to further reduce the potential for particulate matter emissions:

- **Open Burning**: Although open burning of trees and brush is permitted by SGI's Air Quality permit, as a matter of internal policy SGI prohibits open burning and instead opts to have trees and brush shredded on site for use in erosion control projects and other needs.

- **Roadways**: SGI maintains three large trucks equipped with water sprays to control dust from roadways. These trucks utilize water from onsite to keep roadways wet during dry periods when truck traffic may generate fugitive emissions.

  Site entrances are paved to prevent mud and dirt from being picked up by vehicles leaving the site.

  SGI has recently purchased a street sweeper, which will be used to maintain the site entrances to clean up any tracked or spilled materials to minimize tracking off-site.

- **Stockpiles**: Material stockpiles are generally equipped with water sprays to control emissions. Additionally, SGI's water trucks are equipped with water cannons to spray hard to reach areas of stockpiles during times of need. SGI occasionally applies surface binders to stockpiles of fines in order to control particulate emissions from areas that will be temporarily inactive and may be subject to dust generation.

8.2 Air Emission Compliance

SGI has had only one notice of violation related to the Air Quality Permit within the last 5 years. This compliance event occurred on November 17, 2014, and related to visible emissions above the opacity limit at the undersize material processing plant. It should be noted that the visible emissions did not reach the property boundary during the event. In this event, a piece of equipment that conveys collected particulates to a conveyor was found to be adjusted improperly, which caused the fugitive emissions. The plant was shut down and adjustments were made to correct the issue. The plant personnel proceeded to additionally audit several similar pieces of equipment on site to verify that each was properly adjusted. The results of subsequent daily monitoring showed that the changes were effective. Additionally, changes were made to the operating procedures for that equipment to ensure that the occurrence would not be repeated.

8.3 Asbestos in Dust

See discussion of asbestos issues at Section 8 of these responses.

8.4 Bacteriological Contamination

Before issuing the Air Quality Operating Permit, PADEP evaluated all emission sources at the Charmian site, and established appropriate monitoring and compliance requirements for all such sources. Metabasalt rock involves inorganic, not organic, materials. None of the operations at the Charmian facility involve biological materials or bacteriological agents, and there is no basis to consider bacteriological contamination to be an issue at this operation.

9. Historic Resources

Comments:

SGI's archeological review is insufficient as it failed to address impacts to significant Civil War historical sites. (FOTC/Fair Shake)

SGI's archeological evaluation does not address the impact of mining operations on Pine Hill upon the Confederate Army's retreat path following the Battle of Gettysburg ("Retreat from Gettysburg"). … In Hamiltonban Township, Confederate soldiers retreated following what are now named Iron Springs Road, Lower Gum Springs Road, and Gum Springs Road - all following Tom's Creek and wrapping around Pine Hill. The Retreat from Gettysburg is a significant historical resource in the area that is eligible for listing on the National Register of Historical Places. … Surface mining of Pine Hill will significantly impact the Retreat from Gettysburg, as it will fundamentally alter the surrounding environment. Whereas the retreat route follows Tom's Creek through a pass between two mountains, SGI' s mining operations will essentially remove one mountain, thereby eliminating the pass and permanently degrading the historical and esthetic value of the area. (FOTC/Fair Shake)

[S]ignificant battles occurred during the Retreat from Gettysburg, and battles or encampments are likely to have occurred within SGI's permit boundary. (FOTC/Fair Shake)

SGI's archeological survey further did not assess the full permit site to determine whether significant archaeological or historical resources exist. Rather, the archaeological assessment was limited to exploration of former copper mines, as they are recorded in historical maps, and an assessment of a potential schoolhouse on the property, based on informant interviews. However, an extensive site investigation was not conducted to visually assess whether other significant historical resources, such as cemeteries or structures, exist within the permit boundary. (FOTC/air Shake)

SGI failed to identify two known historic places (Module 10.13) that would be impacted by SGl's proposed removal of Pine Hill and failed to assess the impacts of expanded surface mining on these two historic places [referring to Monterey Historic District and July 4-5, 1863 retreat from Gettysburg]. (H. Keahey)

The Monterey Historic District was placed on the National Register of Historic Places in 1976. The District contains approximately 60 structures associated with a late-19th century summer resort community, developed primarily after 1885. The structures, consisting mainly of summer collages, are aesthetically diverse, but all contribute to the scenic values or the district and are oriented to capture breathtaking mountain views or to capture prevailing winds. The Historic District is located in Franklin County but directly adjoins SGI's current operations and processing plants. While the Historic District is

outside of the perimeter of proposed surface mining activities, SGI failed lo identify this historic site and failed to assess the impacts or removing Pine Hill on existing viewsheds. … As a final note on the Monterey Historic District, high tonnage trucks should be redirected as these trucks are a nuisance and safety hazard, and have no place within a National Historic District. (H. Kaehey)

SGI's application fails to identify the 1863 Civil War Retreat which occurred at the base of and around Pine Hill following the Battle of Gettysburg. The retreat path followed Toms Creek along Iron Spring Road and turned at Gum Springs Road into the mountain passages formed by Pine Hill/Pine Mountain, Jacks Mountain, Kepner Knob, and Monterey Peak. (H. Keahey)

In 1866, the Edinburgh Times reported that Confederate General Robert E. Lee encamped near "a picturesque little stream" (Toms Creek) at the intersections of Maria Furnace Road (now known as Iron Springs Road) and Furnace Road (now known as Gum Springs Road). (H. Keahey)

Pine Hill was also previously owned by Thaddeus Stevens, Pennsylvania's most famous abolitionist …. (FOTC Letter to PHMC dated 8/15/2018)

The roads through these mountain passes were part of the Great Wagon Road. (FOTC Letter to PHMC dated 8/15/2018)

Gum Springs Road is presently undergoing review to designate it as a State Historic Road. This road is part of the original Great Philadelphia Wagon Road that played a major part in our Nation's westward expansion. Constructed in 1752-1754, the Wagon Road went from Philadelphia to North Carolina, crossing South Mountain at Fairfield Gap and Monterey Pass. It was the first major road west of the Susquehanna River. Gum Springs Road is one of the few original and remaining sections of this historic and important part of our Nation's history. (J. Gorman)

OMISSION OF HISTORICAL IMPORTANCE The Confederate Army retreated from the Battle of Gettysburg along the roads surrounding the base of Pine Hill. This important historical event, which has received national recognition, was not mentioned at all in SGI's permit application. (S. dVeer)

We ask that you give thorough consideration to the possible impact that an expansion of mining operations could have on extant historic resources in the area, including the Monterey Historic District, Monterey Pass battlefield, and the retreat path of General Robert E. Lee's Army of Northern Virginia following the July 1863 Battle of Gettysburg. (American Battlefield Trust)

The historical nature of the area around Pine Hill (the 20 mile long wagon train of confederates retreating from Gettysburg through the narrow Fairfield Gap) was not known by PHMC, but they recommended archaeological investigation which would probably have found the remains of the wagons which when broken were just pushed off the Retreat Trail. (S. Rogers-Frost)

Response:

9.1 Archaeological Review Conducted and Approved by Pennsylvania State Historic Commission (State Historic Preservation Officer)

(a) Context/Requirements for Review Conducted as Part of Mining Application

At the outset, it is important to note the context in which the review of archaeological and historic resources is reviewed in relation to a non-coal surface mining permit issued under the provisions of the Pennsylvania Non-Coal Surface Mining and Reclamation Act, 52 P.S. §§ 3301 – 3326, and related Pennsylvania environmental statutes. Some comments have made reference to Section 106 of the National Historic Preservation Act ("**NHPA**"), and claimed that SGI failed to fulfill obligations imposed under the NHPA. Section 106 of the NHPA, however, only applies to actions taken by federal agencies, such as the issuance of a federal permit or federal funding of a project.[18] Since the Northern Tract quarry project only involves the issuance of state permits by a state agency – that is, PADEP – Section 106 of the NHPA is not applicable. The legal and regulatory requirements applicable in this situation are those set forth in the Pennsylvania History Code, 37 Pa.C.S. §§101 et seq. and PADEP policy, which together implement the requirements of Pa. Const. Art. I, §27 (the "**Environmental Rights Amendment**").

Under the Pennsylvania History Code, all Commonwealth agencies, including PADEP, are required to notify the Pennsylvania Historical & Museum Commission ("**PHMC**") "before undertaking any Commonwealth or Commonwealth-assisted permitted or contracted projects that may affect archaeological sites." *See* 37 Pa.C.S. § 507(a)(1). Within 15 days of receipt of notification, the PHMC is required to issue a written determination regarding whether the project "may adversely affect" a "significant archaeological site." *Id.* § 507(b)(1). If so, the PHMC is permitted to conduct an archaeological survey, and if necessary, a field investigation, within certain limited statutory time frames (typically 30 days for a survey and 90 days for a field investigation). *See id.* § 507(b)(2)-(3).

While such PHMC surveys or investigations are ongoing, applicants for Commonwealth permits are "prohibited from utilizing a permit or license in any manner that would impair or interfere with the performance of" such survey or investigation." *Id.* § 508(a)(4). However, Commonwealth agencies are ultimately "prohibited from stopping the processing or denying a permit solely because of the possible or actual presence of archaeological resources." *Id.* As a corollary, the History Code does not confer on the PHMC "the authority to delay, deny, condition or limit or cause to be delayed, denied, conditioned or limited any permits which would otherwise be issued by a Commonwealth agency beyond those time frames" mentioned above. *Id.*

[18] See 54 U.S.C. § 306108 (imposing NHPA obligations on "any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking"); 36 C.F.R. § 800.16(y) (defining an "undertaking" as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency").

In cooperation with the PHMC, PADEP has developed a guidance document, entitled "Implementation of the Pennsylvania State History Code: Policy and Procedures for Applicants for DEP Permits and Plan Approvals" (Mar. 16, 2002) ("**PADEP History Code Policy**") that guides PADEP's implementation of obligations under the History Code and Article I, Section 27 of the Pennsylvania Constitution. Under PADEP's History Code Policy, applicants for certain PADEP permits (including all non-coal mining permits) are required to notify the PHMC of their projects, triggering PHMC review. Notification is made using the PHMC's Project Review Form, which requires the applicant to provide a description of the project, copies of site plans and drawings, photographs, and a map of the Project's Area of Potential Effect. To the extent known, the Project Review Form also requires the applicant to identify whether the project "involve[s] properties listed in or eligible for the National Register of Places, or designated as historic by a local government[,]" and if so, to identify any such property.

Under PADEP's History Code Policy, if the PHMC issues a determination that a proposed activity will not affect a significant archaeological site, or 15 days pass from the permittee's submission without a response, both the permittee's and PADEP's obligations with respect to historic resources are complete. PADEP History Code Policy at 5. If the PHMC instead determines that the project may adversely affect a significant archaeological site, the PHMC must determine if an archaeological survey is necessary. *Id.* "If an archaeological survey is not deemed necessary by PHMC, [PADEP] may issue the permit." *Id.* If a survey is deemed necessary, the PHMC is required to complete the survey and any subsequent field investigation within the timeframes set forth in the History Code, and if historic or archaeological resources are identified, to work with the applicant to create a mitigation plan. *Id.*at 5, 8.

The FOTC/FairShake comments generally refer to the Environmental Rights Amendment. The scope, meaning and application of the Environmental Rights Amendment's reference to "historic values" of the environment remains subject to debate, as to which SGI reserves potential legal issues and argument for a later day. Recent EHB decisions addressing related elements of the Environmental Rights Amendment, however, indicate that (i) PADEP's obligation is to consider, within the scope of its statutory authorities, the environmental affects of its decisions (which it is clearly doing in the process); (2) the test is whether the governmental action in question (here the issuance of a mining permit) "is likely to cause, or in fact did cause, the unreasonable degradation or deterioration" of the air, water or other environmental interested enumerated in the Environmental Rights Amendment;[19] and (3) third-party challengers bear the burden of proof,[20] which includes the burden of showing that (i) the resources in question represent protected "values" of the environment, and (ii) the action being permitted would result in unreasonable degradation, diminution, depletion or deterioration of the environment. As explained in detail below, the process followed in this Application has fully comported with the requirements of the State History Code and associated implementation guidance; and the proposed Northern Tract project has been planned in a manner that does not result in

[19] *See Center for Coalfield Justice v. PADEP,* EHB Docket No. 2017-072-B, Adjudication (August 15, 2017) at 60-61; *Delaware Riverkeeper Network v. PADEP*, EHB Docket No. 2014-142-B & 2015-157-B (May 11, 2018).

[20] *Center for Coalfield Justice, supra,* at 24-25.

unreasonable degradation, diminution, depletion or deterioration of protected "historical values" of the environment.

(b) Satisfaction of Required Review/Consultation with PHMC

In this case, as documented in Module 4 of the mining permit application, SGI's historic resource and engineering consultants (Dr. Douglas Dinsmore and Skelly and Loy), followed the process prescribed by the Pennsylvania History Code and PADEP guidance. On February 19, 2016, SGI, through its consultants, submitted a Project Review Form to the PHMC. The Project Review Form identified as the Area of Potential Effect ("APE") all areas that would be potentially disturbed by development of the Northern Tract. That APE comprised a total of 85 acres, including all of the 66-acre quarry area plus the 19-acre operational buffer which might experience earth disturbance. The maps accompanying the Project Review Form clearly identified the location of the Northern Tract project and its surroundings.

The PHMC reviewed the Project Review Form and responded in correspondence dated March 18, 2016, signed by Douglas McLearen, Chief of the PHMC's Division of Archaeology and Protection. The PHMC response noted that although there were no recorded archaeological sites within the project boundaries, a Phase I archaeologic survey of the project area was "recommended ***but not required***." (emphasis added). At the same time, the PHMC's response stated: "In our opinion no historic buildings, structures, districts and or objects will be affected by this project."

While not required by the PHMC, SGI subsequently engaged Skelly and Loy to complete the recommended archaeological survey, the results of which were summarized in the Phase I Archaeological Survey Report Northern Tract Mine Expansion Project, ER No. 2016-0818-001, dated March 2018, a copy of which was submitted to the PHMC on March 22, 2018. That Phase I survey included visual inspection, a pedestrian survey, and subsurface excavation of shovel tests following the PHMC's *Guidelines for Archaeological Investigations* (2008). As noted in the report submitted to the PHMC and included as part of mining application Module 4, the survey found that most of the Northern Tract site consists of rock outcrops and slope between 15 and 25 percent with slope up to 75 percent in some areas. No precontact or historic artifacts were recovered and no historically significant structures or features were identified; therefore the survey did not result in the identification of any archaeological sites. The Phase I survey further confirmed the results of an earlier Phase I Archaeological Investigation of the property conducted by URS Corporation in January 2014 (also included in Module 4), which was purposefully conducted to determine if the archaeological remains of a former school, known as Pine Run School, were located within the project area. The survey resulted in the identification of two archaeological sites: Copper Mine and William Smith House. Neither site was eligible for listing on the National Register of Historic Places and no evidence of Pine Run School was found. Following submission of that information, the PHMC has not modified its previous findings.

