Stationary and Mobile Source Emission Calculations for the NorthMet Project – Combined Report (RS57)

PolyMet Mining Inc

November 2008

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Preface

At the time of the development of the original Detailed Project Description for the NorthMet project and the RS documents submitted to provide details on specific aspects of the project related to air quality, the proposed air permitting approach for the project was to obtain separate permits for the Plant Site (Process Plant, Area 1 Shop, Area 2 Shop, Tailings Basin) and the Mine Site. This was reflected in the layout of the RS documents. Specifically, two separate reports were submitted to provide updated emission calculations in February of 2007. These reports were identified as RS57A and RS57B.

When the Supplemental Project Description was submitted in July of 2007, it had been decided to permit the project as one stationary source. Because of the changes in the project documented in the Supplemental Project Description, and to incorporate comments received at that time, it was necessary to submit another update to the emission calculations. Because the project will be treated as one facility for the purposes of issuing an air emission permit, it is desirable to include all of the emission calculations in one volume. On the other hand, to manage the level of additional effort required, and to make the review easier for those who are already familiar with RS57A and RS57B, the Plant Site and Mine Site emission calculations were kept in separate self contained report sections, but the two reports were submitted under one cover.

An additional section also was prepared: RS57C. The purpose of this section was to discuss the applicability of Prevention of Significant Deterioration (PSD) regulations and the National Emission Standards for Hazardous Air Pollutants (NESHAPS) of 40 CFR Part 63. The Part 63 NESHAPS are commonly referred to as the MACT (Maximum Achievable Control Technology) standards. The applicability of these regulations will be determined based on the emissions from the combined facility, so this section discusses emissions from both the Plant Site and Mine Site.

Due to the changes that have occurred in the emission calculation spreadsheets, the Minnesota Department of Natural Resources (MDNR), the Responsible Governmental Unit (RGU) for the NorthMet Project EIS, has requested that another updated version of the complete RS57 report be submitted. This updated report is intended to aid those reviewing the complete Preliminary Draft EIS (PDEIS) by providing the latest version all relevant emission calculations in a single report. Because the emissions from mining vehicles and locomotives have been considered in air dispersion modeling, the calculations for these sources are also included in this report in a new section identified as RS57D. The title of the overall report has been modified to reflect this addition.

As part of the EIS preparation process, alternatives to the proposed project and potential mitigation measures are being evaluated. Calculations were performed to assess the changes in air emissions associated with one alternative (Reasonable Alternative RA1 - no long term water treatment option at Mine Site) and one proposed mitigation measure (Tailings Basin Geotechnical Mitigation - use of LTVSMC tailings to build tailings basin dams). These calculations are included in this report in the RS57E Section.

Each section of this combined report uses its own set of page numbers, report section numbers, table numbers and figure numbers and has its own cover sheet and table of contents.

Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Plant Site (RS57A)

PolyMet Mining Inc

November 2008

RS57A – Company Finalizes Emission Calculations (Plant Site)
Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Plant Site
PolyMet Mining, Inc
Hoyt Lakes, Minnesota
(RS57A)

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1.0 Introduction

PolyMet Mining Inc (PolyMet) submitted updated emission calculations for the NorthMet Project Plant Site as required by the Environmental Impact Statement (EIS) scoping decision in February of 2007. This document was designated RS57A. The updated emission calculations for the Mine Site were submitted as RS57B under separate cover.

Changes were made to the proposed project after February of 2007, including an option for producing and shipping dried flotation concentrate, modifications to the Tailings Basin design to address water quality related issues, relocation of the overburden stockpile at the mine site, and a change to the proposed permitting strategy for the project (see the July 2007 Supplemental Project Description for additional information on changes to the project).

As noted above, the original emission calculation submittal for the EIS was contained in two separate reports. These two reports were updated and submitted as one report along with an additional Section, RS57C in September of 2007. The additional section addressed the proposed permitting strategy of limiting emission from the project to below the major source level under Prevention of Significant Deterioration (PSD) regulations by presenting an example of how emissions will remain below the major source level. RS57C also discussed HAP emissions from the combined project and the applicability of the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) of 40 CFR Part 63.

At the request of the Minnesota Pollution Control Agency (MPCA), the emission calculation spreadsheets were reformatted and submitted in December of 2007. Further refinements to the emission calculations have been made since then as the criteria pollutant and toxic pollutant (AERA) modeling has been completed for the project and additional comments have been received from MPCA.

The reformatted spreadsheets include additional information which made some of the tables in RS57C redundant. RS 57C now references the emission calculation spreadsheets in RS57A and RS57B.

Due to the changes that have occurred in the emission calculation spreadsheets, the Minnesota Department of Natural Resources (MDNR), the Responsible Governmental Unit (RGU) for the NorthMet Project EIS, has requested that an updated version of the complete RS57 report be

submitted. This updated report is intended to aid those reviewing the complete Preliminary Draft EIS (PDEIS) by providing the latest version all relevant emission calculations in a single report. Because the emissions from mining vehicles and locomotives have been considered in air dispersion modeling, the calculations for these sources are also included in this document in a new section identified as RS57D. The title of the overall report has been modified to reflect this addition.

As part of the EIS preparation process, alternatives to the proposed project and potential mitigation measures are being evaluated. Calculations were performed to assess the changes in air emissions associated with one alternative (Reasonable Alternative RA1 - no long term water treatment option at Mine Site) and one proposed mitigation measure (Tailings Basin Geotechnical Mitigation - use of LTV Steel Mining Company (LTVSMC) tailings to build tailings basin dams). Those calculations are included in this report in the RS57E Section.

This report reflects the current emission calculations as of the preparation of the complete PDEIS. Further changes may occur prior to the Draft EIS being put on public notice as a result of comments from the reviewers of the PDEIS. After the completion of the review of the PDEIS, PolyMet will discuss with MDNR whether or not an additional update is needed prior to the Draft EIS public notice period.

The operation at the Plant Site as proposed over the 20 year projected life of the mining operation is generally expected to remain constant, with the exception of the method by which limestone will be delivered to the plant. Limestone can either be delivered in one to two inch lump form or as a ground powdered product ready for use in the process. A final decision has not been made on which option to utilize. If the lump limestone option is chosen, then for the first one to two years limestone may be delivered by truck, while for the remainder of the projected life of the project, limestone will be delivered by railroad. The powdered limestone option may be used for the entire duration of the project or for a portion of the project life depending on economic conditions. The emission sources for both proposed lump limestone delivery methods are included in the emission calculations. Delivery of the limestone in powdered form would result in lower emissions due to the fewer number of handling steps and the absence of the need for size reduction (e.g. crushing). Under this option, powdered limestone would be transferred from railcars to existing bentonite silos pneumatically and then transferred to a mix tank where it would be mixed with water to form a slurry for use in the process. Any air vented from the pneumatic system would be filtered with a baghouse or similarly performing pollution control equipment before discharge. Because emission from the powdered

limestone option would be lower, emission calculations for this option are not presented in this report. In other words, potential emissions would be represented by the lump limestone option.

The majority of this submittal consists of a table that presents the emissions calculations for all of the stationary sources at the Plant Site (Table 1) and other supporting information. The supporting information include tables which show how emission factors were calculated for fugitive sources (Tables 2 and 3), and a series of tables which shows how the results of the air sampling completed during the 2005 pilot study were scaled up to the commercial scale process (Tables 4 through 50). Table 51 provides a list of the abbreviation used in the tables and their meaning.

A figure is also included to show the Dunka Road and other connecting road segments.

In addition to the tables and figure, brief descriptions of the emission sources, the calculation methods employed, and the sources for the data used as inputs for the calculations are all included following this introduction.

References are made in this document to several other reports that have been prepared as part of the EIS process or for other purposes related to the NorthMet Project. The report identification numbers, along with the report titles are listed below:

- RS57B - Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Mine Site (Draft-03, November 2008)

- RS39/40T – Tailings Basin Geotechnical and Design (Draft-03, August 2007)

- RS58A – Plant Site Emission Control Technology Review (Draft-02, August 2007)

- RS32 Part I - Pilot Plant Environmental Results – Part 1, Liquids and Solids Sampling Flotation Report (Draft-02, May 2006)

- RS32 Part II - Flotation Air Sampling Report (Draft-02, March 2006)

- RS32 Part III – Hydrometallurgical Process Liquids and Solids Sampling Results (Draft-02, May 2006)

- RS32 Part IV - Air Quality Related Sampling Hydrometallurgical Report (Draft-01, March 2006)

- RS13 – PolyMet Tailings Basin Water Balance Study (Draft-03, November 2007)

- ER01A – A Pilot Plant Investigation Into the Recovery of Copper, Nickel, and PGM's from NorthMet Samples

- ER01B – A Pilot Plant Investigation into Bulk Concentrate Production Samples of the NorthMet Deposit

- ER01C – Integrated Pilot Plant Investigation on NorthMet Project Samples

- ER01D – Solvent Extraction of Copper, Cobalt, and Zinc and Copper Electrowinning; NorthMet Project Samples

Most of the reports listed above are used as a source of data for the emission calculations described in this report. However, RS32 Parts II and IV include detailed information on the air quality related sampling conducted during the pilot studies, which may be of special interest to the readers of this report.

The majority of sources at the Plant Site are point sources. Some of the sources listed under the fugitive source section will be considered point sources for the purposes of determining the applicability of regulatory programs (e.g. PSD or Title V).

The emission calculation spreadsheet for the Plant Site (Table 1) includes a column that indicates whether or not each source is included in the determination of PSD applicability. There are also separate totals for criteria pollutants at the bottom of the table for PSD applicability purposes. The total facility emissions with respect to PSD requirements are discussed in detail in the RS57C section of this report.

2.1 Description of Point Sources and Potential Emissions

For the purposes of this discussion, the point sources at the Plant Site have been divided into five categories that tend to be similar in nature. The categories are: 1) the crushing plant and flotation process which includes the Process Plant operation from the ore railcar dumping to the flotation process where the sulfide minerals are concentrated. Equipment for the drying and shipping of flotation concentrate is also included in this category; 2) the Autoclaves where the valuable metals are leached from the concentrate utilizing pressure oxidation and related equipment, 3) the metal extraction processes which include the processes used to separate and recover the valuable metals from the leach solution, 4) process consumables handling sources which includes the handling, transfer and storage of the additives used in the floatation plant, the autoclaves and the metal extraction processes, and 5) combustion sources and fuel tanks, which includes boilers, heaters, emergency diesel engines and fuel oil and gasoline tanks. Note that the hydrometallurgical process includes the autoclave and metal extraction processes listed above.

Unless specified as actual emissions all emissions presented in this report are controlled potential emissions. Controlled potential emissions are the emissions resulting from operating the equipment or activity at maximum capacity all year, accounting for the proposed pollution control equipment.

2.1.1 Crushing Plant and Flotation

PolyMet has purchased the majority of the idled LTVSMC taconite plant from Cliffs Erie LLC. The primary exception is the pellet plant, which is expected to be demolished prior to the commencement of PolyMet operations. The purchase includes the existing crushing plant. The crushing plant has a capacity of approximately 100,000 tons per day. The design of the PolyMet operation reflects an

average throughput of 32,000 tons per day, which indicates that there will be a surplus of crushing capacity. However, to allow for operational flexibility, PolyMet intends to permit all of the existing crushing plant equipment. However, emission and/or operating limits will be proposed in the air permit application to limit emissions for the project below the PSD significant level (see RS57C for details).

The crushing equipment acquired from Cliffs Erie includes two primary crushers (EU 003 and EU 004), two sets of four secondary crushers and associated feeders and discharge points (EU 005, EU 006, EU 007, EU 008, EU 009, EU 010), two conveyors to coarse ore storage (EU 011, EU 012), coarse ore storage (EU 136), seven fine crushing lines and associate feeders and discharge points (EU013, EU 014, EU 015, EU 016, EU 017, EU 018, EU 019, EU 020), conveyor systems to fine ore storage (EU 021, EU 022, EU 023), two sets of fine ore storage bins (EU 137, and EU 138), and 34 feeders to feed fine ore to the milling lines (EU 024 - EU 032).

Emissions from the crushing plant consist of particulate matter (PM), particulate matter less than 10 microns (PM_{10}), fluorides, and small amounts of potentially toxic metals which are contained in the ore. Emissions were calculated for: antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, phosphorus, selenium, barium, boron, copper, molybdenum, vanadium, zinc, hafnium, and tellurium. These metals include all of the metallic Hazardous Air Pollutants (HAPs) as well as other metals that were evaluated in the Air Emissions Risk Analysis (AERA) completed as part of the Environmental Assessment Worksheet (EAW) preparation process and updated in RS38. The existing crushing plant is equipped with pollution control equipment. Much of this equipment dates from the 1950s, so it will be replaced with state of the art pollution control equipment. Details on the selection of pollution control equipment are presented in RS58A.

Controlled potential PM_{10} emissions from the crushing plant after the pollution control equipment upgrade are 81.1 tons per year. Fluoride emissions are 0.01 tons per year. The highest emissions of any toxic metal requiring evaluation were for copper at 0.3 tons per year. The highest emissions of any HAP are for manganese at 0.12 tons per year. As stated above, there will be a surplus of crushing capacity, so actual emissions from the crushing plant will be considerably lower than the controlled potential emissions.

A wet milling process is utilized so no emissions are generated from this activity. The flotation process is also wet, but additives are used which may cause emissions of volatile organic compounds (VOC). The frothers, methyl isobutyl carbinol (MIBC) and Dowfroth 250, contain VOC. Carbon

disulfide (CS_2) is a potential decomposition product of the collector, potassium amyl xanthate (PAX). CS_2 is both a VOC and a HAP. The frothers do not contain HAPs. Potential emissions from flotation are 12.92 tpy total VOC and 0.219 tpy CS_2.

The flotation process will include the option of producing two separate flotation concentrates for sale: one high in nickel and another high in copper. Lime will be added to the concentrate to raise the pH and facilitate the separation.

Equipment will be installed to dry the concentrate or concentrates produced from the flotation process and load them into bulk containers or railcars. Two screw type indirect dryers (EU 342 and EU 343) will be installed to allow for separate drying of copper and nickel concentrate. The heat source for the dryers will be electrically heated hot oil.

Particulate emissions occur from the dryers and the handling of the dried concentrate and loading it for shipping. The particulate matter emitted will have the same metals content as the concentrate.

The concentrate drying operation will only operate when all or a portion of the hydrometallurgical process is not available. The average daily ore processing rate will remain 32,000 tons. If one autoclave is undergoing maintenance, the hydrometallurgical process may be operated at roughly half capacity with the remaining flotation concentrate dried and shipped as a product.

After drying, the concentrate is transferred pneumatically in an enclosed system to one of two existing silos (EU 338 and EU 339). The concentrate is then loaded into railcars via a pneumatic system that transfers it to a Loadout Arm (EU 340). The pneumatic system will discharge through a Filter Receiver (EU 341).

Controlled potential PM_{10} emissions from the concentrate drying and handling operations are 6.6 tpy. The highest emissions for any toxic compound are for copper at 1.5 tpy. The highest HAP emissions are for nickel at 0.3 tpy.

2.1.2 Autoclaves

Two autoclaves will be installed as part of the project. In the autoclaves (EU 2012), pressure oxidation is conducted in the presence of chloride to leach the valuable minerals in the concentrate into solution where they can be recovered. A flash vessel (EU 2022) is associated with each autoclave and is used to bring the autoclave discharge solution down to atmospheric pressure. Emissions from the autoclaves and flash vessels include PM, PM_{10}, SO_2, sulfuric acid mist, NO_x, CO, VOC, fluorides, the same list of metals noted above for the crushing plant, HCl, HF and H_2S. CS_2 is

also emitted by the autoclaves. Hexavalent chromium (hexchrome) is also listed in Table 1 as a pollutant for the autoclaves and flash vessel vents. It is the opinion of the hydrometallurgical experts working on the project that hexchrome is not emitted by either process because it is not contained in the ore and the oxidizing conditions in the autoclave are not strong enough to produce hexchrome from trivalent chromium. However, small amounts of hexchrome were detected in some of the sampling runs during the stack testing performed on the pilot scale autoclave vents. Therefore, the emission are included in the calculations, but it is believed that the hexchrome detected during the pilot study were an artifact from earlier use of the pilot facility, the result of contamination or some other phenomena not related to the operation of the autoclave while processing NorthMet concentrate.

Controlled potential emissions of PM_{10} from the autoclaves and flash vessel vents are 90.0 tpy. Sulfuric acid mist emissions are 8.8 tpy. SO_2 emissions are 1.8 tpy. H_2S and CS_2 emissions are 3.8 and 1.7 tpy respectively for a reduced sulfur compound total of 5.5 tpy.

VOC and CO emissions are 88.5 and 84.2 tpy respectively. The emission estimates for these pollutants are based on testing on the pilot scale autoclave, which may not be representative of the operation of a commercial scale autoclave. An emission control technology review was completed for VOC to be conservative (see RS58A).

The highest emissions for any toxic compound calculated were for copper at 7.0 tpy. The highest HAP emissions were calculated for nickel at 4.9 tpy. The emission levels of the remaining pollutants can be found in Table 1.

2.1.3 Metal Extraction Processes

The Metal Extraction Processes include the following operations:

o AuPGM precipitation tanks (EU 3002), where sulfur dioxide is added to reduce the iron and CuS is added to precipitate the gold and platinum group metals (AuPGM), which are collected as a product;

o Solution Neutralization Tanks (EU 3502, EU 3512, EU 3522, and EU 3532), where limestone is added to raise the pH of the leach solution and gypsum precipitate is formed;

o Raffinate Neutralization Tanks (EU 6275), where additional limestone is added to further neutralize the acid and precipitate the iron and aluminum in the solution;

- o Residual Copper Removal Precipitation Tanks (EU 5522) where residual copper is precipitated with sodium hydrosulfide (NaHS);

- o 1st Stage Mixed Ni/Co/Zn Hydroxide Precipitation (EU 6002) where the nickel, cobalt, and zinc are precipitated with magnesium hydroxide and recovered as a product;

- o 2nd Stage Mixed Ni/Co/Zn Hydroxide Precipitation (EU 1180) where lime is added to cause additional precipitation. The 2nd stage hydroxide precipitate is recycled to the process to recover the valuable metals.

In addition, a Copper Solvent Extraction (EU 222), and Copper Electrowinning (EU 4544) system is used to extract copper with an organic extractant and to produce pure copper cathode. The copper extraction occurs after the solution neutralization step described above. After the raffinate neutralization step, a portion of the copper raffinate is recycled to the autoclave and the balance continues to the residual copper removal precipitation tanks.

Many of the tanks above have the potential to emit sulfuric acid mist and sulfur dioxide. In addition, the NaHS used in the residual copper precipitation step can break down to form hydrogen sulfide. The solvent extraction process uses an organic extractant and organic diluent that can emit VOC. The diluent also contains a small amount of naphthalene. The electrowinning process can emit PM, PM_{10}, sulfuric acid mist, sulfur dioxide, fluorides, and the same list of metals given above for the crushing plant.

Controlled potential emissions from the Metal Extraction Processes are 16.6 tpy for PM_{10}, 2.0 tpy for sulfuric acid mist, and 14.0 tpy for SO_2. VOC emissions are 4.8 tpy, from the copper solvent extraction cells. Emissions for copper are about 0.2 tpy. The highest HAP emissions are for cadmium and nickel at about 0.02 tpy.

2.1.4 Process Consumables Handling Sources

Process consumables delivered in solid form as well as process consumables that are volatile or that can decompose to form volatile compounds generate emissions during storage and handling. Process consumables used that have the potential to generate emissions through storage and handling include: three types of flocculant, PAX, guar gum, carboxymethylcellulose (CMC), cobalt sulfate, lime, limestone, frothers, NaHS, sulfuric acid and hydrochloric acid.

The three types of flocculant used each have a silo feeder (EU 309, EU 312, and EU 314), a silo (EU 310, EU 241, and EU 315), and a transfer operation to the mix tank (EU 202, EU 203, and EU 316).

The PAX will be delivered in solid form and added to a mix tank (EU 226). Guar gum is added to a mix tank (EU 208) as a solid. CMC is added to a mix tank in solid form. Cobalt sulfide is added to a mixer in solid form (EU 215). Lime is delivered, transferred to a silo (EU 220), transferred to a conveyor (EU 221) and then added to a slaker (EU 321) where it is mixed with water to form a slurry. Limestone will either be delivered by truck or by railcar. When it is delivered by railcar, emissions are generated by the railcar dumping operation (EU 326), the limestone crusher (EU 323), and various handling steps (EU 327, EU 329, EU 330, EU 332, EU 324, and EU 224). There are also additional fugitive sources associated with the limestone handling, which are described below in Section 3.

Oxygen is also a process consumable used in the hydrometallurgical process. A cryogenic oxygen plant will be installed to supply oxygen to the Autoclaves. Specific details on the oxygen plant are not currently available, but typical designs often incorporate cooling towers, which are a source of PM_{10} emissions. Therefore a cooling tower (EU 333) is included in the emission inventory. There may also be a small heating demand associated with the oxygen plant; this is discussed in the combustion source section.

The controlled potential PM_{10} point source emissions from handling of solid raw materials and the Oxygen Plant Cooling Tower are 69.9 tpy.

The frothers will be delivered in liquid form and transferred to a storage tank (EU 205 and EU 317). NaHS is delivered in liquid form and can emit H_2S during the mixing process (EU 207). Sulfuric acid is delivered by tanker and transferred to the storage tank (EU 209, EU 210). Hydrochloric acid is also delivered by tanker and transferred to the storage tank (EU 211 and EU 212). The copper extraction diluent is delivered and transferred to a storage tank (EU 214).

Potential emission from the handling and storage of VOC, other than fuel oil and gasoline which are included under Section 2.1.5, are 1.9 tpy. Carbon disulfide emissions are 1.8 tpy. Emissions of sulfuric acid mist and SO_2 are 0.6 and 1.2 tpy respectively. Emissions of HCl are 1.6 tpy. The minor amounts of emissions for the remaining pollutants are provided in Table 1.

2.1.5 Combustion Sources and Fuel Tanks

This process does not include significant combustion sources. The oxidation reaction in the Autoclave produces sufficient heat to maintain the reaction once it has started, and heat exchangers are used wherever possible to avoid the need for external heat sources.

A high pressure natural gas fired boiler (EU 301) is needed to start up the autoclaves, but its utilization will be quite low. Heating in the Process Plant will be provided by natural gas fired space heaters (EU 302). Two existing diesel powered backup generators (EU 128 and EU 129) will be used to provide backup in case of a power failure. Two diesel powered fire pumps (EU 304 and EU 305) will be used to pump water in case of a fire. Three zinc pots (EU 306, EU 307, and EU 308) will be used for crusher lining maintenance, but they will only be used when maintenance is conducted. Propane fired space heaters will be used to heat the Area 2 Shop (EU 130). At the Area 1 Shop, the shop areas are heated with propane fired infrared heaters (EU 334). The office areas use electric heating.

The oxygen plant may require a small heater to heat the nitrogen used to reactivate the adsorbers. Alternatively, this heating demand may be supplied by electric heaters. For the purpose of the emission calculations, it has been assumed that a natural gas fired heater would be used (EU 335).

All of these sources will emit the typical combustion pollutants. Emissions for toxic air pollutants for which AP-42 factors are available were also calculated for the high pressure boiler, space heaters, oxygen plant heater, backup generators and fire pumps. Potential NO_x and CO emissions are 140.5 and 78.7 tpy respectively. VOC emissions are 7.0 tpy. SO_2 emissions are 11.0 tpy and sulfuric acid mist emissions are 0.2 tpy. The highest HAP emissions are for hexane at 1.3 tpy.

In addition, a diesel fuel tank (EU 303) will supply the backup generators and zinc pots and a second one will supply the fire pumps (EU 325). Very small amounts of VOC will be emitted by these tanks (< 0.003 tpy potential emissions).

Two 6,000 gasoline tanks (EU 336 and EU 337) will be used to fuel light trucks and other gasoline powered vehicles. Total emissions for the two tanks are 1.6 tpy of VOC.

2.2 Point Source Emission Calculation Procedures

A variety of calculation procedures were considered for completing emission calculations for point sources at the processing plant. The procedures included: results of stack testing when the crushing plant was operated by LTVSMC as part of their taconite pellet production operation, AP-42 factors, the results of air and solid and liquid sampling during pilot studies completed in 2000 and 2005, data from the MetSim process flow simulation produced for the project, geology and whole rock data for ore compiled by PolyMet, estimates based on engineering principles, estimates of pollution control equipment performance, and applicable emission standards. The most appropriate method was chosen for each source or if no method was clearly superior, the method producing the highest result was

used to be conservative. Specific details on the emission calculations are presented below for the various parts of the Plant Site operation.

2.2.1 Crushing Plant and Flotation

All of the sources in the coarse and fine crushing areas will be retrofitted with new pollution control equipment. Due to concerns related to fine particulate emissions for this project, PolyMet has agreed to install BACT-like controls for $PM_{2.5}$ (particulate matter less than 2.5 microns in aerodynamic diameter). The outlet particulate concentration from the control equipment will be limited to 0.0025 gr/dscf. This concentration along with the design airflow for the equipment was used to estimate emissions after the pollution control equipment upgrade. Details on the selection of pollution control technology are provided in RS58A.

The crushing plant emission sources will emit PM that would be expected to have the same composition as the ore fed to the plant. Therefore, the crushing plant is a potential emissions source of toxic metals and fluorides.

Composition data from several sources were compared to identify appropriate data for use estimating emissions. These included: the geology and whole rock data sets compiled by PolyMet (see below for details), the results of the sampling completed by Barr during the 2005 pilot study (see RS32), data collected during the 2000 pilot study (SGS Lakefield Progress Report No. 6), data reported by SGS Lakefield from the 2005 pilot study (ER01A and ER01C), and composition data used by Bateman Engineering Pty Ltd (Bateman) in the design of the Process Plant. Where multiple data sources were available for a metal of interest generally the highest value was used, except that detected quantities were given preference over data reported as below the detection limit and in some cases, a decision was made to use data believed to be of higher quality. The specific values used for each metal of interest and fluoride and their source along with information on other available data are given in footnote 128 to Table 1.

The PolyMet whole rock data set consists of major rock forming elements reported as oxides along with some trace metal data. This data set used about 60 "whole rock" analyses for the "ore zone" (based on stratigraphic position) and about 45 "whole rock" analyses for the "waste zone" (based on stratigraphic position). These data are largely from Geerts (1994), Severson (1988), and Severson and Hauck (1990).

The geology data set consists of elements reported as metals. The data is based on about 2000 samples of "ore" and 8500 samples of "waste". The "ore" versus "waste" calculation was based solely

on metals content. The waste rock was not divided into the minimum categories expected to be used in mining: non-reactive, reactive, and lean ore. These data were taken from the proprietary PolyMet geology database in August, 2004. Additional data has been gathered since 2004, but the 2004 data is believed to be conservative.

In the crushing plant, any metal or fluoride emitted will be bound up in the rock particles emitted by the processes. Therefore, the same control efficiency is used for metals and fluorides as is used for PM.

The gaseous emissions from the flotation plant are due to the use of additives in the flotation process. Air sampling was conducted during the 2005 flotation pilot study and was reported as RS32 Part II. The room air around the flotation equipment as well as the exhaust vents from the area where the flotation pilot plant was conducted was sampled. Due to the lack of available data on room air ventilation in the commercial scale flotation plant, the results of the exhaust vent sampling were used to estimate emissions from the commercial plant. The lb/hr emission rates of total VOC and CS_2 were scaled up from the pilot plant to the commercial plant based on the surface area of the tanks in the flotation process. Because the emissions are due to the evaporation of volatile compounds from the flotation tanks, this was considered the most appropriate scale up parameter.

The calculation of this scale up factor is shown in Table 44. The commercial plant tank surface areas were estimated by NORAMCO Engineering Co. (NORAMCO), who has been involved with the design of the flotation plant. The average scaling factor for the flotation process was calculated as 231.5:1.

The VOC testing results and the scaled up emission for the two exhaust fans and the totals are presented in Tables 45, 46, and 47. The VOC concentration measured in the vents was corrected for the background concentration measured in the outdoor air. This was done because the measured concentrations in the vents were not significantly above background, so failure to make the adjustment would produce unreasonably high emission estimates.

The results of the SUMMA canister sampling are presented in Tables 48 and 49 including the scale up to the commercial scale plant. The only pollutant of interest is carbon disulfide, because this is a decomposition product of the collector (PAX). Table 49 also presents the total emissions for both exhaust fans.

Charcoal tube sampling was also performed for appropriate alcohols and glycol ethers. The results show that the majority of VOC emissions are MIBC, which is expected because this is the most volatile organic compound in the frother. Therefore, MIBC emissions were assumed equal to total VOC emissions. This produced a result roughly double the MIBC sampling results. Note: CS_2 emissions were on the order of parts per billion, so the influence of CS_2 on the total VOC results was ignored.

The emissions from the concentrate dryers were estimated based on emission factors from AP-42 Section 11.19.2 for flash drying of pulverized minerals with fabric filter control. Emission factors for a heated screw dryer could not be located, but a flash dryer was considered to more closely represent the equipment to be installed than a rotary type dryer (i.e. less vigorous disturbance of the material dried). The dryers will be equipped with wet scrubbers as is appropriate for high moisture conditions, but the scrubbers are expected to perform in a similar manner to a fabric filter for this operation. More information on the selection of pollution control equipment for the concentrate drying and shipping operation is included in RS58A.

The emissions from dried concentrate handling were initially estimated with AP-42 factors for pulverized mineral processing from Section 11.19.2 for processes controlled with fabric filters. Each emissions point in the dried concentrate handling area will be equipped with a baghouse or equivalent control. These emission levels were compared to emissions calculated assuming a performance standard of 0.005 gr/dscf for the fabric filters on the bin vents based on the air to cloth ratio for the specified dust collectors. An outlet concentration of 0.01 gr/dscf was assumed for the filter receiver and railcar loading arm based on the specifications for the integrated duct control systems for these operations. The outlet concentration and the airflow rates for the exhaust points were used to estimate controlled emissions. The calculated emissions based on the performance standard were generally lower except for some total PM calculations. The performance standard based numbers are likely more representative of actual facility operation, so they are reported in this document. It was assumed that material would only be transferred from one silo to the loading system at a time to keep the nickel and copper concentrate separate.

The potential to emit calculations assume operation of this process 8760 hours per year, but this process will not operate at full capacity if all or a portion of the hydrometallurgical plant is operating.

Emissions of toxic air pollutants from the dryers and dried concentrate handling sources were estimated based on the assumption that any particulate emissions would have the same metals content

as the concentrate. Data from the 2000 and 2005 pilot studies, as well as data from the process flow simulation (MetSim) were compared. This highest value was generally used in the calculations, with the exception that data that showed a detectable quantity were given preference over values below the detection limit.

The specific concentrations used in the calculations along with the sources of the data are provided in Footnote 187 to Table 1. The separation of the concentrate into nickel rich and copper rich fractions will change the composition of the individual concentrates, but fractions will be handled in identical equipment so the reported emissions will be representative of emissions from the bulk concentrate. That is, the total emissions reported are representative of the operation as a whole, but emissions of some toxic pollutants my not be apportioned to the appropriate stack (e.g. more copper would be emitted from the dryer used for copper rich concentrate than from the nickel concentrate dryer).

2.2.2 Autoclaves

2.2.2.1 Autoclave Vent

Extensive sampling was performed on the autoclave vents on the pilot scale autoclave during the 2005 pilot study (see RS32 Part IV). The test results were scaled up and applied to the commercial plant for all pollutants for which sampling was completed. A condenser was present in the pilot autoclave venting system before the sampling location. In order to quantify uncontrolled emissions, samples of the condensate were collected during the air sampling program.

Two approaches were considered for scaling up the results at the autoclave vent: 1) using stack test measured concentrations with MetSim air flows; and 2) using mass emission rates and scaling up based on autoclave feed rate.

The first and simpler approach is to use the concentrations measured in the condensate and vent gas along with steam and non-condensable gas flow rates from the MetSim process flow simulation to calculate mass emission rates.

The second and more complex approach is to calculate mass emission rates from the pilot plant and then scale up the results based on the feed rate to the autoclave. This approach was complicated by the fact that it was not possible to quantify the flow rate at the autoclave vent during the test program. Therefore, it was necessary to estimate the rate at which gas was vented based on the amount of excess oxygen added.

The data utilized for this calculation was taken from the pilot study metallurgical report for the Hydrometallurgical Plant (ER01C) and consisted of the fresh solids feed rate (FS: kg/hr), the feed sulfur content (%S), and the oxygen flow rate (O_2v: nL[1]/min)). The sulfur feed rate (S: kg/hr) was calculated by:

$$S = FS * \frac{\%S}{100}$$

It was assumed that all sulfur was sulfide and that the sulfur was completely oxidized to sulfate (i.e. 2 moles of O_2 are required for each mole of sulfur in the concentrate). The stoichiometric quantity of oxygen (O_2St: kg/hr) is then:

$$O_2St = S * \frac{kg\,mole}{32\,kg\,S} * 2\frac{moles\,O_2}{mole\,S} * 32\frac{kg\,O_2}{kg\,mole}$$

The actual oxygen addition (O_2Act) rate in kg/hr is calculated by:

$$O_2\,Act = O_2v * \frac{g\,mole}{22.413\,nL} * 60\frac{minutes}{hour} * 32\frac{g\,O_2}{g\,mole} * \frac{kg}{1000\,g}$$

The excess oxygen (O_2Ex) in kg/hr is then:

$$O_2Ex = O_2Act - O_2St$$

This is converted to a volumetric flow rate in scfm[2] (O2Exv) by:

$$O_2Exv = O_2Ex * \frac{1\,hr}{60\,min} * 1000\frac{g}{kg} * \frac{g\,mole}{32\,g} * 24.054\frac{sL}{g\,mole} * \frac{ft^3}{28.317\,L}$$

Finally, the exhaust rate is corrected for the oxygen content of the vent gas to obtain the flow rate Qav in scfm by

$$Qav = O_2Exv * \frac{20.9 - 100}{20.9 - \%O_2}$$

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[1] Normal liters/minute = corrected to 0 degrees C and 1 standard atmosphere.

[2] Corrected to EPA defined standard conditions = 20 degrees C and 1 standard atmosphere.

A derivation of this equation is provided in Appendix A.

After the mass emission rate is calculated from the concentration data obtained from the stack test and the flow rate calculated as described above, the emission rates can be scaled up to the commercial scale plant using data from MetSim Revision U3. The parameter chosen for the scale-up was fresh solids feed rate. Other options considered were total slurry feed including liquids and total feed including recycle, Cu raffinate, etc., but it is believed that the fresh solid feed rate is the best indication of the oxidation occurring in the autoclave, so it is the best indicator of the operating rate. This results in a scale-up factor ranging from about 11,000 to 19,000:1.

The parameters and results of the calculations of airflow and scaleup factor are presented in Table 4 for PP2 (first week of pilot plant operation) and Table 5 for PP3 (second week of pilot plant operation).

Testing was completed at each of two conditions for most pollutants. The first condition was when concentrate produced without the use of copper sulfate as an activator was fed to the autoclave and a significant portion of the discharged autoclave solids were recycled back to the autoclave feed. The second condition was when concentrates produced with the activator were fed to the autoclave and recycle not utilized. Further details on the operation of the autoclave are presented in ER01C and RS32.

The concentrations of pollutants measured in the condensate were converted to mass rates based on the condensate flow data in ER01C and scaled up the same as the gaseous phase test results.

The second approach (using mass emission rates and scale up based on autoclave feed rate) consistently produced over an order of magnitude higher results for the gaseous phase as compared to the first approach. This would be expected, because more excess oxygen is required to run the pilot scale autoclave than the commercial scale unit, and therefore more gas would be vented relative to the autoclave feed rate. The condensate results were also higher but only by about a factor of two. The second approach for scaling up the pilot plant testing results was chosen to be conservative.

For most pollutants, the average of the scaled up result of the two tests with a safety factor of 50% was used to estimate emissions from the commercial scale autoclaves. However, when all laboratory results were below the detection limit, the safety factor was not applied. Also, the safety factor was not applied to HCl emissions, because it was assumed that all chloride detected in the condensate was due to HCl, which is a very conservative assumption.

A safety factor was not applied for hexchrome, because, the hydrometallurgical experts on the project do not expect hexchrome to be present in the feed to the autoclave or generated in the autoclave.

The mercury results also do not include a safety factor because the inclusion of results for fractions below the detection limit at ½ the detection limit is believed to produce conservative results.

The calculation of the scaled up autoclave vent emission rates is presented in Table 6 through 19. More details on the stack test calculations are presented in RS32 Part IV.

The only pollutant shown in the MetSim flow simulation as emitted from the autoclave vent is carbon dioxide, which is a greenhouse gas. The data from MetSim was used to estimate carbon dioxide emissions.

Fluoride emissions were estimated from the PM results calculated from pilot study air sampling (as described above) by assuming that the PM had the same fluoride composition as the highest of the feed and leach samples collected during the pilot study. The results were adjusted for poor recoveries observed in the spiked samples.

Barium emissions were estimated from the PM results and the barium content of the feed and leach samples.

Boron, molybdenum, vanadium, hafnium, and tellurium emissions were estimated from the PM results and the content of the raw ore of these components. These compounds are of minor concern and other data was not available.

The autoclave vents for each autoclave will be vented to a separate autoclave vent scrubber, which will be a venturi design. The flash vessel vents described below will also be vented to the vent scrubbers. The combined exhaust from the two vent scrubbers will be routed to a common packed bed scrubber before release to the atmosphere.

For PM and $PM_{10,}$ the control efficiency was estimated as 99.06% based on data from the MetSim process flow simulation. The control efficiency for all metals except mercury was estimated to be the same as the PM control efficiency, which is consistent with the MetSim data. A control efficiency of 25% was assumed for mercury due to the potential for vapor phase elemental mercury, which is more difficult to control, to be present (i.e. if the form of mercury potentially present in the off gas was unknown, it was assumed to be elemental mercury as a worst case). If particle bound mercury or mercury in an ionic form is present, the control efficiency would be expected to be higher.

The control efficiency for HCl, HF, and sulfuric acid mist was estimated to be 99% based on the high water solubility of these compounds.

The H$_2$S removal efficiency was estimated to be 70% for water scrubbing based on the low end value for scrubbing in the EPA BACT/LAER clearinghouse database.

No control was assumed for CO, NO$_x$, and CS$_2$, based on their chemical properties.

The control efficiency for SO$_2$ was estimated to be 90% based on an engineering estimate.

A conservative removal efficiency for hexchrome of 90% was assumed.

Finally, a removal efficiency for VOC of 50% was assumed to provide a conservative input value for the VOC emission control technology review. Most of the organic compounds used in the flotation process, which is the source of organic compounds fed to the autoclaves, are oxidized and soluble in water (e.g. xanthates and glycol ethers). The composition of the organic compounds emitted from the autoclaves was not determined during the pilot plant testing. If the organic compounds in the autoclave feed undergo further oxidation, it is likely that the compounds emitted would also be oxidized water soluble compounds. Absorption typically has a control efficiency of 90% - 95% for water soluble organic compounds.

2.2.2.2 Autoclave Flash Vessel Vents

2.2.2.2.1 2005 Pilot Plant Testing

An extensive sampling campaign was also completed on the autoclave flash vessel vent during the pilot study in 2005. These test results are also reported in RS32 Part IV. These results were scaled up to the commercial scale facility and compared to the other available data sources.

Again the first approach for scaling up emissions to the commercial scale plant was to use MetSim flow rate data with the concentrations measured during the stack test. For the flash vessel vent, MetSim shows the emissions as being 100% condensable (i.e. steam plus contaminants). This was not the case during the pilot study because the flash vessel was pressurized with air prior to charging[3]. Typically, the dry gas flow rate would be used in conjunction with the results of the stack test because most pollutants concentrations are measured on a dry basis (the exception is total organics). Because the dry gas flow rate in MetSim is zero (i.e. all gas is water), as a conservative

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[3] The pilot scale autoclave operates as a batch process while the commercial scale units will operate continuously.

assumption, a dry gas flow rate equivalent to the wet gas flow rate in MetSim was assumed. This value was used with the results of the stack test.

A Teflon impinger was placed in front of the Tedlar bag used to accumulate the gas flow during the depressurization portion of the operating cycle as a liquid knockout. The condensate collected in the impinger was analyzed for the same pollutant as the stack test sampling train. In some cases the sampling train produced more chemically specific results. For example, the sampling train quantifies HCl while the analysis of the Teflon impinger measured total chloride. In these cases concentration of the analyte collected in the knockout was reported separately. When the analyte was the same, as for metals, the total in the knockout plus the sample train was used to calculate the concentration in the flash gas. When the two results were combined, the concentration plus the gas flow from MetSim (assuming dry gas = wet gas) were used to calculate scaled up emissions. When the results were kept separate, a concentration in the original knockout sample (prior to dilution during recovery rinsing) was calculated. This value with the liters per minute of solids plus liquids in MetSim was used to calculate a mass emission rate.

An alternative approach to scale up was also evaluated. As with the autoclave vent, it was not possible to directly measure the flow rate of gas during the depressurization portion of the operating cycle, so it was necessary to calculate the flow rate per depressurization. The volume of the flash vessel is seven liters. During our discussions in the planning of the test program, SGS Lakefield personnel suggested assuming 4 liters of headspace in the vessel at depressurization and indicated that the temperature in the vessel was controlled at 70 degrees C. The autoclave pressure was reported in the metallurgical report for the hydrometallurgical pilot study (ER01C) and the flash vessel pressure prior to depressurization is expected to be the same. The volume of gas vented during the depressurization can be calculated from: $P_1 * V_1 / T_1 = P_2 * V_2 / T_2$ or $V_2 = P_1 * V_1 * T_2 / (T_1 * P_2)$. The desired result was the flow rate at standard conditions as defined by EPA (20 degrees C, 1 standard atmosphere), so P_2 and T_2 were based on standard conditions. The result was about 108 sL[4]/depressurization. The depressurization was assumed to occur every 10 minutes (i.e. six per hour), with a results of 10.78 sL/min or 0.38 scf/min. A scale-up factor was calculated as described above based on fresh solids feed. As a check, a scaled up airflow was calculated by multiplying the calculated airflow times the scale-up factor. The results were more than an order of magnitude lower than the value based on MetSim data (and the dry gas = wet gas assumption).

