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January 30, 2020

Michael J. Kutney, P.G.
Chief of Permits & Technical Section
Pottsville District Mining Office
PA Department of Environmental Protection
5 West Laurel Boulevard
Pottsville, PA 17901-2454

**RE: Comments dated December 23, 2019, from Steve Baluh, P.E.
Regarding the "Qualitative Geologic Survey Report" dated November 15, 2019
Rock Hill Quarry (Pierson Materials/Hanson Aggregates)
East Rockhill Township, Bucks County, PA**

Dear Mr. Kutney:

I am providing the following comment responses to East Rockhill Township's (Township's) letter of December 23, 2019, authored and signed by the Township's Engineer, Mr. Steven Baluh, P.E., which was addressed to your attention. The comments concern the Qualitative Geologic Survey Report (QGSR) that I submitted to your office on behalf of Hanson Aggregates Pennsylvania, LLC (Hanson). The comments provided by Mr. Baluh are repeated below *in italics*, followed by comment responses in **bold**.

I must initially note that Mr. Baluh's comments are not typical technical comments related to the data and investigations provided, but are instead a repeated attack on the professionalism of Hanson and Hanson's consultants and further include topics well outside his area of professional practice. Notably, Mr. Baluh is not a geologist. The allegations are purposefully sensational, often totally unsupported, and raise concerns regarding his expertise and his ability to analyze geologic data and information in a balanced and professional manner. I am providing the following detailed responses to the aforementioned comments based upon the data and reports provided to the Pennsylvania Department of Environmental Protection (PA DEP) and the Township. The responses are referenced to the reports and data provided to the PA DEP as appropriate.

East Rockhill Township: *The data and conclusions presented in the QGSR are based on a deficient characterization of the Site, and therefore cannot be used as a basis on which to assess the risk from exposure to naturally occurring asbestos ("NOA"). The deficient characterization of the Site, particularly in the areas planned for blasting, has been the subject of numerous and repeated comments from the Pennsylvania Department of Environmental Protection ("PADEP"), the Township, and other concerned parties. The Township, in particular, submitted comments on the Qualitative Geologic Survey Sampling Plan ("QGSSP") on April 17, 2019 and April 30, 2019, explaining that the QGSSP is inadequate to delineate the presence of asbestos at the Site. Hanson and its consultants (collectively,*

"Hanson") have chosen to ignore these comments outright, or have attempted to circumvent them by submitting insufficient information to PADEP.

RESPONSE:

The characterization completed at the site was performed in accordance with the work plans approved by PA DEP, as detailed in the QGSR report (see QGSR Page 3, Section 2.2). To the extent there are ongoing questions, they are being addressed by Hanson and Hanson's consultants. There has been extensive work completed at the site, and Hanson and their consultants have not chosen to "...ignore these comments outright or circumvent the process..."

East Rockhill Township: The rock corings performed in the two target benches did not intercept most of the known mineral veins present in that area, and as such, no sample analysis or mineralogical descriptions of those veins were ever provided. This concern was first identified by PADEP in its April 12, 2019 comments and by the Township in its April 17, 2019 comments on the QGSSP. In a discussion on April 19, 2019 and in an April 22, 2019 email, PADEP stated that this concern had not been adequately addressed and instructed Hanson to address the Township's comments. In its April 25, 2019 response, Hanson stated that the cores would be drilled to intercept as many potential veins as practical, and if the results indicate the presence of NOA-containing veins, additional sampling may be proposed. However, the boring location plan submitted as part of Hanson's response showed that many of the veins known to be present from the bench face-mapping and suspected to contain NOA were never intended to be intercepted by any corings. Furthermore, coring B-2 was intentionally located to avoid intercepting any known veins. The Township identified this insufficient characterization to PADEP in letters dated April 17, 2019, April 30, 2019, and September 11, 2019, and requested that additional corings be proposed and samples of the veins be collected from the bench faces. By intentionally avoiding these known features suspected to contain NOA, Hanson has biased the results of the site characterization away from identifying NOA.

RESPONSE:

The above comments are contrary to the facts and contents contained in the QSGR, supporting documents and submittals made to the PA DEP on behalf of Hanson. First, Mr. Baluh is not a geologist and his comments go well beyond his area of expertise. Second, in fact, based upon the geology, the investigation was biased towards intercepting mineral veins, not intentionally avoiding such veins.