Thus, contrary to the assertions in the comments submitted by FOTC/Fair Shake, the investigations conducted by SGI's consultants and submitted to the PHMC were not limited to

just a copper mine or potential school remnants. A full Phase I archaeological survey following the PHMC's *Guidelines for Archaeological Investigations* (2008) was conducted within the Northern Tract and this survey did not result in the identification of "cemeteries or structures" or any other archaeological or historic resources.

9.2 Additional Investigations to Address Comments

To address the historical impact issues raised in the public comments (which notably were not raised by the PHMC), SGI engaged Christine Davis Consultants, Inc. ("**CDC**"), an experienced and well-qualified historical and archaeological consulting firm. The qualifications of CDC staff members involved in this review are provided in **Appendix 9.1**. CDC reviewed each of the comments summarized above, conducted on-site visits to the Northern Tract site, prepared viewshed and other analysis, and contributed to preparation of the following responses.

9.3 The Battle of Monterey Pass

Although a number of public comments generally refer to the Battle of Monterey Pass, it is important to note that (i) the site of the actual battle engagements referred to as the Battle of Monterey Pass is not on or near the Northern Tract, but rather is located west of Monterey in and around the present day intersection of Charmian Road and Route 16; and (ii) this site is not at this point listed or eligible for listing on the National Register of Historic Places.

According to published articles,[21] following the extended and exhausting battle at Gettysburg (approximately 15.4 miles by road to the northeast of Charmian), on the morning of July 4, 1863, Confederate General Lee made the decision to retreat to West Virginia across the Potomac River. The retreat took about 10 days with multiple skirmishes and actions widely spread out at various locations in Adams and Franklin Counties in Pennsylvania and Frederick and Washington Counties in Maryland.

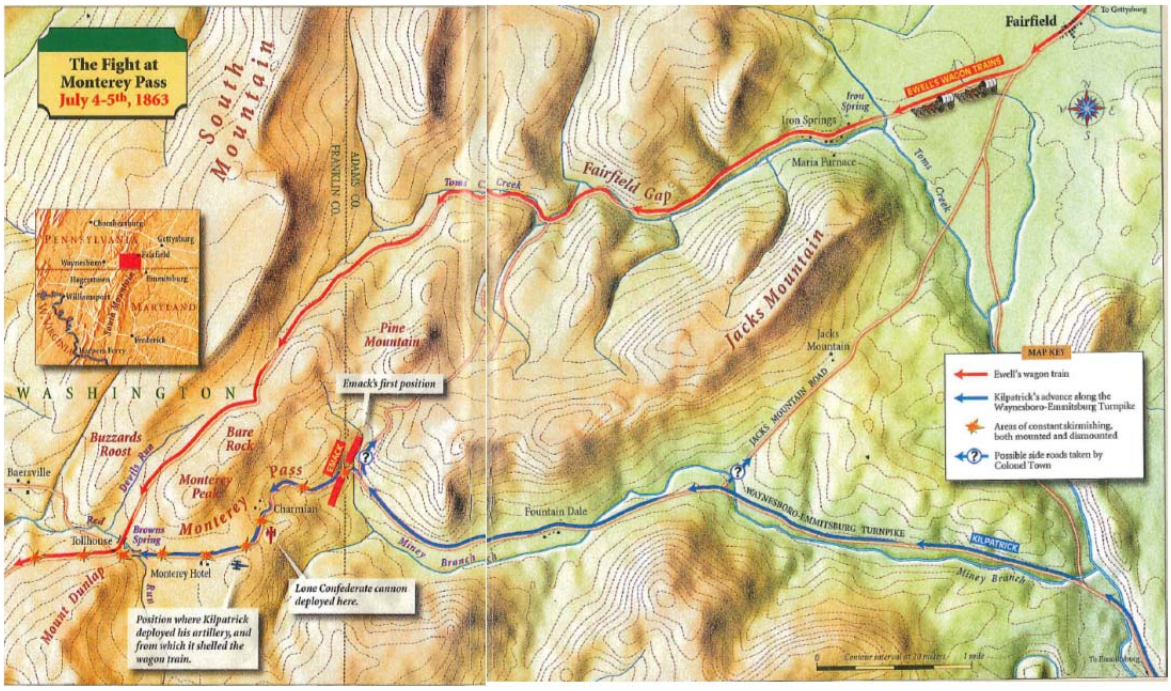
On the first day of the retreat, the Confederate Army commenced to move approximately 20,000 wounded men, approximately 43,000 infantry, cavalry, and artillery troops, all their supplies (food, water, tents, gear, cattle, horses, food for the horses and cattle, etc.), and the bounty of war they had plundered. How these 17-mile long columns of wounded, active troops, and supplies were initially moved from Gettysburg is poorly understood by scholars and there is little consensus on important details, including specifics such as the location of Fairfield Gap, one of two important mountain passes in the vicinity of Monterey and Fairfield. The Confederate Army was divided into at least three Corps' that were further divided into smaller units and deployed in various directions during the retreat. At least some headed north to Cashtown, some southwest to Fairfield, and others south to Emmitsburg, among other destinations.

[21] E. J. Wittenberg, *"This was a night never to be forgotten" The Midnight Fight in the Monterey Pass, July 4-5, 1863*, North and South, vol. 2, no. 6, pg. 44 (August 1999); J.A. Miller, *Monterey Pass: The Gateway of Agony,* Emittsburg Area Historical Society, available at http://www.emmitsburg.net/archive_list/articles/history/civil_war/the_battle_of_monterey.htm; J.A. Miller, *The Battle of Monterey Pass.*

In addition to their own staff cartographers, both the Union and Confederate Armies had access to the 1858 G. M. Hopkins Map of Adams County as well as similar maps for adjacent counties. These maps depicted the road networks that would have been available for troop movements during the Civil War and would have been studied by the Union and Confederate armies alike. The Confederates had the advantage of having used this network of roads during their advancement on Gettysburg, and knew the need to protect the mountain pass at Monterey long enough to allow the retreating column to pass.

How many and what types of troops and where they were deployed during the retreat by Lee is poorly understood. What is agreed upon is that around midnight on the dark and rainy night of July 4-5, 1863, a column of the Confederate Army, known as Ewell's Wagon Train, came down Maria Furnace Road[22] and was met by the Union Army coming up the southern road connecting Emmetsburg and Waynesboro (what is now known as Old Waynesboro Road) in the Battle of Monterey. During this battle, the Union Army seized approximately 10 miles of the wagon train. The approximate paths by which the two armies proceeded are depicted in a map published in North-South magazine which is reproduced below as **Figure 9.1**.[23]

Figure 9.1 – Monterey Pass Battle Map (Wittenberg)



On the night of July 4-5, prior to the Battle of Monterey Pass, there were three points of known contact between the retreating Confederate Army and the pursing Union Army. What is notable for these purposes is that the three points of contact were reported to have occurred along Old

[22] Notably, Maria Furnace Road is not a road adjacent to the Northern Tract. Available information indicates that it is a dirt road situate to the west in Washington Township, Franklin County, and now mostly on private property. See https://southmountaincw.wordpress.com/2013/02/01/the-maria-furnace-road-virtual-tour/ .

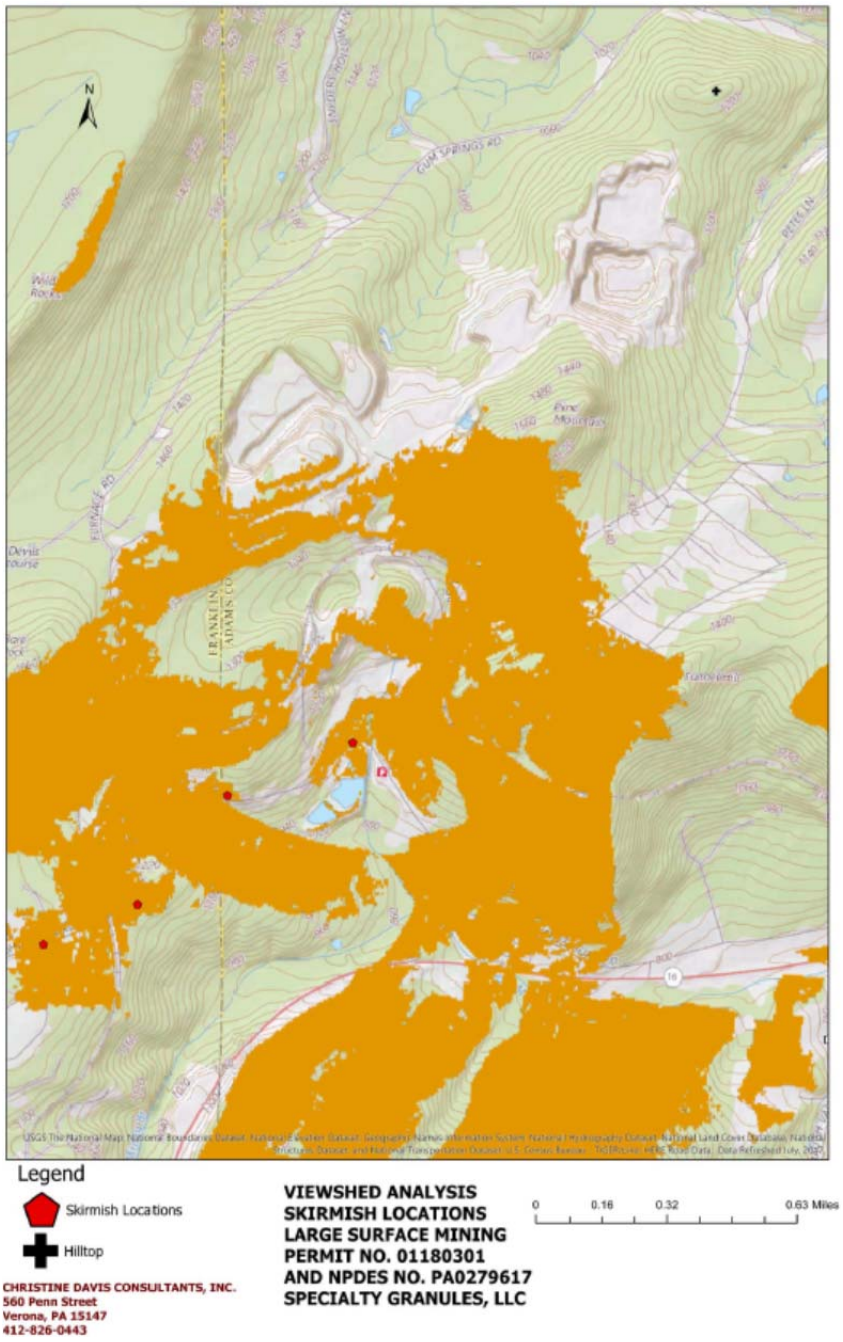
[23] E. J. Wittenberg, at 48-49 (original map across two pages, compiled into single map shown here).

Waynesboro Road and Furnace Road, south and southwest of the existing SGI facilities. The actual Battle of Monterey Pass occurred west of Monterey in Franklin County. The actual battle area is now incorporated into the Monterey Pass Battlefield Park and Museum, which was established in 2010 to preserve a portion of the battlefield. The 125-acre park includes an interpretive museum as well as a preserved portion of Maria Furnace Road. This segment of Maria Furnace Road has never been paved and remains a rutted dirt road, similar to what it would have looked like when miles of the Confederate Army traveled upon it during their retreat.[24]

Although no sites associated with the Battle of Monterey Pass are listed on the NRHP, CDC utilized ArcGIS Pro to conduct a viewshed analysis of the views from the skirmish areas depicted on the above map, to ascertain whether the Northern Tract area is currently observable from any of those points given area topography. Those viewshed results are provided in the following **Figure 9.2**. In **Figure 9.2**, areas shaded tan represent all of the areas that could be seen by a person with eyes approximately 6 feet above the ground from any of the skirmish areas. The area to the northeast marked with a **+** sign is the area of the proposed Northern Tract Quarry. As shown in **Figure 9.2**, no part of the Northern Tract can be seen from the skirmish areas along Old Waynesboro Road.

[24] A map of the battlefield park area is available at: https://www.montereypassbattlefield.org (click on Park Grounds Brochure).

Figure 9.2 – Viewshed from Skirmish Areas



Although some of the Battle of Monterey Pass engagement apparently occurred along sections of what is now known as Old Waynesboro Road near the former SGI West Ridge quarry and existing SGI entrances and processing plant, the Northern Tract mining permit application pending before PADEP does not propose any changes to the existing activities or facilities in the vicinity of Old Waynesboro Road. As discussed in **Section 5** of these Responses, one proposed improvement to SGI's operations, which is the subject of a separate permitting

process, involves installation of a direct connection between the SGI facilities and State Route 16, which is anticipated decrease the amount of truck traffic on Old Waynesboro Road by approximately 80 percent.

9.4 Civil War Retreat Route

(a) Status of the Civil War Retreat Route

The FOTC/Fair Shake and other comments express concerns regarding alleged impacts to the Confederate Army's retreat path, and in the process refer to a Multi-Property Documentation Form for "Adams County, PA Properties Associated with the Battle of Gettysburg, July 1-3, 1863" (the "**MPDF**") prepared by Paula S. Reed, and submitted to the National Register of Historic Places ("**NRHP**") in April 2000 (a copy of which is provided in **Appendix 9.2**). At the outset, it is worth noting that none of the activities to be authorized in the Application will physically impact any of the Confederate Army's retreat path, given that a wooded buffer of at least 100 feet width will be created between any area disturbed by mining and related support activities to the roads and lands through which Ewell's wagon train might have passed.

It is important to understand what the MPDF did and did not do. The MPDF does not actually determine that any of the sites or properties associated with the Battle of Monterey Pass are eligible for listing on the NRHP. Rather, the MPDF describes the bases for which to analyze potential resources that could be contributing components of the Adams County, PA Properties Associated with the Battle of Gettysburg, July 1-3, 1863 context. The MPDF includes a list of Associated Property Types as well as Property Type Registration Requirements to use as guidance for nominating resources related to the context.

Among the potentially eligible property sites, the MPDF lists "Routes of March,"[25] which are described as "thoroughfares used by both armies to approach the [Gettysburg] Battlefield and to withdraw after the fight. … Resources of this property type appear as linear districts, taking in portions of historic roads and travel routes and their attendant roadside properties such as houses, taverns, hotels and villages."[26] In describing property type registration requirements, the MPDF states: "The linear districts should be selected to avoid intrusions as much as possible and include sections of road and attendant features that retain the feeling and association with the Civil War era as much as possible. In order to be eligible, roads do not have to retain unpaved surfaces, but should retain original grade, alignment and width."[27]

Coincident with or subsequent to submission of the MPDF, the PHMC has nominated several specific resources that were mentioned in the MPDF, including the Fairfield Historic District (located approximately 3.4 miles northeast of the SGI property). To date, the PHMC has not nominated any property or site in the vicinity of the Northern Tract permit boundary for inclusion on the NRHP. Indeed, over the many miles of roads and pathways though Adams County via

[25] MPDF at F7-F8.