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[4] Liters at standard conditions, 20 degrees C and 1 standard atmosphere.

The calculation of the scaled up emissions rates for the flash vessel vents are presented in Tables 20 through 33. Details on the stack test calculation procedures are presented in the RS32 Part IV. The MetSim flow procedure was used for all pollutants.

2.2.2.2.2 Selection of Emission Calculation Method for Each Pollutant

The scaled up pilot plant sampling results were compared to other sources of emission data. The 2005 pilot study data was used for VOC, NO_x, CO, SO_2, antimony, arsenic, beryllium, cadmium, mercury, selenium, HF, and H_2S because it was either the only data available or it produced higher results than the other data sources.

The hexchrome results from the pilot testing were below the detection limit, but the emissions were calculated based on the detection limit to be conservative. As noted under the autoclave vent discussion above, the metallurgical experts working on the project do not believe that hexchrome is present in the feed or generated in the autoclave.

The average of the two conditions tested was used for all pollutants except HF, for which the one condition with results greater than the detection limit was used. A safety factor of 1.5 was used for antimony, NO_x, CO, VOC, arsenic cadmium, and selenium and HF. Safety factors were not applied to the results for beryllium, SO_2, mercury, hexchrome and H_2S. For H_2S, all of the sulfide in the condensate was assumed to be due to H_2S, which is a conservative assumption. The mercury results are believed to conservative because fractions of the sampling train reported below the detection limit were assumed to be at ½ the detection limit. Because beryllium, SO_2, and hexchrome were below the detection limit, no safety factor was used to estimate emissions.

Data from the MetSim process flow simulation (revision U3) was used to calculate emissions for PM, PM_{10}, sulfuric acid mist, cobalt, lead, manganese, nickel, phosphorus, copper and zinc because it produced higher results than the other available data.

Chromium, molybdenum, and HCl emissions were estimated using scaled up data from the 2000 pilot study (SGS Lakefield Progress Report No. 7) because it produced higher results or it was the only data available. Results of testing completed in 2000 were scaled up based on the total feed rate to the autoclave.

Barium emissions were calculated based on analysis of feed and leach samples during the 2005 pilot study. The highest three sample average of the feed and leach samples for each parcel was used to calculate the emissions in spite of the fact that the laboratory analysis did not meet data quality

objectives, because these data produced the highest results. The feed and leach analysis data is presented in RS32 Part IV.

Boron emissions were calculated based on the analysis of the regrind concentrate completed during the 2000 pilot study (SGS Lakefield Progress Report No. 6).

Hafnium and tellurium emissions were calculated based on the composition of the ore, because other data were not available. These rare earth elements are only of minor concern.

2.2.2.2.3 Pollution Control Efficiency Assumptions

The pollution control equipment will be the same for the flash vessel vents as for the autoclave vents, so the same pollution control efficiencies as described in Section 2.2.2.1 for the Autoclave Vents were used for the flash vessel vents, with the exception of mercury. Most of the mercury measured during the testing on the pilot scale autoclave flash vessel vent was collected in the Teflon knockout located in front of the other sampling equipment. The mercury collected in the knockout would be expected to be particle bound mercury or mercury in an ionic form; either of which would be amenable to removal via wet scrubbing. A weighted average control efficiency was calculated based on 90% control for the fraction collected in the knockout and 25% for the emissions assigned to the sampling train either due to measured quantities or ½ the detection limit. This was done to account for the fact that the mercury collected in the sampling train could be vapor phase mercury which would be harder to control. The resulting control efficiency is 72%.

2.2.3 Metal Extraction Processes

2.2.3.1 Solvent Extraction and Electrowinning

Emissions from the copper solvent extraction process were estimated using data collected during the 2005 pilot study (see RS32 Part IV). Total organic concentrations were measured at various points in the room with the solvent extraction equipment. An average concentration was calculated. This value, along with an estimated exhaust rate for the solvent extraction area in the commercial scale facility, was used to estimate VOC emissions. The diluent used in the solvent extraction process, which is the more volatile component of the organic phase in the extraction process, contains 0.2% naphthalene, so the emission were assumed to contain 0.2% naphthalene. The copper solvent extraction data and commercial plant emission rate calculations are in Table 50.

An extensive stack testing program was conducted on the electrowinning process during the 2005 pilot study. Multiple approaches were considered for scaling up the electrowinning results. In the first approach, the concentrations measured in the duct were used in conjunction with the flow rate

data in MetSim to calculate a scaled up result. It should be noted that a double layer of polypropylene spheres was spread over the electrolyte solution surface in the electrowinning cell during the pilot study to reduce acid mist emissions. This may have also reduced PM and metals emissions, but the scaled up stack test results still produce higher emission values than other calculation techniques attempted. Based on AP-42 Table 12.20-2, a reduction in emissions of all pollutants of only about 15% is expected from the spheres.

The second approach was to scale up the electrowinning results on a mass basis with an operating parameter. In the case of the electrowinning duct, it was possible to measure the exhaust flow rate, so a mass emission rate could be directly calculated. The parameter chosen was the strip liquor feed flow rate. In the solvent extraction and electrowinning metallurgical report (ER 01D), this is identified as Strip Feed or CSF. We interpreted the equivalent stream in MetSim to be the discharge from spent electrolyte cooler, which is then fed to the second stripping stage (countercurrent flow is utilized). The target value was 500 ml/min during the pilot study. The value in MetSim is 5806.7 L/min. This results in a scale-up factor of about 12,000:1. This produced significantly higher results than the airflow based approach, for which the scale-up was about 400:1.

The third approach attempted was to scale up the electrowinning results based on the current applied to the pilot cell versus the current applied to the commercial scale process cells. The ratio of the currents was then multiplied by the number of cells in the commercial plant to obtain a scale up factor (the pilot plant only had one cell). The calculated scale up factor was about 12,000 to 18,000 to 1.

The scale up factor calculations and scaled up results are presented in Tables 34 to 39. Further details on the test program are available in RS32 Part IV. The third approach was chosen because it produced the highest results and it was believed to be the most technically correct approach because mist emission from the tanks are expected to be related to the current applied.

For most pollutants, the average of the two conditions tested was used to estimate the emissions. The exception was PM for which only filterable particulate emissions were obtained for the first condition because it had to be run in conjunction with the metals testing due to time limitations. For PM the second condition result was used. A safety factor of 1.5 was applied to the results above the detection limit. Because the calculated controlled PM emissions were equivalent to a value less than the performance specification for the scrubber, the performance specification of 0.006 gr/dscf for

total PM is the basis for the calculation in the spreadsheet and was used as the input to the dispersion modeling.

The mercury results were below the detection limit and the emission estimate based on the scaled up detection limit were unrealistically high. Therefore, mercury emissions were calculated by assuming that the PM emission contained mercury in the same concentration as that measured for the regrind concentrate during the 2000 pilot study (SGS Lakefield Progress Report No. 6).

Boron, molybdenum and vanadium emissions were estimated in a manner similar to mercury because this was the best available data. These pollutants are only of minor concern.

Barium emissions were calculated based on the analysis of autoclave feed and leach samples during the 2005 pilot study. The highest three sample average for the three parcels feed and leach samples was used in the calculations.

For tellurium and hafnium, two rare earth elements, the only available data was the concentration of the ore, so these data were used to calculate emissions. These metals are not of significant interest.

Emissions from the electrowinning process will be controlled by a wet scrubber. The control efficiency for all pollutants was assumed to be 95% based on data in the MetSim process flow simulation. Where calculated controlled emissions are below the proposed pollution control equipment performance standard, the control equipment standard will be used in the dispersion modeling to avoid concerns that emissions are underestimated.

2.2.3.2 Metal Extraction Process Tanks

Sulfuric acid mist emissions from the process tanks were originally calculated, in the emission calculations submitted with the EAW, by assuming a concentration in the off gas of 20 ppm and using the flow rates from the MetSim process flow simulation. Testing was also performed during the 2005 pilot study for sulfuric acid mist and SO_2. The results were scaled up to the commercial scale plant based on the limestone feed rate. This parameter was chosen because the limestone added to the solution neutralization and iron removal tanks generates CO_2 gas which causes the majority of off gassing. Note: the iron removal step has been incorporated into the raffinate neutralization step in the commercial scale plant, but limestone is used in either case. The scaleup calculations are presented in Tables 40 and 41.

As with the other emission points sampled, sampling was performed at two conditions: 1) concentrate fed to the autoclave was produced without the use of the activator and a significant amount of

autoclave discharge solids were recycled to the feed; and 2) concentrate produced with the activator was fed to the autoclave and no solids were recycled. The SO_2 detection limit for the condition 1 was elevated due to sample dilution. Two results were above the detection limit, but only barely, and the results did not seem representative. The results for condition 2 were all below the detection limit. Emission from all of the tanks were assumed equivalent to the scaled up result based on ½ the detection limit during condition 2, because using the full detection limit made the emissions unrealistically high. The SO_2 testing results are presented in Tables 42 and 43. SO_2 was not added to the AuPGM Precipitation Tanks during the pilot study, so the SO_2 emissions from these tanks was calculated separately based on emission data in MetSim revision U3.

Sulfuric acid mist emissions were also calculated from the scaled up emission data collected during the pilot study. This data is also presented in Tables 42 and 43. The results were all below the detection limit for all sampling runs. The emissions for all of the tanks were assumed to be equivalent to the scaled up result calculated with the detection limit. This method produced higher results than the method used earlier.

Sampling was also performed for VOC, because it was believed when the test plan was submitted that the emissions from copper solvent extraction would be vented to the common duct, but in the actual pilot plant layout they were vented to the room air. The results of the VOC sampling in the common duct were essentially equivalent to background. The additional sampling performed on the solvent extraction process is described in the section above.

Sampling was also conducted for reduced sulfur compounds. However, the results were below the detection limit and did not provide useful information. A different approach was used to estimate emissions from the Residual Copper Removal Precipitation Tanks, where copper is precipitated with sodium hydrosulfide which can break down to form H_2S. The concentration of H_2S in the headspace over the tank was extrapolated from data in "H_2S in Gas Phase Over Aqueous NaSH" (Pustilnik, 1997). Table 14 provides H_2S concentration vs. temperature for 30% NaSH solutions. Data for the median pH value of 11.7 were used. The data were extrapolated using a logarithmic curve fit to obtain the concentration at the tank temperature of 65 degrees Celsius with a result of 622 ppm.

The current design includes a nitrogen sweep, which will dilute the concentration over the tanks and the thickener. Given that the H_2S concentration will be limited by the kinetics of the breakdown of the NaHS and not the saturation vapor pressure, it is not appropriate to assume the exhausted nitrogen will contain 622 ppm H_2S.

To estimate emissions, the exhaust rate from the tanks was taken from MetSim Rev. Q1, which does not include the nitrogen sweep. The flow rate is 1.0283 ACFM. The flow rate was corrected to standard conditions with the parameters from MetSim Rev. U3 (149.2 F, 13.81 psia) with a result of 0.8375 scfm. The copper removal precipitation thickener may also be vented to the plant scrubber. The flow rate for the thickener is 59.85 scfm for a total of 60.68 scfm. Emissions are then:

$$622 \; ppm * \frac{v/v}{10^6 \; ppm} * \frac{1 \; lb \; mole}{385.3 \; SCF} * \frac{34 \; lb \; H_2S}{lb \; mole} * \frac{60.68 \; scf}{minute} * \frac{60 \; minute}{hour} = 0.20 \frac{lb}{hour}$$

The NaHS would be diluted when added to the warm solution in the tank and it would be quickly consumed in reactions, so this is only a conservative approximation.

The Metal Extraction tanks will be controlled by a packed bed scrubber referred to as the plant scrubber. Caustic will be added to the scrubber liquor to promote the removal of SO_2 and H_2S from the exhaust stream. A control efficiency of 90% was assumed for SO_2 based on information received from Bateman. The control efficiency for sulfuric acid mist was assumed to be 99% based on its high water solubility. The control efficiency for H_2S was assumed to be 70% based on the low end of control efficiencies for scrubbers in the BACT/LAER Clearinghouse database.

2.2.4 Process Consumables Handling Sources

Emissions from the raw material sources that consist of the handling of dry materials were calculated using appropriate emissions factors. For the flocculant handling operations, the emissions from the silo feeder and the transfer to the mix tank were calculated with an emission factor from AIRS 3-05-011-09 "Mixer Loading of Cement/Sand/Aggregate". Emissions from the flocculant silos were calculated using an emission factor from AP-42 Table 11.19.2-4 "Emission Factors for Pulverized Mineral Processing Operations, Product Storage with Fabric Filter". Uncontrolled emissions were estimated by assuming 99% control for the fabric filter (i.e. the controlled emission factor was divided by one minus the control efficiency).

Emissions from adding guar gum, CMC and cobalt sulfate to their respective mixers were calculated using the same AIRS emission factor as described for the flocculant silo feeders and mixer tank transfer.

Cobalt compound emissions are equivalent to PM emissions for the cobalt mixer.

Emissions from the lime silo were calculated with the same emission factor as used for the flocculant silos.

Emissions from the conveyor between the lime silo and the lime slaker were calculated with an emission factor from AP-42 table 11.17-4 "Emission Factors for Lime Manufacturing Raw Material Handling and Product Processing and Handling" for loading lime into an enclosed truck because this operation is similar. The emission factor for the lime slaker was taken from AP-42 Table 11-17-2 "Emission Factors for Lime Manufacturing Calcining, Cooling and Hydrating", atmospheric lime hydrator with wet scrubber. Uncontrolled emissions were estimated by assuming 90% control for the scrubber. Because the Lime Slaker Scrubber was assumed to have a capture efficiency of 80%, the calculated uncontrolled emission factor was multiplied by 80% to estimate the emission routed to the scrubber. The fugitive emissions were estimated by multiplying the emission factor by one minus the capture efficiency or 20%. The fugitive emissions were assumed to be emitted out the general building ventilation.

Emissions from the limestone railcar dump were calculated based on the performance specification for the baghouse controlling emissions from this source (0.006 gr/dscf) and the estimated airflow. This calculation method is believed to be more appropriate than the drop operation calculation (AP-42 Section 3.2.4) previously used because the railcar unloading will be conducted indoors. Emissions from the limestone hopper to conveyor transfer are also included in this calculation. Uncontrolled emissions were estimated by dividing the emissions by one minus the estimated control efficiency for the baghouse (99%).

Emissions from the limestone tunnel conveyor to bunker transfer were calculated by using Equation 1 from AP-42 Section 3.2.4 for calculating emissions from drop operations. This calculation procedure is described in more detail in Section 3.2.1 of this report. The emission factor calculation is shown in Table 2.

Emissions from the limestone reclaim chute, limestone bunker to crusher feed conveyor, limestone crusher feed conveyor discharge, limestone crusher to conveyor, and limestone conveyor to mix tank transfer were calculated with the emission factor from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); conveyor transfer point.

Emissions from the limestone crusher were calculated by using the performance specification for the crusher baghouse (0.005 gr/dscf) and the estimated airflow. The uncontrolled potential to emit for the baghouse stack was calculated by dividing the controlled emissions by one minus the estimated

control efficiency for the baghouse (99%). It was assumed that the capture system would be 80% efficient, so the total emissions from the crusher are the uncontrolled potential emissions from the stack divided by 80%. The fugitive emissions are then the total emissions multiplied by one minus the capture efficiency or 20%. The fugitive emissions were assumed to be vented out the general building ventilation.

The crystalline silica content of the limestone was estimated from the MSDS and other available sources. A high end value of 2% was used in the calculations.

The remaining calculations for material handling used appropriate calculation procedures. The carbon disulfide emissions from the PAX mixer were calculated based on the decomposition rate of PAX. PAX breaks down to form CS_2, which can then be released to the atmosphere. The rate of decomposition was estimated from data in "Sodium Ethyl Xanthate; Priority Existing Chemical No. 5" (Australian Government Publishing Service, May 1995).

This document focuses on sodium ethyl xanthate, but it indicates that the properties of other xanthates are similar. Page 16 gives a decomposition rate per day based on temperature. A daily decomposition rate of 1.58% was extrapolated assuming a temperature of 23 C based on the flotation feed temp in MetSim. Based on equations on page 14, it was assumed that 3 moles of CS_2 are evaporated to the air for every six moles of PAX that decompose: $6ROCS_2- + 3H_2O ---> 6ROH + CO_3(2-) + 3CS_2 + 2CS_3(2-)$. The trithiocarbonate may hydrolize further to form additional CS_2 or H_2S, but CS_2 may also decompose to form thiocarbonate salts and/or accumulate in solution until being oxidized in the autoclave, so the estimate of emission is believed to be reasonable.

Assuming that the typical storage period for the PAX is one day, an emission factor can be calculated from:

$$1.58\% * \frac{v/v}{100\%} * \frac{lb\ mole}{202.37\ lb\ PAX} * \frac{3\ moles\ CS_2}{6\ moles\ PAX} * \frac{76.14\ lb\ CS_2}{lb\ mole} * \frac{2000\ lb}{ton} = \frac{5.94\ lb\ CS2}{ton\ PAX}$$

It was assumed that 90% of the CS_2 would be released from the mix tank and storage tank. Much of the residual SIPX would be expected to be destroyed in the autoclave.

Emissions from filling the MIBC storage tank were calculated with Emission Master Version 7.2.0.4. Breathing losses were assumed negligible because the tank is indoors. Hexanol was used as a surrogate for MIBC because they are both six carbon alcohols. The hourly emission rate is based on the tank being

filled in one hour, the annual rate is based on the number of fills per year necessary to supply the MIBC required for the flotation process. Emissions from the diluent tanks were calculated in the same manner, except a vapor pressure curve was developed from information on the MSDS.

The working losses of sulfuric acid mist from filling the sulfuric acid tanks were calculated based on the vapor pressure of sulfuric acid, the volume of air displaced and the estimated fill time. The sulfur dioxide emissions were estimated with an emission factor taken from AIRS 3-01-023-20 for sulfuric acid tank car and truck unloading. The emission factor was reported for SO_x, the emissions were assumed to be 100% SO_2 to be conservative.

Emissions from the storage tank were estimated with an emission factor from AIRS 3-01-023-21 for a sulfuric acid storage tank vent. Again the emission factors were reported as SO_x, so the emissions were assumed to be both 100% SO_2 and 100% sulfuric acid mist to be conservative.

Emissions from filling the HCl tank and from the HCl tank vent were assumed to be similar to those calculated for SO_2 with the AIRS factor.

Emissions from the NaHS Mix Tank/Storage Tank were calculated by determining the concentration of H_2S in the headspace over the tank based on data in "H_2S in Gas Phase Over Aqueous NaSH" (Pustilnik, 1997). Table 16 provides H_2S concentration vs. temperature for NaSH solutions at nominally 45% concentration. NaHS will be delivered to the plant at 45% and then diluted to 30% for use in the process. Per the process flow diagrams prepared by Bateman (dated June 16, 2006), raw water will be added to the storage tank. As a worse case assumption, the concentration over nominally 45% NaHS was determined. Per the process flow simulation (MetSim revision U3), the NaHS will be stored at 68 degrees F (indoors). Table 16 includes three data points at this temperature, two from plants and one from a sample generated in the laboratory. The average of the three data points is 53.7 ppm. This was assumed to be the concentration in the tank headspace. The scrubber flow rate was assumed to be 50 m^3/hr or 29.4 ft^3/min based on comments from Bateman that the flow would be on the order of "tens of m^3/hr". Emissions are then:

$$53.7 \ ppm \ H_2S * \frac{v/v}{10^6 \ ppm} * \frac{1 \ lb \ mole}{385.3 \ scf} * \frac{34 \ lb \ H_2S}{lb \ mole} * \frac{29.4 \ ft^3}{minute} * \frac{60 \ minute}{hour} = \frac{0.01 \ lb}{hr}$$

Emissions from the oxygen plant cooling tower were calculated based on the procedure in AP-42 Section 13.4 "Wet Cooling Towers". An initial calculation was performed using the default emission factor in Table 13.4-1 for induced draft cooling towers. This value is based on 0.02% liquid drift and 11,500 ppm

total dissolved solids (TDS) content in the circulated water. This calculation was refined to reflect the use of drift eliminators and control of the TDS in the water resulting in 0.001% drift and 2500 ppm TDS.

The control efficiency for fabric filters controlling emissions from dry material handling sources was assume to be 99% based on Table GI-5A.1 from the MPCA air quality permit application instructions. A control efficiency of 90% was assumed for the lime slaker scrubber based on information in the same table.

2.2.5 Combustion Sources and Fuel Tanks

Emissions were estimated for the high pressure boiler for all pollutants except NO_x, with the appropriate emissions factors from AP-42 Section 1.4, "Natural Gas Combustion". NO_x emissions were estimated based on the highest number proposed by potential boiler vendors, 300 mg/Nm^3. Emission factors for the natural gas fired space heaters were taken from the same AP-42 section cited above. For NO_x and CO emissions the emission factors for boilers < 100 MMBtu/hr were used because they are higher than those for residential furnaces (<0.3 MMBtu/hr) although some or all of the heaters may be in the <0.3 MMBtu/hr size range.

For the emergency generators, emissions were calculated with emissions factors from AP-42 Section 3.4.1 "Large Stationary Diesel and All Stationary Duel-fuel Engines", with the exception of sulfuric acid mist. The maximum sulfur content of the fuel was assumed to be 0.5%. For polycyclic organic matter (POM) compounds reported below the detection limit, ½ the detection limit was used in the calculations. A total POM emission factor was calculated by summing the emission factors for the compounds above the detection limit.

Sulfuric acid mist emissions were calculated based on data presented in "The Sulfur Speciation of Diesel Emissions from a Non-road Generator" (Liu, Lu, Keener, and Liang 2005). Figure 5 in the referenced document presents sulfur conversion to SO_4^{2-}, which is indicated elsewhere in the paper to be at least 90% H_2SO_4. From the figure, for the highest sulfur fuel (0.22%) at the highest load, the percent conversion is about 1.67%. The H_2SO_4 emission factor was calculated by:

$$\%S * \frac{w/w}{100\%} * \frac{7.13\ lb\ oil}{gallon} * \frac{98\ lb}{lbmole\ H_2SO_4} * \frac{lb\ mole\ S}{32\ lb} * \frac{1.67\ mole\ H_2SO_4}{100\ mole\ S} * \frac{1\ gallon\ oil}{140000\ Btu} * \frac{10^6\ MMBtu}{Btu} = \frac{0.026*\%S\ lb\ H_2SO_4}{MMBtu}$$

This makes the emission calculations conservative because the SO_2 factor assumes 100% conversion to SO_2.

Emissions from the diesel fire pumps for NO_x and PM were based on the limits in 40 CFR Part 60 Subpart IIII, which will apply to the new fire pumps. The sulfur content of the fuel was assumed to be 500 ppm as specified by the NSPS (effective October 2007).

Emissions from the diesel pumps for sulfuric acid mist were calculated in the same manner as described above for the emergency generators. Sulfur dioxide emissions were calculated based on the fuel oil sulfur content with the emission factor in AP-42 Section 3.4 as requested by MPCA (this procedure would be expected to produce more accurate results).

Emissions from the diesel pumps for the remaining pollutants were calculated based on emission factors in AP-42 Section 3.3 "Gasoline and Industrial Diesel Engines". The CO emission factor in AP-42 produced emissions below the NSPS and the manufacturer's data was lower still, so the AP-42 emissions factor was used for CO. For POM compounds reported below the detection limit, ½ the detection limit was used. A total POM emission factor was calculated as the sum of the emission factors for the compounds reported above the detection limit. Compounds reported below the detection limit were assumed to have no contribution towards total POM.

Emissions were estimated for the zinc pots based on appropriate emissions factors in AP-42 Section 1.3 "Fuel Oil Combustion". The maximum sulfur content of the fuel oil was assumed to be 0.5%.

Emissions from the Area 2 Shop and the Area 1 Shop propane fired space heaters were calculated with emission factors from AP-42 Section 1.5 "Liquid Petroleum Gas Combustion". The sulfur content of the fuel was assumed to be 0.2 gr/100 cf based on data in the LTVSMC Title V permit application. The emission calculations in this report reflect the updated version of Section 1.5 dated July of 2008. The air dispersion modeling was conducted using the previous version of the AP-42 section. The primary pollutants from these sources are NO_x and CO. The NO_x emissions are lower in the updated section. CO emissions are higher, but modeling was not performed for CO. PM emissions are slightly higher, but the total potential emissions for the two sets of heaters are still less than one ton per year.

Emission factors from AP-42 Section 1.4 were used to calculate emissions from the Oxygen Plant Adsorber Regeneration Heater.

Emissions from the diesel fuel tanks for the fire pumps and the emergency generators and zinc pots were calculated with the EPA TANKS program version 4.09d. Meteorological data for Duluth, Minnesota was used. The fire pump tank was assumed to be a vertical fixed roof tank with H/D = 2.5:1. The backup generator and zinc pot tank was assumed to be a horizontal cylinder with L = 2*D.

Emissions from the gasoline tanks were also calculated with the EPA TANKS program with meteorological data for Duluth. Based on information received from PolyMet, H/D was estimated as 1.2. The tanks are light blue in color, so light gray was chosen as the color in the TANKS program because this was the closest available option. The working losses based on the projected throughput were assigned to Tank #1; the breathing losses were assigned to both tanks.

2.3 Basis for Parameters Used in Point Source Calculations

2.3.1 Crushing Plant and Flotation

The emission calculations for the crushing plant sources are based on the performance specification for the baghouses and the design airflow rate. The performance specification is based on BACT-like control for fine particulates. Support for the value chosen is included in RS58A. The airflow rates are based on preliminary design work on the baghouses.

The projected actual emissions for the crushing plant are based on operation of sufficient equipment to process 32,000 tpd for 8760 hours per year. In actual operation, the crushing plant utilization would be expected to be somewhat lower than this. The limited controlled potential to emit is the same as the controlled potential to emit except for PM and PM_{10} which will be part of the facility wide cap of 240 tons on point source emissions.

The nominal capacity of the concentrate dryers was obtained from Bateman in a September 25, 2007 e-mail. A safety factor of 15% was applied to estimate the maximum capacity of the dryers.

The emissions from the concentrate silos, the filter receiver and the railcar loading system are based on the design airflow for this equipment and the estimated performance specification for the fabric filters. The design airflow rates were taken from the preliminary specification for the system prepared by Krech Ojard (dated 6/14/07). The performance of the baghouses was predicted based on air-to-cloth ratio information in the same specification.

2.3.2 Autoclaves

The autoclave exhaust rates were taken from the MetSim process flow simulation (revision U3). The fresh concentrate solids feed rate was used to scale up the results of the 2005 pilot testing where applicable. The total feed rate to the autoclaves was used to scale up the 2000 pilot study data. This data was obtained from MetSim as well.

It should be noted that the basis for the MetSim process flow simulation is 32,000 tons per day of raw ore feed, assuming 90% process availability. The average ore feed rate to the plant is therefore

32,000 tons per day / (24 hours/day * 90% availability) = 1481.5 tons per hour. The data in MetSim reflects the plant design capacity, so it is used directly to calculate potential emissions. The projected actual emissions are based on the projected average operating rate of 32,000 tons of ore per day.

2.3.3 Metal Extraction Processes

The ventilation rates for all of the metal extraction tanks were taken from MetSim revision U3. Where ventilation data was not provided in MetSim, the exhaust rate for the most similar tank was used. The limestone feed rate to the solution neutralization and raffinate neutralization tanks was used to scale up results of the pilot plant stack testing. This necessary data for the commercial scale plant was obtained from MetSim.

The same comment as above concerning the basis for the MetSim data also applies to the metal extraction tank calculations (i.e. the data from MetSim is based on 32,000 tpd ore feed with 90% process availability and the projected actual emissions are based on an average daily feed rate of 32,000 tpd.)

The exhaust rate for the electrowinning process was also taken from MetSim. As described above, the current and number of cells for the commercial scale plant was used to scale up the pilot study stack test results. This information was taken from the "General and Process Design Criteria for the NorthMet Project" spreadsheet prepared by Bateman (revision E1). The projected actual emissions calculations assume 90% availability of the process or 7884 hours of operation per year.

The organic makeup addition rate for the copper solvent extraction process was calculated as the sum of the diluent and extractant makeup rates. The diluent makeup rate was taken from the process design criteria spreadsheet with a 15% safety factor and the extractant makeup addition rate was taken from the *Executive Summary of the Definitive Feasibility Study*, revision E (September 6, 2006), with a 15% safety factor applied. The airflow rate used to estimate emission from the pilot study data was estimated based on the building volume calculated from drawings obtained from Bateman and assuming 6 air exchanges per hour as required by the 1997 uniform building code for areas where Class IIIA liquids are used. Based on the flashpoint given on the MSDS the diluent, it is a Class IIIA liquid. The projected actual emission calculations do not include the safety factor.

2.3.4 Process Consumables Handling Sources

When it was available, data on the raw material handling rates was taken from "General and Process Design Criteria for the NorthMet Project" spreadsheet prepared by Bateman (revision E1, August 24, 2006). A safety factor of 15% was applied to the values in the spreadsheet, unless a maximum value

was included, in which case that value was used. Hourly throughputs were assumed to be annual throughputs divided by 8760 hours per year. The projected actual emissions calculations do not use a safety factor when one was applied for the potential emission calculations or when a maximum value was reported and used in the potential emission calculations the average usage data from the design criteria was used.

The estimated usage of CMC was provided by Bateman in a September 25, 2007 e-mail as 16 metric tons per year. A 15% safety factor was used in the potential emissions calculations, but not the projected actual emission calculations. Hourly throughputs were assumed to be annual throughputs divided by 8760 hours per year.

Usage of lime in the hydrometallurgical process was taken from the design criteria spreadsheet as described above. Lime will also be used for other applications including: 1) waste water treatment at the Mine Site; 2) addition to the East Pit as it is being filled with water; 3) addition to the hydrometallurgical residues that are sent to the residue cells, and 4) use of lime in the separation of copper and nickel concentrate. The total usage from all of these applications was obtained from the engineers and geochemists working on the NorthMet project and used in the lime handling emission calculations. The estimated usage for the copper and nickel concentrate separation is less than that for the hydrometallurgical residue neutralization. Since these two operations will not occur at full capacity simultaneously, the scenario when the hydrometallurgical plant operates at full capacity was taken as worst case.

Hourly throughputs for the sulfuric acid and hydrochloric acid tanks during filling had to be calculated. This was done based on process plant design information from the *Definitive Feasibility Study* (DFS), Process Plant, Revision A (July 7, 2006) and estimated fill times.

The limestone conveyor from the hopper and reclaim rates were taken from the conceptual design drawings prepared by Krech Ojard & Associates (Krech Ojard) and dated January 20, 2006. Additional calculations were performed to determine the maximum daily emission rates to be used as input for the dispersion modeling, because the short term PM_{10} standard is averaged over 24 hours. These calculations are described in Section 3.3.1 of this report.

Limestone railcar unloading and the limestone hopper to conveyor transfer share a common baghouse and emission point. The emissions from these processes were estimated based on the estimated airflow for the baghouse and the baghouse performance specification. The airflow was estimated

based on the area of the unobstructed opening where the railcars pass through the building and a typical design face velocity of 200 feet per minute.

Emissions from the limestone crusher baghouse were estimated based on the estimated airflow and the performance specification for the baghouse. The airflow was estimated by scaling the airflow for one of the fine ore crushers and making an adjustment to reflect the one-stage limestone crushing system versus the two-stage fine ore crushers.

The capacity of the material handling activities related to the limestone crusher were taken from the "General and Process Design Criteria for the NorthMet Project" spreadsheet prepared by Bateman (revision E1). The capacity of the material handling associated with the crusher was assumed to be the same as the 100 tph crusher capacity.

The projected actual emission calculations for the limestone handling sources based on throughput used the projected actual annual consumption of limestone as obtained from the design criteria spreadsheet.

The projected actual emissions for the railcar unloading baghouse are based on the total potential airflow multiplied by the ration of the actual annual limestone usage to the potential usage. The maximum railcar dump rate was obtained from Rich Ojard of Krech Ojard during a phone conversation on November 7, 2006.

The projected actual emissions for the crusher baghouse were calculate in a similar manner, the ratio of the total annual limestone throughput to the maximum annual crusher capacity based on the 100 ton per hour capacity and 8760 hours per year.

The water recirculation rate in the oxygen plant cooling tower was estimated based on the cooling tower size for a larger oxygen plant. The water circulation rate was scaled down based on the ratio of the capacity of the plants in tons per day of oxygen.

2.3.5 Combustion Sources and Fuel Tanks

The maximum fuel consumption rate for the high pressure boiler was obtained from Clayton, a potential boiler vendor as communicated by Mike Wardell-Johnson of Bateman in a May 3, 2006 e-mail. The total heat input to the space heaters was obtained from Paul Stavnes of NORAMCO in a May 1, 2006 e-mail. The heat input was assigned to the heaters in specific buildings based on footprint area. The projected actual emission calculations assume six percent utilization for the boiler as obtained from the boiler specification prepared by Bateman (Mechanical data sheet for "High

Pressure Boiler (Package)"). The projected actual emission calculations also assume 40% utilization for the space heaters based on historic heating demand at the site with a safety factor to account for differences between the historic LTVSMC operation and the proposed PolyMet operation.

The maximum fuel consumption for the Backup Generators is based on a fuel consumption test performed prior to the delivery of the units. The throughput used for the projected actual emission calculations assumed 10 days of annual operation or 240 hours per year.

The maximum fuel consumption rate for the Area 2 Shop infrared heaters was conservatively estimated based on the capacity of the existing system. The new system is expected to have a lower maximum heat input. The maximum fuel consumption rate for the zinc pots was taken from the emission calculations for the LTVSMC facility Title V permit application. The projected actual emission calculations assume 10% utilization as a rough estimate.

The maximum heat input for the Area 1 Shop propane heaters was obtained from a quotation to upgrade the heating system from 1990.

The size of the Oxygen Plant Adsorber Regeneration Heater was obtained from the engineer working on the oxygen plant design.

Fuel consumption data for the fire pumps was obtained from Clarke, the manufacturer ("JU4H-UF58 Installation and Operation Data", revision D). The projected actual emission calculations are based on one hour per week of testing and 12 hours per year of operation for a total of 64 hours per year run time. The maximum throughput for the fuel oil tanks was determined based on the maximum fuel consumption rate of the equipment supplied by the tanks.

The annual throughput for the gasoline tanks was estimated based on the estimated mileage for PolyMet owned gasoline powered vehicles (primarily light trucks) at the tailings basin, on the Dunka Road, and at the mine site. The projected mileage was increased by 10% to account for other vehicle traffic and it was increased by 25% to account for the possible fueling of vehicles owned by other operations at the former LTVSMC site.

3.0 Plant Site Fugitive Source Calculations

3.1 Description of Fugitive Sources and Emissions

The main sources of fugitive emission at the Plant Site are the tailings basin, traffic on paved and unpaved roads and emissions from the handling of limestone.

3.1.1 Raw Material Handling Sources

The primary raw material that generates fugitive emissions from its handling is limestone. As described in Section 1.0 above, PolyMet may have limestone delivered via truck for the first one to two years of operation and thereafter have limestone delivered by rail. The emission spreadsheets include the source for both scenarios, because it is possible that their operation may overlap and this reduces the number of scenarios that must be modeled to demonstrate compliance with ambient air quality standards. This approach may be reconsidered as the impact assessments are completed.

3.1.1.1 Limestone Truck Haul Option

There are four fugitive sources associated with the truck haul options. The first is limestone truck dump (FS 035) where limestone is dumped from the trucks to a grizzly screen over Conveyor 4A. A shed will be constructed around the dump location. The second source is the grizzly (FS 036), which will separate out large pieces of limestone. The third is the transfer from the grizzly to Conveyor 4A (FS 037). The final source is emissions generated from the limestone delivery trucks traveling down the paved road on the Plant Site (FS 038). This source is discussed in detail in Section 3.1.2 below.

After the limestone has been transferred to Conveyor 4A, it will be in the existing crushing plant. The limestone would travel from Conveyor 4A to 5S, be stored in one of the south fine ore storage bins and then fed to the 3 South rod and ball mills via the fine ore feeder. The usage of any equipment prior to the mills (before water is mixed with the limestone) will be tracked as part of the record keeping for the crushing plant. Any emissions due to limestone handling will be included in the calculations to show the facility is a minor source.

These limestone handling sources emit PM and PM_{10}. The limestone also contains a small amount of crystalline silica, which is a pollutant that was referenced in the AERA. Total potential emissions for these sources are 12.9 tpy of PM_{10}.

3.1.1.2 Limestone Rail Haul Option

There are four fugitive sources associated with the rail haul option: 1) The transfer from the limestone conveyor coming from the railcar unloading building to the stacker conveyor (FS 024): 2) the transfer from the stacker conveyor to the stockpile (FS 033); 3) the dumping of limestone from a front end loader to the reclaim pocket for transfer to the limestone crusher (FS 025); and 4) the transfer from the reclaim feeder to the tunnel conveyor that runs to the limestone crusher in the additive plant (FS 034).

As with the truck haul option, the pollutants of interest are PM, PM_{10} and crystalline silica. Potential emissions are 100.1 tpy for PM_{10}.

3.1.1.3 Liquid SO_2 unloading

SO_2 is used in the AuPGM Precipitation process in the Hydrometallurgical Plant. The SO_2 will be delivered and stored as a pressurized liquid. Some fugitive SO_2 will be emitted when the tank is filled (FS 029). Estimated emissions are a maximum of 2.2 lb/hr and 0.03 tpy. The short term emission rate is much higher because the emissions will occur during a short period of time when the tank is filled.

3.1.2 Plant Site Paved Roads

The main roads at the Plant Site used for general traffic are paved. There are also unpaved roads within the PolyMet ownership boundary that are discussed elsewhere. The unpaved roads at the tailings basin are discussed in Section 3.1.3 below and the additional unpaved roads are described in Section 3.1.4.

In general, we have not calculated emissions from paved roads because they will be insignificant. However, 50 trucks per day will be required to meet the limestone demand, so calculations have been performed for this activity (FS 038). Only portions of the paved road within PolyMet's property boundary were included in the calculations. Emissions are estimated as 12.3 tpy of PM_{10}.

3.1.3 Tailings Basin Sources

There are two fugitive sources at the tailings basin: 1) unpaved roads; and 2) wind erosion off the portions of the tailings basin dams above the water line (beaches). The traffic on the roads will be due to light trucks driven by workers at the basin. This will result in PM and PM_{10} emissions. Controlled emissions are estimated as 3.0 tpy PM_{10}.

Tailings basin wind erosion (FS 032) will only occur at the exposed beaches where the deposited tailings are not saturated with water and they have not been stabilized with vegetation or other

means. Therefore, only a portion of the perimeter of the basin will be susceptible to wind erosion at a given time. PM and PM_{10} will be emitted. Toxic pollutant emissions were also calculated based on the metallic content of the tailings. PM_{10} emissions from wind erosion at the tailings basin are 84.3 tpy. The highest HAP, or other toxic compound, emissions are for manganese at 0.24 tpy. Nickel emissions are 0.09 tpy. Fluoride emissions are 0.03 tpy. Lead emissions are 0.06 tpy. Emissions for the remaining metals are included in Table 1.

3.1.4 Dunka Road Emissions

The Dunka Road connects the Mine Site to the Area 2 Shop that will be used for locomotive maintenance and as a base of operations for the mine. The management offices and changing facilities will also be located at the Area 2 Shop. Mine workers will drive their personal vehicles from the public road to the Area 2 Shop along the Dunka Road, and then be shuttled to the mine site. In addition, there will be a small amount of light vehicle traffic from the Plant Site to the Mine Site as supervisors and technical staff based at the Plant Site need to visit the Mine Site. The Dunka Road will also be used to bring in fuel and other supplies to the Mine Site and to haul sludge from the waste water treatment facility at the Mine Site to the Plant Site. Emissions from traffic on the Dunka Road are identified as FS 012 in Table 1.

Mine vehicle maintenance will be conducted at the Area 1 Shop, which is to the west of the Plant Site. Mine vehicles will travel part way down the Dunka Road and then travel through former Cliffs Erie mining operations to avoid mixing light and heavy vehicle traffic as a safety issue.

At the time of EAW submittal, an option for stockpile construction was being considered whereby taconite tailings would be mined from the tailings basin near the Process Plant and transported down the Dunka Road. These tailings would have been used for construction of the stockpile foundation and liner systems. It has since been decided that tailings will not be used at the mine to construct liner systems for the stockpiles. This has made emissions from Dunka Road traffic a much less significant issue. The proposed air quality permitting strategy is to include emissions from portions of the Dunka Road within the Mine Site and the Plant Site boundaries with the combined permit application.

The emissions from the road segments within the Plant Site boundary are included in Table 1. Emissions from the road segments within the Mine Site boundary are included with the calculations for the Mine Site in RS57B.

Emissions were calculated along stretches of the Dunka Road and other service roads where PolyMet will control the surrounding land as part of the Plant Site. Emissions from light trucks, fuel tankers, trucks hauling lime to the waste water treatment facility at the Mine Site, trucks hauling sludge from the waste water treatment facility and mining trucks going for maintenance were calculated. The total controlled potential PM_{10} emissions are 12.5 tpy. Additional emission information is included in Table 1.

