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December 17, 2020

Morrie Lewis
Permit Writer, Air Quality Division
Idaho Department of Environmental Quality
1410 North Hilton
Boise, ID 83706

Subject: **Permit No. P-2019.0047 Project 62288 – Facility ID No. 085-00011**
Midas Gold Idaho, Inc., Stibnite Gold Project
Response to IDEQ's November 20, 2020 Request for Information

Dear Mr. Lewis:

Midas Gold Idaho, Inc. (Midas Gold) is providing the following information requested by the Idaho Department of Environmental Quality (IDEQ) on November 20, 2020 regarding the Stibnite Gold Project (SGP). This information is provided to support IDEQ's responses to comments on the Midas Gold's Air Permit to Construct (PTC) for the SGP. Several responses below refer to the HAP/TAP Addendum report (Addendum), submitted to IDEQ separately. The Addendum contains the hazardous air pollutant (HAP) and toxic air pollutant (TAP) emissions calculations provided in the PTC application and supplements that information to support comment responses.

IDEQ Request 1: *Comments were received concerning the location of and emissions from landfarming operations, discussed in Section 8.7.4 of the Plan of Restoration and Operations (PRO).*[1] *Please confirm whether or not landfarming will be conducted onsite.*

MG Response: The potential for onsite landfarming to remediate petroleum-contaminated soils encountered during construction and operation of the SGP is mentioned in Section 8.7.4 of Midas Gold's Plan of Restoration and Operations. Currently, Midas Gold does not intend to conduct landfarming onsite; therefore, emissions from this activity were not included in the PTC application.

IDEQ Request 2: *Comments were received concerning the location and emissions of the tailings storage facility (TSF). The location identified in Figure 1 of the application suggests a single location next to the Hangar Flats Development Rock Storage Facility (DRSF). Please confirm the location and estimates of criteria pollutant, hazardous air pollutant (HAP), and toxic air pollutant (TAP) emissions.*

MG Response: The SGP will have one TSF, as identified in Figure 1 of the PTC application, in the Meadow Creek drainage upstream of the Hangar Flats pit and adjacent (west of) the Hanger Flats DRSF. The TSF has the potential to emit mercury and hydrogen cyanide (HCN) due to evaporative flux. The mercury

[1] *"Stibnite Gold Project Valley County, Idaho Plan of Restoration and Operations," Midas Gold Idaho, Inc., September 2016. (ref. Midas Gold 2016; 2020AAG205)*

emissions calculations were provided in the PTC application, Appendix B of Attachment A, page 59. These mercury calculations and the HCN emissions calculations are included in the Addendum.

Spent ore from the mill will be pumped (not hauled) to the TSF as thickened tailings slurry. This process will not create criteria pollutant nor HAP/TAP emissions. The majority of the TSF surface will be either wet beach or a supernatant liquid, with some dry areas. The dry beach areas were modeled using EPA's wind erosion equations in AP-42 Section 13.2.5, *Industrial Wind Erosion*. These equations predicted that a fastest-mile wind speed of over 19 meters per second (m/s) is required to cause windblown dust from a flat, dry tailings surface. Based on the SGP's onsite meteorological data, the highest fastest-mile wind speed recorded is only 12.5 m/s. Therefore, windblown dust and dust metal emissions from the TSF will be insignificant.

IDEQ Request 3: *Comments were received concerning potentially missing metal HAP and TAP emissions estimates from the lime kiln, Sb circuit, and fugitive sources of process materials including disposal areas, tailings, stockpiles, and lime kiln operations. Please address whether all HAP and TAP were addressed from such sources or provide sufficient justification for exclusion. Potential emissions of mercury from the lime kiln should also be addressed.*

MG Response: The metal HAP and TAP emissions calculations provided in the PTC application are included and supplemented in the Addendum. The Addendum contains metal HAP and TAP emissions calculations from fugitive sources, ore processing, and limestone, lime, aggregate, and concrete production. This also includes HAP, TAP, and mercury emissions from the lime kiln.

The Sb circuit proposed in the PTC application has been replaced with a new dewatering/packaging circuit. The new circuit eliminates the potential for metals emissions from dust and mercury evaporation emissions from concentrate heating. Instead, the antimony concentrate will be dewatered using a filter press and then bagged as a wet (damp) product. There are no HAP/TAP emissions associated with this new circuit. Midas Gold requests that Sources Sb1 (Sb dryer) and Sb2 (antimony bagging – dry) be removed from the Draft PTC.