[26] Id. at F7.

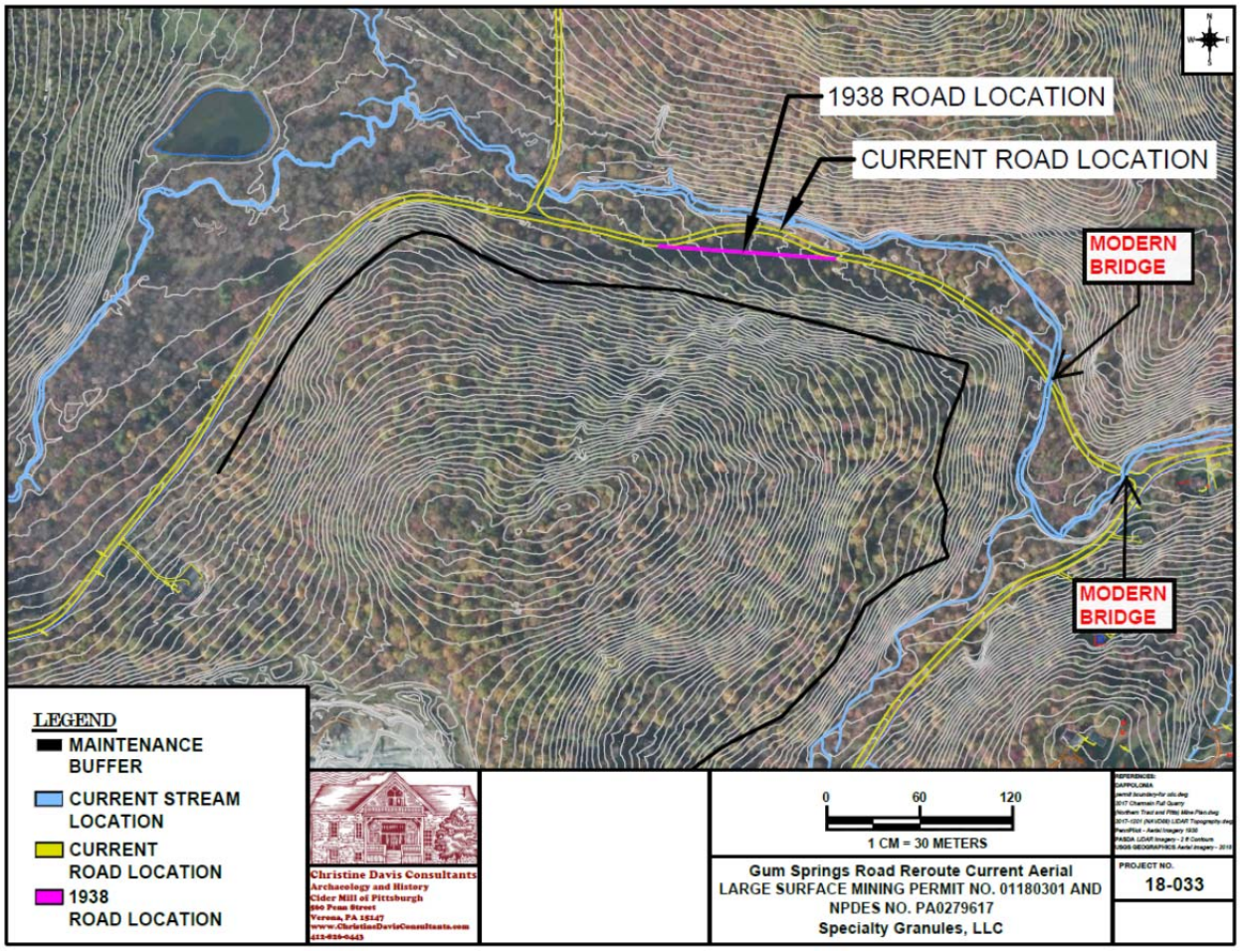
[27] Id. at F8.

which the Confederate Army retreated and the Union Army pursued, none of the "routes of march" outside of certain specific historic districts have attained NRHP listing.

As noted above, the precise routes taken by the Confederate Army during the course of retreat are not well documented, although it appears generally accepted that Ewell's Wagon Train utilized what was known as Maria Furnace Road, a dirt road in Washington Township, Franklin Township which is now largely on private land. Indeed, a portion of Maria Furnace Road is preserved in its original state within the Monterey Pass Battlefield Park in Franklin County.

As noted above, the MPDF indicates, as part of the eligibility criteria for Routes of March, that roads "should retain original grade, alignment and width." With respect to Lower Gum Springs Road, which some commenters have cited as possibly reflecting one of the Confederate retreat routes, CDC located a 1939 aerial photo and compared it to the present day mapping of the roadway (**Figure 9.3**). It is apparent from this comparison and from an inspection of the road in the vicinity of the Northern Tract that a section of Lower Gum Springs Road adjacent to the Northern Tract property has been realigned. In addition, a cleared gas pipeline right-of-way ("ROW") extends across a portion of the road and two modern concrete box bridges carrying Lower Gum Springs Road over Tom's Run have replaced original bridges along this segment.

Figure 9.3 – Comparison of Lower Gum Springs Road – 1939 vs. Present



Irrespective of whether Lower Gum Spring Road may potentially qualify as a Route of March resource, CDC conducted a viewshed analysis to ascertain the degree to which development of the Northern Tract quarry would potentially impact this possible resource. As described below, CDC's viewshed evaluation indicates even if the roads around the north and western sides of the Northern Tract might possibly meet the MPDF criteria, considering the substantial forested buffer to be maintained under SGI's mining application, the operation of the Northern Tract quarry will not result in unreasonable degradation or visual impact to such resources.

(b) Viewshed Analysis

As a predicate to the viewshed analysis, consideration was given to the time of year when the Confederate retreat occurred. The battle of Gettysburg occurred on July 1-4, 1863, with the retreat southward taking place on July 4-5. Although the precise condition of the forest and landscape around Monterey Pass and Pine Mountain at that time is not well documented, in July 1863 native deciduous trees (assuming they had not been timbered) would have been in full leaf. Hence, for viewshed analysis purposes, it is appropriate to consider what the viewshed would have looked like, and will look like in the future, during the summer period when trees are

in leaf. (We note, however, that in several selected areas around Northern Tract, SGI has planted some 300 evergreen trees to provide additional screening.)

To conduct the viewshed analysis, CDC utilized the ARC-GIS program with the 3D Analyst Extension, a robust and sophisticated computer program which allows for an analysis of what can be seen from particular locations considering the topography of the land surface, plus trees or other vegetation. In this instance, CDC input the current and future topography of the Northern Tract area (provided from the plans prepared by d'Appalonia). Based on aerial photographs of the area, the tree densities and heights within the maintained forested buffer were input to the model.

As shown in **Figure 9.4** (where north is to the right), CDC identified a series of points along the Iron Spring Road and Lower Gum Springs Road, along what is cited to be the path of the Ewell's wagon train from Fairfield Gap around the north side of Pine Mountain and southwestward along South Mountain. **Figure 9.5** shows the same points placed on an aerial photograph of the area.

Figure 9.4 – Viewshed Point Locations (Topo Map View)

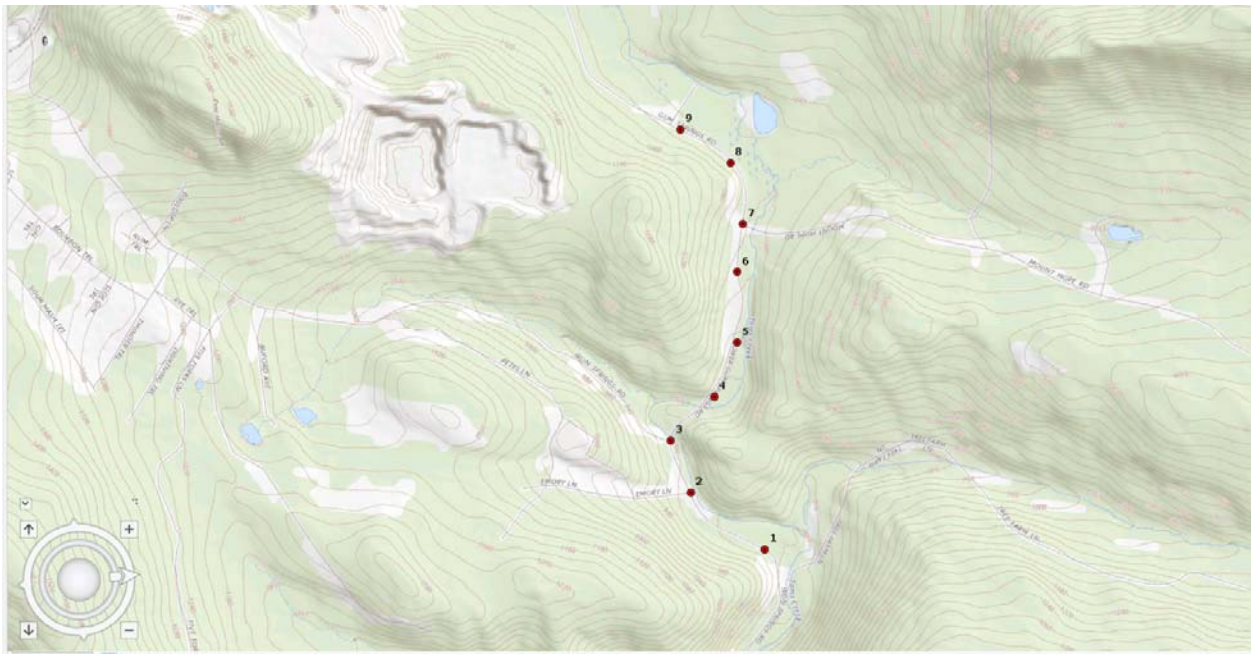
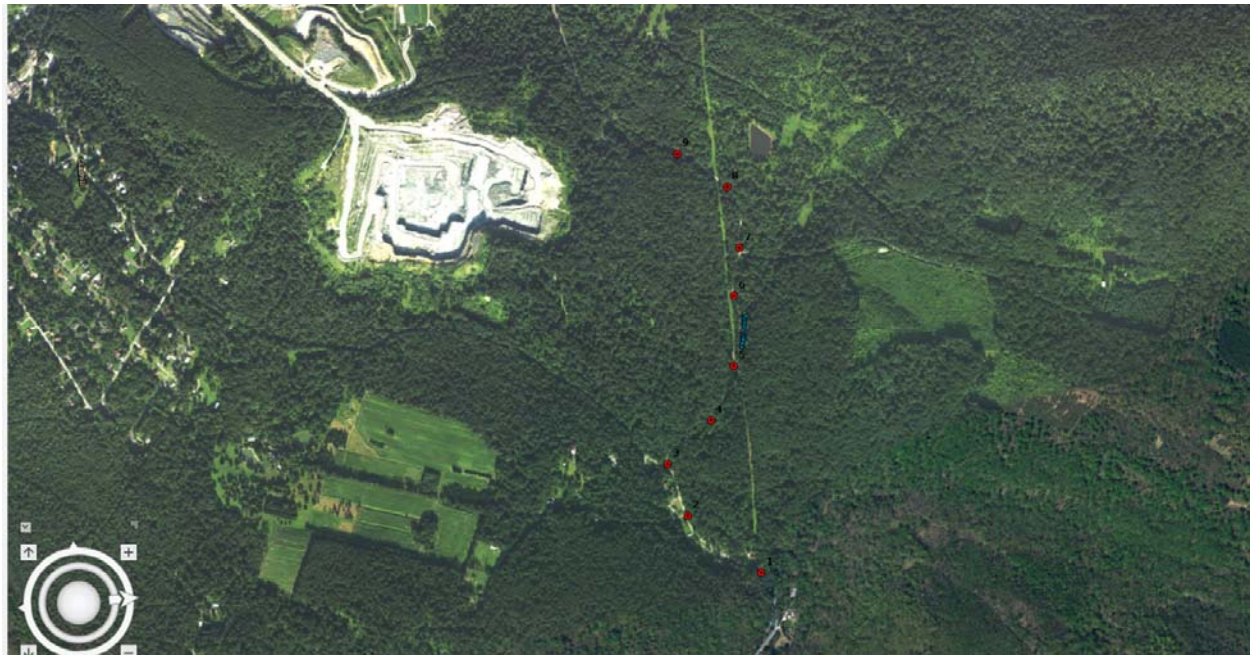


Figure 9.5 – Viewshed Point Locations (Aerial Photo View)



Figures 9.6 to 9.14 provide the results of the ARC-GIS viewshed analysis, showing what could be seen by a person with eyes at approximately 6 feet looking toward the Northern Tract property. In each figure, ***the shaded pink areas are areas where the land surface cannot be seen; and the shaded green areas are areas where the ground surface can be seen***.