3.2 Fugitive Source Emission Calculations Procedures

Appropriate emission calculation procedures from AP-42 5th edition were used to calculate fugitive emissions at the Plant Site where applicable. Otherwise engineering estimates and material balances were used. Further details on the calculations for each type of source are presented below.

3.2.1 Raw Material Handling

Equation 1 from AP-42 Section 3.2.4 for calculating emissions from drop operations was used to calculate emissions from appropriate material handling operations. This included limestone stacker conveyor transfer to the stockpile (FS 033), and the limestone truck dump (FS035). This equation relates wind speed and the moisture content of the material being handled to emissions in lb/ton of material handled. Different constants are used to estimate PM and PM_{10} emissions. A mean wind speed of 7.1 miles per hour was obtained from the 2001 to 2004 meteorological data set for Hibbing, Minnesota used in the air dispersion modeling. A moisture content of 0.7 % was obtained from moisture content data for crushed limestone from AP-42 Table 13.2.4-1.

The parameters used to calculate each material handling emission factor and the factors are shown in Table 2. The AP-42 equation was used to calculate emission factors for PM and PM_{10}. The crystalline silica content of the limestone was estimated from the MSDS and other available sources. A high end value of 2% was used in the calculations.

For the remaining fugitive source related to limestone handling, including limestone conveyor to stacker conveyor transfer (FS 024), the limestone reclaim pocket dump (FS 025), limestone reclaim feeder to conveyor transfer (FS 034), limestone truck dump grizzly (FS 036), and limestone grizzly to conveyor belt (FS 037), appropriate emission factors from AP-42 Section 11.19.2, "Crushed Stone Processing and Pulverized Mineral Processing" were used. An appropriate emission factor was chosen for each operation from Table 11.19.2-2. The specific emission factors are presented in Table 1.

Emissions from the SO_2 unloading operation (FS 029) were estimated by an engineering estimate. It was assumed that the coupler at the end of the hose used to connect the delivery truck to the tank would be filled with liquid SO_2 when it was disconnected and that this SO_2 would evaporate into the surrounding air. The coupler was estimated to be three inches in diameter by six inches long and the quantity of liquid SO_2 present was calculated based on the density of liquid SO_2.

3.2.2 Plant Site Paved Roads

The emissions from hauling limestone down the paved roads at the Plant Site were estimated by using the procedure in AP-42 Section 13.2.1, "Paved Roads". The emission factors were calculated with Equation 1 in the referenced AP-42 section, which calculates the emission factor as a function of the silt loading and average vehicle weight. A correction is also applied for 1980s vehicle fleet exhaust, brake wear and tire wear, because the emission factor include these sources of emissions, but they should not be counted as stationary source emissions. It was assumed that the limestone trucks would be the only traffic on the road, which based on our experience will produce the most conservative results[5]. The trucks will have a loaded weight of 40 tons and an empty weight of 16 tons for an average weight of 28 tons. Different constants are used in the equation to calculate emission factors for PM and PM_{10}. The values for the constants were taken from Table 13.2-1.1 and the emission factor for the vehicle emissions was taken from AP-42 Table 13.2.1-2. Because the facility is not currently operating, no site specific silt loading data was available. Therefore, a value was taken form AP-42 Table 13.2.1-4 for a quarry (8.2 g/m^2). Details on the emission factor calculation, including the values of the constants and parameters used, are presented in Table 2.

A correction factor was applied to account for a proposed 15 mile per hour speed limit for limestone delivery trucks on PolyMet property. This factor is based on Equation 3-1 in *Control of Open Fugitive Dust Sources* (EPA-450/3-88-008). The equation cited is for unpaved roads, but it is also considered applicable to paved roads.

3.2.3 Tailings Basin Sources

There are two distinct sources of fugitive emissions at the tailings basin: wind erosion from the tailings basin beaches and dust emissions from traffic on unpaved roads. The sections below discuss the calculations for these two sources.

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[5] The addition of light truck and car traffic would reduce the average vehicle weight which, although total VMT would increase, tends to reduce total emissions when following AP-42 calculation procedures.

3.2.3.1 Tailings Basin Unpaved Roads

Emission factors for the unpaved tailings basin roads (FS 016) were calculated using the procedures in AP-42 Section 13.2.2, "Unpaved Roads". Equation 1a was chosen, because it is for roads at industrial sites not accessible to the public, which would be the case for the tailings basin roads. This equation calculates an emission factor as a function of road silt content and average vehicle weight. The traffic on the tailings basin will consist of light truck traffic from personnel whose work requires them to travel to and from areas of the tailings basin. A vehicle weight of 2.5 tons was used in the calculations.

The tailings basin, as it will exist as part of the PolyMet operation, is not yet in operation, so silt content data for the roads is not available. Therefore, the silt content data in AP-42 Table 13.2.2-1 was utilized. The value for "Taconite mining and processing, Service road" is the most appropriate with an average value of 4.3%. Details on the calculation of the emission factors are presented in Table 2.

3.2.3.2 Tailings Basin Wind Erosion

PM and PM_{10} emissions were calculated for wind erosion at the tailings basin (FS 032) using the procedure in AP-42 Section 13.2.5. The threshold friction velocity (u*t) of 0.29 m/s was calculated from grain size distribution data reported in RS39/40T. It was assumed that wind erosion would only occur at the coarse beach area of the tailings basin. The fine beach area is predicted to remain at near saturation conditions. The transition from fine beach to coarse beach occurs at around 400 feet from the dike crest, but it is not a precisely defined point, so data out to 512 feet was evaluated to consider finer material that may be subject to wind erosion.

Additional data used for the calculation included interpolated fastest mile data based on the 2004 Hibbing Airport meteorological data, an assumed flat pile shape, daily surface disturbance, and a surface roughness height (Zo) of 0.005 meters. Hourly emissions were not reported because emissions are calculated based on the maximum daily wind speed and emissions on a basis of less than 24-hours are not readily determined with this procedure. Daily emissions will be calculated for specific daily meteorological conditions as part of the dispersion modeling process.

The spreadsheet used to estimate wind erosion from the tailings basin and other sources was submitted to MPCA on November 6, 2007. At that time refinements were made to the wind erosion calculations that reduced the predicted emissions from the tailings basin by a small amount as compared to the September 2007 RS57 submittal. When the reformatted Plant Site emission calculation spreadsheet was submitted in

December of 2007, the refined wind erosion calculations were inadvertently not included. The calculation spreadsheet in this report includes the refined wind erosion calculation for the tailings basin.

Emission of trace metals were estimated based on available data on tailings composition. Tailings composition data was obtained during pilot studies completed in 2000, 2005, and 2006. The 2000 data included an analysis by particle size fraction. The sub 38 micron data was considered for use in most cases, except where the sub 10 micron data produced what appeared to be higher quality results (e.g. lower detection limit). The 2000 data was compared to data from the 2005 and 2006 pilot studies. The 2000 data was used where it produced higher concentrations. Analysis was not performed for Vanadium in 2005 and 2006 so the 2000 data was used. The 2000 data was higher than the more recent data for arsenic, chromium, cobalt, lead manganese, nickel, phosphorus, barium, boron, copper, and zinc. The 2005 and 2006 data was higher for mercury, so these data were used. A Winsorized mean of log transformed data was used for mercury because of an outlier result. Data from the 2005 pilot study were used for antimony, beryllium, cadmium, selenium, and molybdenum because either analysis for these metals was not performed in 2000 or the results were below the detection limit. For the remaining metals of interest, hafnium and tellurium, in the absence of other source of data, data for the raw ore was used.

Fluoride emissions were also estimated for the tailings basin based on the fluoride concentration of the ore. It was assumed that any fluoride in the ore would be emitted in a form that would be detected by EPA Methods 13A or 13B (40 CFR Part 60 Appendix B), that is that all of the emissions would be regulated as a Prevention of Significant Deterioration (PSD) pollutant.

3.2.4 Dunka Road Sources

The same procedures were used to calculate emission factors for the Dunka Road and other connecting roads as for the tailings basin roads as described in Section 3.2.3.1. The Dunka Road also will not be accessible to the public, so Equation 1a was used for these calculations as well. The weighted average vehicle weight for each segment of road where multiple types of vehicles are expected to travel was calculated. This was done by determining the percent of the traffic for each vehicle type and multiplying this by the vehicle weight and summing this for all vehicles. The calculations are shown in Table 3.

Again, because the projected traffic is not yet occurring on the Dunka Road, site specific silt content data is not available. Therefore, the most representative value from AP-42 table 13.2.2-1 was used. This was "Taconite mining and processing, Service road", with a mean value of 4.3%. Details on the calculations are provided in Table 2.

3.3 Source of Parameters Used in Fugitive Source Calculations

3.3.1 Raw Material Handling

The hourly throughput rate for the limestone railcar haul option conveyor to stacker conveyor and stacker conveyor to stockpile are based on the conveyor capacities as given on the conceptual drawings for the limestone handling system dated January 20, 2006 and prepared by Krech Ojard. The same drawings give two values for the reclaim rate depending on the width of conveyor chosen. A final decision on the reclaim rate has not been made, so the higher value is used in the calculations.

The annual limestone throughput used in the projected actual emission calculations is the projected actual limestone consumption for the facility as taken from the "General and Process Design Criteria" spreadsheet (rev. E) prepared by Bateman. Additional calculations were performed to determine the maximum daily emission rates to be used as input for the dispersion modeling, because the short term PM_{10} standard is averaged over 24 hours.

The maximum daily limestone transferred to the stockpile was estimated by assuming that two trains per week would deliver 5,000 tons of limestone each during the April to October Lake Superior shipping season. This would provide sufficient limestone to meet the annual demand. It was further assumed that a maximum of one train would be unloaded per day. A 25% safety factor was applied to the 5,000 ton per train figure to account for possible variation in the number of cars per each individual train.

The maximum daily reclaim rate was calculated by assuming that at most, a one week supply of limestone would be fed to the reclaim system per operating day. The maximum daily throughput is then the annual demand divided by 52 weeks per year.

The rates for the limestone truck dump option were determined based on information from Krech Ojard who designed the limestone handling system. Krech Ojard developed a trucking schedule based on discussion with a trucking company, who indicated they would supply the limestone in 50 trucks per day, five days per week, with each truck delivering 24 tons of limestone. For the hourly emissions calculations, it was assumed that the deliveries would occur over an eight hour day, with approximately seven trucks arriving per hour. The annual throughput rates are very conservative, because it assumes the seven truck per hour rate occurs for 8760 hours per year, when in actuality it would only occur for eight hours per day, five days per week.

The liquid SO_2 handling rate is based on the SO_2 usage rates given in the "General and Process Design Criteria" spreadsheet (rev. E) prepared by Bateman with a 15% safety factor. The emission

rate is based on the total number of times the tank is filled in a given time period. The hourly rate assumes one fill per hour, the annual emission rate is based on the total fills of the 26,681 gallon tank required to meet the annual demand. The annual emissions for the projected actual emissions calculations are based on the number of fills required to meet the actual projected plant SO_2 demand.

3.3.2 Plant Site Paved Roads

As described above, 50 trucks per day will deliver limestone when the truck haul option is utilized. The distance along the paved road from PolyMet's projected property line to the truck dumping location was estimated from an aerial photograph. The total daily miles are then the haul distance times 50 times two to account for round trips. The daily miles were divided by 24 to get an average hourly value. In actual operation the trucks will probably arrive over one or two shifts, but for modeling purposes the average emission rate for a 24-hr period is the appropriate input value.

3.3.3 Tailings Basin Sources

The miles traveled on the tailings basin roads were estimated from calculations performed when the tailings basin was operated by LTVSMC as part of their taconite plant. The LTVSMC calculations were based on nine trucks operating at 15 miles per hour. The LTVSMC value was scaled by tailings production at the taconite plant versus projected tailings production at the PolyMet Plant Site.

The tailings basin emission calculation is based on the total area of beach that is not vegetated and not wet due to recent deposition of tailings. The basis for the calculation is the 20 year configuration for the single tailings basin cell. The 20 year configuration has the largest beach area and therefore the greatest potential for wind erosion. The emission calculations were completed for the scenario when the larger beach to the south of the basin is the active area. This area is closest to the ambient air boundary, so it is expected to have higher impacts than the north beach area. The south beach area would allow for approximately eight months of tailings deposition. It was assumed that mulching would be performed every two months. This means that the active area for the previous two months would be subject to wind erosion at any given time. This would be equal to 25% of the total south beach area. The total coarse beach area along the south perimeter is 118.24 acres, 25% of which is 29.56 acres. In addition, at the active deposition area where recently deposited tailings would still be wet, wind erosion would not occur. The size of this area was calculated as 2.8 acres. The total area subject to wind erosion is then 29.56 – 2.8 = 26.76 acres.

3.3.4 Dunka Road Sources

Traffic levels on the Dunka Road and other service roads were estimated based on projected staffing levels, fuel consumption, lime usage and sludge generation at the waste water treatment facility and the projected need for truck maintenance at the Area 1 Shop. It was assumed that three 40 ton oil tankers per day would deliver fuel to the mine site. This results in three round trips per day. It was assumed that the maximum hourly distance traveled would be one trip going one way.

For the haul trucks going for maintenance, a 10 vehicle fleet was assumed based on information obtained from PolyMet (eight for mining operations, two for construction and miscellaneous purposes). It was also assumed that haul trucks would require maintenance every 250 hours. Assuming 24 hour per day operation, this would mean maintenance about every 10 days. The average daily number of trucks making the trip to the Area 1 Shop would be a little less than one. A conservative estimate of the hourly worst case was assumed to be two trips one way and the daily average one round trip.

The annual traffic due to the waste water treatment facility was estimated from the projected maximum lime usage of 5,000 tons per year and the projected sludge generation of 10,000 tons per year. It was assumed that the sludge and lime would be hauled in separate over the road trucks with a maximum payload of 24 tons. The number of trips per day was determined by assuming a five day per week trucking schedule, with the result rounded up to the nearest trip. For hourly emission calculations, it was assumed that the maximum traffic level was one round trip per hour.

Light truck traffic levels were calculated based on projected staffing levels at the Area 2 Shop, the Mine Site, and the Plant Site. It was assumed that all general mine workers would drive their personal vehicles to the Area 2 Shop and then be shuttled in six person vans to the Mine Site. Railroad operations will be based out of the Area 2 Shop. Mine management will be based at the Area 2 Shop. Supervisory and technical personal, when traveling to the Mine Site would drive separate vehicles. Personnel were divided into shifts and maximum hourly traffic rates were calculated assuming both the shift coming on and the one getting off would travel on the roads during the same hour. It was assumed that all personnel would travel between the eight hour shifts, although railroad workers will be on 12 hour shifts and other staff would likely travel at different times. Total daily traffic levels were estimated by summing traffic from all three shift changes. Detailed tables showing the trips assumed per each segment of the road are shown in footnote 241 to Table 1. Figure 1 shows the location of the various Dunka Road segments.

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Tables

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions - Processing Plant

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	Emission Unit ID	Description	APCD ID	Throughput Maximum (Units/hr) Note	Projected Actual (Units/yr) Note	(Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Cont. PTE [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled PTE (tons/yr)	Max Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
SV 301	EU 301	High Pressure Boiler	NA	0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		NOx	Y	N	186 [101]	8.89	38.954	2.337	0 [502]	8.89	38.954	2.337		38.954				1.121
SV 301		Natural gas		0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		PM10	Y	N	7.6 [103]	0.36	1.592	0.096	0 [502]	0.36	1.592	0.096	0.4 lb/mmBtu	GP 001				0.046
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Total PM	Y	N	7.6 [103]	0.36	1.592	0.096	0 [502]	0.36	1.592	0.096	PM	GP 001				0.046
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		SO2	Y	N	0.6 [103]	0.03	0.126	0.008	0 [502]	0.03	0.126	0.008		0.126				0.004
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Carbon Monoxide	Y	N	84 [102]	4.02	17.592	1.056	0 [502]	4.02	17.592	1.056		17.592				0.506
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		VOC	Y	N	5.5 [103]	0.26	1.152	0.069	0 [502]	0.26	1.152	0.069		1.152				0.033
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Pb	Y	Y	0.0005 [103]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Carbon Dioxide	Y	N	120000 [103]	5738	25132	1,507.901	0 [502]	5738	25,132	1507.901		25,131.689				722.950
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		N2O	Y	N	2.2 [103]	0.11	0.461	0.028	0 [502]	0.11	0.461	0.028		0.461				0.013
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		CH4	Y	N	2.3 [103]	0.11	0.482	0.029	0 [502]	0.11	0.482	0.029		0.482				0.014
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		POM	Y	Y	0.0006728 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		2-Methylnaphthalene	Y	[8]	2.40E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		3-Methylchloranthrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		7,12-Dimethylbenz(a)anthracene	Y	[8]	8.00E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Acenaphthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Acenaphthylene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Anthracene	Y	[8]	1.20E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Benzo(a)anthracene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Benzo(a)pyrene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Benzo(b)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Benzo(g,h,i)perylene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Benzo(k)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Chrysene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Dibenzo(a,h)anthracene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Fluoranthene	Y	[8]	3.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Fluorene	Y	[8]	2.80E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Indeno(1,2,3-cd)pyrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Phenanthrene	Y	[8]	1.70E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Pyrene	Y	[8]	5.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Benzene	Y	Y	2.10E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Dichlorobenzene	Y	Y	1.20E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Formaldehyde	Y	Y	7.50E-02 [104]	0.00	0.016	0.001	0 [502]	0.00	0.016	0.001		0.016				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Hexane	Y	Y	1.8 [104]	0.09	0.377	0.023	0 [502]	0.09	0.377	0.023		0.377				0.011
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Naphthalene	Y	Y	6.10E-04 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Toluene	Y	Y	3.40E-03 [104]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Arsenic	Y	Y	2.00E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Cadmium	Y	Y	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Chromium	Y	Y	1.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Cobalt	Y	Y	8.40E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Manganese	Y	Y	3.80E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Mercury	Y	Y	2.60E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Nickel	Y	Y	2.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Barium	Y	N	4.40E-03 [106]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Copper	Y	N	8.50E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Molybdenum	Y	N	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Vanadium	Y	N	2.30E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Zinc	Y	N	2.90E-02 [106]	0.00	0.006	0.000	0 [502]	0.00	0.006	0.000		0.006				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Beryllium	Y	Y	6.00E-06 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 301				0.048 [201]	419 [302]	25.13 [401]	MM cu. ft.		Selenium	Y	Y	1.20E-05 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328	EU 335	Oxygen Plant Adsorber Regeneration Heater	NA	0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		NOx	Y	N	100 [102]	0.20	0.855	0.570	0 [502]	0.20	0.855	0.570		0.855				0.025
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		PM10	Y	N	7.6 [103]	0.01	0.065	0.043	0 [502]	0.01	0.065	0.043		GP 001				0.002
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Total PM	Y	N	7.6 [103]	0.01	0.065	0.043	0 [502]	0.01	0.065	0.043		GP 001				0.002
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		SO2	Y	N	0.6 [103]	0.00	0.005	0.003	0 [502]	0.00	0.005	0.003		0.005				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Carbon Monoxide	Y	N	84 [102]	0.16	0.718	0.479	0 [502]	0.16	0.718	0.479		0.718				0.021
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		VOC	Y	N	5.5 [103]	0.01	0.047	0.031	0 [502]	0.01	0.047	0.031		0.047				0.001
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Pb	Y	Y	0.0005 [103]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Carbon Dioxide	Y	N	120000 [103]	234	1026	684.114	0 [502]	234	1026	684.114		1,026.171				29.519
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		N2O	Y	N	2.2 [103]	0.00	0.019	0.013	0 [502]	0.00	0.019	0.013		0.019				0.001
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		CH4	Y	N	2.3 [103]	0.00	0.020	0.013	0 [502]	0.00	0.020	0.013		0.020				0.001
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		POM	Y	Y	0.0006728 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		2-Methylnaphthalene	Y	[8]	2.40E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		3-Methylchloranthrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		7,12-Dimethylbenz(a)anthracene	Y	[8]	8.00E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Acenaphthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Acenaphthylene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Anthracene	Y	[8]	1.20E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Benzo(a)anthracene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Benzo(a)pyrene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Benzo(b)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Benzo(g,h,i)perylene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Benzo(k)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Chrysene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Dibenzo(a,h)anthracene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Fluoranthene	Y	[8]	3.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Fluorene	Y	[8]	2.80E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Indeno(1,2,3-cd)pyrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Phenanthrene	Y	[8]	1.70E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Pyrene	Y	[8]	5.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Benzene	Y	Y	2.10E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Dichlorobenzene	Y	Y	1.20E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Formaldehyde	Y	Y	7.50E-02 [104]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Hexane	Y	Y	1.8 [104]	0.00	0.015	0.010	0 [502]	0.00	0.015	0.010		0.015				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Naphthalene	Y	Y	6.10E-04 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Toluene	Y	Y	3.40E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Arsenic	Y	Y	2.00E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Cadmium	Y	Y	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Chromium	Y	Y	1.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Cobalt	Y	Y	8.40E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Manganese	Y	Y	3.80E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Mercury	Y	Y	2.60E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Nickel	Y	Y	2.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Barium	Y	N	4.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Copper	Y	N	8.50E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Molybdenum	Y	N	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions - Processing Plant

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Max (Units/hr) Note	Throughput Max (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max Unc PTE [1] (lb/hr)	Max Unc PTE [1] (tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%) Note	Max Cont PTE [2] (lb/hr)	Max Cont PTE [2] (tons/yr)	Proj Act Cont Emiss (tons/yr)	Emission Std / Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day Note	Max Unc Emiss lb/day	Max Cont Emiss lb/day	g/sec Model Input
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Vanadium	Y	N	2.30E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Zinc	Y	N	2.90E-02 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Beryllium	Y	Y	6.00E-06 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 328				0.002 [202]	17 [302]	11.40 [402]	MM cu. ft.		Selenium	Y	Y	1.20E-05 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V	EU 302	Space Heating (Natural Gas Fired)	NA	0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		NOx	Y	N	100 [102]	5.65	24.747	9.899	0 [502]	5.65	24.747	9.899		24.747				0.712
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		PM10	Y	N	7.6 [103]	0.43	1.881	0.752	0 [502]	0.43	1.881	0.752	GP 001					0.054
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Total PM	Y	N	7.6 [103]	0.43	1.881	0.752	0 [502]	0.43	1.881	0.752	GP 001					0.054
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		SO2	Y	N	0.6 [103]	0.03	0.148	0.059	0 [502]	0.03	0.148	0.059		0.148				0.004
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Carbon Monoxide	Y	N	84 [102]	4.75	20.788	8.315	0 [502]	4.75	20.788	8.315		20.788				0.598
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		VOC	Y	N	5.5 [103]	0.31	1.361	0.544	0 [502]	0.31	1.361	0.544		1.361				0.039
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Pb	Y	Y	0.0005 [103]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Carbon Dioxide	Y	N	120000 [103]	6780	29697	11,878.609	0 [502]	6780	29697	11878.609		29,696.521				854.265
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		N2O	Y	N	2.2 [103]	0.12	0.544	0.218	0 [502]	0.12	0.544	0.218		0.544				0.016
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		CH4	Y	N	2.3 [103]	0.13	0.569	0.228	0 [502]	0.13	0.569	0.228		0.569				0.016
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		POM	Y	Y	0.0006728 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		2-Methylnaphthalene	Y	[8]	2.40E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		3-Methylchloranthrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		7,12-Dimethylbenz(a)anthracene	Y	[8]	8.00E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Acenaphthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Acenaphthylene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Anthracene	Y	[8]	1.20E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Benzo(a)anthracene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Benzo(a)pyrene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Benzo(b)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Benzo(g,h,i)perylene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Benzo(k)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Chrysene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Dibenzo(a,h)anthracene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Fluoranthene	Y	[8]	3.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Fluorene	Y	[8]	2.80E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Indeno(1,2,3-cd)pyrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Phenanthrene	Y	[8]	1.70E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Pyrene	Y	[8]	5.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Benzene	Y	Y	2.10E-03 [104]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Dichlorobenzene	Y	Y	1.20E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Formaldehyde	Y	Y	7.50E-02 [104]	0.00	0.019	0.007	0 [502]	0.00	0.019	0.007		0.019				0.001
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Hexane	Y	Y	1.8 [104]	0.10	0.445	0.178	0 [502]	0.10	0.445	0.178		0.445				0.013
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Naphthalene	Y	Y	6.10E-04 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Toluene	Y	Y	3.40E-03 [104]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Arsenic	Y	Y	2.00E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Cadmium	Y	Y	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Chromium	Y	Y	1.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Cobalt	Y	Y	8.40E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Manganese	Y	Y	3.80E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Mercury	Y	Y	2.60E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Nickel	Y	Y	2.10E-03 [106]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Barium	Y	N	4.40E-03 [106]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Copper	Y	N	8.50E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Molybdenum	Y	N	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Vanadium	Y	N	2.30E-03 [106]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Zinc	Y	N	2.90E-02 [106]	0.00	0.007	0.003	0 [502]	0.00	0.007	0.003		0.007				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Beryllium	Y	Y	6.00E-06 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V				0.057 [203]	495 [302]	197.98 [403]	MM cu. ft.		Selenium	Y	Y	1.20E-05 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V	EU 302	Space Heating (Natural Gas Fired)	NA	0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		NOx	Y	N	100 [102]	2.98	13.051	5.221	0 [502]	2.98	13.051	5.221		13.051				0.375
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		PM10	Y	N	7.6 [103]	0.23	0.992	0.397	0 [502]	0.23	0.992	0.397	GP 001					0.029
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Total PM	Y	N	7.6 [103]	0.23	0.992	0.397	0 [502]	0.23	0.992	0.397	GP 001					0.029
Reag V				0.078 [203]	261 [302]	104.41 [403]	MM cu. ft.		SO2	Y	N	0.6 [103]	0.02	0.078	0.031	0 [502]	0.02	0.078	0.031		0.078				0.002
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Carbon Monoxide	Y	N	84 [102]	2.50	10.963	4.385	0 [502]	2.50	10.963	4.385		10.963				0.315
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		VOC	Y	N	5.5 [103]	0.16	0.718	0.287	0 [502]	0.16	0.718	0.287		0.718				0.021
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Pb	Y	Y	0.0005 [103]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Carbon Dioxide	Y	N	120000 [103]	3576	15662	6,264.625	0 [502]	3576	15662	6264.625		15,661.561				450.528
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		N2O	Y	N	2.2 [103]	0.07	0.287	0.115	0 [502]	0.07	0.287	0.115		0.287				0.008
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		CH4	Y	N	2.3 [103]	0.07	0.300	0.120	0 [502]	0.07	0.300	0.120		0.300				0.009
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		POM	Y	Y	0.0006728 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		2-Methylnaphthalene	Y	[8]	2.40E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		3-Methylchloranthrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		7,12-Dimethylbenz(a)anthracene	Y	[8]	8.00E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Acenaphthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Acenaphthylene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Anthracene	Y	[8]	1.20E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Benzo(a)anthracene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Benzo(a)pyrene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Benzo(b)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Benzo(g,h,i)perylene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Benzo(k)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Chrysene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Dibenzo(a,h)anthracene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Fluoranthene	Y	[8]	3.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Fluorene	Y	[8]	2.80E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Indeno(1,2,3-cd)pyrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Phenanthrene	Y	[8]	1.70E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Pyrene	Y	[8]	5.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Benzene	Y	Y	2.10E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Dichlorobenzene	Y	Y	1.20E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Formaldehyde	Y	Y	7.50E-02 [104]	0.00	0.010	0.004	0 [502]	0.00	0.010	0.004		0.010				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Hexane	Y	Y	1.8 [104]	0.05	0.235	0.094	0 [502]	0.05	0.235	0.094		0.235				0.007
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Naphthalene	Y	Y	6.10E-04 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Toluene	Y	Y	3.40E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Arsenic	Y	Y	2.00E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Cadmium	Y	Y	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Chromium	Y	Y	1.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Cobalt	Y	Y	8.40E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Manganese	Y	Y	3.80E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Mercury	Y	Y	2.60E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.		Nickel	Y	Y	2.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	EU ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj. Actual (Units/yr)	Units	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont (tons/yr)	Limited Cont PTE (tons/yr)	g/sec Model Input
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.	Barium	Y	N	4.40E-03 [106]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000	0.001	0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.	Copper	Y	N	8.50E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.	Molybdenum	Y	N	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.	Vanadium	Y	N	2.30E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.	Zinc	Y	N	2.90E-02 [106]	0.00	0.004	0.002	0 [502]	0.00	0.004	0.002	0.004	0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.	Beryllium	Y	Y	6.00E-06 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Reag V				0.030 [203]	261 [302]	104.41 [403]	MM cu. ft.	Selenium	Y	Y	1.20E-05 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V	EU 302	Space Heating (Natural Gas Fired)	NA	0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	NOx	Y	N	100 [102]	1.11	4.855	1.942	0 [502]	1.11	4.855	1.942	4.855	0.140
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	PM10	Y	N	7.6 [103]	0.08	0.369	0.148	0 [502]	0.08	0.369	0.148	GP 001	0.011
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Total PM	Y	N	7.6 [103]	0.08	0.369	0.148	0 [502]	0.08	0.369	0.148	GP 001	0.011
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	SO2	Y	N	0.6 [103]	0.01	0.029	0.012	0 [502]	0.01	0.029	0.012	0.029	0.001
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Carbon Monoxide	Y	N	84 [102]	0.93	4.078	1.631	0 [502]	0.93	4.078	1.631	4.078	0.117
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	VOC	Y	N	5.5 [103]	0.06	0.267	0.107	0 [502]	0.06	0.267	0.107	0.267	0.008
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Pb	Y	Y	0.0005 [103]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Carbon Dioxide	Y	N	120000 [103]	1330	5826	2330.456	0 [502]	1330	5826	2330	5826.139	167.598
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	N2O	Y	N	2.2 [103]	0.02	0.107	0.043	0 [502]	0.02	0.107	0.043	0.107	0.003
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	CH4	Y	N	2.3 [103]	0.03	0.112	0.045	0 [502]	0.03	0.112	0.045	0.112	0.003
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	POM	Y	Y	0.0006728 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	2-Methylnaphthalene	Y	[8]	2.40E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	3-Methylchloranthrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	7,12-Dimethylbenz(a)anthracene	Y	[8]	8.00E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Acenaphthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Acenaphthylene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Anthracene	Y	[8]	1.20E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Benzo(a)anthracene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Benzo(a)pyrene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Benzo(b)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Benzo(g,h,i)perylene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Benzo(k)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Chrysene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Dibenzo(a,h)anthracene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Fluoranthene	Y	[8]	3.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Fluorene	Y	[8]	2.80E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Indeno(1,2,3-cd)pyrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Phenanthrene	Y	[8]	1.70E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Pyrene	Y	[8]	5.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Benzene	Y	Y	2.10E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Dichlorobenzene	Y	Y	1.20E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Formaldehyde	Y	Y	7.50E-02 [104]	0.00	0.004	0.001	0 [502]	0.00	0.004	0.001	0.004	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Hexane	Y	Y	1.8 [104]	0.02	0.087	0.035	0 [502]	0.02	0.087	0.035	0.087	0.003
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Naphthalene	Y	Y	6.10E-04 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Toluene	Y	Y	3.40E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Arsenic	Y	Y	2.00E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Cadmium	Y	Y	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Chromium	Y	Y	1.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Cobalt	Y	Y	8.40E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Manganese	Y	Y	3.80E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Mercury	Y	Y	2.60E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Nickel	Y	Y	2.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Barium	Y	N	4.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Copper	Y	N	8.50E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Molybdenum	Y	N	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Vanadium	Y	N	2.30E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Zinc	Y	N	2.90E-02 [106]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Beryllium	Y	Y	6.00E-06 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
EW V				0.011 [203]	97 [302]	38.84 [403]	MM cu. ft.	Selenium	Y	Y	1.20E-05 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V	EU 302	Space Heating (Natural Gas Fired)	NA	0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	NOx	Y	N	100 [102]	0.50	2.185	0.874	0 [502]	0.50	2.185	0.874	2.185	0.063
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	PM10	Y	N	7.6 [103]	0.04	0.166	0.066	0 [502]	0.04	0.166	0.066	GP 001	0.005
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Total PM	Y	N	7.6 [103]	0.04	0.166	0.066	0 [502]	0.04	0.166	0.066	GP 001	0.005
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	SO2	Y	N	0.6 [103]	0.00	0.013	0.005	0 [502]	0.00	0.013	0.005	0.013	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Carbon Monoxide	Y	N	84 [102]	0.42	1.836	0.734	0 [502]	0.42	1.836	0.734	1.836	0.053
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	VOC	Y	N	5.5 [103]	0.03	0.120	0.048	0 [502]	0.03	0.120	0.048	0.120	0.003
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Pb	Y	Y	0.0005 [103]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Carbon Dioxide	Y	N	120000 [103]	599	2622	1,048.959	0 [502]	599	2622	1048.959	2,622.399	75.437
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	N2O	Y	N	2.2 [103]	0.01	0.048	0.019	0 [502]	0.01	0.048	0.019	0.048	0.001
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	CH4	Y	N	2.3 [103]	0.01	0.050	0.020	0 [502]	0.01	0.050	0.020	0.050	0.001
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	POM	Y	Y	0.0006728 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	2-Methylnaphthalene	Y	[8]	2.40E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	3-Methylchloranthrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	7,12-Dimethylbenz(a)anthracene	Y	[8]	8.00E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Acenaphthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Acenaphthylene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Anthracene	Y	[8]	1.20E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Benzo(a)anthracene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Benzo(a)pyrene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Benzo(b)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Benzo(g,h,i)perylene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Benzo(k)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Chrysene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Dibenzo(a,h)anthracene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Fluoranthene	Y	[8]	3.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Fluorene	Y	[8]	2.80E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Indeno(1,2,3-cd)pyrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Phenanthrene	Y	[8]	1.70E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Pyrene	Y	[8]	5.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Benzene	Y	Y	2.10E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Dichlorobenzene	Y	Y	1.20E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Formaldehyde	Y	Y	7.50E-02 [104]	0.00	0.002	0.001	0 [502]	0.00	0.002	0.001	0.002	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Hexane	Y	Y	1.8 [104]	0.01	0.039	0.016	0 [502]	0.01	0.039	0.016	0.039	0.001
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Naphthalene	Y	Y	6.10E-04 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Toluene	Y	Y	3.40E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Arsenic	Y	Y	2.00E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Cadmium	Y	Y	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Chromium	Y	Y	1.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.	Cobalt	Y	Y	8.40E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Emission Unit Description	APCD ID	Max (Units/hr) Note	(Units/yr) Note	Proj. Actual (Units/yr) Note	Units	Annual days w/ precip.	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max Unc PTE lb/hr	tons/yr	Proj Act Unc (ton/yr)	Control Eff (%) Note	Max Cont PTE lb/hr	tons/yr	Proj Act Cont (tons/yr)	Emission Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.		Manganese	Y	Y	3.80E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.		Mercury	Y	Y	2.60E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.		Nickel	Y	N	2.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.		Barium	Y	N	4.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.		Copper	Y	N	8.50E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.		Molybdenum	Y	N	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.		Vanadium	Y	N	2.30E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.		Zinc	Y	N	2.90E-02 [106]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.		Beryllium	Y	Y	6.00E-06 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Addit V				0.005 [203]	44 [302]	17.48 [403]	MM cu. ft.		Selenium	Y	N	1.20E-05 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
CarDmp V	EU 302	Space Heating (Natural Gas Fired)	NA	0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		NOx	Y	N	100 [102]	0.04	0.164	0.066	0 [502]	0.04	0.164	0.066	0.164					0.005
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		PM10	Y	N	7.6 [103]	0.00	0.012	0.005	0 [502]	0.00	0.012	0.005	GP 001					0.00036
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Total PM	Y	N	7.6 [103]	0.00	0.012	0.005	0 [502]	0.00	0.012	0.005	GP 001					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		SO2	Y	N	0.6 [103]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000	0.001					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Carbon Monoxide	Y	N	84 [102]	0.03	0.138	0.055	0 [502]	0.03	0.138	0.055	0.138					0.004
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		VOC	Y	N	5.5 [103]	0.00	0.009	0.004	0 [502]	0.00	0.009	0.004	0.009					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Pb	Y	Y	0.0005 [103]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Carbon Dioxide	Y	N	120000 [103]	45	197	78.608	0 [502]	44.87	196.519	78.608	196.519					5.653
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		N2O	Y	N	2.2 [103]	0.00	0.004	0.001	0 [502]	0.00	0.004	0.001	0.004					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		CH4	Y	N	2.3 [103]	0.00	0.004	0.002	0 [502]	0.00	0.004	0.002	0.004					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		POM	Y	Y	0.0006728 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		2-Methylnaphthalene	Y	[8]	2.40E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		3-Methylchloranthrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		7,12-Dimethylbenz(a)anthracene	Y	[8]	8.00E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Acenaphthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Acenaphthylene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Anthracene	Y	[8]	1.20E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Benzo(a)anthracene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Benzo(a)pyrene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Benzo(b)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Benzo(g,h,i)perylene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Benzo(k)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Chrysene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Dibenzo(a,h)anthracene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Fluoranthene	Y	[8]	3.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Fluorene	Y	[8]	2.80E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Indeno(1,2,3-cd)pyrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Phenanthrene	Y	[8]	1.70E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Pyrene	Y	[8]	5.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Benzene	Y	Y	2.10E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Dichlorobenzene	Y	Y	1.20E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Formaldehyde	Y	Y	7.50E-02 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Hexane	Y	Y	1.8 [104]	0.00	0.003	0.001	0 [502]	0.00	0.003	0.001	0.003					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Naphthalene	Y	Y	6.10E-04 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Toluene	Y	Y	3.40E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Arsenic	Y	Y	2.00E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Cadmium	Y	Y	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Chromium	Y	Y	1.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Cobalt	Y	Y	8.40E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Manganese	Y	Y	3.80E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Mercury	Y	Y	2.60E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Nickel	Y	Y	2.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Barium	Y	N	4.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Copper	Y	N	8.50E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Molybdenum	Y	N	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Vanadium	Y	N	2.30E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Zinc	Y	N	2.90E-02 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Beryllium	Y	Y	6.00E-06 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
CarDmp V				0.000 [203]	3 [302]	1.31 [403]	MM cu. ft.		Selenium	Y	Y	1.20E-05 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV	EU 302	Space Heating (Natural Gas Fired)	NA	0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		NOx	Y	N	100 [102]	1.63	7.140	2.856	0 [502]	1.63	7.140	2.856	7.140					0.205
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		PM10	Y	N	7.6 [103]	0.12	0.543	0.217	0 [502]	0.12	0.543	0.217	GP 001					0.016
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Total PM	Y	N	7.6 [103]	0.12	0.543	0.217	0 [502]	0.12	0.543	0.217	GP 001					0.016
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		SO2	Y	N	0.6 [103]	0.01	0.043	0.017	0 [502]	0.01	0.043	0.017	0.043					0.001
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Carbon Monoxide	Y	N	84 [102]	1.37	5.998	2.399	0 [502]	1.37	5.998	2.399	5.998					0.173
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		VOC	Y	N	5.5 [103]	0.09	0.393	0.157	0 [502]	0.09	0.393	0.157	0.393					0.011
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Pb	Y	Y	0.0005 [103]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Carbon Dioxide	Y	N	120000 [103]	1956	8568	3,427.315	0 [502]	1,956.23	8,568.289	3427.315	8,568.289					246.480
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		N2O	Y	N	2.2 [103]	0.04	0.157	0.063	0 [502]	0.04	0.157	0.063	0.157					0.005
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		CH4	Y	N	2.3 [103]	0.04	0.164	0.066	0 [502]	0.04	0.164	0.066	0.164					0.005
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		POM	Y	Y	0.0006728 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		2-Methylnaphthalene	Y	[8]	2.40E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		3-Methylchloranthrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		7,12-Dimethylbenz(a)anthracene	Y	[8]	8.00E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Acenaphthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Acenaphthylene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Anthracene	Y	[8]	1.20E-06 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Benzo(a)anthracene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Benzo(a)pyrene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Benzo(b)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Benzo(g,h,i)perylene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Benzo(k)fluoranthene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Chrysene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Dibenzo(a,h)anthracene	Y	[8]	6.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Fluoranthene	Y	[8]	3.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Fluorene	Y	[8]	2.80E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Indeno(1,2,3-cd)pyrene	Y	[8]	9.00E-07 [105]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Phenanthrene	Y	[8]	1.70E-05 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Pyrene	Y	[8]	5.00E-06 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Benzene	Y	Y	2.10E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Dichlorobenzene	Y	Y	1.20E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Formaldehyde	Y	Y	7.50E-02 [104]	0.00	0.005	0.002	0 [502]	0.00	0.005	0.002	0.005					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Hexane	Y	Y	1.8 [104]	0.03	0.129	0.051	0 [502]	0.03	0.129	0.051	0.129					0.004
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Naphthalene	Y	Y	6.10E-04 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Toluene	Y	Y	3.40E-03 [104]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Arsenic	Y	Y	2.00E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000					0.000

Emission Rates for Model Input - If daily calculations are blank,
g/sec is based on hourly emission rate

Indicates source that will only operate for first 1 to 2 years of plant operation.