The rationale for choosing the boring locations is detailed in Earthres Group, Inc.'s (EARTHRES') April 25, 2019 Response to PA DEP and East Rockhill Township's comments and on QGSR Page 11, Section 4.3. Specifically, geological field mapping and analysis of the mapped mineral vein features was completed to orient the core drilling in a direction to intercept mineral veins.

Also provided therein were photographs of the mapped features that are keyed to their locations on each bench. The subsequently proposed coring locations and mapped features are shown in map view on Figure 1 in the April 25, 2019 EARTHRES response document. The corings were drilled on an approximately 30-degree angle from vertical with an azimuth of approximately N45W. This drilling direction is perpendicular to the expected vein orientation and enabled the intersection of as many features as possible. To purposefully avoid drilling into the mineral vein features, as alleged by Mr. Baluh, drilling would need to have been completed in a direction parallel to the mapped features (N45E or S45W). This is obviously not what was completed in the field. Furthermore, the drilling plan was approved by PA DEP and overseen in the field by PA DEP Professional Geologists, Professional Geologists from EARTHRES, and a Professional Geologist from Hanson. Similarly, the identification and selection of boulder veins were overseen by professional geologists from PA DEP and EARTHRES. To allege, in no uncertain terms, that the mineral veins “...suspected to contain NOA were never intended to be intercepted by any corings...” is wholly inconsistent with the presented geology as reviewed by several professional geologists.

Mr. Baluh additionally alleges that “...coring B-2 was intentionally located to avoid intercepting any known veins...”. This statement is purposefully misleading and shows a lack of geological understanding as to why the Coring B-2 location was chosen. As provided in EARTHRES’ April 25, 2019 Response to Comments document: “Coring B-2 is proposed in an area where face-mapped features are not projected to be present, thus providing additional geological coverage.” Provided the mapped azimuth of the potential mineral vein features (N45E), placement of coring B-2 and drilling at an azimuth of N45W was completed to ascertain if additional vein features were present in the area that were not covered by the bench-face mapping (see Figure 1 in the April 25, 2019 EARTHRES response document). The boring was specifically drilled to assess the potential presence of vein features on Bench 1. Again, to purposefully avoid intercepting potential mineral vein features, as alleged, would require drilling in a direction parallel to expected orientation of the mineral veining. Drilling parallel to the expected orientation of the mineral veining was purposefully not completed, and the allegations made by Mr. Baluh are demonstrably incorrect.

The commenter ends this section of his letter stating “By intentionally avoiding these known features suspected to contain NOA, Hanson has biased the results of the site characterization away from identifying NOA.” This allegation, as shown by examining the geological nature of the deposit and investigations completed, is false and unsupported.

East Rockhill Township: *The results of this intentional bias are now apparent in the QGSR and other representations that Hanson has made to PADEP. In an October 3, 2019 letter, Hanson stated that the Township's request for additional characterization is based on faulty data generated by PADEP's contract laboratory, which is false. The Township's request was based on figures and information developed by Hanson itself, prior to the generation of any laboratory data. Hanson's letter went on to state that, based on the drill core data, the amphibole veins in the deposit represent approximately 0.4% of the possible rock to be quarried. Of course, if the drill cores were placed to avoid intercepting the*

known mineral veins, this figure is biased low. Sections 2.4 and 4.3 of the QGSR state that the core location and drilling angles were selected to maximize encountering as many mineral veins as possible, which is false, for the reasons explained above. The conclusions of the QGSR incorrectly state that sampling at the Site was biased towards NOA detection, but, to the contrary, the rock coring and subsequent vein sampling were biased away from NOA detection. The conclusions go on to represent the calculated average asbestos content of the rock as an overestimate. Notwithstanding the analytical deficiencies addressed below, Hanson's repeated and intentional failure to address PADEP's and the Township's concerns regarding the number and spacing of the rock corings demonstrate that the estimate of the NOA present in the area planned for blasting and mining is underestimated and should not be used for risk-based decisions.

RESPONSE:

Significant sampling and analysis (N=99, not including water samples) was completed at the site over the course of approximately two (2) years. A significant portion of the sampling completed was biased sampling: biased towards mineral veins, where if NOA was present, it would be found. That NOA was not found or found only in trace amounts further supports Hanson's position.