Figure 9.6 – Viewshed from Point 1 (Iron Springs Road NE of Northern Tract)

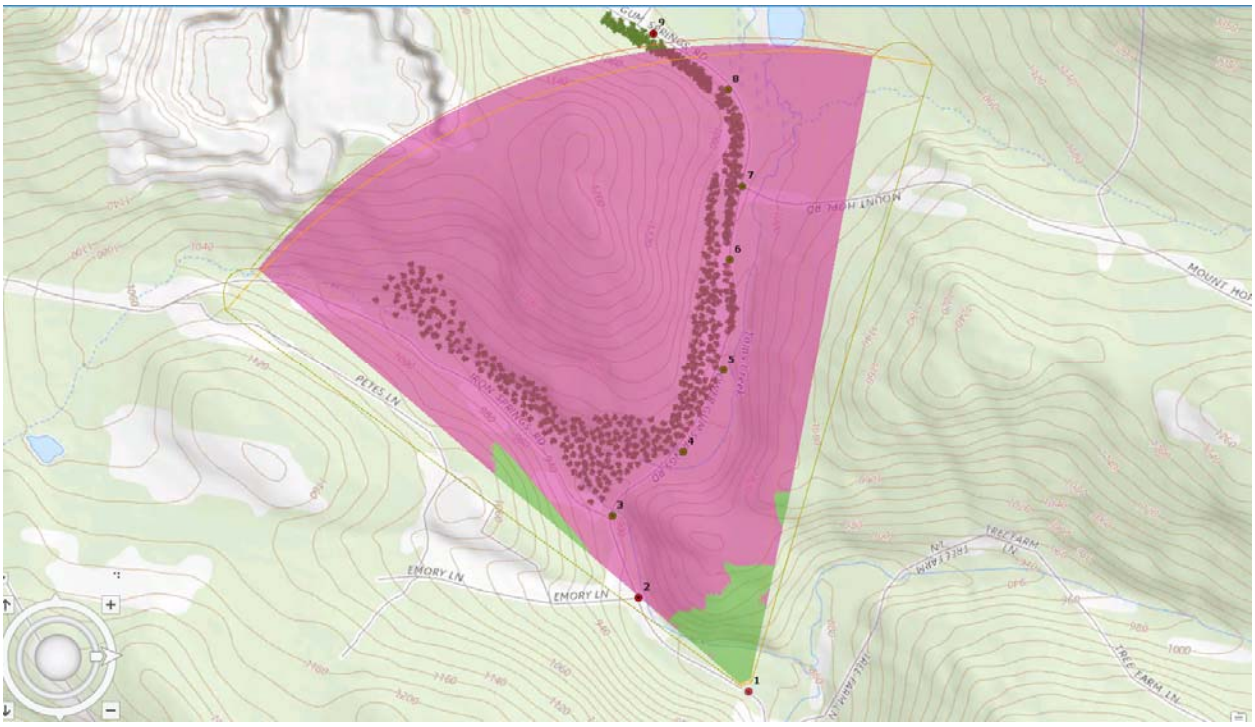


Figure 9.7 – Viewshed from Point 2 (Iron Springs Road NE of Northern Tract)

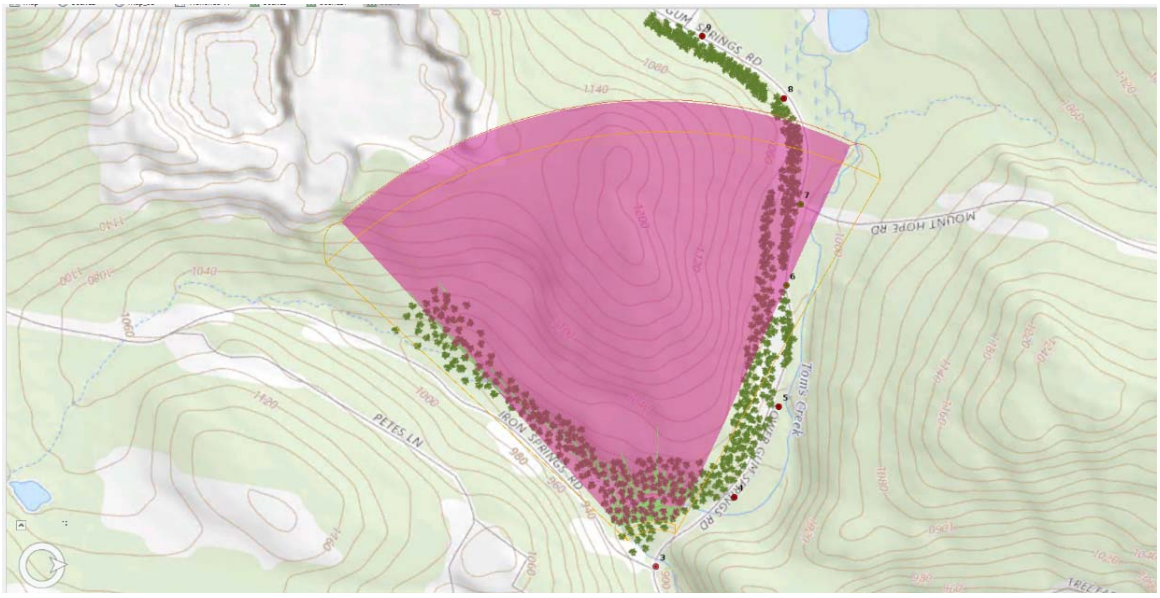


Figure 9.8 – Viewshed from Point 3 (Iron Springs Road and Lower Gum Springs Road Intersection)

Figure 9.9 – Viewshed from Point 4 (Lower Gum Springs Road NE of Northern Tract)

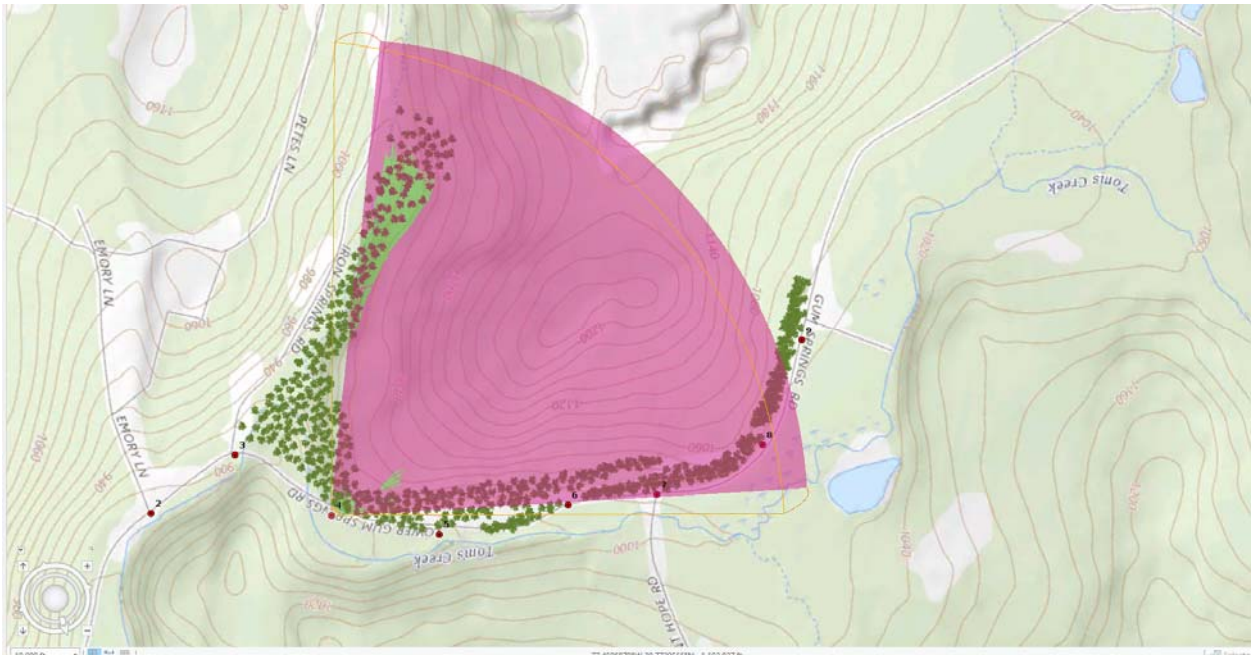


Figure 9.10 – Viewshed from Point 5 (Lower Gum Springs Road NNE of Northern Tract)

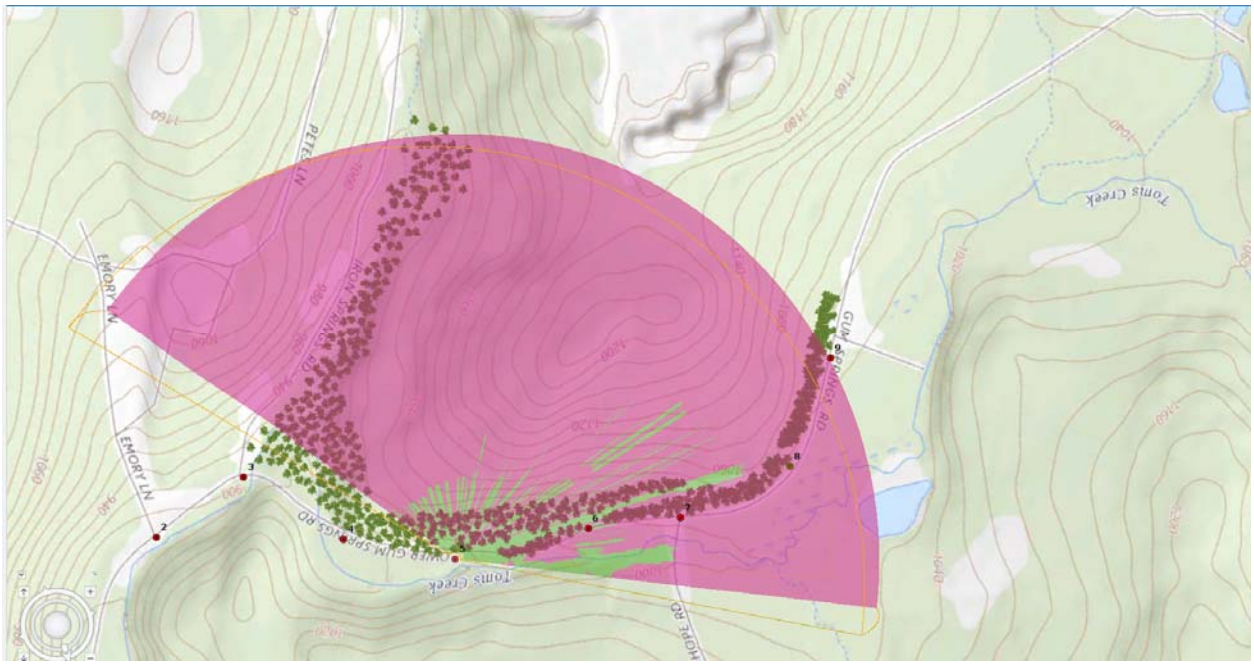


Figure 9.11 – Viewshed from Point 6 (Lower Gum Springs Road N of Northern Tract)

Figure 9.12 – Viewshed from Point 7 (Lower Gum Springs Road NNW of Northern Tract)

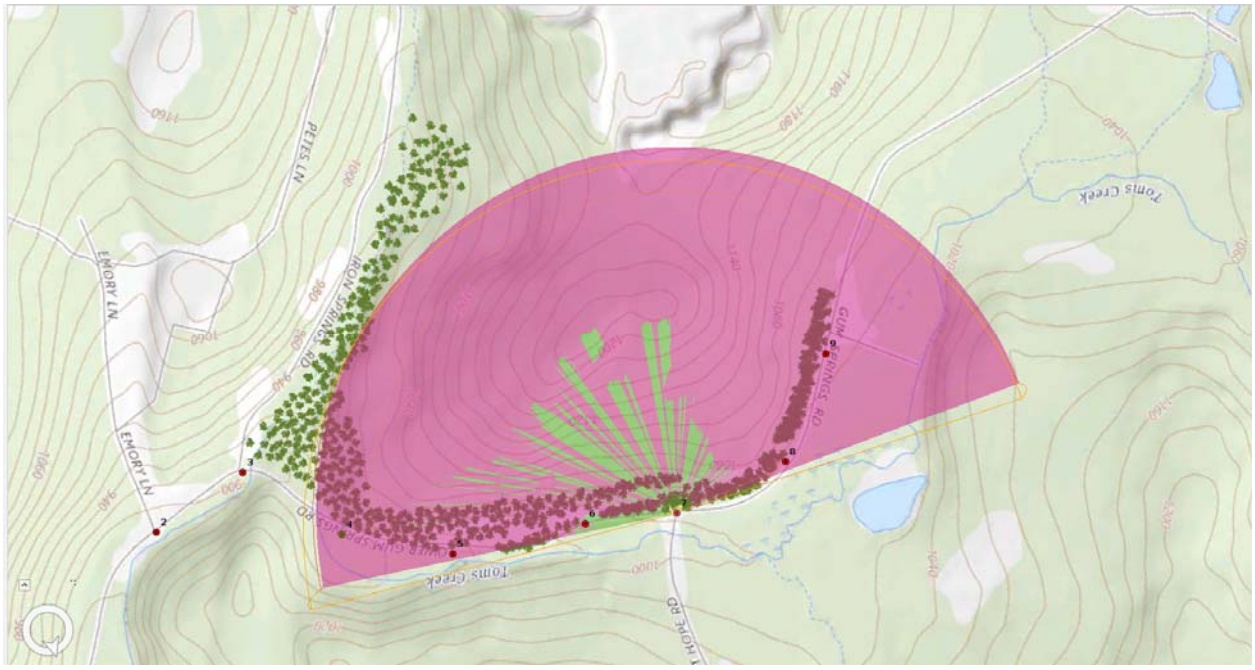


Figure 9.13 – Viewshed from Point 8 (Lower Gum Springs Road NW of Northern Tract)

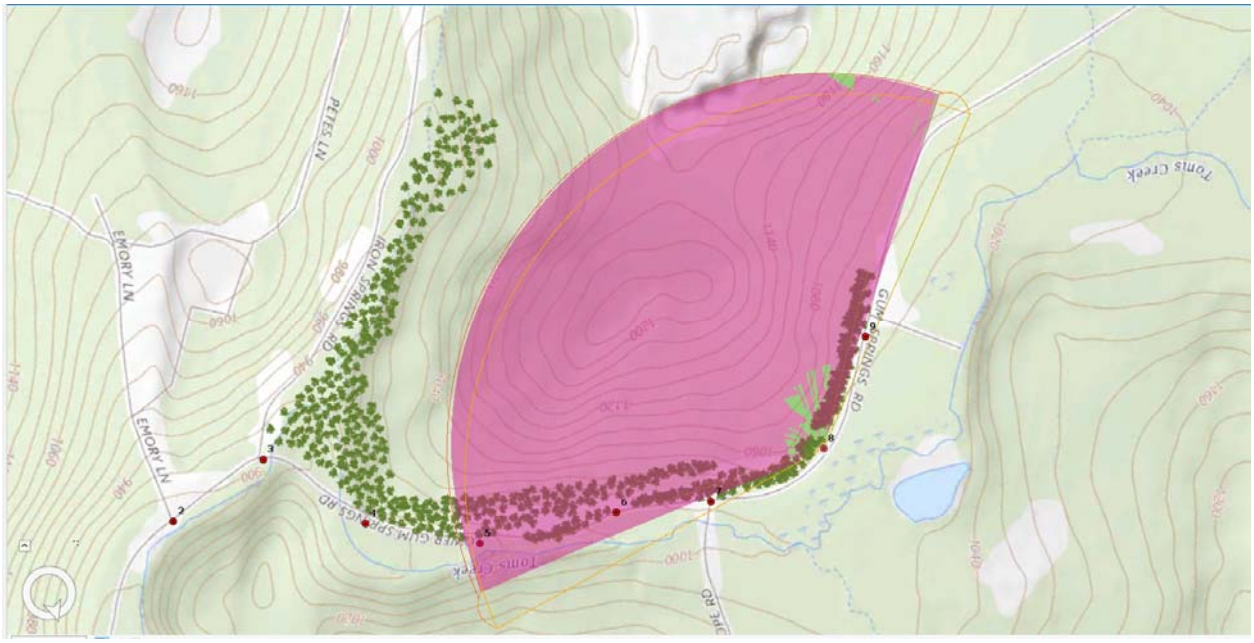
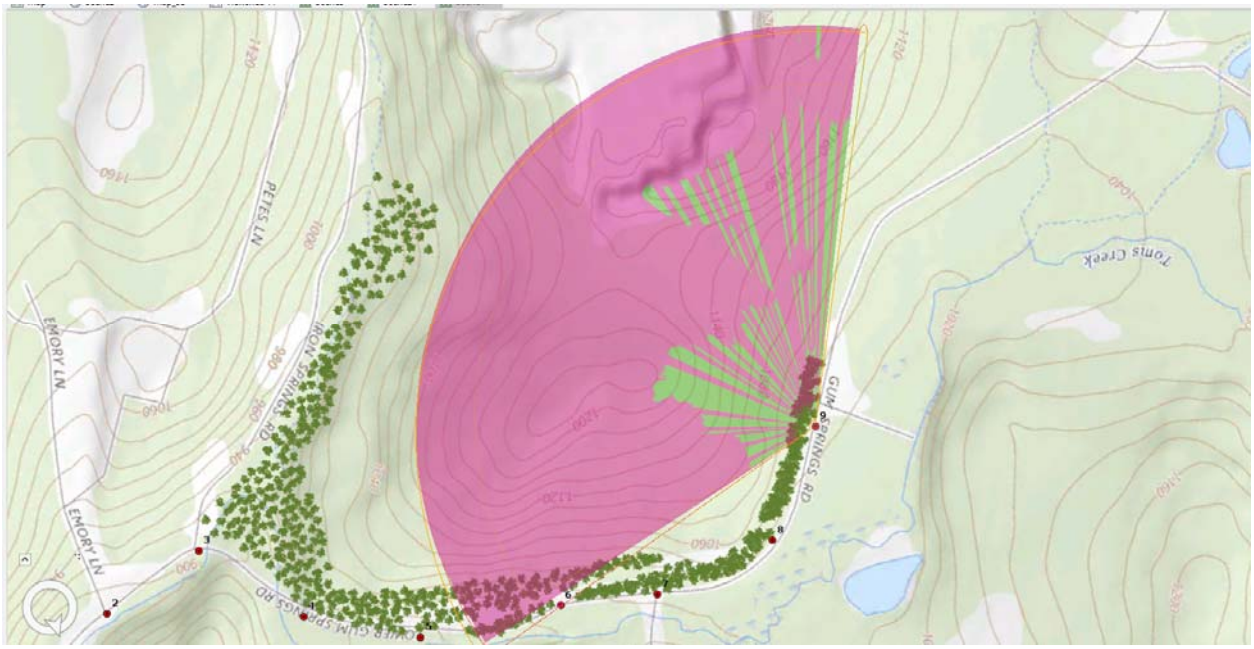