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled Potential to Emit [1] (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential (lb/hr)	Max. Controlled Potential (tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Cadmium	Y	Y	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Chromium	Y	Y	1.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Cobalt	Y	Y	8.40E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Manganese	Y	Y	3.80E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Mercury	Y	Y	2.60E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Nickel	Y	Y	2.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Barium	Y	N	4.40E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Copper	Y	N	8.50E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Molybdenum	Y	N	1.10E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Vanadium	Y	N	2.30E-03 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Zinc	Y	N	2.90E-02 [106]	0.00	0.002	0.001	0 [502]	0.00	0.002	0.001		0.002				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Beryllium	Y	Y	6.00E-06 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SXV				0.016 [203]	143 [302]	57.12 [403]	MM cu. ft.		Selenium	Y	Y	1.20E-05 [107]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108	EU 128	Existing Backup Generator 1	NA	11.300 [204]	5,650 [303]	2712 [404]	MMBtu		NOx	Y	N	3.2 [108]	36.16	9.040	4.339	0 [502]	36.16	9.040	4.339		9.040				4.556
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		PM10	Y	N	0.0573 [108]	0.65	0.162	0.078	0 [502]	0.65	0.162	0.078	GP 001					0.082
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Total PM	Y	N	0.1 [108]	1.13	0.283	0.136	0 [502]	1.13	0.283	0.136	20 % Opacity	GP 001				0.142
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		SO2	Y	N	0.505 [108]	5.71	1.427	0.685	0 [502]	5.71	1.427	0.685	0.5 lb/MMBtu	1.427				0.719
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		H2SO4/SO3	Y	N	0.013 [110]	0.15	0.037	0.018	0 [502]	0.15	0.037	0.018		0.037				0.019
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Carbon Monoxide	Y	N	0.85 [108]	9.61	2.401	1.153	0 [502]	9.61	2.401	1.153		2.401				1.210
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		VOC	Y	N	0.0819 [108]	0.93	0.231	0.111	0 [502]	0.93	0.231	0.111		0.231				0.117
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Carbon Dioxide	Y	N	165 [108]	1,864.50	466.125	223.740	0 [502]	1,864.50	466.125	223.740		466.125				234.922
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzene	Y	Y	7.76E-04 [111]	0.01	0.002	0.001	0 [502]	0.01	0.002	0.001		0.002				0.001
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Toluene	Y	Y	2.81E-04 [111]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Xylene	Y	Y	1.93E-04 [111]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Formaldehyde	Y	Y	7.89E-05 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Acetaldehyde	Y	Y	2.52E-05 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Acrolein	Y	Y	7.88E-06 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Naphthalene	Y	Y	1.30E-04 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Acenaphthylene	Y	[8]	9.23E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Acenaphthene	Y	[8]	4.68E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Fluorene	Y	[8]	1.28E-05 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Phenanthrene	Y	[8]	4.08E-05 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Anthracene	Y	[8]	1.23E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Fluoranthene	Y	[8]	4.03E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Pyrene	Y	[8]	3.71E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzo(a)anthracene	Y	[8]	6.22E-07 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Chrysene	Y	[8]	1.53E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzo(b)fluoranthene	Y	[8]	1.11E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzo(k)fluoranthene	Y	[8]	1.09E-07 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzo(a)pyrene	Y	[8]	1.29E-07 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Indeno(1,2,3-cd)pyrene	Y	[8]	2.07E-07 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Dibenzo(a,h)anthracene	Y	[8]	1.73E-07 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzo(g,h,i)perylene	Y	[8]	2.78E-07 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 108				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		POM	Y	Y	2.10E-04 [112]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 109	EU 129	Existing Backup Generator 2	NA	11.300 [204]	5,650 [303]	2712 [404]	MMBtu		NOx	Y	N	3.2 [108]	36.16	9.040	4.339	0 [502]	36.16	9.040	4.339		9.040				4.556
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		PM10	Y	N	0.0573 [109]	0.65	0.162	0.078	0 [502]	0.65	0.162	0.078	GP 001					0.082
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Total PM	Y	N	0.1 [108]	1.13	0.283	0.136	0 [502]	1.13	0.283	0.136	20 % Opacity	GP 001				0.142
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		SO2	Y	N	0.505 [108]	5.71	1.427	0.685	0 [502]	5.71	1.427	0.685	0.5 lb/MMBtu	1.427				0.719
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		H2SO4/SO3	Y	N	0.013 [110]	0.15	0.037	0.018	0 [502]	0.15	0.037	0.018		0.037				0.019
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Carbon Monoxide	Y	N	0.85 [108]	9.61	2.401	1.153	0 [502]	9.61	2.401	1.153		2.401				1.210
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		VOC	Y	N	0.0819 [108]	0.93	0.231	0.111	0 [502]	0.93	0.231	0.111		0.231				0.117
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Carbon Dioxide	Y	N	165 [108]	1,864.50	466.125	223.740	0 [502]	1,864.50	466.125	223.740		466.125				234.922
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzene	Y	Y	7.76E-04 [111]	0.01	0.002	0.001	0 [502]	0.01	0.002	0.001		0.002				0.001
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Toluene	Y	Y	2.81E-04 [111]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Xylene	Y	Y	1.93E-04 [111]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Formaldehyde	Y	Y	7.89E-05 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Acetaldehyde	Y	Y	2.52E-05 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Acrolein	Y	Y	7.88E-06 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Naphthalene	Y	Y	1.30E-04 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Acenaphthylene	Y	[8]	9.23E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Acenaphthene	Y	[8]	4.68E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Fluorene	Y	[8]	1.28E-05 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Phenanthrene	Y	[8]	4.08E-05 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Anthracene	Y	[8]	1.23E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Fluoranthene	Y	[8]	4.03E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Pyrene	Y	[8]	3.71E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzo(a)anthracene	Y	[8]	6.22E-07 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Chrysene	Y	[8]	1.53E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzo(b)fluoranthene	Y	[8]	1.11E-06 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzo(k)fluoranthene	Y	[8]	1.09E-07 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzo(a)pyrene	Y	[8]	1.29E-07 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Indeno(1,2,3-cd)pyrene	Y	[8]	2.07E-07 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Dibenzo(a,h)anthracene	Y	[8]	1.73E-07 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		Benzo(g,h,i)perylene	Y	[8]	2.78E-07 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 109				11.300 [204]	5,650 [303]	2712 [404]	MMBtu		POM	Y	Y	2.10E-04 [112]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 303	EU 303	Generator/Zinc Pot Fuel Oil Tank	NA	185.429 [205]	290,914 [304]	59766.86 [405]	gallon		VOC	Y	Y	1.61E-05 [104]	0.00	0.002	0.000	0 [502]	0.00	0.002	0.000		0.002				0.000
SV 304	EU 304	Fire Pump #1	NA	0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		NOx	Y	N	3.553 [116]	1.89	8.278	0.060	0 [502]	1.89	8.278	0.060	7.8 g/hr-hr	8.278				0.238
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		PM10	Y	N	0.273 [116]	0.15	0.637	0.005	0 [502]	0.15	0.637	0.005		GP 001				0.018
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Total PM	Y	N	0.273 [116]	0.15	0.637	0.005	0 [502]	0.15	0.637	0.005	0.6 g/hp-hr PM	GP 001				0.018
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		SO2	Y	N	0.0505 [115]	0.03	0.118	0.001	0 [502]	0.03	0.118	0.001	500 ppm S in	0.118				0.003
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		H2SO4/SO3	Y	N	0.013 [110]	0.01	0.030	0.000	0 [502]	0.01	0.030	0.000	Fuel	0.030				0.001
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Carbon Monoxide	Y	N	0.95 [117]	0.51	2.214	0.016	0 [502]	0.51	2.214	0.016		2.214				0.064
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		VOC	Y	N	0.36 [117]	0.19	0.839	0.006	0 [502]	0.19	0.839	0.006		0.839				0.024
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Carbon Dioxide	Y	N	164 [117]	87.25	382.146	2.792	0 [502]	87.25	382.146	2.792		382.146				10.993
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzene	Y	Y	9.33E-04 [118]	0.00	0.002	0.000	0 [502]	0.00	0.002	0.000		0.002				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Toluene	Y	Y	4.09E-04 [118]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Xylene	Y	Y	2.85E-04 [118]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Propylene	Y	Y	2.58E-03 [118]	0.00	0.006	0.000	0 [502]	0.00	0.006	0.000		0.006				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		1,3-Butadiene	Y	Y	1.96E-05 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Formaldehyde	Y	Y	1.18E-03 [118]	0.00	0.003	0.000	0 [502]	0.00	0.003	0.000		0.003				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Acetaldehyde	Y	Y	7.67E-04 [118]	0.00	0.002	0.000	0 [502]	0.00	0.002	0.000		0.002				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Acrolein	Y	Y	4.63E-05 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Naphthalene	Y	Y	8.48E-05 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Acenaphthylene	Y	[8]	2.53E-06 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Acenaphthene	Y	[8]	7.10E-07 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Fluorene	Y	[8]	2.92E-05 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Phenanthrene	Y	[8]	2.94E-05 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	APCD ID	Emission Unit ID	Description	Throughput Max (Units/hr) Note	Max (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applic. (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE (lb/hr)	(ton/yr)	Proj. Act. Unc. Emiss (ton/yr)	Control Eff (%) Note	Max. Cont. PTE (lb/hr)	(ton/yr)	Proj. Act. Cont. Emiss (tons/yr)	Emission Std or Oper. Limit	Limited Cont. PTE (tons/yr)	g/sec Model Input
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Anthracene	Y	[8]	1.87E-06 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Fluoranthene	Y	[8]	7.61E-06 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Pyrene	Y	[8]	4.78E-06 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzo(a)anthracene	Y	[8]	1.68E-06 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Chrysene	Y	[8]	3.53E-07 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzo(b)fluoranthene	Y	[8]	4.96E-08 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzo(k)fluoranthene	Y	[8]	7.75E-08 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzo(a)pyrene	Y	[8]	9.40E-08 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Indeno(1,2,3-cd)pyrene	Y	[8]	1.88E-07 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Dibenzo(a,h)anthracene	Y	[8]	2.92E-07 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzo(g,h,i)perylene	Y	[8]	2.45E-07 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 304				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		POM	Y	Y	1.60E-04 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305	EU 305		Fire Pump #2	0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		NOx	Y	N	3.553 [116]	1.89	8.278	0.060	0 [502]	1.89	8.278	0.060	7.8 g/hr-hr	8.278	0.238
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		PM10	Y	N	0.273 [116]	0.15	0.637	0.005	0 [502]	0.15	0.637	0.005		0.637	0.018
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Total PM	Y	N	0.273 [116]	0.15	0.637	0.005	0 [502]	0.15	0.637	0.005	0.6 g/hp-hr PM	GP 001	0.018
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		SO2	Y	N	0.0505 [115]	0.03	0.118	0.001	0 [502]	0.03	0.118	0.001	500 ppm S in Fuel	0.118	0.003
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		H2SO4/SO3	Y	N	0.0013 [110]	0.00	0.003	0.000	0 [502]	0.00	0.003	0.000		0.003	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Carbon Monoxide	Y	N	0.95 [117]	0.51	2.214	0.016	0 [502]	0.51	2.214	0.016		2.214	0.064
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		VOC	Y	N	0.36 [117]	0.19	0.839	0.006	0 [502]	0.19	0.839	0.006		0.839	0.024
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Carbon Dioxide	Y	N	164 [117]	87.25	382.146	2.792	0 [502]	87.25	382.146	2.792		382.146	10.993
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzene	Y	Y	9.33E-04 [118]	0.00	0.002	0.000	0 [502]	0.00	0.002	0.000		0.002	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Toluene	Y	Y	4.09E-04 [118]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Xylene	Y	Y	2.85E-04 [118]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Propylene	Y	Y	2.58E-03 [118]	0.00	0.006	0.000	0 [502]	0.00	0.006	0.000		0.006	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		1,3-Butadiene	Y	Y	1.96E-05 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Formaldehyde	Y	Y	1.18E-03 [118]	0.00	0.003	0.000	0 [502]	0.00	0.003	0.000		0.003	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Acetaldehyde	Y	Y	7.67E-04 [118]	0.00	0.002	0.000	0 [502]	0.00	0.002	0.000		0.002	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Acrolein	Y	Y	4.63E-05 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Naphthalene	Y	Y	8.48E-05 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Acenaphthylene	Y	[8]	2.53E-06 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Acenaphthene	Y	[8]	7.10E-07 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Fluorene	Y	[8]	2.92E-05 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Phenanthrene	Y	[8]	2.94E-05 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Anthracene	Y	[8]	1.87E-06 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Fluoranthene	Y	[8]	7.61E-06 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Pyrene	Y	[8]	4.78E-06 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzo(a)anthracene	Y	[8]	1.68E-06 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Chrysene	Y	[8]	3.53E-07 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzo(b)fluoranthene	Y	[8]	4.96E-08 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzo(k)fluoranthene	Y	[8]	7.75E-08 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzo(a)pyrene	Y	[8]	9.40E-08 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Indeno(1,2,3-cd)pyrene	Y	[8]	1.88E-07 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Dibenzo(a,h)anthracene	Y	[8]	2.92E-07 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		Benzo(g,h,i)perylene	Y	[8]	2.45E-07 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 305				0.532 [206]	4,660 [302]	34.048 [406]	MMBtu		POM	Y	Y	1.60E-04 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 325	EU 325		Fire Pump Fuel Tank	7.600 [207]	66,576 [302]	486.4 [407]	gallon		VOC	Y	N	1.13E-09 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 306	EU 306		Zinc Pot #1	0.012 [208]	105 [302]	10.512 [408]	Mgal		NOx	Y	N	20 [120]	0.24	1.051	0.105	0 [502]	0.24	1.051	0.105		1.051	0.030
SV 306				0.012 [208]	105 [302]	10.512 [408]	Mgal		PM10	Y	N	2.38 [122]	0.03	0.125	0.013	0 [502]	0.03	0.125	0.013	GP 001		0.004
SV 306				0.012 [208]	105 [302]	10.512 [408]	Mgal		Total PM	Y	N	3.3 [121]	0.04	0.173	0.017	0 [502]	0.04	0.173	0.017	IPER for PM	GP 001	0.005
SV 306				0.012 [208]	105 [302]	10.512 [408]	Mgal		SO2	Y	N	71 [120]	0.85	3.732	0.373	0 [502]	0.85	3.732	0.373		3.732	0.107
SV 306				0.012 [208]	105 [302]	10.512 [408]	Mgal		H2SO4/SO3	Y	N	1.0 [120]	0.01	0.053	0.005	0 [502]	0.01	0.053	0.005		0.053	0.002
SV 306				0.012 [208]	105 [302]	10.512 [408]	Mgal		Carbon Monoxide	Y	N	5 [120]	0.06	0.263	0.026	0 [502]	0.06	0.263	0.026		0.263	0.008
SV 306				0.012 [208]	105 [302]	10.512 [408]	Mgal		VOC	Y	N	0.34 [123]	0.00	0.018	0.002	0 [502]	0.00	0.018	0.002		0.018	0.001
SV 306				1.680 [208]	14,717 [302]	1471.68 [408]	MMBtu		Pb	Y	Y	0.000009 [124]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 306				0.012 [208]	105 [302]	10.512 [408]	Mgal		Carbon Dioxide	Y	N	22300 [125]	267.60	1,172.088	117.209	0 [502]	267.60	1,172.088	117.209		1,172.088	33.717
SV 306				0.012 [208]	105 [302]	10.512 [408]	Mgal		CH4	Y	N	0.216 [123]	0.00	0.011	0.001	0 [502]	0.00	0.011	0.001		0.011	0.000
SV 307	EU 307		Zinc Pot #2	0.006 [208]	52.6 [302]	5.256 [408]	Mgal		NOx	Y	N	20 [120]	0.12	0.526	0.053	0 [502]	0.12	0.526	0.053		0.526	0.015
SV 307				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		PM10	Y	N	2.38 [122]	0.01	0.063	0.006	0 [502]	0.01	0.063	0.006	GP 001		0.002
SV 307				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		Total PM	Y	N	3.3 [121]	0.02	0.087	0.009	0 [502]	0.02	0.087	0.009	IPER for PM	GP 001	0.002
SV 307				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		SO2	Y	N	71 [120]	0.43	1.866	0.187	0 [502]	0.43	1.866	0.187		1.866	0.054
SV 307				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		H2SO4/SO3	Y	N	1.0 [120]	0.01	0.026	0.003	0 [502]	0.01	0.026	0.003		0.026	0.001
SV 307				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		Carbon Monoxide	Y	N	5 [120]	0.03	0.131	0.013	0 [502]	0.03	0.131	0.013		0.131	0.004
SV 307				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		VOC	Y	N	0.34 [123]	0.00	0.009	0.001	0 [502]	0.00	0.009	0.001		0.009	0.000
SV 307				0.840 [208]	7,358.4 [302]	735.84 [408]	MMBtu		Pb	Y	Y	0.000009 [124]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 307				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		Carbon Dioxide	Y	N	22300 [125]	133.80	586.044	58.604	0 [502]	133.80	586.044	58.604		586.044	16.858
SV 307				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		CH4	Y	N	0.216 [123]	0.00	0.006	0.001	0 [502]	0.00	0.006	0.001		0.006	0.000
SV 308	EU 308		Zinc Pot #3	0.006 [208]	52.6 [302]	5.256 [408]	Mgal		NOx	Y	N	20 [120]	0.12	0.526	0.053	0 [502]	0.12	0.526	0.053		0.526	0.015
SV 308				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		PM10	Y	N	2.38 [122]	0.01	0.063	0.006	0 [502]	0.01	0.063	0.006	GP 001		0.002
SV 308				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		Total PM	Y	N	3.3 [121]	0.02	0.087	0.009	0 [502]	0.02	0.087	0.009	IPER for PM	GP 001	0.002
SV 308				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		SO2	Y	N	71 [120]	0.43	1.866	0.187	0 [502]	0.43	1.866	0.187		1.866	0.054
SV 308				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		H2SO4/SO3	Y	N	1.0 [120]	0.01	0.026	0.003	0 [502]	0.01	0.026	0.003		0.026	0.001
SV 308				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		Carbon Monoxide	Y	N	5 [120]	0.03	0.131	0.013	0 [502]	0.03	0.131	0.013		0.131	0.004
SV 308				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		VOC	Y	N	0.34 [123]	0.00	0.009	0.001	0 [502]	0.00	0.009	0.001		0.009	0.000
SV 308				0.840 [208]	7,358.4 [302]	735.84 [408]	MMBtu		Pb	Y	Y	0.000009 [124]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 308				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		Carbon Dioxide	Y	N	22300 [125]	133.80	586.044	58.604	0 [502]	133.80	586.044	58.604		586.044	16.858
SV 308				0.006 [208]	52.6 [302]	5.256 [408]	Mgal		CH4	Y	N	0.216 [123]	0.00	0.006	0.001	0 [502]	0.00	0.006	0.001		0.006	0.000
Area1BV	EU 334		Area 1 Shop Space Heaters (propane fired)	0.098 [209]	859.3 [302]	429.7 [409]	Mgal		PM10	Y	N	0.7 [126]	0.07	0.301	0.150	0 [502]	0.07	0.301	0.150	GP 001		0.009
Area1BV				0.098 [209]	859.3 [302]	429.7 [409]	Mgal		Total PM	Y	N	0.7 [126]	0.07	0.301	0.150	0 [502]	0.07	0.301	0.150	GP 001		0.009
Area1BV				0.098 [209]	859.3 [302]	429.7 [409]	Mgal		NOx	Y	N	13.0 [126]	1.28	5.586	2.793	0 [502]	1.28	5.586	2.793		5.586	0.161
Area1BV				0.098 [209]	859.3 [302]	429.7 [409]	Mgal		SO2	Y	N	0.02 [126]	0.00	0.009	0.004	0 [502]	0.00	0.009	0.004		0.009	0.000
Area1BV				0.098 [209]	859.3 [302]	429.7 [409]	Mgal		Carbon Monoxide	Y	N	7.5 [126]	0.74	3.223	1.611	0 [502]	0.74	3.223	1.611		3.223	0.093
Area1BV				0.098 [209]	859.3 [302]	429.7 [409]	Mgal		VOC	Y	N	0.8 [126]	0.08	0.344	0.172	0 [502]	0.08	0.344	0.172		0.344	0.010
Area1BV				0.098 [209]	859.3 [302]	429.7 [409]	Mgal		Carbon Dioxide	Y	N	12500 [126]	1,226.23	5,370.885	2,685.443	0 [502]	1,226.23	5,370.885	2685.443		5,370.885	154.502
Area1BV				0.098 [209]	859.3 [302]	429.7 [409]	Mgal		CH4	Y	N	0.2 [126]	0.02	0.086	0.043	0 [502]	0.02	0.086	0.043		0.086	0.002
Area1BV				0.098 [209]	859.3 [302]	429.7 [409]	Mgal		N2O	Y	N	0.9 [126]	0.09	0.387	0.193	0 [502]	0.09	0.387	0.193		0.387	0.011
Area2BV	EU 130		Area 2 Shop Space Heaters (propane fired)	0.109 [210]	957.4 [302]	478.7 [409]	Mgal		PM10	Y	N	0.7 [126]	0.08	0.335	0.168	0 [502]	0.08	0.335	0.168	GP 001		0.010
Area2BV				0.109 [210]	957.4 [302]	478.7 [409]	Mgal		Total PM	Y	N	0.7 [126]	0.08	0.335	0.168	0 [502]	0.08	0.335	0.168	GP 001		0.010
Area2BV				0.109 [210]	957.4 [302]	478.7 [409]	Mgal		NOx	Y	N	13.0 [126]	1.42	6.223	3.111	0 [502]	1.42	6.223	3.111		6.223	0.179
Area2BV				0.109 [210]	957.4 [302]	478.7 [409]	Mgal		SO2	Y	N	0.02 [126]	0.00	0.010	0.005	0 [502]	0.00	0.010	0.005		0.010	0.000
Area2BV				0.109 [210]	957.4 [302]	478.7 [409]	Mgal		Carbon Monoxide	Y	N	7.5 [126]	0.82	3.590	1.795	0 [502]	0.82	3.590	1.795		3.590	0.103
Area2BV				0.109 [210]	957.4 [302]	478.7 [409]	Mgal		VOC	Y	N	0.8 [126]	0.09	0.383	0.191	0 [502]	0.09	0.383	0.191		0.383	0.011
Area2BV				0.109 [210]	957.4 [302]	478.7 [409]	Mgal		Carbon Dioxide	Y	N	12500 [126]	1,366.12	5,983.607	2,991.803	0 [502]	1,366.12	5,983.607	2991.803		5,983.607	172.127
Area2BV				0.109 [210]	957.4 [302]	478.7 [409]	Mgal		CH4	Y	N	0.2 [126]	0.02	0.096	0.048	0 [502]	0.02	0.096	0.048		0.096	0.003
Area2BV				0.109 [210]	957.4 [302]	478.7 [409]	Mgal		N2O	Y	N	0.9 [126]	0.10	0.431	0.215	0 [502]	0.10	0.431	0.215		0.431	0.012
SV 003	EU 003		North 60" Crusher	5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	208.29	912.291	912.291	99 [503]	2.08	9.123	9.123	0.0025 gr/cf	GP 001	0.262
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	208.29	912.291	912.291	99 [503]	2.08	9.123	9.123	0.0025 gr/cf	GP 001	0.262
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.004	0.004	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions - Processing Plant

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Description	APCD ID	Maximum (Units/hr) Note	Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE [1] (lb/hr)	Max. Unc. PTE (tons/yr)	Proj. Act. Unc. Emissions (ton/yr)	Control Eff (%) Note	Max. Cont. PTE [2] (lb/hr)	Max. Cont. PTE (tons/yr)	Proj. Act. Cont. Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled PTE (tons/yr)	Max Throughput units/day Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.009	0.009	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.03	0.140	0.140	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.02	0.080	0.080	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.005	0.005	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.31	1.368	1.368	99 [503]	0.00	0.014	0.014	0.0025 gr/cf	0.014				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.24	1.056	1.056	99 [503]	0.00	0.011	0.011	0.0025 gr/cf	0.011				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.11	0.477	0.477	99 [503]	0.00	0.005	0.005	0.0025 gr/cf	0.005				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.005	0.005	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.08	0.343	0.343	99 [503]	0.00	0.003	0.003	0.0025 gr/cf	0.003				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.018	0.018	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.83	3.649	3.649	99 [503]	0.01	0.036	0.036	0.0025 gr/cf	0.036				0.001
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.004	0.004	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.04	0.155	0.155	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.02	0.101	0.101	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.01	0.039	0.039	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 003				5,832,000 [211]	51,088,320,000 [305]	51,088,320,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.04	0.163	0.163	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002				0.000
SV 004	EU 004	South 60" Crusher	CE 002	5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	208.29	912.291	0.000	99 [503]	2.08	9.123	0.000	0.0025 gr/cf	GP 001				0.262
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	208.29	912.291	0.000	99 [503]	2.08	9.123	0.000	0.0025 gr/cf	GP 001				0.262
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.004	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.009	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.03	0.140	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.02	0.080	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.005	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.31	1.368	0.000	99 [503]	0.00	0.014	0.000	0.0025 gr/cf	0.014				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.24	1.056	0.000	99 [503]	0.00	0.011	0.000	0.0025 gr/cf	0.011				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.11	0.477	0.000	99 [503]	0.00	0.005	0.000	0.0025 gr/cf	0.005				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.005	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.08	0.343	0.000	99 [503]	0.00	0.003	0.000	0.0025 gr/cf	0.003				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.018	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.83	3.649	0.000	99 [503]	0.01	0.036	0.000	0.0025 gr/cf	0.036				0.001
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.004	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.04	0.155	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.02	0.101	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.01	0.039	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 004				5,832,000 [211]	51,088,320,000 [305]	0 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.04	0.163	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002				0.000
SV 005	EU 005	North 36" Pan Feeders to Conveyor 1A	CE 003	900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	32.14	140.786	140.786	99 [503]	0.32	1.408	1.408	0.0025 gr/cf	GP 001				0.040
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	32.14	140.786	140.786	99 [503]	0.32	1.408	1.408	0.0025 gr/cf	GP 001				0.040
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.022	0.022	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.012	0.012	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.05	0.211	0.211	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.04	0.163	0.163	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.074	0.074	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.053	0.053	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.003	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.13	0.563	0.563	99 [503]	0.00	0.006	0.006	0.0025 gr/cf	0.006				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.01	0.024	0.024	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.016	0.016	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.006	0.006	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 005				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.025	0.025	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006	EU 006	North 36" Pan Feeders to Conveyor 1B	CE 004	900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	32.14	140.786	140.786	99 [503]	0.32	1.408	1.408	0.0025 gr/cf	GP 001				0.040
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	32.14	140.786	140.786	99 [503]	0.32	1.408	1.408	0.0025 gr/cf	GP 001				0.040
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.022	0.022	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.012	0.012	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.05	0.211	0.211	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.04	0.163	0.163	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.074	0.074	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.053	0.053	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.003	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.13	0.563	0.563	99 [503]	0.00	0.006	0.006	0.0025 gr/cf	0.006				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.01	0.024	0.024	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.016	0.016	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.006	0.006	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 006				900,000 [211]	7,884,000,000 [305]	7,884,000,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.025	0.025	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 007	EU 007	South 36" Pan Feeders to Conveyor 1A	CE 005	900,000 [211]	7,884,000,000 [305]	0 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	32.14	140.786	0.000	99 [503]	0.32	1.408	0.000	0.0025 gr/cf	GP 001				0.040
SV 007				900,000 [211]	7,884,000,000 [305]	0 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	32.14	140.786	0.000	99 [503]	0.32	1.408	0.000	0.0025 gr/cf	GP 001				0.040
SV 007				900,000 [211]	7,884,000,000 [305]	0 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 007				900,000 [211]	7,884,000,000 [305]	0 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 007				900,000 [211]	7,884,000,000 [305]	0 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 007				900,000 [211]	7,884,000,000 [305]	0 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 007				900,000 [211]	7,884,000,000 [305]	0 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.022	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 007				900,000 [211]	7,884,000,000 [305]	0 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.012	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Indicates source that will only operate for first 1 to 2 years of plant operation.

Stack ID	ID	Description	Emissions	APCD ID	Throughput Maximum (Units/hr)	Note	(Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Pb	Y	Y	1.81E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Manganese	Y	Y	5.36E-10	[128]	0.05	0.211	0.000	99	[503]	0.00	0.002	0.000	0.0025 gr/cf	0.002					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Mercury	Y	Y	1.64E-15	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Nickel	Y	Y	4.13E-10	[128]	0.04	0.163	0.000	99	[503]	0.00	0.002	0.000	0.0025 gr/cf	0.002					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10	[128]	0.02	0.074	0.000	99	[503]	0.00	0.001	0.000	0.0025 gr/cf	0.001					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Selenium	Y	Y	1.98E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Barium	Y	N	1.34E-10	[128]	0.01	0.053	0.000	99	[503]	0.00	0.001	0.000	0.0025 gr/cf	0.001					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Boron	Y	N	7.07E-12	[128]	0.00	0.003	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Copper	Y	N	1.43E-09	[128]	0.13	0.563	0.000	99	[503]	0.00	0.006	0.000	0.0025 gr/cf	0.006					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Vanadium	Y	N	6.07E-11	[128]	0.01	0.024	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Zinc	Y	N	3.95E-11	[128]	0.00	0.016	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Hafnium	Y	N	6.54E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Tellurium	Y	N	1.52E-11	[128]	0.00	0.006	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 007					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11	[128]	0.01	0.025	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008	EU 008	South 36" Pan Feeders to Conveyor 1B		CE 006	900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		PM10	Y	N	3.57E-07	[127]	32.14	140.786	0.000	99	[503]	0.32	1.408	0.000	0.0025 gr/cf	GP 001					0.040
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Total PM	Y	N	3.57E-07	[127]	32.14	140.786	0.000	99	[503]	0.32	1.408	0.000	0.0025 gr/cf	GP 001					0.040
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Antimony	Y	Y	1.61E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Chromium	Y	Y	5.50E-11	[128]	0.00	0.022	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11	[128]	0.00	0.012	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Pb	Y	Y	1.81E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Manganese	Y	Y	5.36E-10	[128]	0.05	0.211	0.000	99	[503]	0.00	0.002	0.000	0.0025 gr/cf	0.002					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Mercury	Y	Y	1.64E-15	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Nickel	Y	Y	4.13E-10	[128]	0.04	0.163	0.000	99	[503]	0.00	0.002	0.000	0.0025 gr/cf	0.002					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10	[128]	0.02	0.074	0.000	99	[503]	0.00	0.001	0.000	0.0025 gr/cf	0.001					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Selenium	Y	Y	1.98E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Barium	Y	N	1.34E-10	[128]	0.01	0.053	0.000	99	[503]	0.00	0.001	0.000	0.0025 gr/cf	0.001					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Boron	Y	N	7.07E-12	[128]	0.00	0.003	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Copper	Y	N	1.43E-09	[128]	0.13	0.563	0.000	99	[503]	0.00	0.006	0.000	0.0025 gr/cf	0.006					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Vanadium	Y	N	6.07E-11	[128]	0.01	0.024	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Zinc	Y	N	3.95E-11	[128]	0.00	0.016	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Hafnium	Y	N	6.54E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Tellurium	Y	N	1.52E-11	[128]	0.00	0.006	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11	[128]	0.01	0.025	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008	EU 009	South Pan Feeders		CE 118	900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		PM10	Y	N	3.57E-07	[127]	32.14	140.786	0.000	99	[503]	0.32	1.408	0.000	0.0025 gr/cf	GP 001					0.040
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Total PM	Y	N	3.57E-07	[127]	32.14	140.786	0.000	99	[503]	0.32	1.408	0.000	0.0025 gr/cf	GP 001					0.040
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Antimony	Y	Y	1.61E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Chromium	Y	Y	5.50E-11	[128]	0.00	0.022	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11	[128]	0.00	0.012	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Pb	Y	Y	1.81E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Manganese	Y	Y	5.36E-10	[128]	0.05	0.211	0.000	99	[503]	0.00	0.002	0.000	0.0025 gr/cf	0.002					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Mercury	Y	Y	1.64E-15	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Nickel	Y	Y	4.13E-10	[128]	0.04	0.163	0.000	99	[503]	0.00	0.002	0.000	0.0025 gr/cf	0.002					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10	[128]	0.02	0.074	0.000	99	[503]	0.00	0.001	0.000	0.0025 gr/cf	0.001					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Selenium	Y	Y	1.98E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Barium	Y	N	1.34E-10	[128]	0.01	0.053	0.000	99	[503]	0.00	0.001	0.000	0.0025 gr/cf	0.001					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Boron	Y	N	7.07E-12	[128]	0.00	0.003	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Copper	Y	N	1.43E-09	[128]	0.13	0.563	0.000	99	[503]	0.00	0.006	0.000	0.0025 gr/cf	0.006					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12	[128]	0.00	0.001	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Vanadium	Y	N	6.07E-11	[128]	0.01	0.024	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Zinc	Y	N	3.95E-11	[128]	0.00	0.016	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Hafnium	Y	N	6.54E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Tellurium	Y	N	1.52E-11	[128]	0.00	0.006	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 008					900,000	[211]	7,884,000,000	[305]	0	[410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11	[128]	0.01	0.025	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009	EU 010	North Pan Feeders		CE 007	900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Total PM	Y	N	3.57E-07	[127]	32.14	140.786	140.786	99	[503]	0.32	1.408	1.408	0.0025 gr/cf	GP 001					0.040
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		PM10	Y	N	3.57E-07	[127]	32.14	140.786	140.786	99	[503]	0.32	1.408	1.408	0.0025 gr/cf	GP 001					0.040
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Antimony	Y	N	1.61E-12	[128]	0.00	0.001	0.001	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Arsenic	Y	N	3.67E-12	[128]	0.00	0.001	0.001	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Beryllium	Y	N	1.82E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Cadmium	Y	N	3.18E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Chromium	Y	N	5.50E-11	[128]	0.00	0.022	0.022	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Cobalt	Y	N	3.14E-11	[128]	0.00	0.012	0.012	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Pb	Y	N	1.81E-12	[128]	0.00	0.001	0.001	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Manganese	Y	N	5.36E-10	[128]	0.05	0.211	0.211	99	[503]	0.00	0.002	0.002	0.0025 gr/cf	0.002					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Mercury	Y	N	1.64E-15	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Nickel	Y	N	4.13E-10	[128]	0.04	0.163	0.163	99	[503]	0.00	0.002	0.002	0.0025 gr/cf	0.002					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Phosphorus	Y	N	1.87E-10	[128]	0.02	0.074	0.074	99	[503]	0.00	0.001	0.001	0.0025 gr/cf	0.001					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Selenium	Y	N	1.98E-12	[128]	0.00	0.001	0.001	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Barium	Y	N	1.34E-10	[128]	0.01	0.053	0.053	99	[503]	0.00	0.001	0.001	0.0025 gr/cf	0.001					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Boron	Y	N	7.07E-12	[128]	0.00	0.003	0.003	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Copper	Y	N	1.43E-09	[128]	0.13	0.563	0.563	99	[503]	0.00	0.006	0.006	0.0025 gr/cf	0.006					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12	[128]	0.00	0.001	0.001	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Vanadium	Y	N	6.07E-11	[128]	0.01	0.024	0.024	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Zinc	Y	N	3.95E-11	[128]	0.00	0.016	0.016	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Hafnium	Y	N	6.54E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Tellurium	Y	N	1.52E-11	[128]	0.00	0.006	0.006	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 009					900,000	[211]	7,884,000,000	[305]	7,884,000,000	[410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11	[128]	0.01	0.025	0.025	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 010	EU 011	Drive House 1 East Transfer		CE 008	720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		PM10	Y	N	3.57E-07	[127]	25.71	112.629	112.629	99	[503]	0.26	1.126	1.126	0.0025 gr/cf	GP 001					0.032
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Total PM	Y	N	3.57E-07	[127]	25.71	112.629	112.629	99	[503]	0.26	1.126	1.126	0.0025 gr/cf	GP 001					0.032
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Antimony	Y	Y	1.61E-12	[128]	0.00	0.001	0.001	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12	[128]	0.00	0.001	0.001	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Chromium	Y	Y	5.50E-11	[128]	0.00	0.017	0.017	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11	[128]	0.00	0.010	0.010	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Pb	Y	Y	1.81E-12	[128]	0.00	0.001	0.001	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Manganese	Y	Y	5.36E-10	[128]	0.04	0.169	0.169	99	[503]	0.00	0.002	0.002	0.0025 gr/cf	0.002					0.000
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Mercury	Y	Y	1.64E-15	[128]	0.00	0.000	0.000	99	[503]	0.00	0.000	0.000	0.0025 gr/cf	0.000					0.000
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Nickel	Y	Y	4.13E-10	[128]	0.03	0.130	0.130	99	[503]	0.00	0.001	0.001	0.0025 gr/cf	0.001					0.000
SV 010					720,000	[211]	6,307,200,000	[305]	6,307,200,000	[410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10	[128]	0.01	0.059	0.059	99	[503]	0.00	0.001	0.001	0.0025 gr/cf	0.001					0.000

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate.

Indicates source that will only operate for first 1 to 2 years of plant operation.

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Max (Units/hr) Note	(Units/yr) Note	Proj. Actual (Units/yr) Note	Units	Annual days w/ precip.	Pollutant	PSD Appl. (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE (lb/hr)	(tons/yr)	Proj. Act. Unc. Emis. (ton/yr)	Control Eff. (%) Note	Max. Cont. PTE (lb/hr)	(tons/yr)	Proj. Act. Cont. Emis. (tons/yr)	Emission Std or Op. Limit	Limited Cont. PTE (tons/yr)	g/sec Model Input
SV 010				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 010				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.042	0.042	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 010				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 010				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.10	0.451	0.451	99 [503]	0.00	0.005	0.005	0.0025 gr/cf	0.005	0.000
SV 010				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 010				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.00	0.019	0.019	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 010				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.012	0.012	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 010				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 010				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.005	0.005	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 010				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.020	0.020	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011	EU 012	Drive House 1 West Transfer	CE 009	720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	25.71	112.629	112.629	99 [503]	0.26	1.126	1.126	0.0025 gr/cf	GP 001	0.032
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	25.71	112.629	112.629	99 [503]	0.26	1.126	1.126	0.0025 gr/cf	GP 001	0.032
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.010	0.010	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.04	0.169	0.169	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.03	0.130	0.130	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.059	0.059	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.042	0.042	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.10	0.451	0.451	99 [503]	0.00	0.005	0.005	0.0025 gr/cf	0.005	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.00	0.019	0.019	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.012	0.012	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.005	0.005	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 011				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.020	0.020	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111	EU 136	Coarse Ore Storage	CE 139	600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	21.43	93.857	93.857	99 [503]	0.21	0.939	0.939	0.0025 gr/cf	GP 001	0.027
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	21.43	93.857	93.857	99 [503]	0.21	0.939	0.939	0.0025 gr/cf	GP 001	0.027
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.014	0.014	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.008	0.008	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.03	0.141	0.141	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.02	0.109	0.109	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.049	0.049	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.035	0.035	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.09	0.375	0.375	99 [503]	0.00	0.004	0.004	0.0025 gr/cf	0.004	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.00	0.016	0.016	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.010	0.010	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.004	0.004	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 111				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112			CE 140	600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	21.43	93.857	93.857	99 [503]	0.21	0.939	0.939	0.0025 gr/cf	GP 001	0.027
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	21.43	93.857	93.857	99 [503]	0.21	0.939	0.939	0.0025 gr/cf	GP 001	0.027
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.014	0.014	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.008	0.008	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.03	0.141	0.141	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.02	0.109	0.109	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.049	0.049	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.035	0.035	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.09	0.375	0.375	99 [503]	0.00	0.004	0.004	0.0025 gr/cf	0.004	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.00	0.016	0.016	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.010	0.010	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.004	0.004	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 112				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113			CE 141	600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	21.43	93.857	93.857	99 [503]	0.21	0.939	0.939	0.0025 gr/cf	GP 001	0.027
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	21.43	93.857	93.857	99 [503]	0.21	0.939	0.939	0.0025 gr/cf	GP 001	0.027
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.014	0.014	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.008	0.008	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.03	0.141	0.141	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.02	0.109	0.109	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.049	0.049	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.035	0.035	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.09	0.375	0.375	99 [503]	0.00	0.004	0.004	0.0025 gr/cf	0.004	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

☐ Indicates source that will only operate for first 1 to 2 years of plant operation.