East Rockhill Township: *The data and conclusions presented in the QGSR are based on an inappropriate definition of "asbestiform" and inappropriate analytical methodology, and therefore cannot be used as a basis on which to assess the risk from exposure to NOA. The inappropriate definition and analytical methods that Hanson continues to rely upon have been the subject of numerous and repeated comments from the Township and others, including the U.S. Environmental Protection Agency ("EPA"). Despite being made aware of these issues, Hanson has chosen to ignore these comments outright, or has attempted to circumvent them by submitting inaccurate or irrelevant information to DEP, most recently in its November 25, 2019 letter.*

RESPONSE:

Hanson and their experts have not chosen to ignore the comments provided but have been providing data and evaluation of the collected site data. Of note, mining at the site has ceased until the evaluations are completed.

Hanson through its consultant, RJ Lee Group (RJLG), in its letters dated November 25, 2019 and January 14, 2020, has provided clear and unambiguous NOA terminology, definitions, and corresponding regulation references, including US EPA definitions pertaining to asbestos. Also provided were the appropriate definitions and regulations for asbestos as additionally regulated by the Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA), as well as the appropriate analytical methods to be used for asbestos analysis. The reader is directed specifically to pages 4 and 5 of RJLG's November 25, 2019 letter in response to the above comments.

East Rockhill Township: *On September 20, 2019, the Department issued a letter to Hanson requesting that Hanson: (1) conduct transmission electron microscopy ("TEM") using EPA Method 600/R-93/116 (or equivalent) analysis for asbestos on all rock samples collected at the Site; (2) prepare suitable samples for petrographic analysis; resample at all the water sampling locations using EPA Method 100.1; and (4) by October 7, 2019, provide the sample locations (boulder, core and aggregate) for all rock samples. To our knowledge, Hanson has still not responded to items 1-3 listed above. On October 30, 2019, the Township sent a letter to the Department requesting that the Department follow up on these requests. The Township reiterates its request for Hanson to be required to respond, in full, to the Department's letter of September 20, 2019.*

RESPONSE:

As previously stated, mining is currently ceased at the site, and Hanson, through its experts, is in the process of responding to the PA DEP's and Township's comments in a manner that is professional and appropriate.

East Rockhill Township: *Hanson continues to rely on an overly narrow definition of 'asbestiform' that is contained in EPA/600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Obviously, the material at issue is not a Bulk Building Material, and this is not the appropriate analytical method to use or to reference in this case. The definition that Hanson wishes to use would exclude any fibers less than 5 μm in length, regardless of aspect ratio, and any longer fibers with an aspect ratio lower than 20: 1. However, Hanson fails to acknowledge that the same definition they wish to rely upon also contains the language, "Some asbestiform minerals may lack the properties which make asbestos commercially valuable, such as long fiber length and high tensile strength," which indicates that there are asbestiform minerals with a shorter fiber length and lower aspect ratio which are not regularly incorporated into bulk building materials. This does not mean that these minerals are not hazardous or that PADEP has no authority to regulate them. It only means that the EPA/600/R-93/116 method was designed as a more efficient means of screening bulk building materials for asbestos content, to determine whether proper disposal and OSHA abatement standards apply. As PADEP is aware, and as described in the Township's October 30, 2019 letter, EPA specifically rejected Hanson's previous attempt to rely on this definition for analysis of NOA as "inappropriate and contradictory."*

RESPONSE:

Please refer to our prior response. Hanson through its consultant, RJLG, in its letters dated November 25, 2019 and January 14, 2020, has provided clear and unambiguous NOA terminology, definitions, and corresponding regulation references, including US EPA definitions pertaining to asbestos. Also provided were the appropriate definitions and regulations for asbestos as additionally regulated by OSHA and MSHA, as well as the appropriate analytical methods to be used for asbestos analysis. The reader is directed specifically to pages 4 and 5 of RJLG's November 25, 2019 letter in response to the above comments.