IDEQ Request 4: *Comments were received concerning the representativeness of the ore assay data relied upon[2] and the methodology used in estimating HAP and TAP emissions from material handling operations. Alternative data from a 2017 Stibnite Gold Project Baseline Geochemical Characterization Report was presented as potentially more representative for the project. Please evaluate the representativeness of these datasets and update emissions estimates as appropriate. Please also discuss use of the median ore concentrations in emissions calculations, and the locations of the cores drilled.*

MG Response: The commenter referred to the following alternative data:

> *HAP metal concentration values can be found in Table 30-7* **[3-7]** *of SRK, Stibnite Gold Project Baseline Geochemical Characterization Report (2017) at page 3-27.*

This report, Table 3-7 on page 3-27 of the 2017 Geochemical Characterization, was produced to distinguish between gold ore and development rock materials and calculated the mean metal

[2] *"Geochemistry Statistics." Email from R. McCluskey, Midas Gold Idaho, Inc. to E. Memon, Air Sciences, September 26, 2017. (ref. Midas Gold 2017c; 2020AAG205).*

concentrations from only 428 core samples. Therefore, for emissions calculations purposes, the data in this table is not representative of the metal concentrations for either ore or development rock.

The median metal concentrations used in the PTC application for emissions calculations were derived from over 55,000 core samples taken primarily from the more mineralized zones of the SGP pits (i.e., in and around gold ore deposits) and are, therefore, a more representative dataset for estimating emissions. Because gold ore will constitute only 25% of the total materials mined, these data are both more robust and more conservative when applied to mining fugitive dust.

Within the applied data set, the mean value is unduly influenced by a small number of high values in a skewed distribution. The median statistic provides a better measure of the central tendency of the data. The use of the median (or sometimes the geomean) instead of the mean for environmental data is consistent with the approach used by both EPA and IDEQ.

IDEQ Request 5: *Commenters noted that no single inventory was provided for all HAP emissions by source. Please provide an inventory of all sources of HAP and TAP, including facility-wide totals and also regulatory totals for TAP after Section 210.20 adjustment (information identifying sources "addressed by NSPS/NESHAP" would also be helpful). Comments were also received that uncontrolled HAP estimates were not provided; please provide sufficient information to confirm regulatory source classification.*

MG Response: The Addendum contains the above information.

IDEQ Request 6: *Comments were received concerning the representativeness of the autoclave data relied upon.[3] Please evaluate the representativeness and what was considered in the selection of these data. Please also address whether other process HAP emissions may need evaluated from this process and the Sb dryer.*

MG Response: Use of the Barrick Goldstrike autoclave test data for sulfuric acid and hydrogen sulfide is the best emissions data available and representative of the SGP autoclaves. The Barrick Goldstrike autoclaves are identical processes to the SGP autoclaves (they are both acidic gold ore autoclaving processes) with similar wet control systems (venturi wet scrubbers).

The Addendum report contains the process HAP and TAP emissions for the autoclave, which includes mercury and other metals, as well as sulfuric acid and hydrogen sulfide. As discussed in this report, mercury and other metal emissions calculations are based on SysCAD modeling of the SGP autoclave performed by Midas Gold's engineering contractor, M3 Engineering. This modeling is based on the following mercury control system: a venturi scrubber, a vent gas cleaning tower, a vent gas steam condensation tower, and one or more sulfur-impregnated activated carbon filters. Midas Gold requests that these controls be added to the PTC to reflect the basis for the SysCAD mercury emissions modeling.

See response to IDEQ Request 3 regarding the Sb dryer.

IDEQ Request 7: *Commenters suggest that post-mining activities should be considered. Please address whether these activities were addressed within the operating scenarios analyzed.*

[3] Source emissions test reports including Barrick Goldstrike Mines, Inc. Carlin, Nevada Facility, Permit No. AP1041-0739.02, APT, May 6, 2010 and August 28, 2013. (ref. APT 2010, APT 2013; 2020AAG205)

MG Response: Post-mining activities would not commence until mining is completed (12 or more years from now). The activities associated with post-mining will be subject to those conditions in the permit that remain applicable after mining operations are discontinued, which would include the Fugitive Dust Control Plan and other operating constraints (such as, Condition 3.5: The permittee shall haul no more than 180,000 tons per day (T/day) of ore and rock). Any new activities proposed to implement a post-mining scenario would be subject to PTC requirements.

IDEQ Request 8: *Comments were received regarding the access road length and material density of limestone used in emissions calculations and deposition modeling. Please confirm the accuracy of these values.*

MG Response: The access road length from the South gate to the Warehouse is 1.6 miles. See Figure 2, Appendix B, page 14 of the SOB. This is the length of the access road that is within the SGP operations boundary.

The limestone density was only used for particle deposition in the modeling and is not an input for emissions calculations. The low limestone dust density results in a lower particle deposition and, consequently, a higher modeled concentration. Therefore, the use of low limestone dust density in the modeling is conservative.

If you have any questions regarding this submittal, please contact me at 208-901-3053 or ahaslam@midasgoldinc.com.

Sincerely,
MIDAS GOLD IDAHO, INC.

Alan Haslam
Vice President – Permitting