Stack ID	EU ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj. Act. (Units/yr)	Units	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc (tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont (tons/yr)	Proj Act Cont (tons/yr)	Emission Std/Op Limit	Limited Cont PTE	g/sec Model Input
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.00	0.016	0.016	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.010	0.010	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.004	0.004	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 113				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114			CD 142	600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	21.43	93.857	93.857	99 [503]	0.21	0.939	0.939	0.0025 gr/cf	GP 001	0.027
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	21.43	93.857	93.857	99 [503]	0.21	0.939	0.939	0.0025 gr/cf	GP 001	0.027
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.00	0.014	0.014	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.008	0.008	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.03	0.141	0.141	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.02	0.109	0.109	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.049	0.049	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.035	0.035	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.09	0.375	0.375	99 [503]	0.00	0.004	0.004	0.0025 gr/cf	0.004	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.00	0.016	0.016	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.010	0.010	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.004	0.004	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 114				600,000 [211]	5,256,000,000 [305]	5,256,000,000 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012	EU 014	Fine Crushing - West 4	CE 010	1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	70.71	309.729	0.000	99 [503]	0.71	3.097	0.000	0.0025 gr/cf	GP 001	0.089
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	70.71	309.729	0.000	99 [503]	0.71	3.097	0.000	0.0025 gr/cf	GP 001	0.089
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.003	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.048	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.01	0.027	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.11	0.465	0.000	99 [503]	0.00	0.005	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.08	0.358	0.000	99 [503]	0.00	0.004	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.04	0.162	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.03	0.117	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.006	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.28	1.239	0.000	99 [503]	0.00	0.012	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.053	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.01	0.034	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.013	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.055	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.000	0.000
SV 012	EU013	Vibratory Feeders and Conveyors	CE 119	1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	42.86	187.714	187.714	99 [503]	0.43	1.877	1.877	0.0025 gr/cf	GP 001	0.054
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	42.86	187.714	187.714	99 [503]	0.43	1.877	1.877	0.0025 gr/cf	GP 001	0.054
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.029	0.029	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.01	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.06	0.282	0.282	99 [503]	0.00	0.003	0.003	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.05	0.217	0.217	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.098	0.098	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.02	0.071	0.071	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.004	0.004	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.17	0.751	0.751	99 [503]	0.00	0.008	0.008	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.032	0.032	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.021	0.021	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.008	0.008	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 012				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.034	0.034	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013	EU 015	Fine Crushing - East 1	CE 011	1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	70.71	309.729	309.729	99 [503]	0.71	3.097	3.097	0.0025 gr/cf	GP 001	0.089
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	70.71	309.729	309.729	99 [503]	0.71	3.097	3.097	0.0025 gr/cf	GP 001	0.089
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.003	0.003	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.048	0.048	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.01	0.027	0.027	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.11	0.465	0.465	99 [503]	0.00	0.005	0.005	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.08	0.358	0.358	99 [503]	0.00	0.004	0.004	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.04	0.162	0.162	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.03	0.117	0.117	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.006	0.006	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.28	1.239	1.239	99 [503]	0.00	0.012	0.012	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.053	0.053	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.01	0.034	0.034	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.013	0.013	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.055	0.055	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	Emission Unit ID	Description	APCD ID	Throughput Maximum (Units/hr) Note	(Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
SV 013	EU 016	Fine Crushing - East 2	CE 120	1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	70.71	309.729	309.729	99 [503]	0.71	3.097	3.097	0.0025 gr/cf	GP 001				0.089
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	70.71	309.729	309.729	99 [503]	0.71	3.097	3.097	0.0025 gr/cf	GP 001				0.089
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.003	0.003	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.01	0.048	0.048	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.01	0.027	0.027	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.11	0.465	0.465	99 [503]	0.00	0.005	0.005	0.0025 gr/cf	0.005				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.08	0.358	0.358	99 [503]	0.00	0.004	0.004	0.0025 gr/cf	0.004				0.004
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.04	0.162	0.162	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Barium	Y	Y	1.34E-10 [128]	0.03	0.117	0.117	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.006	0.006	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.28	1.239	1.239	99 [503]	0.00	0.012	0.012	0.0025 gr/cf	0.012				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.01	0.053	0.053	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.01	0.034	0.034	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.013	0.013	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.055	0.055	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 013	EU 017	Fine Crushing - East 3	CE 121	1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	70.71	309.729	309.729	99 [503]	0.71	3.097	3.097	0.0025 gr/cf	GP 001				0.089
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	70.71	309.729	309.729	99 [503]	0.71	3.097	3.097	0.0025 gr/cf	GP 001				0.089
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.003	0.003	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.01	0.048	0.048	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.01	0.027	0.027	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.11	0.465	0.465	99 [503]	0.00	0.005	0.005	0.0025 gr/cf	0.005				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.08	0.358	0.358	99 [503]	0.00	0.004	0.004	0.0025 gr/cf	0.004				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.04	0.162	0.162	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Barium	Y	Y	1.34E-10 [128]	0.03	0.117	0.117	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.006	0.006	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.28	1.239	1.239	99 [503]	0.00	0.012	0.012	0.0025 gr/cf	0.012				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.01	0.053	0.053	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.01	0.034	0.034	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.013	0.013	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 013				1,980,000 [211]	17,344,800,000 [305]	17,344,800,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.055	0.055	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 014	EU 018	Fine Crushing - West 1	CE 012	1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	70.71	309.729	0.000	99 [503]	0.71	3.097	0.000	0.0025 gr/cf	GP 001				0.089
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	70.71	309.729	0.000	99 [503]	0.71	3.097	0.000	0.0025 gr/cf	GP 001				0.089
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.003	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.01	0.048	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.01	0.027	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.11	0.465	0.000	99 [503]	0.00	0.005	0.000	0.0025 gr/cf	0.005				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.08	0.358	0.000	99 [503]	0.00	0.004	0.000	0.0025 gr/cf	0.004				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.04	0.162	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Barium	Y	Y	1.34E-10 [128]	0.03	0.117	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.006	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.28	1.239	0.000	99 [503]	0.00	0.012	0.000	0.0025 gr/cf	0.012				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.01	0.053	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.01	0.034	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.013	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.055	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.000				0.000
SV 014	EU 019	Fine Crushing - West 2	CE 122	1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	70.71	309.729	0.000	99 [503]	0.71	3.097	0.000	0.0025 gr/cf	GP 001				0.089
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	70.71	309.729	0.000	99 [503]	0.71	3.097	0.000	0.0025 gr/cf	GP 001				0.089
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.003	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.01	0.048	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.01	0.027	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.11	0.465	0.000	99 [503]	0.00	0.005	0.000	0.0025 gr/cf	0.005				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.08	0.358	0.000	99 [503]	0.00	0.004	0.000	0.0025 gr/cf	0.004				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.04	0.162	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Barium	Y	Y	1.34E-10 [128]	0.03	0.117	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.006	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.28	1.239	0.000	99 [503]	0.00	0.012	0.000	0.0025 gr/cf	0.012				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.01	0.053	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.01	0.034	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.013	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.055	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 014	EU 020	Fine Crushing - West 3	CE 123	1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	70.71	309.729	0.000	99 [503]	0.71	3.097	0.000	0.0025 gr/cf	GP 001				0.089
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	70.71	309.729	0.000	99 [503]	0.71	3.097	0.000	0.0025 gr/cf	GP 001				0.089
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.003	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	EU ID	Emission Unit Description	APCD ID	Max (Units/hr) Note	Max (Units/yr) Note	Proj. Actual (Units/yr) Note	Units	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit) Note	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%) Note	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont (tons/yr)	Emission Std or Op Limit	Limited Cont PTE (tons/yr)	g/sec Model Input
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.048	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.01	0.027	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.11	0.465	0.000	99 [503]	0.00	0.005	0.000	0.0025 gr/cf	0.005	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.08	0.358	0.000	99 [503]	0.00	0.004	0.000	0.0025 gr/cf	0.004	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.04	0.162	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Selenium	Y	N	1.98E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.03	0.117	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.006	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.28	1.239	0.000	99 [503]	0.00	0.012	0.000	0.0025 gr/cf	0.012	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.053	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.01	0.034	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.013	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,980,000 [211]	17,344,800,000 [305]	0 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.055	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 014	EU 021	Transfer Point - Conveyors	CE 124	1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	42.86	187.714	187.714	99 [503]	0.43	1.877	1.877	0.0025 gr/cf	GP 001	0.054
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	42.86	187.714	187.714	99 [503]	0.43	1.877	1.877	0.0025 gr/cf	GP 001	0.054
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.029	0.029	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.06	0.282	0.282	99 [503]	0.00	0.003	0.003	0.0025 gr/cf	0.003	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.05	0.217	0.217	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.098	0.098	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Selenium	Y	N	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.02	0.071	0.071	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.004	0.004	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.17	0.751	0.751	99 [503]	0.00	0.008	0.008	0.0025 gr/cf	0.008	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.032	0.032	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.021	0.021	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.008	0.008	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 014				1,200,000 [211]	10,512,000,000 [305]	10,512,000,000 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.034	0.034	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015	EU 022	North Transfer Point	CE 013	648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	23.14	101.366	101.366	99 [503]	0.23	1.014	1.014	0.0025 gr/cf	GP 001	0.029
SV 015	EU 022			648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	23.14	101.366	101.366	99 [503]	0.23	1.014	1.014	0.0025 gr/cf	GP 001	0.029
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.00	0.016	0.016	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.009	0.009	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.03	0.152	0.152	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.03	0.117	0.117	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.053	0.053	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.038	0.038	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.09	0.405	0.405	99 [503]	0.00	0.004	0.004	0.0025 gr/cf	0.004	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.011	0.011	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.004	0.004	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 015				648,000 [211]	5,676,480,000 [305]	5,676,480,000 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.018	0.018	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016	EU 023	South Transfer Point	CE 014	648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	23.14	101.366	0.000	99 [503]	0.23	1.014	0.000	0.0025 gr/cf	GP 001	0.029
SV 016	EU 023			648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	23.14	101.366	0.000	99 [503]	0.23	1.014	0.000	0.0025 gr/cf	GP 001	0.029
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.00	0.016	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.009	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.03	0.152	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.03	0.117	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.053	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Selenium	Y	N	1.98E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.038	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.09	0.405	0.000	99 [503]	0.00	0.004	0.000	0.0025 gr/cf	0.004	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.00	0.017	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.011	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.004	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 016				648,000 [211]	5,676,480,000 [305]	0 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.018	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 115	EU 137	Fine Ore Storage - North	CE 143	720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	25.71	112.629	112.629	99 [503]	0.26	1.126	1.126	0.0025 gr/cf	GP 001	0.032
SV 115	EU 137			720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	25.71	112.629	112.629	99 [503]	0.26	1.126	1.126	0.0025 gr/cf	GP 001	0.032
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.010	0.010	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.04	0.169	0.169	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Description	APCD ID	Max (Units/hr) Note	Max (Units/yr) Note	Proj Actual (Units/yr) Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%) Note	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont (tons/yr)	Emission Std or Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day Note	Max Unc Em lb/day	Max Cont Em lb/day	g/sec Model Input
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.03	0.130	0.130	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.059	0.059	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.042	0.042	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.10	0.451	0.451	99 [503]	0.00	0.005	0.005	0.0025 gr/cf	0.005				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.00	0.019	0.019	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.012	0.012	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.005	0.005	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 115				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.020	0.020	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116			CE 144	720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	25.71	112.629	112.629	99 [503]	0.26	1.126	1.126	0.0025 gr/cf	GP 001				0.032
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	25.71	112.629	112.629	99 [503]	0.26	1.126	1.126	0.0025 gr/cf	GP 001				0.032
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.010	0.010	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.04	0.169	0.169	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.03	0.130	0.130	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.059	0.059	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.042	0.042	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.10	0.451	0.451	99 [503]	0.00	0.005	0.005	0.0025 gr/cf	0.005				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.00	0.019	0.019	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.012	0.012	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.005	0.005	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 116				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.020	0.020	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117			CE 145	720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	25.71	112.629	112.629	99 [503]	0.26	1.126	1.126	0.0025 gr/cf	GP 001				0.032
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	25.71	112.629	112.629	99 [503]	0.26	1.126	1.126	0.0025 gr/cf	GP 001				0.032
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.010	0.010	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.04	0.169	0.169	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.03	0.130	0.130	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.059	0.059	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.042	0.042	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.10	0.451	0.451	99 [503]	0.00	0.005	0.005	0.0025 gr/cf	0.005				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.00	0.019	0.019	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.012	0.012	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.005	0.005	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 117				720,000 [211]	6,307,200,000 [305]	6,307,200,000 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.020	0.020	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118			CE 146	720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	25.71	112.629	0.000	99 [503]	0.26	1.126	0.000	0.0025 gr/cf	GP 001				0.032
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	25.71	112.629	0.000	99 [503]	0.26	1.126	0.000	0.0025 gr/cf	GP 001				0.032
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.017	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.010	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.04	0.169	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.03	0.130	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.059	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.042	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.10	0.451	0.000	99 [503]	0.00	0.005	0.000	0.0025 gr/cf	0.005				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.00	0.019	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.012	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.005	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 118				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.020	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 119	EU 138	Fine Ore Storage - South	CE 147	720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	25.71	112.629	0.000	99 [503]	0.26	1.126	0.000	0.0025 gr/cf	GP 001				0.032
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	25.71	112.629	0.000	99 [503]	0.26	1.126	0.000	0.0025 gr/cf	GP 001				0.032
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.00	0.017	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.010	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.04	0.169	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.03	0.130	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.000				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.059	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.042	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

(Yellow) Indicates source that will only operate for first 1 to 2 years of plant operation.

Stack ID	ID	Description	APCD ID	Max (Units/hr) [Note]	Max (Units/yr) [Note]	Proj. Actual (Units/yr) [Note]	Units	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) [Note]	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%) [Note]	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont (tons/yr)	Emission Std / Op Limit	Limited Cont PTE (tons/yr)	g/sec Model Input
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.10	0.451	0.000	99 [503]	0.00	0.005	0.000	0.0025 gr/cf	0.005	0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.00	0.019	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.012	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.005	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 119				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.020	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120			CE 148	720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	25.71	112.629	0.000	99 [503]	0.26	1.126	0.000	0.0025 gr/cf	GP 001	0.032
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	25.71	112.629	0.000	99 [503]	0.26	1.126	0.000	0.0025 gr/cf	GP 001	0.032
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.00	0.017	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.010	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.04	0.169	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.03	0.130	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.001
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.01	0.059	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.042	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.10	0.451	0.000	99 [503]	0.00	0.005	0.000	0.0025 gr/cf	0.005	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.00	0.019	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.012	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.005	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 120				720,000 [211]	6,307,200,000 [305]	0 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.00	0.020	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017	EU 024	Fine Ore Feeders - North 1-4	CE 015	1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	36.00	157.680	157.680	99 [503]	0.36	1.577	1.577	0.0025 gr/cf	GP 001	0.045
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	36.00	157.680	157.680	99 [503]	0.36	1.577	1.577	0.0025 gr/cf	GP 001	0.045
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.024	0.024	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.014	0.014	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.05	0.237	0.237	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.04	0.182	0.182	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.082	0.082	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.059	0.059	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.003	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.14	0.631	0.631	99 [503]	0.00	0.006	0.006	0.0025 gr/cf	0.006	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.027	0.027	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.007	0.007	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 017				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.028	0.028	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018	EU 025	Fine Ore Feeders - North 5-8	CE 016	1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	36.00	157.680	157.680	99 [503]	0.36	1.577	1.577	0.0025 gr/cf	GP 001	0.045
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	36.00	157.680	157.680	99 [503]	0.36	1.577	1.577	0.0025 gr/cf	GP 001	0.045
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.024	0.024	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.014	0.014	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.05	0.237	0.237	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.04	0.182	0.182	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.082	0.082	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.059	0.059	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.003	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.14	0.631	0.631	99 [503]	0.00	0.006	0.006	0.0025 gr/cf	0.006	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.027	0.027	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.007	0.007	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 018				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.028	0.028	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019	EU 026	Fine Ore Feeders - North 9-12	CE 017	1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	36.00	157.680	157.680	99 [503]	0.36	1.577	1.577	0.0025 gr/cf	GP 001	0.045
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	36.00	157.680	157.680	99 [503]	0.36	1.577	1.577	0.0025 gr/cf	GP 001	0.045
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.024	0.024	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.014	0.014	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.05	0.237	0.237	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.04	0.182	0.182	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.082	0.082	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.059	0.059	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.003	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.14	0.631	0.631	99 [503]	0.00	0.006	0.006	0.0025 gr/cf	0.006	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.027	0.027	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions - Processing Plant

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	EU ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Act (Units/yr)	Units	Pollutant	PSD	HAP	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont (tons/yr)	Emission Std/Op Limit	Limited Cont PTE	g/sec Model Input
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.007	0.007	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 019				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.028	0.028	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020	EU 027	Fine Ore Feeders - North 13-16	CE 018	1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	36.00	157.680	157.680	99 [503]	0.36	1.577	1.577	0.0025 gr/cf	GP 001	0.045
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	36.00	157.680	157.680	99 [503]	0.36	1.577	1.577	0.0025 gr/cf	GP 001	0.045
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.002	0.002	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.024	0.024	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.014	0.014	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.05	0.237	0.237	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.04	0.182	0.182	99 [503]	0.00	0.002	0.002	0.0025 gr/cf	0.002	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.082	0.082	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.059	0.059	99 [503]	0.00	0.001	0.001	0.0025 gr/cf	0.001	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.003	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.14	0.631	0.631	99 [503]	0.00	0.006	0.006	0.0025 gr/cf	0.006	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.001	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.027	0.027	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.017	0.017	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.007	0.007	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 020				1,008,000 [211]	8,830,080,000 [305]	8,830,080,000 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.028	0.028	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021	EU 028	Fine Ore Feeders - North 17-20	CE 019	1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	36.00	157.680	0.000	99 [503]	0.36	1.577	0.000	0.0025 gr/cf	GP 001	0.045
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	36.00	157.680	0.000	99 [503]	0.36	1.577	0.000	0.0025 gr/cf	GP 001	0.045
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Antimony	Y	N	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Arsenic	Y	N	3.67E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Beryllium	Y	N	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Cadmium	Y	N	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Chromium	Y	N	5.50E-11 [128]	0.01	0.024	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Cobalt	Y	N	3.14E-11 [128]	0.00	0.014	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Pb	Y	N	1.81E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Manganese	Y	N	5.36E-10 [128]	0.05	0.237	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Mercury	Y	N	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Nickel	Y	N	4.13E-10 [128]	0.04	0.182	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Phosphorus	Y	N	1.87E-10 [128]	0.02	0.082	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Selenium	Y	N	1.98E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.059	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.14	0.631	0.000	99 [503]	0.00	0.006	0.000	0.0025 gr/cf	0.006	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.027	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.017	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.007	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 021				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.028	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022	EU 029	Fine Ore Feeders - North 21-24	CE 020	1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	36.00	157.680	0.000	99 [503]	0.36	1.577	0.000	0.0025 gr/cf	GP 001	0.045
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	36.00	157.680	0.000	99 [503]	0.36	1.577	0.000	0.0025 gr/cf	GP 001	0.045
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.024	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.014	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.05	0.237	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.04	0.182	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.082	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.059	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.14	0.631	0.000	99 [503]	0.00	0.006	0.000	0.0025 gr/cf	0.006	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.027	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.017	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.007	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 022				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.028	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023	EU 030	Fine Ore Feeders - South 3-4	CE 021	1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	36.00	157.680	0.000	99 [503]	0.36	1.577	0.000	0.0025 gr/cf	GP 001	0.045
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	36.00	157.680	0.000	99 [503]	0.36	1.577	0.000	0.0025 gr/cf	GP 001	0.045
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Arsenic	Y	Y	3.67E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Chromium	Y	Y	5.50E-11 [128]	0.01	0.024	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Cobalt	Y	Y	3.14E-11 [128]	0.00	0.014	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Manganese	Y	Y	5.36E-10 [128]	0.05	0.237	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Nickel	Y	Y	4.13E-10 [128]	0.04	0.182	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.082	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Barium	Y	N	1.34E-10 [128]	0.01	0.059	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Copper	Y	N	1.43E-09 [128]	0.14	0.631	0.000	99 [503]	0.00	0.006	0.000	0.0025 gr/cf	0.006	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Vanadium	Y	N	6.07E-11 [128]	0.01	0.027	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Zinc	Y	N	3.95E-11 [128]	0.00	0.017	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Tellurium	Y	N	1.52E-11 [128]	0.00	0.007	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 023				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.028	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000	0.000
SV 024	EU 031	Fine Ore Feeders - South 5-8	CE 022	1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	PM10	Y	N	3.57E-07 [127]	36.00	157.680	0.000	99 [503]	0.36	1.577	0.000	0.0025 gr/cf	GP 001	0.045
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.	Total PM	Y	N	3.57E-07 [127]	36.00	157.680	0.000	99 [503]	0.36	1.577	0.000	0.0025 gr/cf	GP 001	0.045

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled Potential to Emit [1] (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	Max. Controlled Potential to Emit [2] (tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.01	0.024	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.014	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.05	0.237	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.04	0.182	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.082	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Barium	Y	Y	1.34E-10 [128]	0.01	0.059	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.14	0.631	0.000	99 [503]	0.00	0.006	0.000	0.0025 gr/cf	0.006				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.01	0.027	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.017	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.007	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 024				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.028	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025	EU 032	Fine Ore Feeders - South 9-12	CE 023	1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		PM10	Y	N	3.57E-07 [127]	36.00	157.680	0.000	99 [503]	0.36	1.577	0.000	0.0025 gr/cf	GP 001				0.045
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Total PM	Y	N	3.57E-07 [127]	36.00	157.680	0.000	99 [503]	0.36	1.577	0.000	0.0025 gr/cf	GP 001				0.045
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Antimony	Y	Y	1.61E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Arsenic	Y	Y	3.67E-12 [128]	0.00	0.002	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Beryllium	Y	Y	1.82E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Cadmium	Y	Y	3.18E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Chromium	Y	Y	5.50E-11 [128]	0.01	0.024	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Cobalt	Y	Y	3.14E-11 [128]	0.00	0.014	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Pb	Y	Y	1.81E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Manganese	Y	Y	5.36E-10 [128]	0.05	0.237	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Mercury	Y	Y	1.64E-15 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Nickel	Y	Y	4.13E-10 [128]	0.04	0.182	0.000	99 [503]	0.00	0.002	0.000	0.0025 gr/cf	0.002				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Phosphorus	Y	Y	1.87E-10 [128]	0.02	0.082	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Selenium	Y	Y	1.98E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Barium	Y	N	1.34E-10 [128]	0.01	0.059	0.000	99 [503]	0.00	0.001	0.000	0.0025 gr/cf	0.001				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Boron	Y	N	7.07E-12 [128]	0.00	0.003	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Copper	Y	N	1.43E-09 [128]	0.14	0.631	0.000	99 [503]	0.00	0.006	0.000	0.0025 gr/cf	0.006				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Molybdenum	Y	N	1.54E-12 [128]	0.00	0.001	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Vanadium	Y	N	6.07E-11 [128]	0.01	0.027	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Zinc	Y	N	3.95E-11 [128]	0.00	0.017	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Hafnium	Y	N	6.54E-13 [128]	0.00	0.000	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025				1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Tellurium	Y	N	1.52E-11 [128]	0.00	0.007	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
SV 025	EU 1508	Flotation Fugitive Emissions	NA	1,008,000 [211]	8,830,080,000 [305]	0 [410]	ft^3 exh.		Fluorides (as F)	Y	N	6.39E-11 [128]	0.01	0.028	0.000	99 [503]	0.00	0.000	0.000	0.0025 gr/cf	0.000				0.000
Conc B V				7740 [212]	67802400 [306]	67802400 [423]	ft^3 surf. * hr		VOC	Y	N	3.75E-04 [129]	2.90	12.702	12.702	0 [502]	2.90	12.702	12.702	0.0025 gr/cf	12.702				0.365
Conc B V				7740 [212]	67802400 [306]	67802400 [423]	ft^3 surf. * hr		MIBC	Y	N	3.75E-04 [129]	2.90	12.702	12.702	0 [502]	2.90	12.702	12.702	0.0025 gr/cf	12.702				0.365
SV 2532	EU 2012	Autoclave vent (2 units)	CE 201-203	16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		SO2	Y	N	0.238 [131]	3.93	17.196	15.476	90 [511]	0.39	1.720	1.548		1.720				0.049
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		H2SO4/SO3	Y	N	0.475 [131]	7.86	34.409	30.968	99 [504]	0.08	0.344	0.310		0.344				0.010
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Total PM	Y	N	3.946 [131]	65.21	285.620	257.058	99.1 [504]	0.61	2.685	2.416		GP 001				0.077
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		PM10	Y	N	3.946 [131]	65.21	285.620	257.058	99.1 [504]	0.61	2.685	2.416	IPER for PM	GP 001				0.077
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		NOx	Y	N	0.012 [131]	0.20	0.867	0.781	0 [502]	0.20	0.867	0.781		0.867				0.025
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Carbon Dioxide	Y	N	6.1884 [130]	102.26	447.886	403.098	0 [502]	102.26	447.886	403.098		447.886				12.884
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		HCl	Y	Y	0.078 [131]	1.29	5.633	5.069	99 [504]	0.01	0.056	0.051		0.056				0.002
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		HF	Y	Y	0.004 [131]	0.07	0.296	0.266	99 [504]	0.00	0.003	0.003		0.003				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Antimony	Y	Y	5.57E-05 [131]	0.00	0.004	0.004	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Arsenic	Y	Y	1.07E-04 [131]	0.00	0.008	0.007	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Beryllium	Y	Y	1.39E-06 [132]	0.00	0.000	0.000	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Cadmium	Y	Y	8.65E-04 [131]	0.01	0.063	0.056	99.1 [504]	0.00	0.001	0.001		0.001				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Chromium	Y	Y	1.48E-03 [131]	0.02	0.107	0.096	99.1 [504]	0.00	0.001	0.001		0.001				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Cobalt	Y	Y	3.13E-04 [131]	0.01	0.023	0.020	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Copper	Y	Y	0.008 [131]	0.13	0.568	0.511	99.1 [504]	0.00	0.005	0.005		0.005				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Pb	Y	Y	3.90E-05 [131]	0.00	0.003	0.003	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Manganese	Y	Y	1.95E-04 [131]	0.00	0.014	0.013	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Nickel	Y	Y	0.013 [131]	0.21	0.920	0.828	99.1 [504]	0.00	0.009	0.008		0.009				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Phosphorus	Y	Y	2.81E-04 [131]	0.00	0.020	0.018	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Selenium	Y	Y	5.72E-05 [131]	0.00	0.004	0.004	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Zinc	Y	Y	1.57E-03 [131]	0.03	0.114	0.102	99.1 [504]	0.00	0.001	0.001		0.001				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Mercury	Y	Y	3.93E-05 [131]	0.00	0.003	0.003	25 [505]	0.00	0.002	0.002		0.002				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Hydrogen Sulfide	Y	Y	0.170 [131]	2.81	12.308	11.077	70 [504]	0.84	3.692	3.323		3.692				0.106
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		CS2	Y	Y	0.023 [131]	0.39	1.691	1.522	0 [502]	0.39	1.691	1.522		1.691				0.049
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Hexchrome	Y	[9]	2.09E-05 [131]	0.00	0.002	0.001	90 [507]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Carbon Monoxide	Y	N	1.142 [131]	18.87	82.651	74.386	0 [502]	18.87	82.651	82.651		82.651				2.378
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		VOC	Y	N	0.845 [131]	13.97	61.189	55.070	50 [506]	6.99	30.594	27.535		30.594				0.880
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Barium	Y	N	2.78E-04 [133]	0.00	0.020	0.018	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Boron	Y	N	2.60E-03 [134]	0.04	0.189	0.170	99.1 [504]	0.00	0.002	0.002		0.002				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Molybdenum	Y	N	5.57E-10 [134]	0.00	0.000	0.000	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Vanadium	Y	N	4.05E-09 [134]	0.00	0.000	0.000	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Hafnium	Y	N	2.55E-12 [134]	0.00	0.000	0.000	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Tellurium	Y	N	3.69E-08 [135]	0.00	0.000	0.000	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				16.524 [213]	144750.24 [305]	130275.216 [411]	ton gas		Fluorides (as F)	Y	N	0.0010 [136]	0.02	0.071	0.064	99.1 [504]	0.00	0.001	0.001		0.001				0.000
SV 2532	EU 2022	Autoclave Flash Vessels(2 units)	CE 201-203	70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		PM10	Y	N	30.06 [137]	2,129.18	9,325.808	8,393.227	99.1 [504]	19.93	87.290	78.561		GP 001				2.511
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Total PM	Y	N	30.06 [137]	2,129.18	9,325.808	8,393.227	99.1 [504]	19.93	87.290	78.561	IPER for PM	GP 001				2.511
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		NOx	Y	N	0.0017 [138]	0.12	0.525	0.472	0 [502]	0.12	0.525	0.472		0.525				0.015
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		H2SO4/SO3	Y	N	2.710 [141]	191.95	840.750	756.675	99 [504]	1.92	8.407	7.567		8.407				0.242
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		SO2	Y	N	0.003 [138]	0.23	1.007	0.907	90 [511]	0.02	0.101	0.091		0.101				0.003
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		VOC	Y	N	0.3731 [138]	26.43	115.763	104.187	50 [506]	13.22	57.882	52.094		57.882				1.665
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Carbon Monoxide	Y	N	0.0051 [138]	0.36	1.568	1.411	0 [502]	0.36	1.568	1.411		1.568				0.045
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Antimony	Y	Y	5.92961E-06 [138]	0.00	0.002	0.002	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Arsenic	Y	Y	9.22E-05 [138]	6.53E-03	0.029	0.026	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Beryllium	Y	Y	5.29E-07 [138]	3.75E-05	0.000	0.000	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Cadmium	Y	Y	4.34E-05 [138]	3.08E-03	0.013	0.012	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Chromium	Y	Y	1.19E-03 [139]	0.08	0.370	0.333	99.1 [504]	0.00	0.003	0.003		0.003				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Cobalt	Y	Y	1.54E-01 [140]	10.89	47.715	42.943	99.1 [504]	0.10	0.402	0.447		0.447				0.013
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Pb	Y	Y	0.038 [140]	2.70	11.820	10.638	99.1 [504]	0.03	0.111	0.100		0.111				0.003
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Manganese	Y	Y	1.66E-02 [140]	1.17	5.143	4.629	99.1 [504]	0.01	0.048	0.043		0.048				0.001
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Mercury	Y	Y	2.06E-05 [138]	1.46E-03	0.006	0.006	72 [508]	0.00	0.002	0.002		0.002				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Nickel	Y	Y	1.683 [140]	119.21	522.134	469.920	99.1 [504]	1.12	4.887	4.398		4.887				0.141