In reply to the above assertion that "...EPA specifically rejected Hanson's previous attempt to rely on this definition for analysis of NOA...", Mr. Van Orden has indicated the following:

"It is incorrect to suggest that the US EPA has commented on any matter regarding the Rock Hill Quarry. All analyses were conducted in accordance with published EPA methods. RJLG has worked with the EPA on asbestos analytical issues for more than 30 years. Rich Lee was on the review committee for the 1984 EPA TEM method (the Yamate method), and four RJLG employees were on the committee that wrote the AHERA analytical procedure. RJLG personnel have also served on other method-writing committees (i.e., ASTM, NAS, USP, and ISO). The procedures used by RJLG to differentiate asbestiform amphibole from their non-asbestiform counterparts was approved for use by the EPA in the study conducted at the Sparta, NJ quarry. RJLG has a long history of providing asbestos analyses to various branches of the Federal government, including the EPA, the Department of Defense (DOD), the US Post Office, the Food and Drug Administration (FDA), and OSHA. These analyses have resulted in published EPA reports (such as 'Assessing Asbestos Exposure in Public Buildings', EPA 560/5-88-002), which are seminal to our understanding of asbestos in the environment. RJLG worked extensively on World Trade Center recovery efforts in close association with Region 2 of the EPA. EPA Region 9 did criticize our data evaluation of their El Dorado analyses. RJLG responded to that criticism with extensive notes and data documenting techniques, definitions, and procedures – all of which have been accepted by the EPA since there was no further response from them."

East Rockhill Township: Hanson's November 25, 2019 letter claims that EPA provided no regulatory definition of "asbestiform," which is false. The two methods found in Appendix A to 40 CFR Part 763 (which regulation Hanson has specifically referenced in their letter) both contain a definition of asbestiform that is much broader than the one for which Hanson is advocating. Notably, each of these promulgated methods rely on TEM, which is more sensitive but takes longer than Polarized Light Microscopy ("PLM"). The promulgated TEM methods contain the following definitions:

- *Asbestiform – A specific type of mineral fibrosity in which the fibers and fibrils possess high tensile strength and flexibility.*
- *Aspect ratio – A ratio of the length to the width of a particle. Minimum aspect ratio as defined by this method is equal to or greater than 5: 1.*
- *Fiber – A structure greater than or equal to 0.5 μ m in length with an aspect ratio (length to width) of 5: 1 or greater and having substantially parallel sides.*

RESPONSE:

Please refer to our prior response. Hanson through its consultant, RJLG, in its letters dated November 25, 2019 and January 14, 2020, has provided clear and unambiguous NOA terminology, definitions, and corresponding regulation references, including US EPA definitions pertaining to asbestos. Also provided were the appropriate definitions and regulations for asbestos as

additionally regulated by OSHA and MSHA, as well as the appropriate analytical methods to be used for asbestos analysis. The reader is directed specifically to pages 4 and 5 of RJLG's November 25, 2019 letter in response to the above comments.

East Rockhill Township: *Additionally, Hanson's water samples were analyzed via EPA methods 100.1 and 100.2, which each define a minimum aspect ratio of 3: 1. Method 100.2 is designed to only detect asbestos structures over 10 µm in length. Method 100.1 is designed to detect all asbestos fibers, and notes that asbestos fibers range in length from 0.1 µm to over 20 µm. However, Hanson used a modified version of this method to only detect fibers greater than 5 µm in length (for reasons that remain unknown), while still using a minimum aspect ratio of 3: 1. Although Hanson has used these methods in characterizing the Site, and apparently requested a modification of method 100.1 to further reduce asbestiform detections, they failed to reference these promulgated definitions in their November 25, 2019 letter.*

RESPONSE:

There is no promulgated US EPA method for non-potable water (regardless of the source). It is my understanding that RJLG used both US EPA-issued water methods for these analyses. Initially, RJLG used Method 100.2 and counted asbestos fibers 10 µm and longer. In response to a request from the PA DEP to address the issues related to risk evaluation should this water be used as a spray, RJLG re-analyzed the water samples looking for the asbestos fibers that RJLG knows are appropriate for various inhalation risk models, which are fibers 5 µm and longer. Drew Van Orden of RJLG has indicated that fibers greater than ≥ 5 µm in length are used in both US EPA's and OSHA's risk models, see:

EPA Iris Asbestos CASRN 1332-21-4:

https://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nmbr=371

Mr. Van Orden has further provided references^{1,2,3} herein to substantiate his position. Mr. Van Orden further notes:

“Analysis of materials should be targeted toward those fibers that have been shown to cause an increase in risk, hence the use of the minimum length of 5 µm for the non-potable water analyses.”