Figure 9.14 – Viewshed from Point 9 (Lower Gum Springs Road WNW of Northern Tract)



To briefly summarize the viewshed analysis results:

- An individual on the route defined by Iron Springs Road coming from Fairfield toward the Northern Tract, looking toward the site from Points 1 (**Figure 9.6**) would be screened from

seeing the land surface of the Northern Tract quarry, and hence the quarry operations, behind the intervening topography and forested buffer area.

- At Point 2 on Iron Springs Road (**Figure 9.7**), the topography and forested buffer block views of most of the Northern Tract operations except for certain limited areas at the top of the hill.

- At the intersection of Iron Springs Road and Lower Gum Springs Road (Point 3), the forested buffer area to be maintained under the plan submitted by SGI blocks the view of the land surface all the way to the top of the hill (**Figure 9.8**).

- As Point 4 on Lower Gum Springs Road (**Figure 9.9**), the forested buffer blocks the view of the land surface all the way to the top of the hill.

- On Lower Gum Springs Road at Point 5, where the natural gas pipeline ROW crosses the road, a viewer could see only a narrow sliver of the land surface behind the forested buffer (**Figure 9.10**).

- On Lower Gum Springs Road at Point 6, near the point where the natural gas pipeline ROW crosses the road, a viewer could see between the trees that lie on either side of the cleared pipeline ROW some fingers of land surface behind the forested buffer (**Figure 9.11**)

- At Point 7 on Lower Gum Springs Road north-north west of the Northern Tract, the viewshed model indicates some fingers of potential view to the ground on part of the hillside, although the vast majority of the area is screened from view (**Figure 9.12**).

- At Point 8 on Lower Gum Springs Road, only a very small area of land surface at the lower elevations of the hill could be seen behind the forested buffer (**Figure 9.13**).

- Finally, west of the Northern Tract, on Lower Gum Springs Road at Point 9, the viewshed model shows scattered fingers of potential view to the land surface beyond the forested buffer, but again with the vast majority of the area screened from view (**Figure 9.14**).

It is apparent from this viewshed analysis that SGI's plan provides for substantial and effective buffering of any alleged impacts to views from the path that literature indicates was the route taken by the retreating Ewell's wagon train. That screening is certainly far more effective in preserving the look and feel of this route than evidenced along significant portions of the retreat route. As the commenters' advocate for the public's right to preservation of historic values, at the same time recognition must be given to the rights of property owners, such as SGI, to develop and utilize their property for economically-beneficial purposes in a manner consistent with applicable zoning. Here, under the applicable Hamiltonban Township Zoning Ordinance, SGI holds a duly-authorized conditional use zoning approval allowing for the Northern Tract quarry operation. In light of those property rights, and considering the substantial buffering and screening protections provided by the stipulated forested buffer on the western, northern, and

eastern sides of the Northern Tract, SGI's proposed mining plans do not lead to an unreasonable degradation of the historic values of the environment.

(c) Battles and Encampments

Although FOTC/Fair Shake claim that "battles or encampments are likely to have occurred within SGI's permit boundary," they offer no citations or evidence supporting such claims. As noted above, available literature CDC has reviewed indicates that all engagements between the retreating Confederates and the pursuing Northern Army occurred significantly south of the Northern Tract along the line of the road from Emittsburg to Waynesboro, approximating the Old Waynesboro Road.

As reflected in the Phase I Archaeological Report submitted to the PHMC, the land comprising the Northern Tract area is largely composed of hard rock outcroppings and steep slope. Both the topographic mapping of the area and walking observations of the property indicate that the area on SGI property adjacent to the cited retreat route (Lower Gum Springs Road) is very rocky and steep. From mapping, CDC calculated the areas adjacent to Lower Gum Springs Road have grades of approximately 13 to 23%. Such conditions would make it highly unlikely that anyone (let alone a retreating wagon train seeking to escape a pursuing army during a dark and rainy night) would seek to encamp on the area within the SGI Northern Tract boundary, particularly when flatter land, with some agricultural fields, were available adjacent to Tom's Creek in areas north and west of the Northern Tract.

H. Keahey's comments refer to an 1866 Edinburgh Times article that she claims reports that General Lee encamped somewhere near the intersection of Iron Springs Road and Gum Springs Road. No specific citation or copy of the referenced article was provided, and SGI is unable to confirm the source of the information. However, even assuming that Lee might have at some point rested near Tom's Creek, there is no evidence that he did so on the SGI property, particularly given the topography and rockiness of the land within the SGI Northern Tract boundaries. Moreover, if and to the extent that Lee's temporary stop was near the intersection of what is now Furnace Run Road and Lower Gum Springs Road, the viewshed analysis conducted by CDC indicates that the Northern Tract development would be screened from view from that direction by the forested buffer being maintained by SGI and no below ground impacts would occur in this area as a result of the development.

9.5 Monterey Historic District

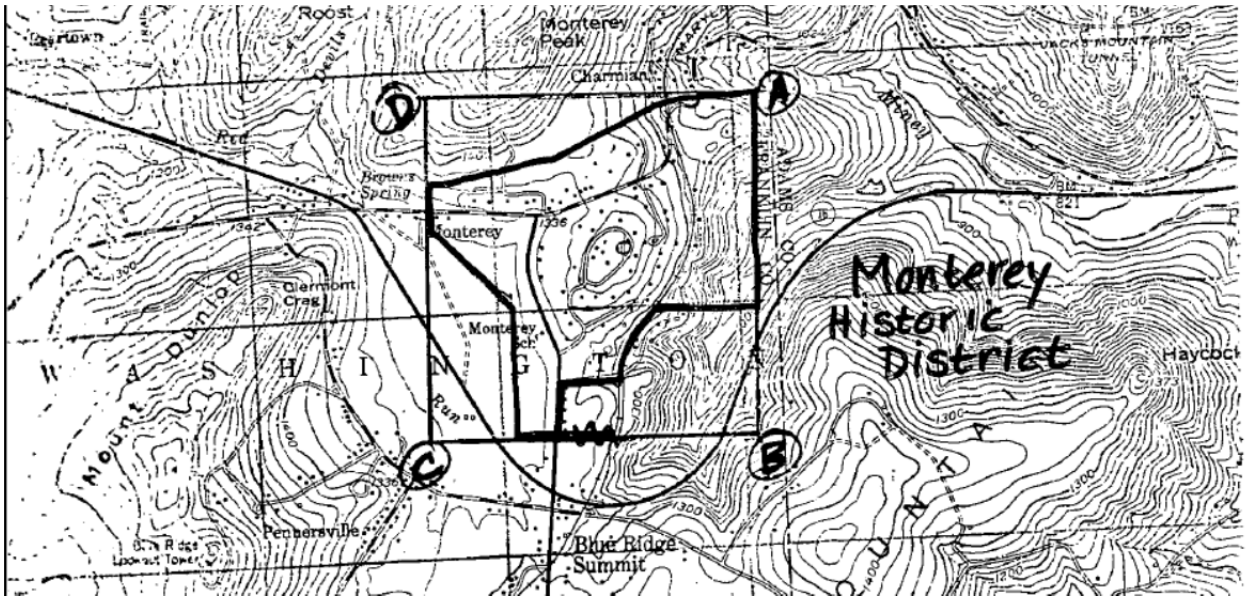
FOTC and other commenters suggest that SGI should have considered potential impacts on the Monterey Historic District, even though the PHMC did not indicate any concern as to impacts on that resource.

To provide some background, the Monterey Historic District was listed on the NRHP on April 22, 1976 under the categories of Architecture and Community Planning and Development.[28] At that

[28] See CRGIS report available on line at:

time, the District encompassed approximately 250 acres and included 60 contributing structures and approximately 20 non-contributing structures. The majority of the non-contributing structures are residential structures built on the sites of former homes or inns that burned. **Figure 9.15** shows the location and configuration of the designated historic district derived from the map appended to the National Register Nomination Form ("NRNF"), a copy of which is provided in **Appendix 9.3**.

Figure 9.15 – Monterey Historic District



According to the NRNF:

> The Monterey Historic District is a fine example of a 19th century summer resort area which has retained its basic· integrity. Although primarily residential in character, the district contains two inns, a church, a library building, a club, and a golf course. It includes approximately 60 structures of historical significance, with perhaps 20 later intrusions, the majority of which are residential structures built on the sites of former houses or inns which have burned down.

The NRNA indicates that during the 1880's, as many people were reacting to life in the cities, development of the Monterey area reflected a desire to create a seasonal colony. "As a summer resort, Monterey thrived from about 1885 though World War II …." After that, the area's function as a resort community declined and several of the inns burned. "That Monterey was able to remain visually intact … may be due to the rerouting of Pennsylvania Route 16 from the old turnpike road to a new site, completely by-passing Monterey."

---

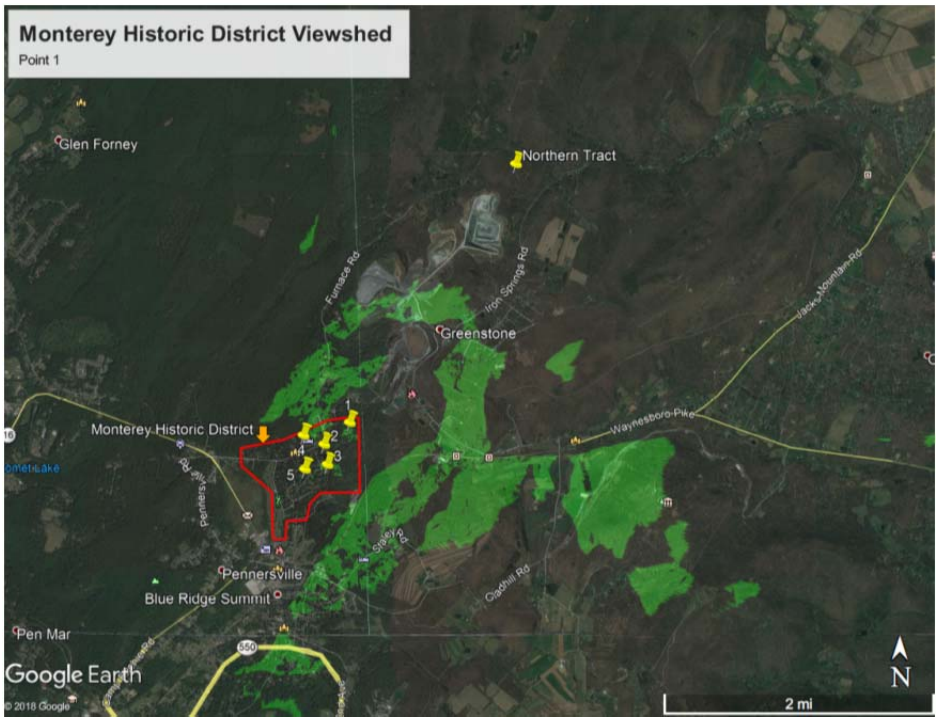
https://www.dot7.state.pa.us/CRGIS/Application/ASPNET/Report/Report.aspx?R=108&T=KEYNO&I=000899 .

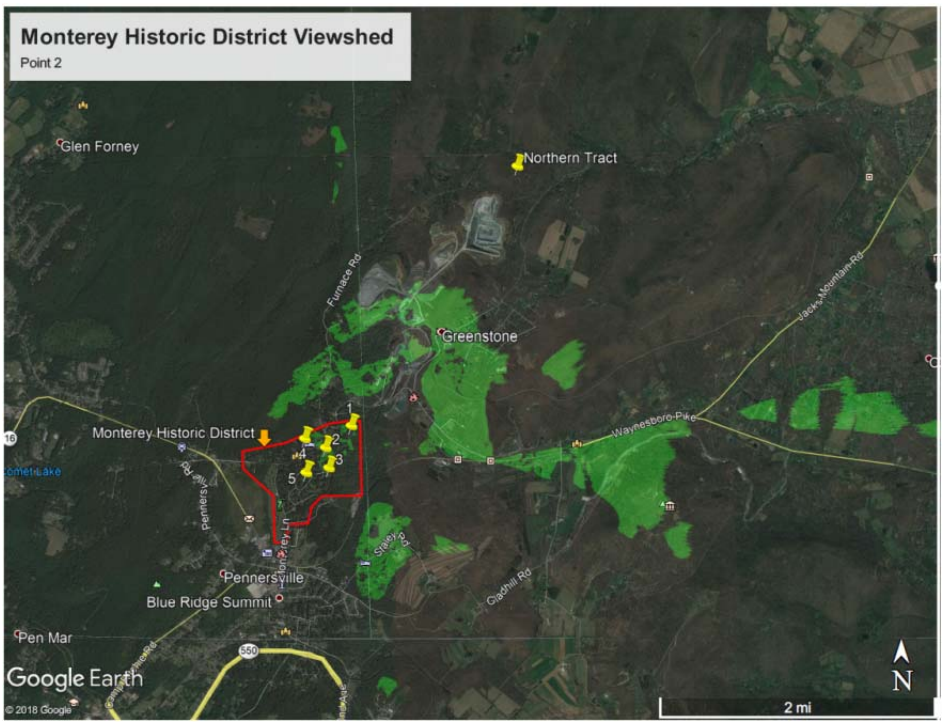
The Period of Significance for this resource was not defined; however, the NRNF mentions several inns that date back to 1810 and also states that Monterey Lane was laid out in 1852 but the majority of the properties and lanes were laid out around 1890.