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions - Processing Plant

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Throughput Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled Potential to Emit (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	Max. Controlled Potential to Emit (tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Phosphorus	Y	Y	5.67E-03 [140]	0.40	1.758	1.582	99.1 [504]	0.00	0.016	0.015		0.016				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Selenium	Y	N	3.60E-05 [138]	2.55E-03	0.011	0.010	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Barium	Y	N	0.002 [133]	0.15	0.657	0.592	99.1 [504]	0.00	0.006	0.006		0.006				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Boron	Y	N	0.020 [134]	1.41	6.155	5.540	99.1 [504]	0.01	0.058	0.052		0.058				0.002
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Copper	Y	N	2.423 [140]	171.62	751.711	676.540	99.1 [504]	1.61	7.036	6.332		7.036				0.202
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Molybdenum	Y	N	1.38E-04 [139]	0.01	0.043	0.039	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Vanadium	Y	N	1.14E-03 [134]	0.08	0.354	0.319	99.1 [504]	0.00	0.003	0.003		0.003				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Zinc	Y	N	0.080 [140]	5.64	24.714	22.242	99.1 [504]	0.05	0.231	0.208		0.231				0.007
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Hafnium	Y	N	5.50E-05 [135]	0.00	0.017	0.015	99.1 [504]	0.00	0.000	0.000		0.000				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Tellurium	Y	N	0.09 [140]	0.09	0.398	0.358	99.1 [504]	0.00	0.004	0.003		0.004				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		HF	Y	Y	9.32E-04 [138]	0.07	0.289	0.260	99 [504]	0.00	0.003	0.003		0.003				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Hydrogen Sulfide	Y	N	1.28E-03 [138]	0.09	0.399	0.359	70 [504]	0.03	0.120	0.108		0.120				0.003
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		HCl	Y	Y	0.261 [139]	18.47	80.911	72.819	99 [504]	0.18	0.809	0.728		0.809				0.023
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Hexchrome	Y	[9]	3.13E-06 [132]	0.00	0.001	0.001	90 [507]	0.00	0.000	0.000		0.000				0.000
SV 2532				70.831 [215]	620479.56 [305]	558431.604 [411]	ton exh.		Fluorides (as F)	Y	N	0.007 [136]	0.53	2.322	2.090	99.1 [504]	0.00	0.022	0.020		0.022				0.001
SV 303	EU 2012	Autoclave Emergency Pressure Relief Vent	NA							Y	N	[142]													
SV 8003	EU 3002	AuPGM Precipitation Tanks (3 tanks, 3 vents)	CE 204	1.107 [213]	9697.32 [305]	8727.588 [411]	ton gas		SO2	Y	N	8.5668 [130]	9.48	41.538	37.384	90 [509]	0.95	4.154	3.738		4.154				0.119
SV 8003				1.107 [213]	9697.32 [305]	8727.588 [411]	ton gas		H2SO4/SO3	Y	N	0.1395 [143]				99 [509]					Data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.				
SV 8003				1.107 [213]	9697.32 [305]	8727.588 [411]	ton gas		PM10	Y	N	0.1395 [143]				99 [509]									
SV 8003				1.107 [213]	9697.32 [305]	8727.588 [411]	ton gas		Total PM	Y	N	0.1395 [143]				99 [509]				IPER for PM					Included
SV 8003	EU 3502	Solution Neutralization Tank 1 Vent	CE 204	4.442 [213]	38911.92 [305]	35020.728 [411]	ton gas		H2SO4/SO3	Y	N	0.090069 [143]	Emission data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry below			99 [509]	Emission data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry below.				with total tank emissions.				
SV 8003				4.442 [213]	38911.92 [305]	35020.728 [411]	ton gas		PM10	Y	N	0.090069 [143]				99 [509]									
SV 8003				4.442 [213]	38911.92 [305]	35020.728 [411]	ton gas		Total PM	Y	N	0.090069 [143]				99 [509]				IPER for PM					
SV 8003				4.442 [213]	38911.92 [305]	35020.728 [411]	ton gas		Carbon Dioxide	Y	N	1979 [130]	8792	38507	34,656.512	0 [502]	8,791.61	38,507.236	34656.512		38,507.236				1,107.718
SV 8003	EU 3512	Solution Neutralization Tank 2 Vent	CE 204	3.652 [213]	31991.52 [305]	28792.368 [411]	ton gas		H2SO4/SO3	Y	N	0.093646 [143]	Emission data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.			99 [509]	Data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.				Included below				
SV 8003				3.652 [213]	31991.52 [305]	28792.368 [411]	ton gas		PM10	Y	N	0.093646 [143]				99 [509]									
SV 8003				3.652 [213]	31991.52 [305]	28792.368 [411]	ton gas		Total PM	Y	N	0.093646 [143]				99 [509]				IPER for PM					
SV 8003				3.652 [213]	31991.52 [305]	28792.368 [411]	ton gas		Carbon Dioxide	Y	N	1917.6 [130]	7,003.08	30,673.469	27,606.122	0 [502]	7,003.08	30,673.469	27606.122		30,673.469				882.368
SV 8003	EU 3522	Solution Neutralization Tank 3 Vent	CE 204	0.068 [213]	595.68 [305]	536.112 [411]	ton gas		H2SO4/SO3	Y	N	0.094447 [143]	Emission data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.			99 [509]	Data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.				Included with total tank emissions.				
SV 8003				0.068 [213]	595.68 [305]	536.112 [411]	ton gas		PM10	Y	N	0.094447 [143]				99 [509]									
SV 8003				0.068 [213]	595.68 [305]	536.112 [411]	ton gas		Total PM	Y	N	0.094447 [143]				99 [509]				IPER for PM					
SV 8003				0.068 [213]	595.68 [305]	536.112 [411]	ton gas		Carbon Dioxide	Y	N	1873.5 [130]	127.40	558.003	502.203	0 [502]	127.40	558.003	502.203		558.003				16.052
SV 8003	EU 3532	Solution Neutralization Tank 4 Vent	CE 204	0.0058 [213]	50.808 [305]	45.7272 [411]	ton gas		H2SO4/SO3	Y	N	0.127458 [143]				99 [509]					Data for this pollutant is included in the totals under the "Total				
SV 8003				0.0058 [213]	50.808 [305]	45.7272 [411]	ton gas		PM10	Y	N	0.127458 [143]				99 [509]									
SV 8003				0.0058 [213]	50.808 [305]	45.7272 [411]	ton gas		Total PM	Y	N	0.127458 [143]				99 [509]				IPER for PM					
SV 8003	EU 6275	Raffinate Neutralization Tanks (4 tanks, 4 vents)	CE 204	4.7208 [213]	41354.208 [305]	37218.7872 [411]	ton exh.		H2SO4/SO3	Y	N	0.092692 [143]	Emission data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.			99 [509]	Emission data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.				Included with total tank emissions.				
SV 8003				4.7208 [213]	41354.208 [305]	37218.7872 [411]	ton exh.		PM10	Y	N	0.092692 [143]				99 [509]									
SV 8003				4.7208 [213]	41354.208 [305]	37218.7872 [411]	ton exh.		Total PM	Y	N	0.092692 [143]				99 [509]				IPER for PM					
SV 8003				4.7208 [213]	41354.208 [305]	37218.7872 [411]	ton exh.		Carbon Dioxide	Y	N	1938.9 [130]	9,153.16	40,090.837	36,081.753	0 [502]	9,153.16	40,090.837	36081.753		40,090.837				1,153.273
SV 8003	EU 5522	Residual Cu Removal Tanks Vents (2 tanks, 2 vents)	CE 204	1.1023 [213]	9656.148 [305]	8690.5332 [411]	ton gas		H2SO4/SO3	Y	N	0.139863 [143]	Emission data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.			99 [509]	Data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.				Included below				
SV 8003				1.1023 [213]	9656.148 [305]	8690.5332 [411]	ton gas		PM10	Y	N	0.139863 [143]				99 [509]									
SV 8003				1.1023 [213]	9656.148 [305]	8690.5332 [411]	ton gas		Total PM	Y	N	0.139863 [143]				99 [509]				IPER for PM					
SV 8003				1.1023 [213]	9656.148 [305]	8690.5332 [411]	ton gas		Hydrogen Sulfide	Y	N	0.181 [144]	0.20	0.876	0.788	70 [509]	0.06	0.263	0.237		0.263				0.008
SV 8003	EU 6002	1st Stage Hydroxide Precipitation (3 tanks, 3 vents)	CE 204	0.000139 [213]	1.21764 [305]	1.095876 [411]	ton gas		H2SO4/SO3	Y	N	0.15 [143]				99 [509]					Data for this pollutant is included in the totals under the "Total				
SV 8003				0.000139 [213]	1.21764 [305]	1.095876 [411]	ton gas		PM10	Y	N	0.15 [143]				99 [509]									
SV 8003				0.000139 [213]	1.21764 [305]	1.095876 [411]	ton gas		Total PM	Y	N	0.15 [143]				99 [509]				IPER for PM					Included
SV 8003	EU 1180	2nd Stage Hydroxide Precipitation	CE 204	0.000139 [216]	1.21764 [305]	1.095876 [411]	ton gas		H2SO4/SO3	Y	N	0.15 [143]	Emission data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.			99 [509]	Emission data for this pollutant is included in the totals under the "Total Hydrometallurgical Process Tank Emissions" entry.				with total tank emissions.				
SV 8003				0.000139 [216]	1.21764 [305]	1.095876 [411]	ton gas		PM10	Y	N	0.15 [143]				99 [509]									
SV 8003				0.000139 [216]	1.21764 [305]	1.095876 [411]	ton gas		Total PM	Y	N	0.15 [143]				99 [509]				IPER for PM					
SV 8003	GP 002	Total Hydrometallurgical Process Tank Emissions	CE 204	15.10 [217]	132260 [305]	119034 [411]	ton gas		SO2	Y	N	0.573579143 [153]	8.66	37.931	34.138	90 [509]	0.87	3.793	3.414		3.793				0.109
SV 8003				15.10 [217]	132260 [305]	119034 [411]	ton gas		H2SO4/SO3	Y	N	1.844593434 [154]	27.85	121.983	109.785	99 [509]	0.28	1.220	1.098		1.220				0.035
SV 8003				15.10 [217]	132260 [305]	119034 [411]	ton gas		PM10	Y	N	1.844593434 [154]	27.85	121.983	109.785	99 [509]	0.28	1.220	1.098		GP 001					0.035
SV 8003				15.10 [217]	132260 [305]	119034 [411]	ton gas		Total PM	Y	N	1.844593434 [154]	27.85	121.983	109.785	99 [509]	0.28	1.220	1.098	IPER for PM	GP 001					0.035
SV 4542	EU 4544	Cu Electrowinning Cells Off Gas	CE 205	4105680 [214]	35965756800 [305]	32369181120 [411]	ft^3 exh.		PM10	Y	N	8.57E-07 [146]	70.38	308.278	277.450	95 [510]	3.52	15.414	13.873		GP 001					0.443
SV 4542				4105680 [214]	35965756800 [305]	32369181120 [411]	ft^3 exh.		Total PM	Y	N	8.57E-07 [146]	70.38	308.278	277.450	95 [510]	3.52	15.414	13.873	IPER for PM	GP 001					0.443
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		H2SO4/SO3	Y	N	2.35E-02 [147]	3.45	15.124	13.612	95 [510]	0.17	0.756	0.681		0.756				0.022
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		SO2	Y	N	9.44E-02 [145]	13.88	60.781	54.703	90 [510]	1.39	6.078	5.470		6.078				0.175
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Antimony	Y	Y	4.10E-03 [148]	4.10E-03	0.018	0.016	95 [510]	0.00	0.001	0.001		0.001				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Arsenic	Y	Y	2.79E-05 [148]	4.10E-03	0.018	0.016	95 [510]	0.00	0.001	0.001		0.001				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Beryllium	Y	Y	2.79E-06 [148]	4.10E-04	0.002	0.002	95 [510]	0.00	0.000	0.000		0.000				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Cadmium	Y	Y	6.34E-04 [145]	9.31E-02	0.408	0.367	95 [510]	0.00	0.020	0.018		0.020				0.001
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Chromium	Y	Y	8.30E-05 [145]	1.22E-02	0.053	0.048	95 [510]	0.00	0.003	0.002		0.003				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Cobalt	Y	Y	4.28E-05 [145]	6.29E-03	0.028	0.025	95 [510]	0.00	0.001	0.001		0.001				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Pb	Y	Y	1.47E-04 [145]	2.16E-02	0.095	0.085	95 [510]	0.00	0.005	0.004		0.005				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Manganese	Y	Y	2.74E-04 [145]	4.02E-02	0.176	0.158	95 [510]	0.00	0.009	0.008		0.009				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Mercury	Y	Y	3.52E-08 [149]	5.17E-06	0.000	0.000	95 [510]	0.00	0.000	0.000		0.000				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Nickel	Y	Y	5.06E-04 [145]	7.43E-02	0.325	0.293	95 [510]	0.00	0.016	0.015		0.016				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Phosphorus	Y	Y	3.58E-04 [145]	5.26E-02	0.230	0.207	95 [510]	0.00	0.012	0.010		0.012				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Selenium	Y	N	2.79E-05 [148]	4.10E-03	0.018	0.016	95 [510]	0.00	0.001	0.001		0.001				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Barium	Y	N	1.98E-05 [133]	2.91E-03	0.013	0.011	95 [510]	0.00	0.001	0.001		0.001				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Boron	Y	N	1.86E-04 [150]	2.73E-02	0.120	0.108	95 [510]	0.00	0.006	0.005		0.006				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Copper	Y	N	5.55E-03 [145]	8.15E-01	3.570	3.213	95 [510]	0.04	0.178	0.161		0.178				0.005
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Molybdenum	Y	N	2.81E-06 [150]	4.13E-04	0.002	0.002	95 [510]	0.00	0.000	0.000		0.000				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Vanadium	Y	N	1.07E-05 [150]	1.57E-03	0.007	0.006	95 [510]	0.00	0.000	0.000		0.000				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Zinc	Y	N	5.38E-04 [145]	7.91E-02	0.346	0.312	95 [510]	0.00	0.017	0.016		0.017				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Hafnium	Y	N	5.15E-07 [151]	7.57E-05	0.000	0.000	95 [510]	0.00	0.000	0.000		0.000				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Tellurium	Y	N	1.20E-05 [151]	1.76E-03	0.008	0.007	95 [510]	0.00	0.000	0.000		0.000				0.000
SV 4542				146.93 [215]	1287106.8 [305]	1158396.12 [411]	ton exh.		Fluorides (as F)	Y	N	7.01E-05 [152]	1.03E-02	0.045	0.041	95 [510]	0.00	0.002	0.002		0.002				0.000
SV 200	EU 200	Hydroxide Product Storage and Handling	NA	2.689 [218]	23555.64 [307]	21200.076 [411]	ton		PM10	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Total PM	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Cobalt	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Nickel	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Pb	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Manganese	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Phosphorus	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Copper	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Zinc	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Antimony	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Arsenic	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Barium	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Beryllium	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Boron	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Cadmium	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Chromium	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Molybdenum	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Selenium	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Hafnium	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Description	APCD ID	Max (Units/hr) Note	Max (Units/yr) Note	Proj. Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Appl. (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc Emissions (ton/yr)	Control Eff (%) Note	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont Emissions (tons/yr)	Emission Std or Operational Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day Note	Max Unc Emissions lb/day	Max Cont Emissions lb/day	g/sec Model Input
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Tellurium	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Vanadium	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 200				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Fluorides (as F)	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220	EU 201	Hydroxide Bagging	NA	2.689 [218]	23555.64 [307]	21200.076 [411]	ton		PM10	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Total PM	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Cobalt	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Nickel	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Pb	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Manganese	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Phosphorus	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Copper	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Zinc	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Antimony	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Arsenic	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Barium	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Beryllium	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Boron	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Cadmium	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Chromium	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Molybdenum	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Selenium	Y	Y	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Hafnium	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Tellurium	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Vanadium	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	Process wet	0.000				0.000
SV 220				2.689 [218]	23555.64 [307]	21200.076 [411]	ton		Fluorides (as F)	Y	N	0 [155]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	filter cake	0.000				0.000
Conc B V	EU 309	Flotation flocculant Silo Feeder (Magnafloc 10)	NA	0.00217 [219]	19.0092 [309]	16.42 [412]	ton		PM10	Y	N	0.02 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Conc B V				0.00217 [219]	19.0092 [309]	16.42 [412]	ton		Total PM	Y	N	0.04 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Conc B V	EU 310	Flotation flocculant Silo (Magnafloc 10)	CE 302	0.00217 [219]	19.0092 [309]	16.42 [412]	ton		PM10	Y	N	0.16 [156]	0.00	0.002	0.001	99 [512]	0.00	0.000	0.000	GP 001	0.000				0.000
Conc B V				0.00217 [219]	19.0092 [309]	16.42 [412]	ton		Total PM	Y	N	0.99 [156]	0.00	0.009	0.008	99 [512]	0.00	0.000	0.000	GP 001	0.000				0.000
Conc B V	EU 202	Flotation flocculant to Mix Tank (Magnafloc 10)	NA	0.00217 [219]	19.0092 [309]	16.42 [412]	ton		PM10	Y	N	0.02 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Conc B V				0.00217 [219]	19.0092 [309]	16.42 [412]	ton		Total PM	Y	N	0.04 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V	EU 312	Leach Residue flocculant Silo Feeder (Mag. 351)	NA	0.0294 [219]	257.544 [309]	223.80 [412]	ton		PM10	Y	N	0.02 [158]	0.00	0.003	0.002	0 [502]	0.00	0.003	0.002	GP 001	0.000				0.000
Reag V				0.0294 [219]	257.544 [309]	223.80 [412]	ton		Total PM	Y	N	0.04 [158]	0.00	0.005	0.004	0 [502]	0.00	0.005	0.004	GP 001	0.000				0.000
Reag V	EU 241	Leach Residue flocculant Silo (Magnafloc 351)	CE 221	0.0294 [219]	257.544 [309]	223.80 [412]	ton		PM10	Y	N	0.16 [156]	0.00	0.021	0.018	99 [512]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V				0.0294 [219]	257.544 [309]	223.80 [412]	ton		Total PM	Y	N	0.99 [156]	0.03	0.127	0.111	99 [512]	0.00	0.001	0.001	GP 001	0.000				0.000
Reag V	EU 203	Leach Residue flocculant to Mix Tank (Magnafloc 351)	NA	0.0294 [219]	257.544 [309]	223.80 [412]	ton		PM10	Y	N	0.02 [158]	0.00	0.003	0.002	0 [502]	0.00	0.003	0.002	GP 001	0.000				0.000
Reag V				0.0294 [219]	257.544 [309]	223.80 [412]	ton		Total PM	Y	N	0.04 [158]	0.00	0.005	0.004	0 [502]	0.00	0.005	0.004	GP 001	0.000				0.000
Reag V	EU 313	coagulant to Mix Tank	NA	0.041621 [219]	364.6 [309]	317 [412]	gallons		PM10	Y	N	0 [157]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V				0.041621 [219]	364.6 [309]	317 [412]	gallons		Total PM	Y	N	0 [157]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V	EU 314	Plant flocculant Silo Feeder (Magnafloc 342)	NA	0.0001313 [219]	1.15 [309]	1.0 [412]	ton		PM10	Y	N	0.02 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V				0.0001313 [219]	1.15 [309]	1.0 [412]	ton		Total PM	Y	N	0.04 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V	EU 315	Plant flocculant Silo (Magnafloc 342)	CE 303	0.0001313 [219]	1.15 [309]	1.0 [412]	ton		PM10	Y	N	0.16 [156]	0.00	0.000	0.000	99 [512]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V				0.0001313 [219]	1.15 [309]	1.0 [412]	ton		Total PM	Y	N	0.99 [156]	0.00	0.001	0.000	99 [512]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V	EU 316	Plant flocculant to Mix Tank (Magnafloc 342)	NA	0.0001313 [219]	1.15 [309]	1.0 [412]	ton		PM10	Y	N	0.02 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V				0.0001313 [219]	1.15 [309]	1.0 [412]	ton		Total PM	Y	N	0.04 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Conc B V	EU 204	PAX Mix Tank (w/baghouse)	CE 211	1738.2 [220]	15226632 [305]	13235025 [413]	ft^3 exh.		PM10	Y	N	7.14E-07 [159]	0.12	0.544	0.473	99 [513]	0.00	0.005	0.005	GP 001	0.000				0.000
Conc B V				1738.2 [220]	15226632 [305]	13235025 [413]	ft^3 exh.		Total PM	Y	N	7.14E-07 [159]	0.12	0.544	0.473	99 [513]	0.00	0.005	0.005	GP 001	0.000				0.000
Conc B V				0.0788 [219]	690.288 [309]	600 [412]	ton		CS2	Y	Y	5.346 [160]	0.42	1.845	1.604	0 [502]	0.42	1.845	1.604		1.845				0.053
Conc B V				0.0788 [219]	690.288 [309]	600 [412]	ton		VOC	Y	N	5.346 [160]	0.42	1.845	1.604	0 [502]	0.42	1.845	1.604		1.845				0.053
Conc B V	EU 226	PAX Fugitive CS2 Emissions	NA	0.0788 [219]	690.288 [309]	600 [412]	ton		CS2	Y	Y	0.635 [161]	0.05	0.219	0.190	0 [502]	0.05	0.219	0.190		0.219				0.006
Conc B V				0.0788 [219]	690.288 [309]	600 [412]	ton		VOC	Y	N	0.635 [161]	0.05	0.219	0.190	0 [502]	0.05	0.219	0.190		0.219				0.006
Conc B V	EU 205	Frother Storage Tank (MIBC)	NA	10.43 [221]	91352.9 [309]	79448 [412]	gallons		VOC	Y	N	6.90E-02 [162]	0.72	0.003	0.002	0 [502]	0.72	0.003	0.002		0.003				0.091
Conc B V				10.43 [221]	91352.9 [309]	79448 [412]	gallons		MIBC	Y	N	6.90E-02 [162]	0.72	0.003	0.002	0 [502]	0.72	0.003	0.002		0.003				0.091
SV 317	EU 317	Frother Storage Tank (DF 250)	NA	2.85 [221]	24969 [309]	21708 [412]	gallons		VOC	Y	N	0 [163]			0.000										0.000
SV 317				2.85 [221]	24969 [309]	21708 [412]	gallons		PGME	Y	N	0 [163]			0.000										0.000
SV 318	EU 318	Frother Mix Tank	NA	13.28 [221]	116321.9 [309]	101156.00 [412]	gallons		VOC	Y	N	0 [164]			0.000										0.000
SV 318				10.43 [221]	91352.9 [309]	101156.00 [412]	gallons		MIBC	Y	N	0 [164]			0.000										0.000
SV 318				2.85 [221]	24969 [309]	122864.00 [412]	gallons		PGME	Y	N	0 [164]			0.000										0.000
Conc B V	EU 319	Copper Sulfate Mix Tank	NA	0.08552 [219]	749.2 [309]	651 [412]	ton		PM10	Y	N	0 [166]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Conc B V				0.08552 [219]	749.2 [309]	651 [412]	ton		Total PM	Y	N	0 [166]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Conc B V				0.08552 [219]	749.2 [309]	651 [412]	ton		Copper	Y	N	0 [166]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Conc B V	EU 346	Carboxymethylcellulose Mix Tank	NA	0.0023 [222]	20.2 [310]	17.6 [414]	ton		PM10	Y	N	0.02 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Conc B V				0.0023 [222]	20.2 [310]	17.6 [414]	ton		Total PM	Y	N	0.04 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
SV 8003	EU 207	NaHS Mix Tank/Storage Tank	CE 204	0.3968 [219]	3475.968 [308]	2897 [412]	ton		Hydrogen Sulfide	Y	N	0.0252 [165]	0.01	0.044	0.037	70 [514]	0.00	0.013	0.011		0.013				0.000
EW V	EU 208	Guar gum to mix tank	NA	0.00132 [219]	11.56 [309]	10 [412]	ton		PM10	Y	N	0.02 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
EW V				0.00132 [219]	11.56 [309]	10 [412]	ton		Total PM	Y	N	0.04 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V	EU 209	Sulfuric Acid Unload	NA	108.43 [223]	12290.28 [309]	10694 [412]	ton		H2SO4/SO3	Y	N	1.44794E-05 [167]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Reag V	EU 210	Sulfuric Acid Storage Tank	NA	108.43 [223]	12290.28 [309]	10694 [412]	ton		SO2	Y	N	0.1 [168]	10.84	0.615	0.535	0 [502]	10.84	0.615	0.535		0.615	542.150 [601]	54.215	54.215	0.285
Reag V				1.403 [219]	12290.28 [309]	10694 [412]	ton		H2SO4/SO3	Y	N	0.1 [169]	0.14	0.615	0.535	0 [502]	0.14	0.615	0.535		0.615				0.018
Reag V				1.403 [219]	12290.28 [309]	10694 [412]	ton		SO2	Y	N	0.1 [169]	0.14	0.615	0.535	0 [502]	0.14	0.615	0.535		0.615				0.018
Reag V	EU 211	Hydrochloric Acid Storage Tank	NA	1.8 [219]	15768 [309]	13707 [412]	ton		HCl	Y	N	0.1 [169]	0.18	0.788	0.685	0 [502]	0.18	0.788	0.685		0.788				0.023
Reag V	EU 212	Hydrochloric Acid Unloading	NA	96.4 [223]	15768 [309]	13707 [412]	ton		HCl	Y	N	0.1 [169]	9.64	0.788	0.685	0 [502]	9.64	0.788	0.685		0.788				1.215
SXV	EU 214	Diluent storage tank	NA	4.994 [224]	43,747 [309]	38659 [412]	gal makeup		VOC	Y	N	3.08E-01 [170]	1.54	0.005	0.004	0 [502]	1.54	0.005	0.004		0.005				0.194
SXV				4.994 [224]	43,747 [309]	38659 [412]	gal makeup		Naphthalene	Y	N	6.17E-04 [170]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
SV 313		Cu Extractant Handling	NA	0.787 [225]	6,890 [308]	5090 [412]	gal makeup		VOC	Y	N	0 [171]			0.000										0.000
SXV	EU 222	Cu SX Tanks	NA	5.780 [225]	50,637 [311]	43749 [412]	gal makeup		VOC	Y	N	1.90E-01 [172]	1.1000000	4.818	4.163	0 [502]	1.10	4.818	4.163		4.818				0.139
SXV				5.780 [225]	50,637 [311]	43749 [412]	gal makeup		Naphthalene	Y	Y	3.81E-04 [172]	0.0022000	0.010	0.008	0 [502]	0.00	0.010	0.008		0.010				0.000
SV 320		Caustic Tank	NA	0.009 [219]	76 [309]	66 [412]	ton		Total PM	Y		[173]													0.000
EW V	EU 215	Cobalt Sulfate to mix tank	NA	0.000993 [219]	8.699 [309]	7.0 [412]	ton		PM10	Y	N	0.02 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
EW V				0.000993 [219]	8.699 [309]	7.0 [412]	ton		Total PM	Y	N	0.04 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
EW V	EU 218	MgO to Mix Tank	NA	0.000993 [219]	8.699 [309]	7.0 [412]	ton		Cobalt	Y	N	0.04 [158]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V				4.63 [219]	40565 [309]	35274 [412]	ton		PM10	Y	N	0.02 [174]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
Reag V				4.63 [219]	40565 [309]	35274 [412]	ton		Total PM	Y	N	0.04 [174]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	GP 001	0.000				0.000
SV 327	EU 333	Oxygen Plant Cooling Tower	NA	320.04 [226]	2803550.4 [301]	2803550 [415]	Mgal		PM10	Y	N	0.00021 [175]	0.07	0.294	0.294	0 [502]	0.07	0.294	0.294	0.001% drift;	GP 001				0.008
SV 327				320.04 [226]	2803550.4 [301]	2803550 [415]	Mgal		Total PM	Y	N	0.00021 [175]	0.07	0.294	0.294	0 [502]	0.07	0.294	0.294	2500 ppm TDS	GP 001				0.008
Reag V	EU 220	Lime Silo	CE 220	14340 [227]	125618400 [305]	120718249 [416]	ft^3 exh.		PM10	Y	N	7.14E-07 [176]	1.02	4.486	4.311	99 [512]	0.01	0.045	0.043	GP 001	0.000				0.001
Reag V				6.027 [228]	52796.52 [312]	50910 [417]	ton		Total PM	Y	N	7.14E-06 [176]	5.97	26.134	25.200	99 [512]	0.06	0.261	0.252	GP 001	0.000				0.008
Reag V	EU 221	Lime Conveyor	NA	6.027 [228]	52796.52 [312]	50910 [417]	ton		PM10	Y	N	0.61 [177]	3.68	16.103	15.528	0 [502]	3.68	16.103	15.528	GP 001	0.463				0.463
Reag V				6.027 [228]	52796.52 [312]	50910 [417]	ton		Total PM	Y	N	0.61 [177]	3.68	16.103	15.528	0 [502]	3.68	16.103	15.528	GP 001	0.463				0.463
SV 221	EU 321	Lime Slaker (w/scrubber)	CE 301	6.027 [228]	52796.52 [312]	50910 [417]	ton		PM10	Y	N	0.64 [178]	3.86	16.895	16.291	90 [517]	0.39	1.689	1.629	GP 001	0.049				0.049
SV 221				6.027 [228]	52796.52 [312]	50910 [417]	ton		Total PM	Y	N	0.64 [178]	3.86	16.895	16.291	90 [517]	0.39	1.689	1.629	IPER for PM	GP 001				0.049
Reag V	EU 321	Lime Slaker (fugitive emissions)	NA	6.027 [228]	52796.52 [312]	50910 [417]	ton		PM10	Y	N	0.16 [178]	0.96	4.224	4.073	0 [517]	0.96	4.224	4.073	GP 001	0.122				0.122
Reag V				6.027 [228]	52796.52 [312]	50910 [417]	ton		Total PM	Y	N	0.16 [178]	0.96	4.224	4.073	0 [517]	0.96	4.224	4.073	GP 001	0.122				0.122
SV 323	EU 326	Limestone Railcar Dump	CE 305	1445760 [229]	12664857600 [305]	121544561 [418]	ft^3 exh.		PM10	Y	N	8.57E-07 [179]	123.92	542.780	5.209	99 [515]	1.24	5.428	0.052	0.022 gr/cf PM	GP 001	3012000 [602]	322.714	3.227	0.017
SV 323				1445760 [229]	12664857600 [305]	121544561 [418]	ft^3 exh.		Total PM	Y	N	8.57E-07 [179]	123.92	542.780	5.209	99 [515]	1.24	5.428	0.052	(NSPS)	GP 001	3012000 [602]	322.714	3.227	0.017
SV 323				1445760 [229]	12664857600 [305]	121544561 [418]	ft^3 exh.		Crystalline Silica	Y	N	1.71E-08 [180]	2.48	10.856	0.104	99 [515]	0.02	0.109	0.001		0.109	3012000 [602]	6.454	0.065	0.000
SV 323	EU 327	Limestone hopper to conveyor	CE 305																						

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions - Processing Plant

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	Emission Unit ID	Description	APCD ID	Throughput Maximum (Units/hr)	Note	(Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
SV 323																															
SV 323				Emissions included with EU 326																											
CarDmp V	EU 328	Limestone Reclaim chute (to tunnel conveyor)	NA	800	[230]	7008000	[308]	252209	[419]	ton		PM10	Y	N	0.0011	[183]	0.88	3.854	0.139	0	[502]	0.88	3.854	0.139	GP 001		4850	[603]	5.335	5.335	0.028
CarDmp V				800	[230]	7008000	[308]	252209	[419]	ton		Total PM	Y	N	0.003	[183]	2.40	10.512	0.378	0	[502]	2.40	10.512	0.378	NSPS OOO [5]		4850	[603]	14.551	14.551	0.076
CarDmp V				800	[230]	7008000	[308]	252209	[419]	ton		Crystalline Silica	Y		0.0001	[180]	0.05	0.210	0.008	0	[502]	0.05	0.210	0.008		0.210	4850	[603]	0.291	0.291	0.002
Addit V	EU 329	Limestone Tunnel Conveyor to Bunker	NA	800	[230]	7008000	[308]	252209	[419]	ton		PM10	Y	N	0.0077	[185]	6.15	26.919	0.969	0	[502]	6.15	26.919	0.969	GP 001		4850	[603]	37.261	37.261	0.196
Addit V				800	[230]	7008000	[308]	252209	[419]	ton		Total PM	Y	N	0.0162	[185]	12.99	56.915	2.048	0	[502]	12.99	56.915	2.048	NSPS OOO [5]		4850	[603]	78.780	78.780	0.414
Addit V				800	[230]	7008000	[308]	252209	[419]	ton		Crystalline Silica	Y		0.0003	[180]	0.26	1.138	0.041	0	[502]	0.26	1.138	0.041		1.138	4850	[603]	1.576	1.576	0.008
Addit V	EU 330	Limestone Bunker to crusher feed conveyor (enclosed)	NA	100	[231]	876000	[308]	252209	[419]	ton		PM10	Y	N	0.0011	[183]	0.11	0.482	0.139	0	[502]	0.11	0.482	0.139	GP 001						0.014
Addit V				100	[231]	876000	[308]	252209	[419]	ton		Total PM	Y	N	0.003	[183]	0.30	1.314	0.378	0	[502]	0.30	1.314	0.378	NSPS OOO [5]						0.038
Addit V				100	[231]	876000	[308]	252209	[419]	ton		Crystalline Silica	Y		0.0001	[180]	0.01	0.026	0.008	0	[502]	0.01	0.026	0.008		0.026					0.001
Addit V	EU 322	Limestone Crusher Feed Conveyor Discharge (enclosed)	NA	100	[231]	876000	[308]	252209	[419]	ton		PM10	Y	N	0.0011	[183]	0.11	0.482	0.139	0	[502]	0.11	0.482	0.139	GP 001						0.014
Addit V				100	[231]	876000	[308]	252209	[419]	ton		Total PM	Y	N	0.003	[183]	0.30	1.314	0.378	0	[502]	0.30	1.314	0.378	NSPS OOO [5]						0.038
Addit V				100	[231]	876000	[308]	252209	[419]	ton		Crystalline Silica	Y		0.0001	[180]	0.01	0.026	0.008	0	[502]	0.01	0.026	0.008		0.026					0.001
SV 322	EU 323	Limestone Crusher (stack emissions)	CE 304	115680	[232]	1013356800	[305]	291755371	[420]	ft^3 exh.		PM10	Y	N	7.14E-07	[420]	8.26	36.191	10.420	99	[516]	0.08	0.362	0.104	0.022 gr/cf PM GP 001						0.010
SV 322				115680	[232]	1013356800	[305]	291755371	[420]	ft^3 exh.		Total PM	Y	N	7.14E-07	[181]	8.26	36.191	10.420	99	[516]	0.08	0.362	0.104	(NSPS) GP 001						0.010
SV 322				115680	[232]	1013356800	[305]	291755371	[420]	ft^3 exh.		Crystalline Silica	Y		1.43E-08	[182]	0.17	0.724	0.208	99	[516]	0.00	0.007	0.002		0.007					0.000
Addit V	EU 323	Limestone Crusher (fugitive emissions)		115680	[232]	1013356800	[305]	291755371	[420]	ft^3 exh.		PM10	Y	N	1.79E-05	[182]	2.07	9.048	2.605	0	[516]	2.07	9.05	2.605	GP 001						0.260
Addit V				115680	[232]	1013356800	[305]	291755371	[420]	ft^3 exh.		Total PM	Y	N	1.79E-05	[182]	2.07	9.048	2.605	0	[516]	2.07	9.05	2.605	GP 001						0.260
Addit V				115680	[232]	1013356800	[305]	291755371	[420]	ft^3 exh.		Crystalline Silica	Y		3.57E-07	[180]	0.04	0.181	6.512	0	[516]	0.04	0.18	6.512		0.181					0.005
Addit V	EU 324	Limestone Crusher to Conveyor	NA	100	[231]	876000	[308]	252209	[419]	ton		PM10	Y	N	0.0011	[183]	0.11	0.482	0.139	0	[502]	0.11	0.482	0.139	GP 001						0.014
Addit V				100	[231]	876000	[308]	252209	[419]	ton		Total PM	Y	N	0.003	[183]	0.30	1.314	0.378	0	[502]	0.30	1.314	0.378	NSPS OOO [5]						0.038
Addit V				100	[231]	876000	[308]	252209	[419]	ton		Crystalline Silica	Y		0.0001	[180]	0.01	0.026	0.008	0	[502]	0.01	0.026	0.008		0.026					0.001
Addit V	EU 224	Limestone Conveyor to Mix Tank	NA	100	[231]	876000	[308]	252209	[419]	ton		PM10	Y	N	0.0011	[183]	0.11	0.482	0.139	0	[502]	0.11	0.482	0.139	GP 001						0.014
Addit V				100	[231]	876000	[308]	252209	[419]	ton		Total PM	Y	N	0.003	[183]	0.30	1.314	0.378	0	[502]	0.30	1.314	0.378	NSPS OOO [5]						0.038
Addit V				100	[231]	876000	[308]	252209	[419]	ton		Crystalline Silica	Y		0.0001	[180]	0.01	0.026	0.008	0	[502]	0.01	0.026	0.008		0.026					0.001
SV 335	EU 342	Nickel Concentrate Dryer (hot oil)	CE 310	32	[233]	280320	[301]	280320	[421]	ton		PM10	Y	N	1.46	[186]	46.72	204.634	204.634	99	[518]	0.47	2.046	2.046	0.02 gr/cf PM GP 001						0.059
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Total PM	Y	N	2.68	[186]	85.76	375.629	375.629	99	[518]	0.86	3.756	3.756	(NSPS) GP 001						0.108
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Antimony	Y	Y	1.18E-06	[187]	0.00	0.000	0.000	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Arsenic	Y	Y	1.05E-03	[187]	0.03	0.146	0.146	99	[518]	0.00	0.001	0.001		0.001					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Beryllium	Y	Y	2.68E-07	[187]	0.00	0.000	0.000	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Cadmium	Y	Y	5.90E-05	[187]	0.00	0.008	0.008	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Chromium	Y	Y	2.17E-04	[187]	0.01	0.030	0.030	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Cobalt	Y	Y	6.16E-03	[187]	0.20	0.864	0.864	99	[518]	0.00	0.009	0.009		0.009					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Pb	Y	Y	2.79E-03	[187]	0.09	0.391	0.391	99	[518]	0.00	0.004	0.004		0.004					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Manganese	Y	Y	1.77E-03	[187]	0.06	0.248	0.248	99	[518]	0.00	0.002	0.002		0.002					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Mercury	Y	Y	3.35E-07	[187]	0.00	0.000	0.000	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Nickel	Y	Y	8.31E-02	[187]	2.66	11.644	11.644	99	[518]	0.03	0.116	0.116		0.116					0.003
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Selenium	Y	Y	2.04E-04	[187]	0.01	0.029	0.029	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Barium	Y	Y	1.36E-04	[187]	0.00	0.019	0.019	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Boron	Y	Y	1.77E-03	[187]	0.06	0.248	0.248	99	[518]	0.00	0.002	0.002		0.002					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Copper	Y	Y	4.02E-01	[187]	12.86	56.344	56.344	99	[518]	0.13	0.563	0.563		0.563					0.016
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Molybdenum	Y	Y	6.46E-05	[187]	0.00	0.009	0.009	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Vanadium	Y	Y	1.02E-04	[187]	0.00	0.014	0.014	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Zinc	Y	Y	7.77E-03	[187]	0.25	1.089	1.089	99	[518]	0.00	0.011	0.011		0.011					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Hafnium	Y	Y	4.90E-06	[187]	0.00	0.001	0.001	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Tellurium	Y	Y	1.14E-04	[187]	0.00	0.016	0.016	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 335				32	[233]	280320	[301]	280320	[421]	ton		Fluorides (as F)	Y	Y	6.67E-04	[187]	0.02	0.094	0.094	99	[518]	0.00	0.001	0.001		0.001					0.000
SV 336	EU 343	Copper Concentrate Dryer (hot oil)	CE 311	32	[233]	280320	[301]	280320	[421]	ton		PM10	Y	N	1.46	[186]	46.72	204.634	204.634	99	[518]	0.47	2.046	2.046	0.02 gr/cf PM GP 001						0.059
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Total PM	Y	N	2.68	[186]	85.76	375.629	375.629	99	[518]	0.86	3.756	3.756	(NSPS) GP 001						0.108
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Antimony	Y	Y	1.18E-06	[187]	0.00	0.000	0.000	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Arsenic	Y	Y	1.05E-03	[187]	0.03	0.146	0.146	99	[518]	0.00	0.001	0.001		0.001					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Beryllium	Y	Y	2.68E-07	[187]	0.00	0.000	0.000	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Cadmium	Y	Y	5.90E-05	[187]	0.00	0.008	0.008	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Chromium	Y	Y	2.17E-04	[187]	0.01	0.030	0.030	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Cobalt	Y	Y	6.16E-03	[187]	0.20	0.864	0.864	99	[518]	0.00	0.009	0.009		0.009					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Pb	Y	Y	2.79E-03	[187]	0.09	0.391	0.391	99	[518]	0.00	0.004	0.004		0.004					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Manganese	Y	Y	1.77E-03	[187]	0.06	0.248	0.248	99	[518]	0.00	0.002	0.002		0.002					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Mercury	Y	Y	3.35E-07	[187]	0.00	0.000	0.000	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Nickel	Y	Y	8.31E-02	[187]	2.66	11.644	11.644	99	[518]	0.03	0.116	0.116		0.116					0.003
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Selenium	Y	Y	2.04E-04	[187]	0.01	0.029	0.029	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Barium	Y	Y	1.36E-04	[187]	0.00	0.019	0.019	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Boron	Y	Y	1.77E-03	[187]	0.06	0.248	0.248	99	[518]	0.00	0.002	0.002		0.002					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Copper	Y	Y	4.02E-01	[187]	12.86	56.344	56.344	99	[518]	0.13	0.563	0.563		0.563					0.016
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Molybdenum	Y	Y	6.46E-05	[187]	0.00	0.009	0.009	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Vanadium	Y	Y	1.02E-04	[187]	0.00	0.014	0.014	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Zinc	Y	Y	7.77E-03	[187]	0.25	1.089	1.089	99	[518]	0.00	0.011	0.011		0.011					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Hafnium	Y	Y	4.90E-06	[187]	0.00	0.001	0.001	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Tellurium	Y	Y	1.14E-04	[187]	0.00	0.016	0.016	99	[518]	0.00	0.000	0.000		0.000					0.000
SV 336				32	[233]	280320	[301]	280320	[421]	ton		Fluorides (as F)	Y	Y	6.67E-04	[187]	0.02	0.094	0.094	99	[518]	0.00	0.001	0.001		0.001					0.000
SV 331	EU 338	Concentrate Silo #1 Bin Vent	CE 306	156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		PM10	Y	N	7.14286E-07	[188]	11.14	48.806	40.671	99	[520]	0.11	0.488	0.407	0.02 gr/cf PM GP 001						0.014
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Total PM	Y	N	7.14286E-07	[188]	11.14	48.806	40.671	99	[520]	0.11	0.488	0.407	(NSPS) GP 001						0.014
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Antimony	Y	Y	3.14E-13	[187]	0.00	0.000	0.000	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Arsenic	Y	Y	2.79E-10	[187]	0.00	0.019	0.016	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Beryllium	Y	Y	7.14E-14	[187]	0.00	0.000	0.000	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Cadmium	Y	Y	1.57E-11	[187]	0.00	0.001	0.001	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Chromium	Y	Y	5.79E-11	[187]	0.00	0.004	0.003	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Cobalt	Y	Y	1.64E-09	[187]	0.03	0.112	0.094	99	[520]	0.00	0.001	0.001		0.001					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Pb	Y	Y	7.44E-10	[187]	0.01	0.051	0.042	99	[520]	0.00	0.001	0.001		0.001					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Manganese	Y	Y	4.72E-10	[187]	0.01	0.032	0.027	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Mercury	Y	Y	8.93E-14	[187]	0.00	0.000	0.000	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Nickel	Y	Y	2.21E-08	[187]	0.35	1.513	1.261	99	[520]	0.00	0.015	0.013		0.015					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Selenium	Y	Y	5.43E-11	[187]	0.00	0.004	0.003	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Barium	Y	Y	3.64E-11	[187]	0.00	0.002	0.002	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Boron	Y	Y	4.71E-10	[187]	0.01	0.032	0.027	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Copper	Y	N	1.07E-07	[187]	1.67	7.321	6.101	99	[520]	0.02	0.073	0.061		0.073					0.002
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Molybdenum	Y	Y	1.72E-11	[187]	0.00	0.001	0.001	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Vanadium	Y	Y	2.71E-11	[187]	0.00	0.002	0.002	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Zinc	Y	Y	2.07E-09	[187]	0.03	0.142	0.118	99	[520]	0.00	0.001	0.001		0.001					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Hafnium	Y	Y	1.31E-12	[187]	0.00	0.000	0.000	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Tellurium	Y	Y	3.05E-11	[187]	0.00	0.002	0.002	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 331				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Fluorides (as F)	Y	N	1.78E-10	[187]	0.00	0.012	0.010	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332	EU 339	Concentrate Silo #2 Bin Vent	CE 307	156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		PM10	Y	N	7.14286E-07	[188]	11.14	48.806	40.671	99	[520]	0.11	0.488	0.407	0.02 gr/cf PM GP 001						0.014
SV 332				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Total PM	Y	N	7.14286E-07	[188]	11.14	48.806	40.671	99	[520]	0.11	0.488	0.407	(NSPS) GP 001						0.014
SV 332				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Antimony	Y	Y	3.14E-13	[187]	0.00	0.000	0.000	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Arsenic	Y	Y	2.79E-10	[187]	0.00	0.019	0.016	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332				156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Beryllium	Y	Y	7.14E-14	[187]	0.00	0.000	0.000	99	[520]	0.00	0.000	0.000		0.000					0.000

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Description	Max (Units/hr)	Note	(Units/yr)	Note	Proj Act (Units/yr)	Note	Units	Days precip	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit)	Note	MaxUnc lb/hr	MaxUnc tons/yr	ProjActUnc ton/yr	Ctrl Eff %	Note	MaxCont lb/hr	MaxCont tons/yr	ProjActCont tons/yr	Emission Std/Op Limit	Limited Cont PTE tons/yr	Max Throughput units/day	Note	MaxUnc lb/day	MaxCont lb/day	g/sec
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Cadmium	Y	Y	1.57E-11	[187]	0.00	0.001	0.001	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Chromium	Y	Y	5.79E-11	[187]	0.00	0.004	0.003	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Cobalt	Y	Y	1.64E-09	[187]	0.03	0.112	0.094	99	[520]	0.00	0.001	0.001		0.001					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Pb	Y	Y	7.44E-10	[187]	0.01	0.051	0.042	99	[520]	0.00	0.001	0.001		0.001					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Manganese	Y	Y	4.72E-10	[187]	0.01	0.032	0.027	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Mercury	Y	Y	8.93E-14	[187]	0.00	0.000	0.000	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Nickel	Y	Y	2.21E-08	[187]	0.35	1.513	1.261	99	[520]	0.00	0.015	0.013		0.015					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Selenium	Y	Y	5.43E-11	[187]	0.00	0.004	0.003	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Barium	Y	N	3.64E-11	[187]	0.00	0.002	0.002	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Boron	Y	N	4.71E-10	[187]	0.01	0.032	0.027	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Copper	Y	N	1.07E-07	[187]	1.67	7.321	6.101	99	[520]	0.02	0.073	0.061		0.073					0.002
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Molybdenum	Y	N	1.72E-11	[187]	0.00	0.001	0.001	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Vanadium	Y	N	2.71E-11	[187]	0.00	0.002	0.002	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Zinc	Y	N	2.07E-09	[187]	0.03	0.142	0.118	99	[520]	0.00	0.001	0.001		0.001					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Hafnium	Y	N	1.31E-12	[187]	0.00	0.000	0.000	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Tellurium	Y	N	3.05E-11	[187]	0.00	0.002	0.002	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 332			156000	[234]	1366560000	[305]	1138800000	[422]	ft^3 exh.		Fluorides (as F)	Y	N	1.78E-10	[187]	0.00	0.012	0.010	99	[520]	0.00	0.000	0.000		0.000					0.000
SV 333	EU 340	Railcar Loading Arm (CE 308)	96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		PM10	Y	N	1.42857E-06	[189]	13.71	60.069	12.014	99	[521]	0.14	0.601	0.120	0.02 gr/cf PM (NSPS)						0.017
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Total PM	Y	N	1.42857E-06	[189]	13.71	60.069	12.014	99	[521]	0.14	0.601	0.120	GP 001						0.017
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Antimony	Y	Y	6.29E-13	[187]	0.00	0.000	0.000	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Arsenic	Y	Y	5.57E-10	[187]	0.01	0.023	0.005	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Beryllium	Y	Y	1.43E-13	[187]	0.00	0.000	0.000	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Cadmium	Y	Y	3.14E-11	[187]	0.00	0.001	0.000	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Chromium	Y	Y	1.16E-10	[187]	0.00	0.005	0.001	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Cobalt	Y	Y	3.28E-09	[187]	0.03	0.138	0.028	99	[521]	0.00	0.001	0.000		0.001					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Pb	Y	Y	1.49E-09	[187]	0.01	0.063	0.013	99	[521]	0.00	0.001	0.000		0.001					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Manganese	Y	Y	9.44E-10	[187]	0.01	0.040	0.008	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Mercury	Y	Y	1.79E-13	[187]	0.00	0.000	0.000	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Nickel	Y	Y	4.43E-08	[187]	0.43	1.862	0.372	99	[521]	0.00	0.019	0.004		0.019					0.001
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Selenium	Y	Y	1.09E-10	[187]	0.00	0.005	0.001	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Barium	Y	N	7.27E-11	[187]	0.00	0.003	0.001	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Boron	Y	N	9.43E-10	[187]	0.01	0.040	0.008	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Copper	Y	N	2.14E-07	[187]	2.06	9.010	1.802	99	[521]	0.02	0.090	0.018		0.090					0.003
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Molybdenum	Y	N	3.44E-11	[187]	0.00	0.001	0.000	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Vanadium	Y	N	5.43E-11	[187]	0.00	0.002	0.000	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Zinc	Y	N	4.14E-09	[187]	0.04	0.174	0.035	99	[521]	0.00	0.002	0.000		0.002					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Hafnium	Y	N	2.61E-12	[187]	0.00	0.000	0.000	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Tellurium	Y	N	6.09E-11	[187]	0.00	0.003	0.001	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 333			96000	[235]	840960000	[305]	168192000	[422]	ft^3 exh.		Fluorides (as F)	Y	N	3.56E-10	[187]	0.00	0.015	0.003	99	[521]	0.00	0.000	0.000		0.000					0.000
SV 334	EU 341	Loading System Filter Receiver (CE 309)	156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		PM10	Y	N	1.42857E-06	[190]	22.29	97.611	19.522	99	[522]	0.22	0.976	0.195			GP 001				0.028
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Total PM	Y	N	1.42857E-06	[190]	22.29	97.611	19.522	99	[522]	0.22	0.976	0.195			GP 001				0.028
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Antimony	Y	Y	6.29E-13	[187]	0.00	0.000	0.000	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Arsenic	Y	Y	5.57E-10	[187]	0.01	0.038	0.008	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Beryllium	Y	Y	1.43E-13	[187]	0.00	0.000	0.000	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Cadmium	Y	Y	3.14E-11	[187]	0.00	0.002	0.000	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Chromium	Y	Y	1.16E-10	[187]	0.01	0.008	0.002	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Cobalt	Y	Y	3.28E-09	[187]	0.05	0.224	0.045	99	[522]	0.00	0.002	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Pb	Y	Y	1.49E-09	[187]	0.02	0.102	0.020	99	[522]	0.00	0.001	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Manganese	Y	Y	9.44E-10	[187]	0.01	0.065	0.013	99	[522]	0.00	0.001	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Mercury	Y	Y	1.79E-13	[187]	0.00	0.000	0.000	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Nickel	Y	Y	4.43E-08	[187]	0.69	3.026	0.605	99	[522]	0.01	0.030	0.006		0.030					0.001
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Selenium	Y	Y	1.09E-10	[187]	0.00	0.007	0.001	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Barium	Y	N	7.27E-11	[187]	0.00	0.005	0.001	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Boron	Y	N	9.43E-10	[187]	0.01	0.064	0.013	99	[522]	0.00	0.001	0.000		0.001					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Copper	Y	N	2.14E-07	[187]	3.34	14.642	2.928	99	[522]	0.03	0.146	0.029		0.146					0.004
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Molybdenum	Y	N	3.44E-11	[187]	0.00	0.002	0.000	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Vanadium	Y	N	5.43E-11	[187]	0.00	0.004	0.001	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Zinc	Y	N	4.14E-09	[187]	0.06	0.283	0.057	99	[522]	0.00	0.003	0.001		0.003					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Hafnium	Y	N	2.61E-12	[187]	0.00	0.000	0.000	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Tellurium	Y	N	6.09E-11	[187]	0.00	0.004	0.001	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 334			156000	[236]	1366560000	[305]	273312000	[422]	ft^3 exh.		Fluorides (as F)	Y	N	3.56E-10	[187]	0.01	0.024	0.005	99	[522]	0.00	0.000	0.000		0.000					0.000
SV 329	EU 336	Gasoline Tank #1 (NA)	7.75	[237]	67922	[313]	67922	[423]	gallons		VOC	Y	N	0.0277	[191]	0.21	0.941	0.941	0	[502]	0.21	0.941	0.941		0.941					0.027
SV 330	EU 337	Gasoline Tank #2 (NA)	7.75	[237]	67922	[313]	67922	[423]	gallons		VOC	Y	N	0.0188	[191]	0.15	0.640	0.640	0	[502]	0.15	0.640	0.640		0.640					0.018
FS 024	FS 024	Limestone conveyor to stacker conveyor (NA)	2500	[230]	21900000	[308]	252209	[419]	ton		PM10	Y	N	0.0011	[183]	2.75	12.045	0.139	0	[502]	2.75	12.045	0.139	10% opacity (NSPS)	GP 001	6250	[604]	6.875	6.875	0.036
FS 024			2500	[230]	21900000	[308]	252209	[419]	ton		Total PM	Y	N	0.003	[183]	7.50	32.850	0.378	0	[502]	7.50	32.850	0.378	GP 001		6250	[604]	18.750	18.750	0.098
FS 024			2500	[230]	21900000	[308]	252209	[419]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.15	0.657	0.008	0	[502]	0.15	0.657	0.008		0.657	6250	[604]	0.375	0.375	0.002
FS 033	FS 033	Limestone Stacker Conveyor to stockpile (NA)	2500	[230]	21900000	[308]	252209	[419]	ton		PM10	N	N	0.0077	[185]	19.21	84.122	0.969	0	[502]	19.21	84.122	0.969		84.122	6250	[604]	48.015	48.015	0.252
FS 033			2500	[230]	21900000	[308]	252209	[419]	ton		Total PM	N	N	0.0162	[185]	40.61	177.859	2.048	0	[502]	40.61	177.859	2.048		177.859	6250	[604]	101.518	101.518	0.533
FS 033			2500	[230]	21900000	[308]	252209	[419]	ton		Crystalline Silica	N	N	0.0003	[180]	0.81	3.557	0.041	0	[502]	0.81	3.557	0.041		3.557	6250	[604]	2.030	2.030	0.011
FS 025	FS 025	Limestone Reclaim Pocket Dump (NA)	800	[230]	7008000	[308]	252209	[419]	ton		PM10	Y	N	1.60E-05	[192]	0.01	0.056	0.002	0	[502]	0.01	0.056	0.002			GP 001		4850 [603]	0.078	0.078
FS 025			800	[230]	7008000	[308]	252209	[419]	ton		Total PM	Y	N	4.80E-05	[192]	0.04	0.168	0.006	0	[502]	0.04	0.168	0.006	GP 001		4850	[603]	0.233	0.233	0.001
FS 025			800	[230]	7008000	[308]	252209	[419]	ton		Crystalline Silica	Y	N	9.60E-07	[180]	0.00	0.003	0.000	0	[502]	0.00	0.003	0.000		0.003	4850		0.005	0.005	0.000
FS 034	FS 034	Limestone Reclaim Feeder to Conveyor (NA)	800	[230]	7008000	[308]	252209	[419]	ton		PM10	Y	N	0.0011	[183]	0.88	3.854	0.139	0	[502]	0.88	3.854	0.139	GP 001		4850	[603]	5.335	5.335	0.028
FS 034			800	[230]	7008000	[308]	252209	[419]	ton		Total PM	Y	N	0.003	[183]	2.40	10.512	0.378	0	[502]	2.40	10.512	0.378	GP 001		4850	[603]	14.551	14.551	0.076
FS 034			800	[230]	7008000	[308]	252209	[419]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.05	0.210	0.008	0	[502]	0.05	0.210	0.008		0.210	4850		0.291	0.291	0.002
FS 035	FS 035	Limestone Truck Dump	168	[238]	1471680	[308]	252209	[419]	ton		PM10	Y	N	0.0077	[185]	1.29	5.653	0.969	0	[502]	1.29	5.653	0.969			GP 001				0.163
FS 035			168	[238]	1471680	[308]	252209	[419]	ton		Total PM	Y	N	0.0162	[185]	2.73	11.952	2.048	0	[502]	2.73	11.952	2.048			GP 001				0.344
FS 035			168	[238]	1471680	[308]	252209	[419]	ton		Crystalline Silica	Y	N	0.0003	[185]	0.05	0.239	0.041	0	[502]	0.05	0.239	0.041		0.239					0.007
FS 036	FS 036	Limestone Truck Dump Grizzly	168	[238]	1471680	[308]	252209	[419]	ton		PM10	Y	N	0.0087	[193]	1.46	6.402	1.097	0	[502]	1.46	6.402	1.097			GP 001				0.184
FS 036			168	[238]	1471680	[308]	252209	[419]	ton		Total PM	Y	N	0.0250	[193]	4.20	18.396	3.153	0	[502]	4.20	18.396	3.153			GP 001				0.529
FS 036			168	[238]	1471680	[308]	252209	[419]	ton		Crystalline Silica	Y	N	0.0005	[180]	0.08	0.368	0.063	0	[502]	0.08	0.368	0.063		0.368					0.011
FS 037	FS 037	Limestone Grizzly to Conveyor Belt	168	[238]	1471680	[308]	252209	[419]	ton		PM10	Y	N	0.0011	[183]	0.18	0.809	0.139	0	[502]	0.18	0.809	0.139	Enclosed shed constructed over unloading point	GP 001					0.023
FS 037			168	[238]	1471680	[308]	252209	[419]	ton		Total PM	Y	N	0.003	[183]	0.50	2.208	0.378	0	[502]	0.50	2.208	0.378			GP 001				0.064
FS 037			168	[238]	1471680	[308]	252209	[419]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.01	0.044	0.008	0	[502]	0.01	0.044	0.008		0.044					0.001
FS 029	FS 029	Liquid SO2 Unloading (NA)	0.498	[219]	4362	[309]	3792	[412]	ton		SO2	Y	N	4.42	[184]	2.20	0.031	0.026	0	[502]	2.20	0.031	0.026		0.031					0.277
FS 038	FS 038	Plant Site Paved Roads - Limestone Haul (NA)	7.62	[239]	47580	[314]	47580	[423]	VMT	134	PM10	N	N	1.14	[185]	8.69	24.654	24.654	50	[519]	4.35	12.327	12.327		12.327					0.548
FS 038			7.62	[239]	47580	[314]	47580	[423]	VMT	134	Total PM	N	N	5.85	[185]	44.58	126.395	126.395	50	[519]	22.29	63.197	63.197		63.197					2.808
FS012B2	FS 012	Unpaved Roads, Dunka Rd. B2 (Haul Trucks) (NA)	0.32	[240]	111	[315]	111	[423]	VMT	134	PM10	N	N	0.965	[185]	0.31	0.034	0.054	60	[501]	0.12	0.014	0.021		0.014	0.317	[605]	0.306	0.122	0.001
FS012B2			0.32	[240]	111	[315]	111	[423]	VMT	134	Total PM	N	N	3.869	[185]	1.23	0.136	0.215	60	[501]	0.49	0.054	0.086		0.054	0.317	[605]	1.226	0.490	
FS012B2		Unpaved Roads, Dunka Rd. B2 (Light Trucks) (NA)	5.27	[241]	5,251	[316]	5251	[423]	VMT	134	PM10	N	N	0.965	[185]	5.09	1.603	2.532	60	[501]	2.04	0.641	1.013		0.641	14.385	[606]	13.876	5.550	0.029
FS012B2			5.27	[241]	5,251	[316]	5251	[423]	VMT	134	Total PM	N	N	3.869	[185]	20.41	6.428	10.157	60	[501]	8.16	2.571	4.063		2.571	14.385	[606]	55.654	22.262	0.117
FS012B2		Unpaved Roads, Dunka Rd. B2 (Fuel Tanker) (NA)	0.16	[242]	348	[317]	348	[423]	VMT	134	PM10	N	N	0.965	[185]	0.15	0.106	0.168	60	[501]	0.06	0.042	0.067		0.042	0.953	[607]	0.919	0.368	0.002
FS012B2			0.16	[242]	348	[317]	348	[423]	VMT	134	Total PM	N	N	3.869	[185]	0.60	0.426	0.673	60	[501]	0.25	0.170	0.269		0.170	0.953	[607]	3.688	1.475	0.008
FS012B2		Unpaved Roads, Dunka Rd. B2 (WWTF Trucks) (NA)	0.32	[243]	200	[318]	200	[423]	VMT	134	PM10	N	N	0.965	[185]	0.31	0.061	0.096	60	[501]	0.12	0.024	0.039		0.024	0.959	[608]	0.925	0.370	0.002
FS012B2			0.32	[243]	200	[318]	200	[423]	VMT	134	Total PM	N	N	3.869	[185]	1.24	0.245	0.386	60	[501]	0.49	0.098	0.155		0.098	0.959	[608]	3.710	1.484	0.008
FS012C	FS 012	Unpaved Roads, Dunka Rd. C (Light Trucks) (NA)	63.62	[241]	63,327	[316]	63327	[423]	VMT	134	PM10	N	N	0.777	[185]	49.44	15.573	24.607	60	[501]	19.78	6.229	9.843		6.229	173.498	[606]	134.830	53.932	0.283
FS012C			63.62	[241]	63,327	[316]	63327	[423]	VMT	134	Total PM	N	N	3.117	[185]	198.29	62.462	98.696	60	[501]	79.32	24.985	39.478		24.985	173.498	[606]	540.798	216.319	1.136