Mr. Van Orden has confirmed that the RJLG selected the analytical method and that Hanson was not involved in that process. Mr. Van Orden further verifies that the methods used counted and

¹ Eastern Research Group (2003). *Report on the Expert Panel on Health Effects of Asbestos and Synthetic Vitreous Fibers: The Influence of Fiber Length*, prepared for: Agency for Toxic Substances and Disease Registry Division of Health Assessment and Consultation, March 17, 2003.

² D. W. Berman and K. S. Crump (2008). “A Meta-Analysis of Asbestos-Related Cancer Risk That Addresses Fiber Size and Mineral Type,” *Critical Reviews in Toxicology*, **38**, p. 49-73.

³ J. T. Hodgson and A. Darnton (2000). “Occupational Hygiene Society. “The Quantitative Risks of Mesothelioma and Lung Cancer in Relation to Asbestos Exposure,” *Annals of Occupational Hygiene*, **44**, p 565-601.

reported all particles 5 µm and longer (regardless of habit), thus allowing any user to re-evaluate the data as needed.

East Rockhill Township: *Although Hanson's consultant, RJ Lee Group, has been aware since 2006 that the EPA/600/R- 93/116 definition of "asbestiform" is inappropriate and contradictory in the context of characterizing NOA, and although Hanson references several other analytical methods and regulations that do contain more appropriate definitions and more sensitive analytical techniques, it has failed to disclose these facts to PADEP in further effort to bias the results of the Site characterization away from the detection of NOA. The large difference between Hanson's and PADEP's split sample results clearly demonstrate that the analytical technique and the morphological definition of asbestiform can have a dramatic effect on the reported results. The regulations and experts in this field, including those at EPA, have repeatedly demonstrated that using TEM in conjunction with a broader definition of asbestiform is appropriate when assessing the presence of NOA to inform risk-based decisions. Hanson's continued reliance on a restricted and inappropriate definition of "asbestiform" further renders the data and conclusions contained in the QGSR unrepresentative of site conditions and inappropriate for purposes of assessing health risks and evaluating emissions control practices.*

RESPONSE:

Regarding the above comment, Mr. Van Orden has indicated the following:

"I am surprised that Mr. Baluh is aware of what RJLG knows or does not know as of 2006. If Mr. Baluh is referencing the EPA response to the El Dorado Hills project, then he is missing much of the information that is relevant. Please refer to my above response on this matter."

"Mr. Baluh seems to think that the only reason for discrepancy between two laboratories' results is due solely to the definition of asbestos. All analyses conducted by the RJLG were completed in accordance with promulgated procedures and our more than 40 years' experience and research on amphibole minerals."

East Rockhill Township: *Throughout its correspondence with PADEP, Hanson has intentionally avoided providing complete and accurate information as part of a concerted effort to bias the results of the QGSR away from the detection of NOA and to further obfuscate any meaningful discussion of these issues. Because of the inherent bias present from the initial site characterization and continuing through the laboratory analysis of samples, the data and conclusions presented in the QGSR cannot be relied upon by PADEP or others to make important decisions regarding health risks associated with the Site. Until these overarching issues are resolved, any such decisions rendered with respect to risks presented by NOA at the Site would be premature and irresponsible.*

RESPONSE:

The QGSR submitted by Hanson and completed under the direction of a professional geologist contains significant and useful geologic information regarding the Rock Hill Quarry. The geologic

analysis contained in the QGSR is supported by significant research and analytical results. The Township's engineer, who is not a geologist, has submitted comments to the PA DEP that are sensational, inaccurate, and often totally unsupported by existing geologic information. Hanson respectfully requests that the PA DEP consider those factors in determining the appropriate weight and value to be assigned to the Township's comments.

I trust that the information provided herein sufficiently responds to comments presented in the East Rockhill Township letter dated December 23, 2019. If you have any questions regarding the comment responses, please contact me at (800) 264-4553.

Sincerely,
Earthres Group, Inc.



Louis F. Vittorio, Jr., P.G.
Vice President

cc: Steven Baluh, P.E., C. Robert Wynn Associates, Inc. (via email)
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