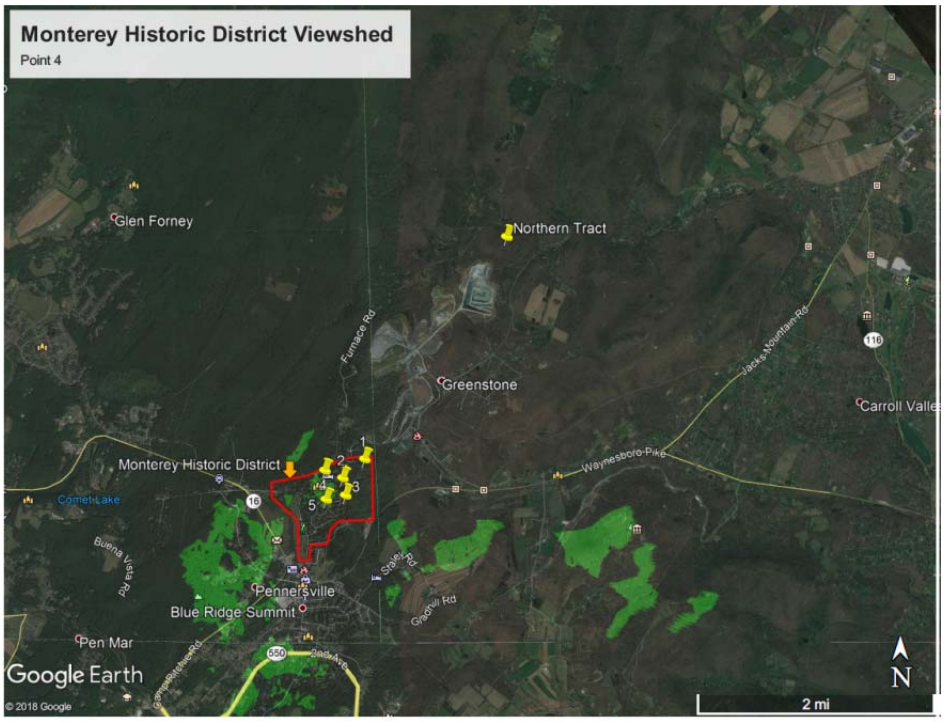
Notably, as seen in **Figure 9.16** below, the center of Monterey Historic District is approximately 2.5 miles southwest of the proposed Northern Tract. It is important to note that Monterey Circle, which encompasses the majority of the Historic District, can only be accessed via a private road that is closed the general public.

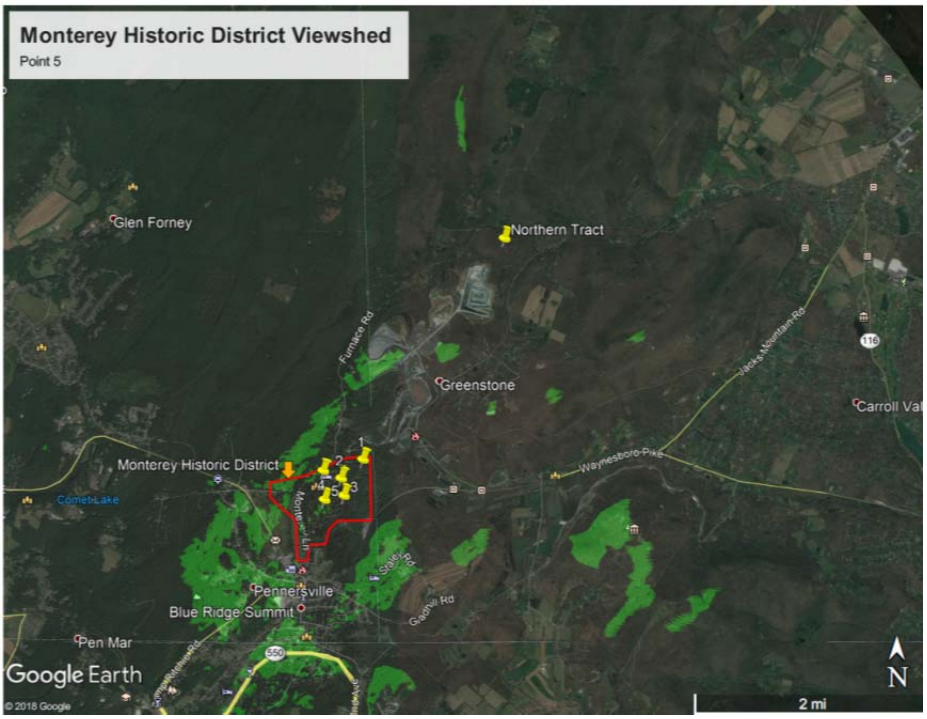
Although it is clear based on distance alone that the Northern Tract has no direct impact on the Monterey Historic District, CDC conducted a viewshed analysis utilized the GoogleEarth Pro tool, to ascertain whether the Northern Tract was visible to locations within the Monterey Park Historic District. The results of that viewshed analysis are set forth in the five panels of **Figure 9.16**, in which the area that can be seen from a particular location within the district is shown in green. Clearly, based on this analysis, the Northern Tract is not visible from the Monterey Historic District.

Figure 9.16 – Monterey Historic District Viewshed




Monterey Historic District Viewshed
Point 2
Glen Forney
Northern Tract
Furnace Rd
Greenstone
Jacks Mountain Rd
Monterey Historic District
Waynesboro Pike
Comet Lake
Pennersville
Stepp Rd
Gadhill Rd
Blue Ridge Summit
Pen Mar
Google Earth
© 2018 Google
2 mi
N


Monterey Historic District Viewshed
Point 4
Glen Forney
Northern Tract
Furnace Rd
Greenstone
Jacks Mountain Rd
Carroll Valle
Monterey Historic District
Waynesboro Pike
Comet Lake
Buena Vista Rd
Stepp Rd
Pennersville
Gadhill Rd
Blue Ridge Summit
Pen Mar
Google Earth
© 2018 Google
2 mi
N



The operation of the Northern Tract itself does not alter in any way activities in or near the Monterey Historic District. That said, a separate effort being undertaken by SGI will provide significant benefits to the District. As discussed in **Section 5** of these Responses, SGI has proposed to connect the existing Charmian facility directly to Route 16 via a new access road. Once completed, this connection is anticipated to reduce truck traffic to and from SGI on Old Waynesboro Road (with passes through the Monterey Historic District) by approximately 80%.

9.6 Great Philadelphia Wagon Road Claims

One commenter, J. Gorman, suggests that "Gum Springs Road is presently undergoing review to designate it as a State Historic Road" and states that the road was part of the original "Great Philadelphia Wagon Road." No background or evidence was submitted in support of the claim, and no identification is provided as to which agency (if any) is considering such a designation. To CDC's knowledge and experience, the specific term "state historic road" is not a designation term used by the PHMC under the Pennsylvania History Code.

If and to the extent that Gum Springs Road has any old wagon road connections (which is the case for many Pennsylvania roads), the viewshed analysis referenced above indicates that the Northern Tract development will not unreasonably degrade any such historic connections or values.

9.7 Claim that Thaddeus Stevens owned Pine Hill

In an August 2018 letter addressed to the PHMC, with copy to PADEP, FOTC asserts that Thaddeus Stevens previously owned Pine Hill. No documentation or support is offered for this claim, and the facts are to the contrary.

The Summary Report Archaeological Investigations, 112.22-Acre Glatfelter Property prepared by URS in January 2014, which was included in Module 4, notes that Thaddeus Stevens was a part owner of a company organized to mine the local iron ore and manufacture iron products which at one time owned the Maria Furnace, constructed southwest of Fairfield on Iron Springs Road. But the Maria Furnace was not on the Northern Tract property.

The URS Summary Report, pages 7-10, carefully traces the ownership history of what now comprises the Northern Tract property, which was part of what at one time was the 112.22-acre former Glatfelter property. That history starts with the warrant and patent out of the Commonwealth, through each successive owner. Thaddeus Stevens does not appear anywhere in that chain of title.

10. Protected and Other Species

10.1 Nodding Trillium (*Trillium cernuum*)

Comments:

Proposed protection of identified endangered plant Trillium cernuum (Nodding Trillium) is insufficient to ensure protection of the plant species. (FOTC/FairShake)

Removal of the mountain top from which surface waters now run will impact the continued existence of healthy wetlands that are critical habitat for rare flora and fauna. The nodding trillium is an example or fragile flora that depends upon a moist, woodlands habitat. We are informed the colony or nodding trillium on Pine Hill is the largest in the state. This delicate plant is now extinct in Ohio and is considered endangered. (H. Keahey)

The wetlands of Pine Hill which support fragile flora and fauna, including owls, bats, bears, and foxes known to inhabit the dense forests of Pine Hill, and an endangered colony of Nodding Trilliums, a plant now extinct in Ohio. (Multiple commenters)

The very rare plant, Nodding Trillium, could not survive in such a parched environment. If you look at the map provided by the biologist showing where these special plants exist, you will see that their colony surrounds the bottom of the mountain. This is where water naturally collects and provides the continually moist and rich habitat necessary for the Nodding Trillium. The colony is described by the biologist as the largest in the state. Nodding Trillium also requires heavy shade so merely fencing them off will also kill them unless enough forest buffer is allowed to remain. (S. Rogers-Frost and C. Frost)

Nodding Trillium (Trillium cernuum) is currently tracked as a "species of special concern" in Pennsylvania and is not currently listed as rare, threatened, or endangered under the federal Endangered Species Act, 16 U.S.C. §§ 1531-1544, the Pennsylvania Wild Resource Conservation Act, 32 P.S. §§ 5301-5314), the Fish and Boat Code, 30 Pa.C.S. §101 *et seq.*, or the Pennsylvania Game and Wildlife Code, 34 Pa.C.S. §101 *et seq*. Specifically, the Pennsylvania Wild Resource Conservation Act provides for the Pennsylvania Department of Conservation and Natural Resources ("**DNCR**") to establish a classification procedure for plants that includes the following classifications: (1) extripated, (2) endangered, (3) threatened, (4) disjunct, (5) endemic, (6) restricted, (7) limit of range, and (8) vulnerable. 32 P.S. §5307(b).

The two classifications mentioned in 25 Pa. Code §77.126(a)(10) – "endangered" and "threatened" – are defined in the Wild Resource Conservation Act as follows:

> Endangered. Species in danger of extinction throughout all or most of its range if critical habitat is not maintained, or is greatly exploited by man.
>
> Threatened. Species likely to become endangered throughout all or most of its range if critical habitat is not maintained or it is greatly exploited by man.

32 P.S. §5307(b)(2), (3).

The listing of plants determined by DCNR to be either endangered or threatened is provided in 17 Pa. Code §§45.12 (endangered) and 45.13 (threatened). *Trillium cernuum* does not appear on either list. Nor has *Trillium cernuum* been proposed for listing as either endangered or threatened in DCNR's latest update to Ch. 45. *See* 47 Pa. Bulletin 7210 (November 25, 2017).

The pertinent provisions of the non-coal mining regulations, set forth in 25 Pa. Code §77.126(a)(10) provide that in reviewing a mining permit application, the Department must find that:

> (10) The proposed activities would not affect the continued existence of ***endangered or threatened species*** or result in the ***destruction or adverse modification of their known critical habitats as determined under*** the Endangered Species Act of 1973 (16 U.S.C.A. § § 1531—1544), the Wild Resource Conservation Act (32 P. S. § § 5301—5314), 30 Pa.C.S. (relating to the Fish and Boat Code) and 34 Pa.C.S. (relating to the Game and Wildlife Code).

(emphasis added). The regulations refer to two specific classifications of protected species: "endangered" and "threatened"; and the referenced "critical habitats" are those critical habitats determined pursuant to the provisions of specifically identified statutes.

Although the comments submitted by FOTC/Fair Shake and others use the terms "endangered" or "rare" to describe Nodding Trillium, those terms do not apply to this species as it is not legally classified as "endangered" or "rare" but is only classified as a "species of special concern." The important distinction between endangered or threatened species and "species of special concern" was recently explained by Commonwealth Court in *Marcellus Shale Coalition v. Department of Environmental Protection,* Pa. Commw. Ct., No. 573 M.D. 2016 (Opinion, August 23, 2018). In that case, Commonwealth Court enjoined portions of regulations governing non-conventional oil and gas operations which purported to extend special notification requirements relating to "public resources" to "species of special concern" as identified in the Pennsylvania Natural Diversity Inventory ("PNDI") database. As noted by the court, PADEP's Policy for PNDI Coordination During Permit Review and Evaluation, Document No. 021-0200-011, dated May 25, 2013 (2013 PNDI Policy), defines "species of special concern" as:

> Plant and animal species that are *not listed as threatened or endangered by a jurisdictional agency*, but are identified on a PNDI Receipt as an at risk species. These include: (1) plant and animal species that are classified as rare, vulnerable, tentatively undetermined or candidate, (2) taxa of conservation concern and (3) special concern plant populations.
>
> 2013 PNDI Policy at 1.

Marcellus Shale Coalition, Slip Op. at 32-33 (emphasis in original). Where the Oil and Gas Act went beyond the Non-Coal Surface Mining and Conservation Act to define "public resources" to include "rare and endangered flora and fauna and other critical communities," the Court found that "species of special concern" did not qualify as "public resources." As observed by the Court, "species of special concern" is a broad, non-statutory, classification of flora and fauna that include those "which are not endangered or threatened species, but are in *proposed status or tentatively undetermined* …. In essence, a 'species of special concern' is a resource classification that falls below endangered or threatened species." Slip Op. at 41-42 (emphasis in original, footnote omitted).

In preparing its permit application, SGI queried the PNDI database, and pursued all required consultations with applicable natural resource agencies, including DCNR (which administers the Wild Resource Conservation Act's program for plants. SGI's consultant, Skelley and Loy, conducted a detailed survey of the Nodding Trillium as a species of special concern mapping the location of each plant or group of plants. SGI designed the project to avoid the main population of Nodding Trillium and the mining plan only impacts 18 individual plants while leaving the identified plants and colonies otherwise undisturbed. In response letters dated September 26, 2016 (provided in Application Module 1), which was reconfirmed and updated August 1, 2017 [copy attached], the DCNR determined that no impact to the existing population of *Trillium cernuum* is anticipated as a result of project implementation as planned, assuming certain additional avoidance and monitoring efforts are implemented. Specifically, DCNR stated:

> **DCNR requests a 10-year monitoring program** immediately following initiation of mining activities, with monitoring events at Years 1, 2, 3, 5, 7, and 10. A report should be issued to our office following each monitoring event. Invasive species management may be requested in the future based on the monitoring results. DCNR may also shorten or lengthen the monitoring period depending on the rate of mine expansion and monitoring results.
>
> **In addition, protective fencing is requested** along the outer edge of the Operational Buffer to act as both a physical barrier and visual reminder to construction crews in an effort to safeguard adjacent individuals of nodding trillium. Appropriate Erosion and Sediment Controls should be implemented on the steep terrain.