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions - Processing Plant

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

(Yellow highlight) Indicates source that will only operate for first 1 to 2 years of plant operation.

Stack ID	ID	Description	APCD ID	Max Throughput (Units/hr)	Max Throughput (Units/yr)	Projected Actual (Units/yr)	Units	Annual days with precip.	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont (tons/yr)	Emission Std/Oper. Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
FS012C		Unpaved Roads, Dunka Rd. C (Fuel Tanker)	NA	1.93 [242]	4,225 [317]	4225 [423]	VMT	134	PM10	N	N	0.777 [185]	1.50	1.039	1.642	60 [501]	0.60	0.416	0.657		0.416	11.575 [607]	8.995	3.598	0.019
FS012C			NA	1.93 [242]	4,225 [317]	4225 [423]	VMT	134	Total PM	N	N	3.117 [185]	6.01	4.167	6.585	60 [501]	2.41	1.667	2.634		1.667	11.575 [607]	36.079	14.432	0.076
FS012C		Unpaved Roads, Dunka Rd. C (WWTF Trucks)	NA	3.86 [243]	2,410 [318]	2410 [423]	VMT	134	PM10	N	N	0.777 [185]	3.00	0.593	0.936	60 [501]	1.20	0.237	0.375		0.237	11.567 [608]	8.989	3.595	0.019
FS012C			NA	3.86 [243]	2,410 [318]	2410 [423]	VMT	134	Total PM	N	N	3.117 [185]	12.02	2.377	3.756	60 [501]	4.81	0.951	1.502		0.951	11.567 [608]	36.053	14.421	0.076
FS012D	FS 012	Unpaved Roads, Dunka Rd. D (Light Trucks)	NA	25.24 [241]	24,567 [316]	24567 [423]	VMT	134	PM10	N	N	0.580 [185]	14.65	4.511	7.128	60 [501]	5.86	1.804	2.851		1.804	67.306 [606]	39.056	15.622	0.082
FS012D			NA	25.24 [241]	24,567 [316]	24567 [423]	VMT	134	Total PM	N	N	2.327 [185]	58.74	18.093	28.589	60 [501]	23.50	7.237	11.435		7.237	67.306 [606]	156.650	62.660	0.329
FS012D		Unpaved Roads, Dunka Rd. D (WWTF Trucks)	NA	0.30 [243]	185 [318]	185 [423]	VMT	134	PM10	N	N	0.580 [185]	0.17	0.034	0.054	60 [501]	0.07	0.014	0.021		0.014	0.886 [608]	0.514	0.206	0.001
FS012D			NA	0.30 [243]	185 [318]	185 [423]	VMT	134	Total PM	N	N	2.327 [185]	0.69	0.136	0.215	60 [501]	0.27	0.054	0.086		0.054	0.886 [608]	2.061	0.824	0.004
FS012E	FS 012	Unpaved Roads, Segment E (Light Trucks)	NA	2.17 [241]	1,581 [316]	1581 [423]	VMT	134	PM10	N	N	1.238 [185]	2.68	0.619	0.979	60 [501]	1.07	0.248	0.391		0.248	4.331 [606]	5.362	2.145	0.011
FS012E			NA	2.17 [241]	1,581 [316]	1581 [423]	VMT	134	Total PM	N	N	4.966 [185]	10.75	2.484	3.925	60 [501]	4.30	0.994	1.570		0.994	4.331 [606]	21.507	8.603	0.045
FS012E		Unpaved Roads, Segment E (WWTF Trucks)	NA	1.44 [243]	902 [318]	902 [423]	VMT	134	PM10	N	N	1.238 [185]	1.79	0.353	0.559	60 [501]	0.71	0.141	0.223		0.141	4.331 [608]	5.362	2.145	0.011
FS012E			NA	1.44 [243]	902 [318]	902 [423]	VMT	134	Total PM	N	N	4.966 [185]	7.17	1.418	2.240	60 [501]	2.87	0.567	0.896		0.567	4.331 [608]	21.507	8.603	0.045
FS012F	FS 012	Unpaved Roads, Segment F (Light Trucks)	NA	1.11 [241]	810 [316]	810 [423]	VMT	134	PM10	N	N	1.238 [185]	1.37	0.317	0.502	60 [501]	0.55	0.127	0.201		0.127	2.220 [606]	2.748	1.099	0.006
FS012F			NA	1.11 [241]	810 [316]	810 [423]	VMT	134	Total PM	N	N	4.966 [185]	5.51	1.273	2.012	60 [501]	2.20	0.509	0.805		0.509	2.220 [606]	11.023	4.409	0.023
FS012F		Unpaved Roads, Segment F (WWTF Trucks)	NA	0.74 [243]	462 [318]	462 [423]	VMT	134	PM10	N	N	1.238 [185]	0.92	0.181	0.286	60 [501]	0.37	0.072	0.115		0.072	2.220 [608]	2.748	1.099	0.006
FS012F			NA	0.74 [243]	462 [318]	462 [423]	VMT	134	Total PM	N	N	4.966 [185]	3.67	0.727	1.148	60 [501]	1.47	0.291	0.459		0.291	2.220 [608]	11.023	4.409	0.023
FS012H	FS 012	Unpaved Roads, Dunka Rd. H (Fuel Tanker)	NA	0.11 [242]	249 [317]	249 [423]	VMT	134	PM10	N	N	0.583 [185]	0.07	0.046	0.072	60 [501]	0.03	0.018	0.029		0.018	0.681 [607]	0.397	0.159	0.001
FS012H			NA	0.11 [242]	249 [317]	249 [423]	VMT	134	Total PM	N	N	2.340 [185]	0.27	0.184	0.291	60 [501]	0.11	0.074	0.116		0.074	0.681 [607]	1.593	0.637	0.003
FS012H	FS 012	Unpaved Roads, Dunka Rd. H (Light Trucks)	NA	16.62 [241]	16,209 [316]	16209 [423]	VMT	134	PM10	N	N	0.583 [185]	9.70	2.992	4.727	60 [501]	3.88	1.197	1.891		1.197	44.408 [606]	25.902	10.361	0.054
FS012H			NA	16.62 [241]	16,209 [316]	16209 [423]	VMT	134	Total PM	N	N	2.340 [185]	38.89	12.000	18.960	60 [501]	15.56	4.800	7.584		4.800	44.408 [606]	103.893	41.557	0.218
FS012H	FS 012	Unpaved Roads, Dunka Rd. H2 (Fuel Tanker)	NA	0.11 [244]	249 [319]	249 [423]	VMT	134	PM10	N	N	0.583 [185]	0.07	0.046	0.072	60 [501]	0.03	0.018	0.029		0.018	0.681 [609]	0.397	0.159	0.001
FS012H			NA	0.11 [244]	249 [319]	249 [423]	VMT	134	Total PM	N	N	2.340 [185]	0.27	0.184	0.291	60 [501]	0.11	0.074	0.116		0.074	0.681 [609]	1.593	0.637	0.003
FS012H	FS 012	Unpaved Roads, Dunka Rd. H2 (Light Trucks)	NA	16.62 [244]	16,209 [319]	16209 [423]	VMT	134	PM10	N	N	0.583 [185]	9.70	2.992	4.727	60 [501]	3.88	1.197	1.891		1.197	44.408 [609]	25.902	10.361	0.054
FS012H			NA	16.62 [244]	16,209 [319]	16209 [423]	VMT	134	Total PM	N	N	2.340 [185]	38.89	12.000	18.960	60 [501]	15.56	4.800	7.584		4.800	44.408 [609]	103.893	41.557	0.218
FS012J	FS 012	Unpaved Roads, Dunka Rd. J (Haul Trucks)	NA	0.17 [240]	61 [315]	61 [423]	VMT	134	PM10	N	N	3.769 [185]	0.66	0.073	0.115	60 [501]	0.26	0.029	0.046		0.029	0.174 [605]	0.657	0.263	0.001
FS012J			NA	0.17 [240]	61 [315]	61 [423]	VMT	134	Total PM	N	N	15.116 [185]	2.63	0.292	0.461	60 [501]	1.05	0.117	0.185		0.117	0.174 [605]	2.634	1.054	0.006
FS012J2	FS 012	Unpaved Roads, Dunka Rd. J2 (Haul Trucks)	NA	0.48 [240]	166 [315]	166 [423]	VMT	134	PM10	N	N	3.769 [185]	1.79	0.199	0.314	60 [501]	0.72	0.079	0.125		0.079	0.475 [605]	1.791	0.716	0.004
FS012J2			NA	0.48 [240]	166 [315]	166 [423]	VMT	134	Total PM	N	N	15.116 [185]	7.18	0.796	1.258	60 [501]	2.87	0.319	0.503		0.319	0.475 [605]	7.183	2.873	0.015
FS 016	FS 016	Unpaved Roads, Tailings Basin	NA	63.17 [246]	43,046 [320]	43046 [423]	VMT	134	PM10	N	N	0.5487 [185]	34.66	7.474	11.809	60 [501]	13.86	2.990	4.724		2.990				1.747
FS 016			NA	63.17 [246]	43,046 [320]	43046 [423]	VMT	134	Total PM	N	N	2.2007 [185]	139.02	29.977	47.366	60 [501]	55.61	11.991	18.947		11.991				7.006
FS 032	FS 032	Tailings Basin Wind Erosion	NA	NA [245]	26.8 [321]	26.8 [423]	acres		PM10	N	N	6,299 [194]	NA	84.286	84.286	0 [502]	NA	84.286	84.286		84.286				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Total PM	N	N	12,599 [194]	NA	168.572	168.572	0 [502]	NA	168.572	168.572		168.572				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Arsenic	N	Y	1.014 [195]	NA	0.014	0.014	0 [502]	NA	0.014	0.014		0.014				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Chromium	N	Y	3.906 [195]	NA	0.052	0.052	0 [502]	NA	0.052	0.052		0.052				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Cobalt	N	Y	1.260 [195]	NA	0.017	0.017	0 [502]	NA	0.017	0.017		0.017				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Pb	N	Y	4.829 [195]	NA	0.065	0.065	0 [502]	NA	0.065	0.065		0.065				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Manganese	N	Y	17.638 [195]	NA	0.236	0.236	0 [502]	NA	0.236	0.236		0.236				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Mercury	N	Y	5.921E-04 [196]	NA	0.000	0.000	0 [502]	NA	0.000	0.000		0.000				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Nickel	N	Y	6.425 [195]	NA	0.086	0.086	0 [502]	NA	0.086	0.086		0.086				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Phosphorus	N	Y	9.701 [195]	NA	0.130	0.130	0 [502]	NA	0.130	0.130		0.130				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Barium	N	N	2.646 [195]	NA	0.035	0.035	0 [502]	NA	0.035	0.035		0.035				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Boron	N	N	0.756 [195]	NA	0.010	0.010	0 [502]	NA	0.010	0.010		0.010				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Copper	N	N	6.892 [195]	NA	0.092	0.092	0 [502]	NA	0.092	0.092		0.092				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Vanadium	N	N	2.646 [195]	NA	0.035	0.035	0 [502]	NA	0.035	0.035		0.035				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Hafnium	N	N	0.023 [197]	NA	0.000	0.000	0 [502]	NA	0.000	0.000		0.000				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Tellurium	N	N	0.537 [197]	NA	0.007	0.007	0 [502]	NA	0.007	0.007		0.007				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Fluorides (as F)	N	N	2.255 [197]	NA	0.030	0.030	0 [502]	NA	0.030	0.030		0.030				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Antimony	N	Y	0.001 [196]	NA	0.000	0.000	0 [502]	NA	0.000	0.000		0.000				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Beryllium	N	Y	0.002 [196]	NA	0.000	0.000	0 [502]	NA	0.000	0.000		0.000				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Cadmium	N	Y	0.001 [196]	NA	0.000	0.000	0 [502]	NA	0.000	0.000		0.000				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Selenium	N	Y	0.014 [196]	NA	0.000	0.000	0 [502]	NA	0.000	0.000		0.000				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Molybdenum	N	N	0.006 [196]	NA	0.000	0.000	0 [502]	NA	0.000	0.000		0.000				[4]
FS 032			NA	NA [245]	26.8 [321]	26.8 [423]	acres		Zinc	N	N	6.904 [195]	NA	0.092	0.092	0 [502]	NA	0.092	0.092		0.092				[4]
NA	GP 001	All PM/PM10 Point Sources	[3]	NA	NA	NA	NA		PM10	Y	N	NA	NA	NA			NA	NA	NA	See above	See above	240			NA
NA				NA	NA	NA	NA		Total PM	Y	N	NA	NA	NA			NA	NA	NA	See above	See above	240			NA

Totals for PSD Applicability (i.e. PSD Point Sources)

Criteria Pollutant Totals

Pollutant	Max Unc (lb/hr)	Max Unc (tons/yr)	Proj Act Unc (ton/yr)	Max Cont (lb/hr)	Max Cont (tons/yr)	Proj Act Cont (tons/yr)	Limited Cont PTE (tons/yr)
PM10	4457.29	19517.60	13935.19	69.99	301.19	174.984	240.00
SO2	62.64	170.73	145.97	30.08	28.12	17.619	28.12
H2SO4/SO3	231.58	1013.09	911.62	2.92	11.55	10.236	11.55
Total PM	4561.25	19968.94	14304.44	91.73	392.42	184.880	240.00
NOx	100.59	141.89	39.93	100.59	141.89	39.93	141.89
VOC	50.83	205.10	181.35	30.63	116.62	101.23	116.62
Carbon Monoxide	55.30	162.90	100.65	55.30	162.90	100.65	162.90
Pb	2.97	13.01	11.65	0.03	0.13	0.11	0.13

Toxic Air Pollutant Totals [10]

Pollutant	Max Unc (lb/hr)	Max Unc (tons/yr)	Proj Act Unc (ton/yr)	Max Cont (lb/hr)	Max Cont (tons/yr)	Proj Act Cont (tons/yr)	Limited Cont PTE (tons/yr)
Hydrogen Sulfide	3.11	13.63	12.26	0.93	4.09	3.68	4.09
CS2	0.86	3.75	3.32	0.86	3.75	3.32	3.75
TRS	3.97	17.38	15.58	1.79	7.84	6.99	7.84
Fluorides (as F)	0.95	4.14	3.18	0.01	0.04	0.03	0.04

Plant Site Totals (Point and Fugitive Sources)

Criteria Pollutant Totals [6]

Pollutant	Max Unc (lb/hr)	Max Unc (tons/yr)	Proj Act Unc (ton/yr)	Max Cont (lb/hr)	Max Cont (tons/yr)	Proj Act Cont (tons/yr)	Limited Cont PTE (tons/yr)
PM10	4623.19	19749.51	14106.48	148.74	497.47	297.12	436.27
SO2	62.64	170.73	145.97	30.08	28.12	17.62	28.12
H2SO4/SO3	231.58	1013.09	911.62	2.92	11.55	10.24	11.55
Total PM	5199.93	20597.57	14847.64	376.02	864.37	517.17	711.95
NOx	100.59	141.89	39.93	100.59	141.89	39.93	141.89
VOC	50.83	205.10	181.35	30.63	116.62	101.23	116.62
Carbon Monoxide	55.30	162.90	100.65	55.30	162.90	100.65	162.90
Pb	2.97	13.07	11.71	0.03	0.19	0.18	0.19

Toxic Air Pollutant Totals [7]

Pollutant	Max Unc (lb/hr)	Max Unc (tons/yr)	Proj Act Unc (ton/yr)	Max Cont (lb/hr)	Max Cont (tons/yr)	Proj Act Cont (tons/yr)	Limited Cont PTE (tons/yr)
Antimony	0.01	0.06	0.04	0.0003	0.0013	0.0011	0.0013
Arsenic	0.12	0.54	0.44	0.0014	0.0197	0.0185	0.0197
Beryllium	0.00	0.01	0.00	0.0000	0.0002	0.0001	0.0002
Cadmium	0.12	0.51	0.46	0.0051	0.0222	0.0195	0.0222
Chromium	0.43	1.91	1.26	0.0049	0.0737	0.0663	0.0737
Cobalt	11.60	50.81	45.37	0.1093	0.4956	0.4441	0.4956
Manganese	4.15	18.40	12.07	0.0424	0.4217	0.3578	0.4217
Mercury	0.00	0.01	0.01	0.0009	0.0041	0.0036	0.0041
Nickel	128.76	564.05	502.90	1.2145	5.4055	4.8251	5.4055
Phosphorus	1.43	6.38	4.19	0.0161	0.2004	0.1777	0.2004
Selenium	0.04	0.15	0.12	0.0005	0.0025	0.0020	0.0025
Barium	0.87	3.83	2.32	0.0094	0.0767	0.0593	0.0767
Boron	1.66	7.30	6.48	0.0168	0.0837	0.0755	0.0837
Copper	214.45	939.37	827.22	2.0673	9.1469	8.0589	9.1469
Molybdenum	0.02	0.10	0.08	0.0004	0.0020	0.0012	0.0020
Vanadium	0.41	1.82	1.13	0.0045	0.0549	0.0469	0.0549
Zinc	6.62	29.10	25.74	0.0706	0.4017	0.3535	0.4017
Tellurium	0.18	0.80	0.59	0.0018	0.0152	0.0131	0.0152
Hafnium	0.01	0.03	0.03	0.0001	0.0007	0.0006	0.0007

Indicates source that will only operate for first 1 to 2 years of plant operation.

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Pollutant	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	g/sec Model Input
POM	0.01	0.00	0.00	0.0050	0.0024	0.0007	0.0024
2-Methylnaphthalene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
3-Methylchloranthrene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
7,12-Dimethylbenz(a)anthracene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Acenaphthene	0.00	0.00	0.00	0.0001	0.0000	0.0000	0.0000
Acenaphthylene	0.00	0.00	0.00	0.0002	0.0001	0.0000	0.0001
Anthracene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Benzo(a)anthracene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Benzo(a)pyrene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Benzo(b)fluoranthene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Benzo(g,h,i)perylene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Benzo(k)fluoranthene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Chrysene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Dibenzo(a,h)anthracene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Fluoranthene	0.00	0.00	0.00	0.0001	0.0001	0.0000	0.0001
Fluorene	0.00	0.00	0.00	0.0003	0.0002	0.0000	0.0002
Indeno(1,2,3-cd)pyrene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Phenanthrene	0.00	0.00	0.00	0.0010	0.0004	0.0001	0.0004
Pyrene	0.00	0.00	0.00	0.0001	0.0000	0.0000	0.0000
Benzene	0.02	0.01	0.00	0.0189	0.0103	0.0026	0.0103
Dichlorobenzene	0.00	0.00	0.00	0.0002	0.0009	0.0000	0.0009
Formaldehyde	0.02	0.06	0.02	0.0157	0.0614	0.0173	0.0614
Hexane	0.30	1.33	0.41	0.3039	1.3309	0.4083	1.3309
Toluene	0.01	0.01	0.00	0.0074	0.0060	0.0015	0.0060
Naphthalene	0.01	0.01	0.01	0.0084	0.0112	0.0088	0.0112
Xylene	0.00	0.00	0.00	0.0047	0.0024	0.0005	0.0024
MIBC	3.62	12.70	12.70	3.6200	12.7045	12.7045	12.7045
HF	0.13	0.58	0.53	0.0013	0.0058	0.0053	0.0058
HCl	29.58	88.12	79.26	10.0176	2.4422	2.1496	2.4422
Hydrogen Sulfide	3.11	13.63	12.26	0.9333	4.0879	3.6782	4.0879
CS_2	0.86	3.75	3.32	0.8573	3.7548	3.3158	3.7548
TRS	3.97	17.38	15.58	1.7906	7.8427	6.9940	7.8427
Crystalline Silica	4.18	18.29	7.07	1.5592	6.8293	6.7621	6.8293
Fluorides (as F)	0.95	4.17	3.21	0.0095	0.0718	0.0622	0.0718
Acetaldehyde	0.00	0.00	0.00	0.0014	0.0037	0.0001	0.0037
Acrolein	0.00	0.00	0.00	0.0002	0.0003	0.0000	0.0003
Propylene	0.00	0.01	0.00	0.0027	0.0120	0.0001	0.0120
Hexchrome	0.00	0.00	0.00	0.0001	0.0002	0.0002	0.0002
PGME	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
1,3-Butadiene	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0001
Total HAP	180.32	748.79	661.65	12.67	14.47	12.00	14.47
Carbon Dioxide (Greenhouse Gas Totals)	52466.37	214401.93	132835.00	52466.37	214401.93	132835.00	214401.93
N_2O	0.56	2.44	0.91	0.56	2.44	0.91	2.44
CH_4	0.43	1.91	0.61	0.43	1.91	0.61	1.91

Notes:

General References:

[1] Max. Uncontrolled Emissions (lb/hr) = EF (lb/unit) x Max. Hourly Throughput (units/hr).
  Max. Uncontrolled Emissions (tons/yr) = EF (lb/unit) x Max. Annual Throughput (units/yr) / 2,000 (lb/ton).
[2] Max. Controlled Emissions (lb/hr) = Max. Uncontrolled Emissions (lb/hr) x (1-Control Eff./100).
  Max. Controlled Emissions (tons/yr) = Max. Uncontrolled Emissions (tons/yr) x (1-Control Eff./100).
[3] Control devices are listed with the individual emission limits
[4] Tailings basin emission are calculated by the dispersion modeling program based on the actual meteorological data for each day modeled.
[5] This unit may be subject to NSPS subpart OOO (nonmetallic mineral processing). The standard allows for multiple compliance options. The specific requirements will be provided in detail in the compliance plan for the facility.
[6] Lead is both a criteria pollutant and a toxic air pollutant, as well as a HAP.
[7] Pollutants evaluated included HAPs as well as other toxic compounds that may be evaluated in the AERA.
[8] These speciated compounds are HAPs because they are POM. HAP emissions are calculated with the total POM emission factor. The speciated compound data were used as inputs to the AERA.
[9] Hexchrome included with total chrome for purposes of summing total HAPs.
[10] CS2 is not a PSD pollutant, but the CS2 total, along with the H2S total are used to calculate TRS which is a PSD pollutant.

Emission Factor References:

[101] Clayton (boiler vendor) gave range of 200-300 mg/Nm3 @ 3% O2 for boiler NOx emissions as communicated in an e-mail from Bateman received 5/3/06. Assuming high end and that it is on a dry basis, 300 mg/Nm3 * (273.15 + 0)/(273.15 + 20) =
  279.5 mg/sm3 * (1 g / 1000 mg) * (1 kg / 1000 g) * (2.205 lb / kg) * (1 m3 / 35.3 ft3) = 1.746 e-5 lb/dscf. From EPA Method 19, E(lb/MMBtu) = CdFd * 20.9 / (20.9 - %O2) = 1.746 e-5 * 8710 dscf/MMBtu * 20.9 / (20.9 - 3) = 0.18 lb/MMBtu * 1050 MMBtu/MMcf = 186 lb NOx/MMcf.
[102] Emission factors (lb/MMBtu) from AP-42 Table 1.4-1, Small Boilers (<100 MMBtu/hr) uncontrolled.
[103] Emission factors (lb/MMcf) from AP-42 Table 1.4-2; all PM assumed to be PM10 per footnote "c".
[104] Emission factors (lb/MMcf) taken from Table 1.4-3. Total POM emission factor calculated by summing POM compounds reported above the detection limit and 1/2 the detection limit for compounds reported below the detection limit.
[105] Emission factors for speciated polycyclic organic matter (POM) reported below the detection limit in AP-42 Table 1.4-3 assumed to be one half the value based on the detection limit (i.e. emissions equal one half the detection limit).
[106] Emission factors (lb/MMcf) taken from Table 1.4-4 for metals reported above the detection limit.
[107] Emission factors for metals reported below the detection limit in AP-42 Table 1.4-4 assumed to be one half the emission factor based on the detection limit (i.e. emissions equal to one half the detection limit).
[108] Emission factors taken from AP-42 Table 3.4-1 for Diesel Fuel. Maximum sulfur content of fuel assumed to be 0.5%. VOC assumed equivalent to non-methane total organics.
[109] Emission factor taken from AP-42 Table 3.4-2 for total PM10, including filterable and condensable particulate.
[110] Emission factor for H2SO4 calculated from data presented in "The Sulfur Speciation of Diesel Emissions from a Non-road Generator" by Zifei Liu, Mingming Lu, Tim C. Keener, and Fuyan Liang. Figure 5 presents sulfur conversion to SO4[2-], which is indicated elsewhere in the paper to be at least 90% H2SO4.
  From the figure, for the highest sulfur fuel (0.22%) at the highest load, the percent conversion is about 1.67%. The H2SO4 emission factor was calculated by %S / 100 * 7.13 lb/gallon * 98 lb/lb-mole H2SO4 / 32 lb/lb-mole S * 1.67/100 mole H2SO4/Mole S * / 140000 Btu/gallon * 10^6 MMBtu/Btu =
  0.026 * %S lb/MMBtu. This makes the emission calculations conservative since the SO2 factor assumes 100% conversion to SO2.
[111] Emission factors taken from AP-42 Table 3.4-3.
[112] Emission factors taken from AP-42 Table 3.4-4. A total POM emission factor was calculated as the sum of the emission factors for the compounds detected.
[113] Compound not detected per data in AP-42 Table 3.4-4. Emission factor based on 1/2 the detection limit.
[114] Annual emission for the 12,000 gallon diesel fuel tank were calculated with the EPA TANKS program (version 4.09b). The tank was assumed to be a horizontal cylinder with L = 2*D. Hourly emissions are the average for the year.
[115] The fuel oil sulfur content based SO2 emission factor from AP-42 Table 3.4.-1 (large diesel engines) was used. The fuel oil sulfur content was assumed to be in compliance with the NSPS (500 ppm) which is effective in October of 2007. The fire pumps do not meet the size criteria of Section 3.4, but the fuel oil sulfur content
  based calculation is expected to be more accurate since as it reflects the maximum SO2 emissions as calculated by material balance (assuming 100% of fuel oil sulfur is emitted as SO2).
[116] NOx and PM emissions based on limits in 40 CFR Part 60 Subpart IIII. Assumed all NMHC + NOx was NOx for worst case. The manufacturers data for the specified engine shows compliance with these limits. PM10 assumed equal to PM.
[117] Emission factors from AP-42 Table 3.3-1. VOC was assumed equivalent to total organic compounds. Note: AP-42 factor for CO lower than NSPS. Manufacturer's data even lower, so AP-42 factor used for CO.
[118] Emission factors taken from AP-42 Table 3.3-2. For compounds measured below the detection limit, an emission factor based on 1/2 the detection limit was used. Total POM calculated as the sum of the emission factors for PAHs found above the detection limit.
[119] Emissions estimated with EPA TANKS program Version 4..09d. Assumed vertical tank with H/D = 2.5:1. Tank capacity is 120 gallons per Dave Hughes of PolyMet. Tank is under reservoir, so breathing losses would be nearly zero, but it was assumed the tank was above ground and outdoors.
  Other assumptions include a white tank, with a dome room 1 foot high and breather settings of 0 psi. Hourly emissions are annual emissions averaged over the year.
[120] Emission factors from AP-42 Table 1.3-1 for distillate oil fired Boilers < 100 MMBtu/hr. Maximum sulfur content assumed to be 0.5%.
[121] Emission factor calculated from filterable PM value in AP-42 Table 1.3-1 for Distillate oil fired boilers < 100 MMBtu/hr and condensable PM factor from Table 1.3-2 (EF Total PM = 2 + 1.3 = 3.3).
[122] Emission factor calculated from condensable PM factor in Table 1.3-2 for distillate oil fired boilers and size specific PM data from Table 1.3-7 (EF = 1.3 + 1.08 = 2.38).
[123] Emission factors from AP-42 Table 1.3-3 for Commercial/institutional/residential combustors. Non methane total organic compounds (NMTOC) assumed equal to VOC.
[124] Emission factor taken from AP-42 Table 1.3-10. Emission factor in lb/10^12 Btu converted to lb/10^6 Btu by dividing by 10^6.
[125] Emission factor taken from AP-42 Table 1.3-12.
[126] Emission factors taken from AP-42 Table 1.5-1 for propane fired Industrial Boilers. Per footnote d, all PM assumed to be PM10. Maximum sulfur concentration 0.2 gr/100 cf per Title V permit application for LTV.
[127] Emission factor based on performance specification for the baghouses that will be installed in the crushing plant of 0.0025 gr/cf. The emission factor in lb/cf is then: 0.0025 gr/cf * 1/7000 lb/gr = 3.57e-7 lb/cf. Uncontrolled emissions were estimated by assuming a control efficiency of 99% for the baghouses. Uncontrolled emissions then equal controlled emission divided by (1-99/100).
[128] Trace metal emissions are based on ore composition data obtained from various sources. Details are provided below:
Metal   Conc. (ppm)   Source   Comments

															Emission Rates for Model Input - If daily calculations are blank,			
	Indicates source that will only operate for first 1 to 2 years of plant operation.															g/sec is based on hourly emission rate		
Stack ID	Emission Unit		APCD ID	Throughput				Annual days with	Pollutant	PSD	HAP?	Emission Factor	Max. Uncontrolled	Proj. Act. Uncontrolled	Control Efficiency	Max. Controlled Potential	Proj. Act. Controlled	Emission Std or	Limited Controlled	Maximum		Max. Unc.	Max Cont.	g/sec
	ID	Description		Maximum		Projected Actual		Units	precipitation		Applicability		Potential to Emit [1]	Emissions		to Emit [2]	Emissions	Operational	Potential to Emit	Throughput		Emissions	Emissions	Model
				(Units/hr)	Note	(Units/yr)	Note	(Units/yr)	Note	(tons/yr)		(Y/N)	(Y/N)	(lb/Unit)	Note	(lb/hr)	(tons/yr)	(ton/yr)	(%)	Note	(lb/hr)	(tons/yr)	(tons/yr)	Limit	(tons/yr)	units/day	Note	lb/day	lb/day	Input

Antimony	4.5	Value from design company = Whole Rock Set		Barr Sampling Pilot Study 2005 - All values below detection limit or QA/QC Criteria not met (max = 0.15 ppm); geology data set 2.38
Arsenic	10.27	Geology data set		Barr Sampling Pilot Study 2005 - Average all grades 2.1 PPM; Max 3.5 PPM
Beryllium	0.51	Geology data set		Barr Sampling Pilot Study 2005 - Average all grades 0.08 PPM; Max 0.2
Cadmium	0.89	Geology data set		Barr Sampling Pilot Study 2005 - Average all grades 0.23; Max 0.45 PPM; Process Input SS 58.9 = Whole Rock Data Set Value
Chromium	154	Value from design company		Barr Sampling Pilot Study 2005 - Average all grades 26.5; Max 45.2; Geology data set 97.86; Whole Rock 209.36.
Cobalt	88	Value from design company (MetSim Rev. U3)		Barr Sampling Pilot Study 2005 - Average all grades 54.6; Max 83.3; Geology data set = 79.35; Whole Rock 94.8
Lead	5.06	Geology data set		Barr Sampling Pilot Study 2005 - Average all grades 2.57 Max 5.7, Process Input SS 4.3, MetSim 43 (typo?); Whole Rock 49.68
Manganese	1500	Whole rock data set		Barr Sampling Pilot Study 2005 - Average all grades 467, Max 705; Bateman SS 1162 PPM; 1470 PPM MetSim Q1
Mercury	0.0046	Rod mill feed analyses from 2000 pilot study		Barr Sampling Pilot Study 2005 - all results < d.l. (0.02 PPM).
Nickel	1157	2005 Pilot Study - Barr Sampling for C3		Barr Sampling Pilot Study 2005 - Average all grades 727; max 1440; MetSim U3 0.11105%, SGS 2005 Pilot Study; average all grades 0.102%; Max C3 0.1157%
Phosphorus	522.87	Geology data set		Barr Sampling Pilot Study 2005 - Average all grades 137.1; Max 184; Value from Bateman = 499.4
Selenium	5.54	Whole rock data set		Barr Sampling Pilot Study 2005 - Average all grades 1.5 PPM; Max 2.6
Barium	376.5	Value from design company		Barr Sampling Pilot Study 2005 - Average all grades 28.96; Max 51.6; Geology data set 52.27 PPM; whole rock data set 700.66
Boron	19.8	2005 Pilot Study - Barr Sampling		Geology data set 10.08;
Copper	4000	Value from design company		Barr Sampling Pilot Study 2005 - Average all grades 0.226%; Max 0.4060% - one bad QA/QC result; SGS Max P3, 0.395 (Barr 0.379); Geology data set 0.38%
Molybdenum	4.3	Value from design company = Whole Rock Set		Barr Sampling Pilot Study 2005 - Average all grades 0.53; Max 1.18; Geology data set 2.43
Vanadium	170	Value from design company		Geology data set 42.24; whole rock data 169.35.
Zinc	110.7	Process flow simulation input (MetSim Rev. U3)		Barr Sampling Pilot Study 2005 - Average all grades 49.9; Max 87; Geology data set 80.82; whole rock 140.08
Hafnium	1.83	Whole rock data set		Only Data
Tellurium	42.63	Whole rock data set		Only Data
Fluorides	178.95	Whole rock data set		Only Data for head feed (Barr sampled concentrate and leach)

Emission factors are calculated by converting the PPM value to a weight fraction and multiplying this value times the PM emission factor (PM emission factor is based on performance specification for the baghouses to be installed, as described under note 113).

All fluorine in the ore assumed to be in a form that would be measured as total fluoride by EPA Method 13A or 13B.

[129] An emission factor in lb VOC per square foot of surface area of flotation tanks was calculated based on air sampling conducted during the 2005 flotation pilot study. All VOC was assume to be MIBC, because it is the most prevalent compound. CS2 emissions are calculated in another manner below under PAX Fugitive CS2 emissions (EU 226).