With the avoidance of nodding trillium within the Maintained Buffer and the completion of a monitoring program, DCNR has determined that no impact is likely. DCNR looks forward to receiving monitoring reports in the future.

DCNR Letter (August 1, 2017) at 1. DCNR also recommended certain actions to avoid/control invasive species. SGI has committed to implement the additional actions requested by DCNR which are part of SGI's Permit Application.

In its review letters, DCNR concluded: "Impacts to the 18 individuals within the Operational Buffer will not significantly compromise the long-term success of the overall population. However, given that this nodding trillium population is the largest known in the state, and that the proposed mining and support activities are in very close proximity to the population boundaries, long-term monitoring of the remaining individuals is requested." DCNR Letter (August 1, 2017); DCNR Letter (Sept. 26, 2016).

FOTC/Fair Shake express a concern that provision of fencing to protect the Nodding Trillium, as requested by DCNR, will not be adequate, alleging that the SGI mining activities will remove shading from the Nodding Trillium plants outside of the Operational Buffer. FOTC/Fair Shake premise their concern on the claim that "a significant number of nodding trillium is located on the border between the operational and maintained buffers" that they allege will be "exposed to direct sunlight" and thus be "unable to survive." As specified in the Permit Application,[29] SGI's mining plan calls for maintenance of the forested area outside of the Operational Buffer, which includes preservation of those existing trees that provide shade to the Nodding Trillium plants outside of the Operational Buffer. The operating plan provides that within the Maintained Buffer (as defined in the conditional use zoning approval issued by Hamiltonban Township), SGI will not undertake any activities except for replacement of dead trees. Contrary to the commenters' assertions, an examination of the Figure 2 – Nodding Trillium Survey Map attached to Skelly & Loy's August 25, 2016 report, provided in Application Module 1, shows that very few "dots" (denoting the location of Nodding Trillium plants) are located near the boundary between the Operational Buffer and the forested Maintained Buffer. With the exception of five (5) dots, all other observed Nodding Trillium are at least 15-20+ feet inside of the forested Maintained Buffer boundary, inside the boundary where trees will remain to shade the plants on all sides. Although the 5 locations near the boundary could experience more sunlight or partial shade depending on the fauna near them, SGI could find no citation indicating partial shade would be harmful to the plants. The commenter does not cite any authority for the proposition that any exposure to direct sunlight will kill those Nodding Trillium that may be near the edge of the forested Maintained Buffer. As monitoring the health of the Nodding Truillium population is required by the Permit, should unexpected negative impacts be observed responsive measures will be undertaken. Such future measures could include providing additional shade trees or barriers if necessary.

[29] See Module 1, page 1-2; Attachment to Module 1, Hamiltonban Township CUP; Social or Economic Justification (SEJ) and Water Use Demonstration.

Similarly, FOTC/Fair Shake's mistakenly suggests that "removal of the mountain top" will impact the continued existence to Nodding Trillium at the bottom of the hill by distrupting surface water flows leading to a "parched environment." The analysis conducted by Skelly and Loy indicates that the wetlands in or near the Nodding Trillium locations are not primarily fed by surface waters from the hill. The hydrologic sources to Wetlands A, B, C, and E are primarily surface water and seasonal groundwater interflow ***contributed by the Unnamed Tributary to Toms Creek***. Only Wetland D, partly located on the hillside, may experience some result of loss of runoff area and possible impacts to hillside groundwater seepage. However, Wetland D is an expansive habitat extending well beyond the Northern Tract permit boundary. Sustenance from other sources of runoff area outside of the Northern Tract permit boundary are expected to ameliorate possible effects. In addition, baseline and biannual monitoring are proposed in Wetland D. If changes in the hydrologic conditions are observed, SGI will initiate additional monitoring efforts, and work with the Department to develop a mitigation strategy.

Finally, as monitoring the health of the Nodding Truillium population is required by the Permit, should unexpected impacts be observed (however unlikely) responsive measures will be taken. Such measures could include installing a supplemental groundwater well outflow to maintain surface water availability, or other such measures as necessary.

Under these circumstances, and based on the substantial information provided as part of the Permit Application, PADEP may validly defer to the findings of its sister governmental agency, DCNR, which has expressed the clear conclusion that "no impact is likely" with respect to Nodding Trillium.

10.2 Bats and Other Species

I am aware that bats were found in Thaddeus Stevens' copper mine. Even though none were the endangered Indiana Bat, I remain concerned for the loss of the existing bats' habitat. I wish that SGI was required or self-motivated to provide some alternative bat habitat. All our bat species are declining quickly through disease, habitat loss and dangers in the modern environment such as wind turbines. (S. deVeer and W. Morrison)

The wetlands of Pine Hill which support fragile flora and fauna, including owls, bats, and foxes known to inhabit the dense forests of Pine Hill. (Multiple Commenters)

We are concerned that the bright lights that accompany 24/7 operations, which will likely expand onto Pine Hill, will create a new hazard to humans and animals, particularly animals already persecuted, such as bats, bears, and foxs, known to inhabit Pine Hill. (H. Keahey)

Gold fish, crayfish and muskrats no longer inhabit Miney Branch. (M. Young)

As noted above, 25 Pa. Code §77.126(a)(10) provides specific reference to "threatened" and "endangered" species. As documented in SGI's Permit Application, SGI consulted with the natural resource agencies having jurisdiction over bats – the Pennsylvania Game Commission and the U.S. Fish & Wildlife Agency ("**USFWS**"). Although not required or requested by any agency, SGI commissioned an independent expert, Western EcoSystems Technology ("**WEST**") to undertake a specific study of the former copper mine shaft found on the Northern Tract site.

In early October 2017, WEST undertook a mist-net survey following protocols established by USFWS and the Game Commission. The results, reflected in *Abandoned Mine Shaft Mist-Net Surveys, Adams County, Pennsylvania* (November 10, 2017), found no federally endangered Indian Bat (Myotis sodalis) or the federally threatened Northern Long-eared Bat. This study was submitted by SGI to the USFWS, which administers the Endangered Species Act programs for these two bat species. (SGI Letter dated December 21, 2017). By letter dated January 19, 2018, the USFWS responded. Acknowledging the mist-net study results, the USFWS concluded: "[T]he Service does not expect adverse effects to hibernating bats from the proposed project." To address the potential impact on both species, who use trees as maternity sites during the spring and summer months, the USFWS recommended "confining any tree removal activities to the winter months (November 15 through March 31) to avoid killing or injuring breeding bats (for trees that are greater than or equal to 3 inches in diameter at breast height)." SGI has agreed to conform to that USFWS recommendation. All of the foregoing documentation was submitted to PADEP on January 4, 2018, and is part of the Permit Application record (see attachment to Module 1: Supplemental Correspondence with USFWS).

With respect to the comments concerning potential light impacts on wildlife species, none of the species generically mentioned in the comments (bats, bears, foxes) are identified threatened or endangered species. SGI will direct and design its lighting during nighttime operations at the Northern Tract area to minimize outward glare, and the mining plan provides for maintenance of a forested Maintained Buffer that should further reduce the propagation of light. While some species may seek to avoid lighted areas, it is noted that virtually all human activities involve light sources – including the ski resorts, lodges and commercial establishments in the area. At the same time, numerous areas around the SGI property, including the extensive lands of the Michaux State Forest, remain as suitable habitat for such common wildlife species.

In reference to the comment concerning alleged impacts on gold fish, crayfish, and muskrats in Miney Branch, please see the response to comments concerning measures undertaken by SGI to protect the water quality of Miney Branch at Section 3 of these Responses.

11. Past Discharge Events

11.1 2011 Incident

Comments:

My upstream neighbor, Michelle King Hovis provided me with the story and pictures of her back yard over-run with green sludge after a storm event in May, 2011. Her story makes it clear that this event was caused by HUMAN ERROR in the mine's operation above her house, which had been filling an old mine with the finest of waste-product granules, too fine to be useful as roofing shingle grit. I am attaching her story and her pictures in a pdf file along with this letter. The green reached the creek and other neighbors took photographs of the water flowing green. Storm events AND HUMAN ERRORS such as these must NOT release green sludge into Tom's Creek. (S. deVeer)

Response:

The event that occurred in May 2011 was preceded by very heavy rainfall in the previous month. In fact, the Spring of 2011 was reported to be the wettest March-May period in history[30]; and the nearest weather station recorded 21.76" of rain from March 1 to May 31. Prior to May 2011, SGI was placing fines collected from its mining and processing operations in the former West Ridge quarry as provided in the approved reclamation plan for that quarry. The edge of the West Ridge quarry area included an earthen berm around the fines stockpile in the northern corner. At the time of May 2011 event, a section of the earthen berm experienced a piping-type failure (that is, material found a preferential flow path through the earthen material), which resulted in water and associated fines contained within the stockpile to flow down the adjoining hill. SGI responded with a full crew of personnel. Several tiers of silt sock were deployed on the hillside to catch residue on the slope. The crew, using hand shovels and buckets collected the fine material on the hill side. Subsequent corrective engineering actions were taken, including (1) installation of a 15-foot cutoff trench to avoid flow under and through the berm; (2) installation of a compacted clay barrier to prevent water from finding a preferential pathway; and (3) raising of the berm in the subject corner by ten feet.

The area of fines storage from 2011 has been fully remediated and upgraded so the incident cannot happen again. The fines on this area will be covered with overburden and vegetated as they reach final grade. In 2016 and 2017, SGI substantially upgraded the perimeter channels around the West Ridge Quarry to provide further protection from fines runoff. The new channels are much larger than the previously-installed channels, providing more freeboard for typical storm events and further preventing fines from leaving the property.

Significant additional physical improvements have been made to the stormwater systems, including those associated with the Pitts Quarry, and operational control procedures have been strengthened to provide additional protection to Toms Creek. As a result, SGI has not discharged to Toms Creek for over seven (7) years. That record of no discharge in seven years evidences the effectiveness of the physical upgrades and operational improvements, and the commitment of the company to protecting Toms Creek.

In relation to the Northern Tract mine permit currently under review, there will be no new or additional fines storage near Toms Creek as a result of the Northern Tract Quarry operation. The areas adjacent to Toms Creek in the Northern Tract are designated to be undisturbed buffer. As detailed elsewhere, the proposed stormwater control system is being designed to control and retain the equivalent of a 100-year storm without discharging to Toms Creek.

[30] See https://www.ncdc.noaa.gov/sotc/national/201105/supplemental/page-3; https://www.washingtonpost.com/blogs/capital-weather-gang/post/spring-extreme-weather-events-in-2011-in-us-historic-and-record-setting/2011/06/15/AGVMkOXH_blog.html?noredirect=on&utm_term=.f2ec81b68684.

11.2 2010 Incident

Comments:

The last major event we had in 2010 early that year, got up the next morning after we've had 9" plus rains and the creek behind the house was literally full. It was exploding at the banks and it was as running green as a gourd and I do mean green. I called DEP, I filed a complaint, I waited, I waited, and I waited, and I heard from no one. … I got in the car and I went straight up to where the settling pond was and it's kind of funny how if you get 9" of rain in a day the pond was empty. (M. Young)

Response:

SGI was contacted in March 2010 by PADEP in reference to a telephone complaint from Ms. Young, which we believe is the item referenced in this comment. At the time of the contact, the Lower Mill Pond system was operating properly. SGI is unsure what "settling pond" Ms. Young is referring to in the statement suggesting that she observed an empty settling pond. It is not physically possible for any of SGI's settling ponds to be empty after a 9" rainfall as the outlet pipes do not reach to the bottom of the ponds. Lower Mill Pond 1 typically serves as the impoundment which settles out and fills with sediment, and it is possible that the sediment captured and deposited in that pond could be observed by someone to look like there is no water in the pond. Notably, stormwater exiting Lower Mill Pond 1 flows through and is further treated in Lower Mill Pond 2 and 3 before the discharge point. Without photos of the alleged observation of the settling pond and event being referenced, it is difficult for SGI to be more definitive.

Following receiving word of this complaint, SGI did investigate conditions on Ms. Young's property, and did observe some deposits on that property. However, the source of those materials could not be determined. The storm in question had engendered significant scour of the stream, and apart from SGI's operations, the entire upstream area of Miney Branch (all of which is in metabasalt geology) can produce greenish particulate and sediment.

In recent years, SGI installed and upgraded numerous treatment and control systems leading to and through the Lower Mill Pond system to the Miney Branch Outfall 001. This includes an upgraded drainage culvert under Old Waynesboro Road, improvements to the pond riser structures, and upgraded treatment system controls. In 2016, when PADEP renewed the NPDES Permit governing discharges to Miney Branch, much stricter controls were imposed for discharges during storm events. In addition, as discussed in **Section 3.2(b)** of these Responses, SGI is planning in the near future to install additional stormwater control and treatment projects related to the Miney Branch discharge. Thus, although SGI cannot determine what was the source of the materials observed on the Young property in 2010, the SGI Lower Mill Pond / Miney Branch system has undergone major upgrades since that time.

12. Light Impacts

Comments:

Harsh light is getting ever closer to us (S. Ungar)

NIGHT LIGHT: We are concerned that the bright lights that accompany 24/7 operations, which will likely expand onto Pine Hill, will create a new hazard to humans and animals, particularly animals already persecuted, such as bats, bears, and foxes, known to inhabit Pine Hill. (Multiple commenters)

No rattlesnakes or bats are going to hang around all that blasting, crushing and bright lights. (S. Rogers-Frost)

Response:

Proposed operations at the Northern Tract Quarry would not involve the propagation off of the SGI property of “bright lights” on a 24/7 basis. At all times, the mining area will be surrounded by a wooded buffer. In addition, after initial operations, the Northern Tract quarry will be excavated to a level that creates a berm around the operating area that will block horizontal light propagation. Normal night operations at the Northern Tract would generally involve a combination of one loader and two haul trucks to load and move the rock material produced during daytime operations. The only lighting for such night operations would come from the headlights on the loader and two haul trucks; and SGI will endeavor to position the haul trucks and loading equipment to minimize propagation of light to off-site receptors. For rare occasions when additional lighting may be necessary for safety reasons, stationary lights will be positioned to minimize off-site impacts. The associated light from the limited Northern Tract night operations would thus be minimized and would not be anticipated to pose a hazard to humans or animals.

13. Reclamation Plan

13.1 Northern Tract’s Reclamation Plan Compliance with Reclamation Plan Requirements

Comments:

SGI's reclamation plan is incomplete and does not demonstrate compliance with the Noncoal Surface Mining Conservation and Reclamation Act and its implementing regulations. Pursuant to 52 P.S. § 3307(c), each application for a noncoal surface mining operation must include a "complete and detailed plan for the reclamation of the land affected." The reclamation plan must include a "detailed timetable for the accomplishment of each major step in the reclamation plan" as well as the estimated cost for each step and "total cost to the operator." Id. at §3307(c)(5). The Pennsylvania Code further requires that reclamation procedures, to the greatest extent possible, occur concurrently with the progression of the proposed operation. 25 Pa. Code §77.595(a). (FOTC/Fair Shake)

[E]ven should SGI successfully complete reclamation of Pine Hill, SGI has not proposed a higher or better land use for the mining area. Where an applicant proposes restoring

the parcel to something other than the approximate original contour, as is the case here, the applicant must demonstrate that the reclaimed land will be capable of supporting higher or better land uses than current. (FOTC/Fair Shake)

SGI has failed to set forth a concurrent reclamation plan for Pine Hill, and reclamation of existing quarries is wholly inadequate. (Multiple commenters)

Response:

Section 7 of the Noncoal Surface Mining and Reclamation Act with respect to the timing of reclamation activities, 25 Pa. Code §77.595(a) provides as follows:

> (a) Reclamation procedures, including backfilling, grading, topsoil replacement and revegetation of land that is disturbed by noncoal surface mining shall be kept concurrent with the progress of the proposed operation to the greatest extent possible in conformance with §§ 77.456, 77.592—77.594, this section, § 77.596 and the approved reclamation plan.

Under this provision, reclamation procedures must be kept concurrent with the progress of the proposed operation "to the greatest extent possible." That statutory provision recognizes that in conducting hard rock mining, where minerals must be extracted from the earth in quarry pits, "concurrent reclamation" is often not possible. Mining of metabasalt and other hard rocks is quite different than surface coal mining. In most surface coal mines, mining proceeds laterally to extract coal from a vein, and reclamation (removal of highwalls and backfilling) can likewise proceed laterally as the mining proceeds. In contrast, the extraction of metabasalt and similar hard rock materials proceeds downward, in a series of benches (i.e., levels) within a pit to extract the mineral deposit at increasing greater depth. Simply put, one cannot "reclaim" a quarry pit by refilling or recontouring it while continuing to extract minerals at lower benches and levels of the same quarry.

As explained in Module 10, SGI intends to comply with this requirement by undertaking concurrent reclamation "to the fullest extent possible that active operations allow." (Module 10, Section 10.6.) Specifically, SGI has committed to pursue the following concurrent reclamation activities: (1) using overburden from the Northern Tract to conduct concurrent reclamation activities in the adjacent Pitts Quarry, which will be approaching its mining conclusion as the Northern Tract quarry is opened; (2) returning overburden to Northern Tract pit areas "upon depletion of the rock reserve to the 12th level (elevation 740' MSL) of the mine plan"; (3) reclaiming areas that have been mined to final depth as soon as practical so long as reclamation can be conducted safely and without affecting future mining operations or sterilizing future reserves (e.g., by intercepting ramps or blocking haul roads); and (4) shaping, stabilizing and vegetating excess overburden soils concurrently with ongoing mining activities. (Module 10, Sections 10.1, 10.4.)

Second, FOTC/Fair Shake's comment that SGI "must demonstrate that the reclaimed land will be capable of supporting higher or better land uses than current," misstates the applicable regulation. Under Section 7 of the Act (52 P.S. §3307(c)(2)) and 25 Pa. Code §77.593,

applicants who choose to pursue an alternative to reclaiming to approximate original contour have ***two*** compliance options, which are contained in 52 P.S. §3307(c)(2)(ii) / 25 Pa. Code §77.593(1) on the one hand, and 52 P.S. §3307(c)(2)(iii) / 25 Pa. Code §77.593(2) on the other. Under the first option, the applicant must demonstrate (among other requirements) that under the chosen alternative the land affected will be "capable of supporting ***the highest or best use it can reasonably support***" after mining and reclamation is completed. 52 P.S. §3307(c)(2)(ii); 25 Pa. Code §77.593(1)(vi) (emphasis added). Under the second option, the applicant must demonstrate (among other requirements) that "the operation will restore the land affected to a condition capable of supporting the uses it was capable of supporting prior to any mining ***or to any higher or better use***." 52 P.S. §3307(c)(2)(iii); 25 Pa. Code §77.593(2) (emphasis added).

In its application, SGI chose the first of the two options. Under §77.593(1), the chosen alternative to reclaiming to approximate original contour must be capable of supporting the highest or best use ***that can reasonably be supported*** – ***not*** to a higher or better land use than current. As explained further in Module 20, SGI's proposed reclamation plan provides for the highest and best use that can reasonably be supported under the Township's conditional use approval, which requires a post-mining reclamation use that provides wildlife habitat. SGI has proposed to convert the land to an unmanaged water impoundment surrounded by forestland (the pre-mining land use), which will support fish and wildlife habitat, serve to protect the watershed, and provide opportunities for a variety of other beneficial uses (e.g., fishing, boating, irrigation, fire protection, and water supply). As set forth in the conditional use zoning approval issued by Hamiltonban Township, the reclamation plan provides for provision of access to the water in reclaimed quarry pit for firefighting and other purposes. SGI's proposed post-mining use is consistent with Appalachian Regional Reforestation Initiative's Forestry Reclamation Approach to encourage rapid succession and accelerate development of high quality post mining forests. This approach satisfies the requirement that SGI institute an alternative to original contouring that supports the highest or best use that can reasonably be supported after mining is complete.

With respect to the comment concerning requirements for reclamation plans estimating the "total cost to the operator," the proposed reclamation plan for the Northern Tract and the previously approved reclamation plans for the West Ridge Quarry and currently operating Pitts Pond Quarry all include detailed reclamation cost estimates which are part of PADEP's full-cost bonding program under the Noncoal Surface Mining and Conservation Act and 25 Pa. Code Ch. 77, Subch. D requirements. Specifically, §77.202 provides for the bond to be posted by an operator to reflect "the estimated cost to the Department if it had to complete the reclamation, restoration and abatement work required under the act …." For the Northern Tract Quarry, those cost estimates are provided in Module 10. PADEP may require operators to periodically update those cost estimates and adjust the amount of the required reclamation bond, and SGI will of course comply with any such requests.

13.2 Pitts Quarry Reclamation

Comments:

SGI-owned quarries adjacent to the proposed Northern Tract remain un-reclaimed years after mining has been completed. SGI proposes stockpiling overburden soils from the Northern Tract in "abandoned portions of the Pitts Quarry" as "an efficient method to incrementally reclaim an area adjacent to the Northern Tract Quarry." Id. Yet, SGI does not acknowledge that mining in portions of the Pitts Quarry concluded by 1996 and remain un-reclaimed. (FOTC/Fair Shake)

I would also ask that you look at what SGI has promised in the past when it comes to reclamation. You know, there's a huge, huge area that is, has been destroyed that we have not reclaimed or made very little effort to do so, and I would ask they make effort and maybe support jobs doing reclamation before we allow them to destroy another mountain environment. (L. Whitcam)

We know next to nothing about the reclamation plans for the 800-plus acres that SGI is mining. Has anything been reclaimed? (Multiple commenters)

[D]oes calling this mining of Pine Hill - Northern Tract - a continuation of its previous operations delay the reclamation of the now-gigantic scar from the already existing mine? Will we live to see it reclaimed? (S. deVeer)

Why is DEP not requiring SGI to completely reclaim the West Ridge Quarry before going forward with a permit process for a new quarry? And why is DEP not requiring concurrent reclamation of the Pitts Quarry? If SGI is establishing a new quarry this should not be allowed until they have finished reclaiming an inactive one. If the "Northern Tract" is not a new mine, then they are illegally expanding an existing mine. (S. Rogers-Frost)

Response:

The FOTC/Fair Shake comments appear to misunderstand the current status of Pitts Quarry. Contrary to the FOTC's statement that Pitts Pond quarry mining ended in 2006, in fact Pitts Quarry is still in active operation. Currently, mining in Pitts Quarry has reached Level 7, and is planned to proceed downward over the next several years to Level 10.

West Ridge Quarry ceased in 1996. The approved reclamation plan for the West Ridge Quarry Pit provides for reclamation in the following manner: fine crushed rock will be backfilled until it has filled to the quarry rim. After that point, the material will be placed in small lifts and compacted and shaped into a pile or mound. The shape of the pile has been refined to provide land-form continuity with the top of the Advance Quarry Reclamation area. The final overall slope of the fill will have an overall grade of 3:1. Upon reaching final configuration in each portion of the pile/mound area, the outer slopes are reclaimed with soil and seeded to prevent erosion. Once placement of the material in the pile/mounded area is completed, the approved reclamation plan consists of planting grasses and completing reforestation activities. The backfilling of the West Ridge Quarry has already begun.

14. Best Practices

Comments:

What I do want is for the DEP to make sure that our local mine operates with all the best practices. We're better than best practices. (S. deVeer)

Response:

As documented throughout its mining application and further explained in these responses to public comments, SGI has adopted and is implementing a wide range of best management practices that meet and go beyond compliance with applicable environmental regulations. Those best management practices include, for example: (1) erosion and sedimentation control best management practices described in Module 12; (2) best management practices for control of dust and airborne particulate, consistent with requirements of the Pennsylvania air regulations and the Air Quality Operating Permit for the facility; (3) the design and implementation of stormwater management measures to avoid discharges to high quality waters except under circumstances equivalent to a 100-year storm; (4) measures as in the design and performance of blasting activities that go beyond regulatory standards, as described in **Section 4.1** of these responses; (5) implementation of a forested buffer around the Northern Tract, and a minimum 300 foot buffer from Tom's Creek and its tributaries; and (6) implementation of both operational practices and equipment improvements to reduce noise generation and propagation, as described in **Section 6.3** of these Responses. SGI has gone well beyond current regulatory mandates and generally-accepted practices in the mining industry, and at the same time is committed to a process of continuing improvements.

15. SGI's Acquisition of Northern Tract

Comments:

SGI engaged in a surreptitious and secret land swap to acquire land for the Northern Tract. (S. Ungar, S. deVeer)

Through surreptitious land swaps and purchases and other mysterious goings-on, the mining company now known as SGI has become more and more of a presence - and a menace. (S. Unger)

We were made aware of the secret deal between then-ISP (now SGI) and DCNR to acquire Pine Hill back in 2011. The circumstances of this land swap were kept under wraps until members of the public (taxpayers who paid for the land in question, thinking it would be conserved as part of Michaux State Forest) read about it in a newspaper. (F. & L. Shivers, et al.)

Response:

The land exchange transaction between ISP Minerals, Inc. ("**ISP**") (now known as SGI) and the Pennsylvania Department of Conservation and Natural Resources ("**DCNR**") was neither surreptitious nor secret. The transaction was approved by two public agencies in a process that

involved public notice and comment, discussion at public meetings and a public informational meeting held by DCNR to receive comments.

By way of background, until 2008, what is referred to as the Northern Tract property consisted of a series of parcels (the "**Glatfelter Property**") owned by Glatfelter Pulp Wood Company (the "**Glatfelter**"). In March 2008, Glatfelter conveyed the property to The Conservation Fund ("**TCF**"), in a transaction financially assisted by Adams County. Two years later, TCF conveyed the Glatfelter Property to DCNR. The Glatfelter Property, as conveyed to DCNR, comprised an approximately 112.2 acre property, bounded by roads on three sides (west, north and east) and the SGI facility to the south.

DCNR was desirous of acquiring a series of other privately-owned properties located within or contiguous to Michaux State Forest, including (1) the ~63.9 acre property owned by Stephen Sleightholm, (2) the ~21.8 acres property owned by J. Martin Benchoff, Jr., and (3) the ~30.1 acre property owned by Darrell Nagle and Denise Ann Kittinger (the "**Exchange Parcels**"), totaling approximately 115.9 acres.[31] ISP subsidiaries negotiated and obtained rights to acquire the Exchange Parcels. In October 2010, DCNR and ISP entered into a Land Exchange Agreement (**Appendix 15.1**) providing for the exchange under which DCNR would obtain the Exchange Parcels (thereby filling in holes within the Michaux State Forest) in exchange for conveyance of the Glatfelter Property to ISP. The Exchange Agreement was subject to a series of contingencies, including requirements for a series of legal approvals, including approval by Adams County.

As part of the Exchange Agreement, DCNR rendered the explicit "opinion that the collective value of the Sleightholm Land, the Benchoff Land and the Nagle Land to be acquired by DCNR from ISP … is equal to or exceeds the value of the DCNR Exchange Land to be transferred from DCNR to ISP, that the Sleightholm Land, the Benchoff Land and the Nagle Land are as well adapted to State Forest purposes, and that the exchange will be to the advantage of the State Forest interests, which findings are made in accordance with the provisions of 32 P.S. § 131, *et seq.*" *Id.* at pg. 2.

On December 29, 2010, at an advertised public meeting, the Adams County Commissioners initially approved the proposed exchange transaction, as documented in a letter to DCNR of that same date (**Appendix 15.2**). On January 22, 2011, DCNR published notice of the proposed land exchange in the Pennsylvania Bulletin, inviting public comment on the proposed transaction. 41 Pa. Bulletin 524 (Jan. 22, 2011) (**Appendix 15.3**). That notice established a 30-day public comment period, and further provided that if a significant amount of public concern develops, DCNR might schedule a public informational hearing. Public notice was also advertised once per week for a period of three consecutive weeks in newspapers located in proximity to the proposed exchange, including newspapers in Waynesboro, Chambersburg, Gettysburg and Hagerstown MD. DCNR subsequently noticed and held a public meeting on the

[31] It should be noted that the parcel acreage listed in the October 2010 Exchange Agreement was an approximately prior to survey. The acreages listed in this sentence reflect the land areas as subsequently determined by surveys and reflected in the recorded deeds.

proposal on February 15, 2011.[32] Through the public comment and public meeting process, DCNR received some 278 comments, which the agency summarized in a published Summary of Public Comments.[33] (**Appendix 15.4**).

Following receipt of those public comments, the Adams County Commissioners recommended additional conditions to the exchange, which ISP agreed to by letter dated July 19, 2011 (**Appendix 15.5**), including establishment of a buffer from Toms Creek, and ongoing efforts to maintain the quality rating of Tom's Creek and its tributaries.

Thus, over a period of many months, the exchange transaction was publicly noticed, commented on, debated, and modified by the addition of a number of supplemental conditions and commitments, before it was ultimately approved by two public agencies (Adams County and DCNR).

[32] "Large crowd attends land swap info meeting", Gettysburg Times, Feb. 16, 2011, available at: https://newspaperarchive.com/gettysburg-times-feb-16-2011-p-1/ .

[33] Available at: http://docplayer.net/6600446-Proposed-land-exchange-between-the-dcnr-bureau-of-forestry-and-isp-minerals-inc.html .

LIST OF APPENDICES

Appendix 15.3 - PA Bulletin Notice of Proposed Exchange of Land

Appendix 15.4 - DCNR Summary of Public Comments

Appendix 15.5 - Letter from ISP to DCNR and Adams County