[130] CO2 and SO2 emission factors where applicable were calculated from information on the weight fraction CO2 and SO2 in the gaseous phase taken from the process flow simulation (MetSim version U3). The CO2 and SO2 weight fractions were determined based on material balance and knowledge of process chemistry.
Note: the process flow simulation only shows a gaseous emission stream from the Fe reduction tanks, but the PGM precipitation tanks will also be vented to the scrubber to collect SO2 in the headspace. It was assumed that the overall material balance for SO2 in the process flow simulation is still correct
(i.e. fraction consumed in reactions, fraction emitted to the air etc.).

[131] Emissions based on scaled up results of 2005 pilot plant sampling. Mass emission rates calculated based on oxygen balance, scale up based on fresh solids feed. Safety factor of 1.5 applied for SO2, VOC, CO, H2SO4, HF, PM, PM10, Sb, As, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, P, Se, Zn, H2S, CS2, and NOx.
No safety factor for HCl, Hg, and hexchrome. All pollutant levels represent the average result from the two conditions tested. When some runs were below the detection limit, the detection limit was
averaged with the detectable quantity results. For the Hg calculations, 1/2 the detection limit was used because the summing of multiple fractions can lead to misleadingly high detection limits.

[132] Results of 2005 pilot study sampling were below the detection limit for both conditions tested. The average detection limit for the two conditions was scaled up to the full scale process as a conservative estimated of emissions.

[133] Emission calculated based on analysis of autoclave feed and leach samples during 2005 pilot study. The highest 3 sample average for feed and leach for each parcel was used (C1/2, Feed: 70.5 PPM). Note QA/QC targets were not met, but this data results in higher emissions than other available data sources.
PM assumed to have same composition as feed/leach.

[134] Emissions were calculated based on an analysis of regrind concentrate completed during the 2000 pilot study by assuming that particulate emissions have the same composition as the regrind concentrate.
The trace metal composition of the concentrate would be expected to vary as it proceeds through the process, but this represents the best or most conservative data available.

[135] For trace metals for which other data were not available, and for which the 2000 pilot test reported results below the detection limit, the particulate emissions were assumed to have the same trace metal composition as the raw ore (see note 128 for the source of the raw ore data).

[136] Emissions were calculated based on an analysis of regrind concentrate completed during the 2000 pilot study; results were adjusted for poor recoveries by dividing reported results by percent recovery (C2 feed data used). PM assumed to have the same composition as the feed/leach.

[137] PM emission factors were calculated by summing the quantity of material emitted in the solid phase plus the non-water components of the aqueous
phase per the process flow simulation (MetSim Rev. U3). PM10 was assumed to be equal to PM. PM10 emissions would include the water soluble compounds in the aqueous phase as condensable inorganics if they passed through the filter in the sampling train, but PM emission would not include the condensable
inorganic fraction, so the PM emission factor may conservatively high.

[138] Emission rate taken from 2005 pilot study results scaled up based on MetSim Rev U3 exhaust flow. The average result of the two conditions tested was used, except for HF for which the condition where a detectable quantity was found was used. The testing during the other condition had an elevated detection limit.
Safety factor of 1.5 applied for Sb, NOx, CO, VOC, As, Cd, Se, and HF. Not applied to Be, SO2, Hg and H2S. H2S all sulfide in condensate assumed H2S. Hg assumed 50% of d.l. for fractions with non-detectable quantities of mercury.
Beryllium and SO2 emission factors based on the detection limit.

[139] Emission were calculated based on stack testing performed during a study completed on a pilot scale autoclave in 2000. The emission factors were scaled up from 225 ml/minute slurry feed rate in the pilot study to the 5221 l/min slurry feed rate in the process flow simulation (MetSim U3).
Data from 2000 pilot study was only used if it produced higher results than other available data.
A safety factor of 1.5 was applied to the off gas test results as recommended by the testing company.
HCl and HF values developed from the pilot test may be conservatively high because the testing company reported that they were unable to distinguish between gaseous chloride and fluoride and solid compounds in the off gas test.
Presumably this result would include all soluble chloride and fluoride
(only Cl- and F- are detected by ion chromatography.) Chloride and fluoride emission factors developed from the test results were adjusted to HCl and HF values by multiplying the result by the ration of the molecular weights of HCl to Cl and HF to F, or 1.0282 and 1.0526 respectively.

[140] Emissions of cobalt compounds, lead compounds, nickel compounds, copper compounds, and zinc compounds were calculated by summing the weight fraction of the compounds which contain the element of concern included in the process flow simulation (MetSim Rev. U3).
The emissions of manganese and phosphorus were determined from the weight fraction of these elements included in the process flow simulation.

[141] Sulfuric acid mist emissions taken from data in the process flow simulation (MetSim Rev. U3).

[142] This stack only operates during upset conditions to relieve the pressure in the autoclave.

[143] H2SO4 emission conservatively estimated by assuming an exhaust concentration of 20 PPMv on a wet basis, which is approximately equivalent to the human odor threshold. This is believed to be conservative because at other similar facilities, no acid smell was noticeable above the tanks.
H2SO4 would also be quantified as inorganic condensable particulate by EPA Method 202. Alternatively, can use combined duct results from pilot study to estimate tank emissions. At present, this approach is used because it results in higher emission estimates.

[144] NaHS added to the copper removal tanks breaks down to form H2S especially at elevated temperatures. The concentration of H2S in the headspace over the tanks was extrapolated from data in
H2S in Gas Phase Over Aqueous NaSH by Anatoly Pustinik, Ph.D (Tessenderlo Kerley Inc., Research & Development. October 1987).
Table 14 provides H2S concentration vs. temperature for 30% NaSH solutions. Data for the median pH value of 11.7 were used. The data were extrapolated using a logarithmic curve fit to obtain the concentration at the tank temperature of 65 deg. C with a result of 622 ppm.
The current design includes a nitrogen sweep, which will dilute the concentration over the tanks and the thickener. Given that the H2S concentration will be limited by the kinetics of the breakdown of the NaHS and will not the saturation vapor pressure, it does not make sense to assume the exhausted nitrogen will contain
622 ppm H2S. To estimate emissions, the exhaust rate from the tanks was taken from MetSim Q1, which does not include the nitrogen sweep. The flow rate is 1.0283 ACFM. The flowrate was corrected to standard conditions with the parameters from MetSim. U3 (149.2 F, 13.81 psia) with a result of 0.8375 scfm.
The flow rate for the thickener is 59.85 scfm for a total of 60.68 scfm. Emissions are then 622 ppm / 10^6 (ppm/v/v) / 385.3 scf/mole * 34 lb H2S/ lb mole * 60.68 ft^3/min * 60 min/hr = 0.20 lb/hr.
The NaHS would be diluted when added to the warm solution in the tank and it would be quickly consumed in reactions, so this is only an approximation.

[145] Emissions based on stack testing during 2005 pilot study. Scale up based on ratio of full scale plant current to pilot plant current and number of cells in commercial plant taken from "General and Process Design Criteria" spreadsheet, revision E1.
Safety factor of 1.5 applied for PM, SO2 and metals found in quantities above the detection limit. Note: a double layer of hollow polypropylene spheres was spread over the electrolyte surface to reduce acid mist. This may have also reduced PM and metals emissions,
but the scaled up test results were produced higher emissions than other calculation techniques. Based on data in AP-42 Table 12.20-2, the use of the spheres would only be expected to reduce emissions by about 15%. The average result of the two conditions tested was used in the calculations,
except for PM where the back 1/2 was not quantified for the first condition, so the second condition was used.

[146] PM emissions were calculated based on the performance specification for the scrubber or 0.006 gr/cf. The emission factor in lb/cf is then: 0.0025 gr/cf * 1/7000 gr/lb = 3.57e-7 lb/cf. Uncontrolled emissions were estimated by assuming a control efficiency of 95% for the scrubber. Uncontrolled emissions then equal controlled emission divided by (1-95/100).

[147] Results of stack test on pilot plant below detection limit. The detection limit was scaled up to the commercial scale plant as a conservative estimate of emissions. Note: a double layer of hollow polypropylene spheres was spread over the electrolyte surface to reduce acid mist,
but test results showed higher emissions than other calculation techniques. Based on data in AP-42 Table 12.20-2, a reduction of only about 15% is expected from the spheres. The higher detection limit from the two conditions tested was used in the calculations.

[148] Results of stack test on pilot plant below detection limit. The detection limit was scaled up to the commercial scale plant as a conservative estimate of emissions. Note: a double layer of hollow polypropylene spheres was spread over the electrolyte surface to reduce acid mist.
This may have also reduced metals emissions, but test results showed higher emissions than other calculation techniques. Based on data in AP-42 Table 12.20-2, a reduction of only about 15% is expected from the spheres. The higher detection limit from the two conditions tested was used in the calculations.

[149] Emissions calculated by assuming the trace metal composition of the particulate emissions is the same as that determined for the regrind concentrate during the 2000 pilot study. The trace metal composition of the concentrate
would be expected to vary as it proceeds through the process, but this represents the best data available. This calculation method may be conservative because only water soluble compounds would be expected to be emitted by this emission unit.
Sampling was performed on the EW vent during the 2005 pilot study. All results were below the detection limit. Due to high scale up factors and multiple fractions in the Method 29 train, detection limit is too high to be a realistic estimated of emissions based on total mercury in the feed material.
Therefore, the concentrate data from 2000, which was higher than the data from 2005, was used. The mercury emission factor is based on the scaled up PM emissions from the pilot study with a 50% safety factor (0.28136 lb/ton exhaust).

[150] Emissions calculated by assuming the trace metal composition of the particulate emissions is the same as that determined for the regrind concentrate during the 2000 pilot study. The trace metal composition of the concentrate
would be expected to vary as it proceeds through the process, but this represents the best data available. This calculation method may be conservative because only water soluble compounds would be expected to be emitted by this emission unit. The calculated emission factors are based on the scaled up PM emissions from the pilot study with a 50% safety factor (0.28136 lb/ton exhaust).

[151] Emission factors calculated by assuming particulate emissions have the same trace metal content as the ore. This is a conservative assumption as only water soluble compounds are emitted from this emission unit, because no solid phase emissions are included in the process flow simulation.
These data were only used when more representative data was not available. The calculated emission factors are based on the scaled up PM emissions from the pilot study with a 50% safety factor (0.28136 lb/ton exhaust).

[152] Fluoride emissions were estimated based on the analysis of autoclave feed and leach solutions. Results were adjusted for poor recoveries by dividing by the percent recovery (C2 feed data used). PM assume to contain same fraction fluoride as feed/leach solutions.
This calculation method may be conservative because only water soluble compounds would be emitted from the electrowinning process. The calculated emission factor is based on the scaled up PM emissions from the pilot study with a 50% safety factor (0.28136 lb/ton exhaust).

[153] Results of the stack testing during the 2005 pilot study were used to estimate total emissions from all of the tanks routed to the scrubber. Sampling for condition one for SO2 had elevated detection limit due to excessive sample dilution. Two detectable results were obtained, but only twice detection limit and
do not seem representative. The detection limit for condition 2 (all results below d.l.) divided by 2 (1/2 the d.l.) was used as an estimate of SO2 emissions. Note: SO2 was not added to the process during the pilot study. Emissions from SO2 use are estimated separately for the AuPGM precipitation tanks.

[154] Stack testing on the pilot process produced results below the detection limit for both conditions. The average detection limit was scaled up as a conservative estimate of emissions. This produced a higher result than earlier calculation methods.
Note: condensers were present on the pilot plant tank exhaust which may have resulted in some H2SO4 control.

[155] Product is a damp filter cake (25% H2O per MetSim U3 and "Study Report - Process Plant Rev. A"). No emissions expected from handling.

[156] Emission factors from AP-42 Table 11.19.2-4 "Emission Factors for Pulverized Mineral Processing Operations", Product Storage with Fabric Filter Control. Controlled PM emission factor = 0.0099; uncontrolled emissions estimated by assuming 99% control for fabric filter by: 0.0099/(1-99/100) = 0.99.
Controlled PM10 emission factor = 0.0016 lb/ton; uncontrolled emissions estimated by assuming 99% control by: 0.0016/(1-99/100) = 0.16.

[157] Per PFD 100-P120-013-001 (6/16/06) coagulant is delivered to the plant as a liquid, so there are not emissions from handling.

[158] Emission factors (lb/ton) from AIRS 3-05-011-09, "Mixer Loading of Cement/Sand/Aggregate"

[159] Emission factor based on performance specification for the PAX mixtank baghouse of 0.005 gr/cf. The emission factor in lb/cf is then: 0.005 gr/cf * 1/7000 gr/lb = 7.14 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a control efficiency of 99% for the baghouse. Uncontrolled emissions then equal controlled emission divided by (1-99/100).

[160] PAX breaks down to form CS2, which can then be released to the atmosphere. The rate of decomposition was estimated from data in "Sodium Ethyl Xanthate; Priority Existing Chemical No. 5 (Australian Government Publishing Service, May 1995).
This document focuses on sodium ethyl xanthate, but it indicates that the properties of other xanthates are similar. Page 16 gives a decomposition rate per day based on temperature. A daily decomposition one for SO2 had elevated detection limit due to excessive dilution was calculated assuming a temperature of 23 C based on the flotation feed temp in MetSim.
Based on equations on page 14, it was assumed that 3 moles of CS2 are evaporated to the air for every six moles of PAX that decompose: 6ROCS2- + 3H2O ---> 6ROH + CO3(2-) + 3CS2 + 2CS3(2-). The trithiocarbonate may hydrolize further to form additional CS2 or H2S, but CS2 may also decompose to form
thiocarbonate salts and/or accumulate in solution until being oxidized in the autoclave, so the estimate of emission is believed to be reasonable. Assuming that the typical storage period for the PAX is one day, an emission factor can be calculated from:
1.58 % PAX decomposes / 100 / 202.37 lb PAX/lb-mole * 3 moles CS2/6 moles PAX * 76.14 lb CS2/lb-mole * 2000 lb/ton = 5.94 lb CS2/ton PAX. It was assumed that 90% of the CS2 would be released from the mix tank and storage tank.
Much of the residual PAX would be expected to be destroyed in the autoclave.

																Emission Rates for Model Input - If daily calculations are blank,					
	Indicates source that will only operate for first 1 to 2 years of plant operation.															g/sec is based on hourly emission rate					
Stack ID	Emission Unit			APCD ID	Throughput						Annual days with	Pollutant	PSD	HAP?	Emission Factor		Max. Uncontrolled	Proj. Act. Uncontrolled	Control Efficiency	Max. Controlled Potential	Proj. Act. Controlled	Emission Std or	Limited Controlled	Maximum		Max. Unc.	Max Cont.	g/sec
	ID	Description			Maximum		Projected Actual		Units	precipitation		Applicability			Potential to Emit [1]	Emissions		to Emit [2]	Emissions	Operational	Potential to Emit	Throughput		Emissions	Emissions	Model
					(Units/hr)	Note	(Units/yr)	Note	(Units/yr)	Note			(Y/N)	(Y/N)	(lb/Unit)	Note	(lb/hr)	(tons/yr)	Emissions	(%)	Note	(lb/hr)	(tons/yr)	(tons/yr)	Limit	(tons/yr)	units/day	Note	lb/day	lb/day	Input

[161] Fugitive CS2 emission from the flotation process based on air sampling completed during the 2005 pilot study, scaled up to the full scale facility by the surface area of the flotation cells.

[162] Emissions from the 13,200 gallon MIBC tank were estimated on a per fill basis utilizing Emission Master Version 7.2.0.4. Breathing losses assumed negligible because tank is located indoors. Hexanol was used as a surrogate for MIBC because they are both six carbon alcohols. Emissions were found to be 0.72 lb/fill.
The short term emission rate assumes that the tank can be filled in one hour. Total fills per year = 91,352.9 gal/yr max usage / 13,200 gallon tank = 7 fills per year. Annual emissions are then 7 fills * 0.72 lb emissions/fill = 5.04 lb/yr. The temperature in the tank was conservatively assumed to be 80 degrees F during filling.

[163] Emission assumed to be zero for all practical purposes. Vapor pressure = 0.001 mm Hg @ 20 deg. C versus 2.9 mm Hg for MIBC. Emissions from MIBC tank very low and emissions from DF 250 tank would be considerably lower.

[164] Emissions are included with flotation plant fugitive emission calculations because this activity was included in the emissions measured from the pilot scale flotation plant.

[165] NaHS decomposes to form H2S. The concentration of H2S in the headspace over the tank was estimated from data in "H2S in Gas Phase Over Aqueous NaSH" by Anatoly Pustilnik, Ph.D (Tessenderlo Kerley Inc., Research & Development. October 1997).
Table 16 provides H2S concentration vs. temperature for NaSH solutions at nominally 45% concentration. NaHS will be delivered to the plant at 45% and then diluted to 30% for use in the process. Per the PFDs, raw water will be added to the storage tank. As a worse case assumption,
the concentration over nominally 45% NaHS will be determined. Per the process flow simulation, the NaHS will be stored at 68 degrees F (indoors). Table 16 includes three data points at this temperature, two from samples generated in the laboratory. The average of the three data points is 53.7 ppm.
This was assumed to be the concentration in the tank headspace. The scrubber flow rate was assumed to be 50 m^3/hr or 29.4 ft^3/min based on comments from the design company that the flow would be on the order of "tens of m^3/hr".
Emissions are then 53.7 ppm / 10^6 (ppm/v/v) / 385.3 scf/mole * 34 lb H2S/lb-mole * 29.4 ft^3/min * 60 min/hr = 0.01 lb/hr.

[166] Copper sulfate will be obtained from the electrowinning process in the form of an aqueous solution. Therefore, there will be no emissions associated with handling CuSO4.

[167] Working losses due to tank filling were calculated from vapor pressure data, the volume of air displaced, and the time required to fill the tank (5 hours). Max. hourly throughput = 108.43 ton/hr * 2000 lb/ton / (1.894 *8.3454 lb/gal) = 13720 gallon/hr = 1834 ft^3/hr.
Tank will be indoors; assume maximum temperature of 80 degrees F and pressure = 1 atm. Solution will be 93% by weight. Vapor pressure H2SO4 over solution extrapolated from data in Perry's (6th edition) Table 3-14b. Vapor pressure is 3.49 e-6 bar = 3.444 e-6 atm / 1 atm = 3.444 e-6 v/v H2SO4 = 3.444 ppm.
Volume displaces at standard conditions = 1834 * (460 + 68) / (460 + 80) = 1793.2 scfm. Emission rate = 3.444 ppm / 385.3 scf/lb-mole / 10^6 ppm/(v/v) * 98 lb H2SO4 /mole * 1793.2 = 0.00157 lb/hr.

[168] Emission factor (lb/ton) taken from AIRS 3-01-023-20, Tank car and truck unloading. Emission factor reported as SOx, assumed to be 100% SO2 to be conservative. HCl emissions from HCl unloading assumed to be similar.

[169] Emission factor (lb/ton) taken from AIRS 3-01-023-21, storage tank vent. Emission factor reported as SOx, assumed to be 100% H2SO4 and 100% SO2 to be conservative. HCl emissions from HCl storage assumed to be similar.

[170] Emissions from the 7,400 gallon diluent tank were estimated on a per fill basis utilizing Emission Master Version 7.2.0.4. Breathing losses assumed negligible because tank is located indoors. A vapor pressure curve was approximated from data in the MSDS for the diluent. Emissions were found to be 1.54 lb/fill.
The short term emission rate assumes that the tank can be filled in one hour. Total fills per year = 43747 gal/yr max usage / 7,400 gallon tank = 6 fills per year. Annual emissions are then 6 fills * 1.54 lb emissions/fill = 9.24 lb/yr. The temperature in the tank was conservatively estimated as 80 degrees F during filling.

[171] Extractant is delivered in 1000 liter bulk boxes, which are directly pumped to the loaded organic tank as needed. Therefore there are no emission points prior to Cu SX.

[172] Fugitive emissions will occur from diluent and possibly extractant use in the copper extraction process. Emission were estimated based on VOC concentrations measured in the room around the solvent extraction equipment during the 2005 pilot study. The exhaust flow rate was estimated by calculating the volume of the
SX building at the full scale plant, assuming six air exchanges per hour, and assuming the exhaust gas would have the same organic concentration as the room with the pilot scale equipment. The building volume is 719,633 ft^3 and the average measured hydrocarbon concentration was 5.9 ppm as methane.
The emissions are then: 719.633 ft^3 * 6 exchanges/hour * 5.9 ppm / 385.3 ft^3/lb-mole / 10^6 ppm/(v/v) * 16 lb CH4/lb-mole = 1.1 lb/hr. Per the MSDS for the diluent, the product contains 0.2% naphthalene. Naphthalene emissions were assumed to comprise 0.2% of the total.
The assumption of six air exchanges per hour is based on requirements from the 1997 Uniform Building Code for areas where Class IIIA liquids are used. Per the MSDS, the diluent has a flash point of 170.6 degrees F, which makes it a Class III-A liquid.

[173] Vapor pressure of NaOH is essentially zero at ambient conditions. Partial pressure of NaOH over a 50% solution would also be expected to be essentially zero, so no NaOH (PM10) emissions are expected from this tank.

[174] Per PFD 100-P120-011-001 (6/16/06) magnesium hydroxide is delivered to the plant as a slurry, so there are no emissions from handling.

[175] Emission factor calculated based on principles in AP-42 Section 13.4. Emission with proposed control practices based on 0.001% drift and 2500 ppm dissolved solids.

[176] Emission factor based on performance specification for the lime silo filter of 0.005 gr/cf. The emission factor in lb/cf is then: 0.005 gr/cf * 1/7000 gr/lb = 7.14 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a control efficiency of 99% for the filter. Uncontrolled emissions then equal controlled emission divided by (1-99/100). Baghouse performance based emission factor used for PM10; AP-42 factor used for PM because it produced a higher result.

[177] Feed system consists of an enclosed screw feeder from silo to slaker. Emissions expected to be minimal. As a conservative estimate, emission factor for loading lime into an enclosed truck was taken from AP-42 Table 11.17-4. PM10 assumed equal to PM.

[178] Emission factor from AP-42 Table 11.17-2, Atmospheric Hydrator with wet scrubber. An uncontrolled emission factor was estimated by assuming 90% control for the scrubber. Emission factor is sum of filterable and inorganic condensable PM. PM10 assumed equal to PM. Because of the assumed 80% capture efficiency, the emissions routed to the scrubber = 80% of the emission factor and emissions that escape through the building ventilation system = 20% of the emission factor.

[179] Emission factor based on performance specification for the limestone railcar unloading baghouse of 0.006 gr/cf. The emission factor in lb/cf is then: 0.006 gr/cf * 1/7000 gr/lb = 8.57 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a removal efficiency of 99% for the baghouse and a capture efficiency of 80%. Uncontrolled emissions then equal controlled emissions divided by (1-99/100) and then divided by 0.8.

[180] Per the MSDS for this reagent, typical limestone contains >1% crystalline silica. Based on other data sources, a typical upper bound is 2% crystalline silica, which was used in the calculations (the PM was assumed to be 2% crystalline silica).

[181] Emission factor based on performance specification for the limestone crusher baghouse of 0.005 gr/cf. The emission factor in lb/cf is then: 0.005 gr/cf * 1/7000 gr/lb = 7.14 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a removal efficiency of 99% for the baghouse. Emissions not routed to the baghouse are calculated in the following entry in the spreadsheet.

[182] Emissions not routed to the control device were calculated by dividing the controlled emission factor for the stack emissions by (1-99/100) to get the uncontrolled emissions, dividing by 0.8 capture efficiency to get total emissions (captured + uncaptured) and times (1-.8) to get the fraction not routed to the control device.

[183] Emission factors (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Conveyor transfer point.

[184] Fugitive emissions per fill were estimated by assuming the coupler at the end of the filling hose would be filled with liquid SO2 when it was detached from the tank which would evaporate when the coupler was depressurized. The volume of the coupler was estimated as 3 inches in diameter and 6 inches
long or: {3 in/12 (in/ft) / 2 (rad/diam)} ^ 2 * pi * 6 in / 12 (in/ft) = 0.0245 ft^3 = 0.1836 gallons. Density of liquid SO2 is 11.97 lb/gallons so emissions per fill = 0.1835 gal/fill * 11.97 lb/gal = 2.2 lb/fill. Annual usage is 4362 tons tank capacity is 26,681 (per design input spreadsheet) gallons or 159.68 tons so annual fills
= 4362/159.68 = 27.3 which is rounded up to 28. Annual emissions are then 28 fills/yr * 2.2 lb/fill = 61.6 lb/yr.

[185] See "Table 2A: Calculation of Emission Factors for Fugitive Sources".

[186] Emission factor for flash drying of pulverized mineral with fabric filter control taken from AP-42 Table 11.19.2-3. Uncontrolled emissions were estimated by assuming 99% control for fabric filter. Controlled PM emission factor = 0.0268 / (1 - 99/100) = 2.68 lb/ton.
Same calculation applied to PM10 emission factor of 0.0146 lb/ton with a result of 1.46 lb/ton. Actual dryer will be oil heated screw. Flash drying seemed more similar to this process then rotary dryers (i.e. rotary drying results in more momentum applied to material resulting in more becoming airborne).

[187] Emission of potentially toxic air pollutants estimated by assuming that the emissions would have the same composition as the concentrate. Note: if separate nickel and copper concentrates are produced, the makeup of the emissions from the two dryers may vary,
but the total emission should be accurately represented by the reported emission calculations. The assumed concentration for the various metals are given below along with the data source and other information.

Metal	Conc. (ppm)	Source	Comments
		2005 Pilot Study, autoclave feed analysis. Adjusted for poor	
Fluorides	249	recovery.	Only available data
Antimony	0.44	2005 Pilot Study	2000 Pilot study below detection limit
Arsenic	390	2000 Pilot Study Regrind Concentrate	2005 Pilot study = 24.6
Barium	50.9	2005 Pilot Study	2000 Pilot study = 30
Beryllium	0.1	2005 Pilot Study	2000 Pilot study below detection limit
Boron	660	2000 Pilot Study Regrind Concentrate	2005 Pilot study = 32.4
Cadmium	22	2000 Pilot Study Regrind Concentrate	2005 Pilot study = 5.1
Chromium	81	2000 Pilot Study Regrind Concentrate	2005 Pilot study = 47
Cobalt	2299	MetSim process flow simulation	2000 Pilot study = 1100; 2005 pilot study = 980
Copper	150000	2000 Pilot Study Regrind Concentrate	2005 Pilot study = 84122; MetSim = 90800
Lead	1041	MetSim process flow simulation	2000 Pilot study = 550; 2005 pilot study = 48.5
Manganese	661	MetSim process flow simulation	2000 Pilot study = 260; 2005 Pilot Study = 113.2
Mercury	0.125	2000 Pilot Study Regrind Concentrate	2005 Pilot study = 0.04
Molybdenum	24.1	2005 Pilot Study	2000 Pilot study = 10
Nickel	31000	2000 Pilot Study Regrind Concentrate	2005 Pilot study = 22767; MetSim = 22421
Selenium	76	2000 Pilot Study Regrind Concentrate	2005 Pilot study = 39.4
Zinc	2900	2000 Pilot Study Regrind Concentrate	2005 Pilot study = 532.6; MetSim = 2543
Vanadium	38	2000 Pilot Study Regrind Concentrate	Only available data - metal of minor concern
Hafnium	1.83	Ore Whole Rock Data Set	Only available data - metal of minor concern
Tellurium	42.63	Ore Whole rock Data Set	Only available data - metal of minor concern

Emission factors are calculated by converting the PPM value to a weight fraction and multiplying this value times the PM emission factor.
All fluorine in the concentrate assumed to be in a form that would be measured as total fluoride by EPA Method 13A or 13B.

[188] Emission factor based on performance specification for the bin vent filters of 0.005 gr/cf. The emission factor in lb/cf is then: 0.005 gr/cf * 1/7000 gr/lb = 7.14 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a control efficiency of 99% for the filters. Uncontrolled emissions then equal controlled emission divided by (1-99/100).

[189] Emission factor based on performance specification for the loading arm dust collector of 0.01 gr/cf. The emission factor in lb/cf is then: 0.01 gr/cf * 1/7000 gr/lb = 1.43 e-6 lb/cf. Uncontrolled emissions were estimated by assuming a control efficiency of 99% for the dust collector. Uncontrolled emissions then equal controlled emission divided by (1-99/100).

[190] Emission factor based on performance specification for the exhaust of the filter receiver of 0.01 gr/cf. The emission factor in lb/cf is then: 0.01 gr/cf * 1/7000 gr/lb = 1.43 e-6 lb/cf. Uncontrolled emissions were estimated by assuming a control efficiency of 99% for the filter receiver. Uncontrolled emissions then equal controlled emission divided by (1-99/100).

[191] Annual emission were calculated using the EPA TANKS program version 4.09b. Based on information obtained from PolyMet, the 6000 gallon tanks are vertical cylinders with H/D estimated as 1.2. The tanks are light blue in color, so light gray was entered as the tank color
as this was the closest choice available in the software. The working losses from the projected throughput was assigned Tank 1; the breathing losses were assigned to both tanks. Hourly emissions are the average for the year.

[192] Emission factor taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Truck Unloading - Fragmented Stone. Truck dumping would be a similar operation to dumping material in the reclaim hopper with a front end loader.

[193] Emission factors taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Screening.

[194] The emissions from wind erosion in the tailings basin were calculated utilizing the procedure in AP-42 Section 13.2.5. The threshold friction velocity (u*t) of 0.29 m/s was calculated from grain size distribution data obtained from RS39/40T.
Additional data used for the calculation included interpolated fastest mile data based on
the 2004 Hibbing Airport meteorological data, an assumed flat pile shape, daily surface disturbance, and a surface roughness height (Zo) of 0.005 meters. Hourly emissions are not reported because emissions are calculated based on the maximum daily wind speed and emissions on a
basis of less than 24-hours are not readily determined with this procedure.

[195] Emission factors calculated from tracemetal analysis completed on tailings produced during the pilot study. The results from the -38um fraction was used because this would approximate TSP except when the -10um fraction appeared to produce higher quality data (e.g. lower detection limits).
Only one value was reported for mercury analysis. Data for the analysis of the entire tailings size range was also evaluated, but these values were lower, with the exception of boron,
and the smaller particle sizes would represent those most likely to become airborne. The data for the entire tailings size range was used for boron, because the size specific data were below the detection limit.
With the exception of vanadium, analysis for all of these elements was also performed during the 2005 pilot study. However, the results from 2000 were higher for all elements except mercury. 2005 data was used for mercury, 2000 data for the remaining elements to be conservative.

[196] Emission factor calculated from data obtained during 2005 pilot study. Average value for all parcels calculated. Values below the detection limit assumed to be at the detection limit. Mercury results based on the Windsorized mean of log transformed data. This approach was utilized due to an outlier result.

[197] For tracemetals with no other available data, not even data showing concentrations below the detection limit, it was assumed the composition of the tailings was the same as the raw ore.

Maximum Hourly Throughput References:

[201] Max. Hourly Capacity = 52,970 MJ/hr per Clayton as communicated in May 3, 2006 e-mail from Mike Wardell-Johnson of Bateman. Fuel usage: 52,970 MJ/hr * 10^6 J/MJ * 9.47831 * 10^-4 Btu/J / 10^6 Btu/MMBtu / 1,050 MMBtu/MMcu.ft. (heating value of natural gas) = 0.0478 MMcf/hr.

[202] Heating demand for adsorber regeneration estimated as 600 kW by engineer working on oxygen plant design. Heater may be electric or natural gas fired. Assumed natural gas as worst case. Hourly heat input = 600 kW * 0.94783 (Btu/sec)/kW * 3600 sec/hour / 10^6 MMBtu/Btu = 2.05 MMBtu/hr.
Limited throughput emissions based on 16 hours per day operation.

[203] Total plant heating input 125 MMBtu/hr per Paul Stavnes of NORAMCO in a May 1, 2006 e-mail. Heating will be provided by natural gas fired space heaters. The total heat input was apportioned to the various buildings based on footprint area.
Maximum fuel consumption is: 125 MMBtu/hr / 1050 MMBtu/MMcu.ft. (heating value of natural gas) = 0.119 MMcf/hr natural gas.

[204] PolyMet has acquired the two existing backup generators on site from Cliffs Erie. A fuel consumption test was performed on the generators before they were delivered with a result of 587 lb fuel/hr @ 100% power.
From AP-42 Section 3.4.1, footnote "a", the heat content of diesel fuel is 19,300 Btu/lb. The maximum heat input is then 587 lb fuel/hr * 19,300 Btu/lb / 10^6 Btu/MMBtu = 11.3 MMBtu/hr. Each generator is powered by a 1600 hp diesel engine. Therefore, AP 42 Section 3.4 is applicable for emission calculations.

[205] Maximum hourly throughput is equivalent to maximum fuel consumption or 11.3 MMBtu/hr * 10^6 Btu/MMBtu / 140,000 Btu/gallon * 2 generators = 161.4 gal/hr plus the maximum hourly throughput for the zinc pots (0.012 + 0.006 + 0.006) Mgal/yr * 1000 = 185.4 gal/hr.

[206] Existing fire pumps will be replaced with two Clarke JU4H-UF58 diesel powered pumps. Maximum fuel consumption rate is 3.8 gal/hr per data obtained from the manufacturer. Heat input = 3.8 gal/hr * 140,000 Btu/gallon / 10^6 MMBtu/Btu = 0.532 MMBtu/hr.

[207] Maximum throughput is equivalent to maximum fuel consumption for both fire pumps or 3.8 gallons/hr * 2 = 7.6 gallons/hr.

[208] Maximum fuel oil consumption rate from calculations for LTVSMC facility.

[209] Total heat input of the propane fired space heaters at the Area 1 Shop based on a quotation for upgrade of the system from 1990. Heat input = 8.976 MMBtu/hr / 91.5 MMBtu/Mgal propane = 0.098 Mgal propane/hr.

													Emission Rates for Model Input - If daily calculations are blank,				
	Indicates source that will only operate for first 1 to 2 years of plant operation.													g/sec is based on hourly emission rate				

Stack ID	Emission Unit		APCD ID	Throughput					Annual days with precipitation	Pollutant	PSD Applicability	HAP?	Emission Factor	Max. Uncontrolled Potential to Emit [1]	Proj. Act. Uncontrolled Emissions	Control Efficiency	Max. Controlled Potential to Emit [2]	Proj. Act. Controlled Emissions	Emission Std or Operational Limit	Limited Controlled Potential to Emit	Maximum Throughput		Max. Unc. Emissions	Max. Cont. Emissions	g/sec Model Input
	ID	Description		Maximum		Projected Actual		Units			(Y/N)	(Y/N)	(lb/Unit) Note	(lb/hr) (tons/yr)	(ton/yr)	(%) Note	(lb/hr) (tons/yr)	(tons/yr)		(tons/yr)	units/day Note		lb/day	lb/day	
				(Units/hr) Note	(Units/yr) Note	(Units/yr) Note																			

[210] New propane fired infrared space heaters will be installed in the Area 2 shops. Maximum capacity assumed the same as existing boiler (10 MMBtu/hr per Title V permit application for LTVSMC). The heaters are expected to have a lower maximum heat input than the existing boiler.
  Fuel consumption rate is then 10 MMBtu/hr / 91.5 (MMBtu / Mgal) = 0.1093 MGal/hr.

[211] Emissions from the crushing plant were estimated based on the design airflow for the stacks and the performance specification for the baghouses (0.0025 gr/cf). The hourly airflow rate is then the relevant process parameter for use in the emission calculations. Airflow values were taken from preliminary design work on the pollution control equipment. The hourly airflow rate is equivalent to the ACFM * 60 min/hr.

[212] An estimate of the total surface area of the flotation tanks in the commercial plant was provided by NORAMCO with a value of 7740 ft^3. The units are expressed as ft^3 * hr because the emission rate is for a plant with operating for one hour per square foot of flotation tank surface area.

[213] Max. Hourly Throughput (ton gas/hr) represents the exhaust generated by the emission unit as obtained from the process flow simulation (MetSim Rev. U3). All emissions from this unit are in the gas phase per the process flow simulation.
  The basis for the data in the process flow simulation is the daily processing rate of 32,000 tpd divided by the anticipated operating hours of 21.6 hr/day or 1482 t/hr.

[214] The PM/PM10 emissions estimated from pilot study data and the process flow simulation produced lower results than the performance specification for the scrubber (0.006 gr/cf). Therefore, the performance specification was used as the model input, and the exhaust rate for the stack is appropriate process parameter for the calculations. The airflow was calculated from data in the process flow simulation (MetSim revision U3).

[215] Max. Hourly Throughput (ton exh./hr) represents the exhaust generated by the emission unit as obtained from the process flow simulation. This value is the sum of the gaseous, liquid, and solid phase emissions.
  The basis for the data in the process flow simulation is the daily processing rate of 32,000 tpd divided by the anticipated operating hours of 21.6 hr/day or 1482 t/hr.

[216] No exhaust data is available for this unit in the process flow simulation, so it was assumed to have the same emissions as the 1st Stage Hydroxide Precipitation Tank.

[217] The sum of the estimated exhaust from all tanks routed to the scrubber was calculated to produce this exhaust rate.

[218] Hydroxide product processing rate taken from the production rate in the process flow simulation (MetSim Rev. U3).

[219] Annual usage taken from "General and Process Design Criteria" (rev. E1), prepared by plant design company. Hourly max taken as 115% of the annual usage divided by 8760, unless a maximum usage value if given in the spreadsheet, in which case this value was used.

[220] Emissions from the PAX mix tank were estimated from the estimated exhaust rate and a baghouse outlet particulate concentration of 0.005 gr/cf. The hourly airflow was estimated by assuming airflow would be similar to that from the NaHS mix tank, which is based on information obtained from the design company. The hourly airflow equals ACFM * 60 min/hr.

[221] The frother is delivered in a liquid form. The addition rate was taken from General and Design Criteria spreadsheet (Rev. E1, 8/24/06) and converted to gallons using the specific gravity from the spreadsheet. A 15% safety factor was added for the PTE calculation.

[222] Annual usage estimate of 16 mt/yr provided by Bateman. A safety factor of 15% was added with a result of 20.2 ston/yr. Hourly usage assumed to be annual usage divided by 8760 hours/year.

[223] The hourly throughput used to calculate working losses is based on the capacity of the tank (from Process Study Report - Process Plant) and estimated fill time. The sulfuric acid tank capacity is 68,605 gallons * (1.894 * 8.3454) lb/gal / 2000 lb/ton = 542.5 tons and fill time was assumed to be 5 hours with a result
  of 108.43 tph. The hydrochloric acid tank capacity is 60000 gallons * 1.1546 * 8.3454 / 2000 lb/ton = 289.1 tons and fill time was assumed to be three hours, so hourly fill rate is 96.4.

[224] Annual usage taken from General and Process Design Criteria (Rev. E). Safety factor of 15% was applied.

[225] Data not included in General and process design criteria spreadsheet. Annual usage taken from executive summary of DFS Revision E. Converted to gallons based on specific gravity in design criteria spreadsheet (0.96). Safety factor of 15% applied. Throughput for SX cells is sum of diluent and extractant.

[226] Recirculation rate estimated from unit on 1100 ton/day oxygen plant. The recirculation rate was scaled for the 772 tpd capacity for the oxygen plant for the NorthMet project.

[227] Emissions from the lime silo were estimated from the estimated exhaust rate and a filter outlet particulate concentration of 0.005 gr/cf. The hourly airflow was estimated based on the volume displaced by filling the silo.

[228] Annual usage for Plant Site taken from "General and Process Design Criteria" (rev. E1), prepared by plant design company. Hourly max taken as 115% of the annual usage divided by 8760. Additional Lime will also be required for the waste water treatment facility at the Mine Site and addition to the East Pit.
  A maximum demand of 5000 tons/year at the Mine Site was estimated by the Barr engineers working on waste water treatment. Lime will also be added to the hydrometallurgical residues. The quantity required was estimated as 44,000 tons/yr of Ca(OH)2 by the project geochemist,
  which is equivalent to 33,297 tons/year CaO. The total annual throughput for the lime handling system is the sum of the plant usage, the usage at the Mine Site, and the quantity added to the residues. Actual emissions estimates do not include 15% safety factor for Plant Site lime usage.
  Lime will also be used when two separate concentrates are produced in the flotation process. However, the lime usage for this processing step will be less than that used to neutralize the hydrometallurgical residues. Therefore, the lime usage will be at a maximum when the hydrometallurgical plant is operating at full capacity.

[229] The emissions from the limestone railcar unloading operation and the limestone hopper transfer to the conveyor will be vented to a common baghouse. Emission estimates are based on the estimated airflow and a baghouse performance specification of 0.006 gr/cf. The airflow was estimated based on the unobstructed opening area where the railcars pass through the building and a face velocity of 200 fpm.

[230] Maximum rate taken from conceptual drawings of limestone handling system prepared by Krech Ojard (1/20/06). Reclaim capacity based on 36" conveyor option from Rich Ojard of Krech Ojard.

[231] Hourly maximum rate taken from "General and Process Design Criteria" (rev. E1), prepared by plant design company (Bateman).

[232] Emissions from the limestone crusher are calculated based on the estimated airflow and a performance specification of 0.005 gr/cf for the baghouse. The airflow was estimated based on a scaled airflow for the fine ore crushers and an adjustment for one crushing stage versus two.

[233] Nominal design capacity of dryers provided by Bateman as 25 mt/hr. A 15% safety factor was applied with a result of 32 ston/hr dryer capacity.

[234] Emissions are calculated based on the design airflow and a performance specification of 0.005 gr/cf for the bin vent filters. The airflow was obtained from the preliminary design specifications for the system.

[235] Emissions are calculated based on the design airflow and a performance specification of 0.01 gr/cf for the railcar loading arm dust collector. The airflow was obtained from the preliminary design specifications for the system.

[236] Emissions are calculated based on the design airflow and a performance specification of 0.01 gr/cf for the filter receiver exhaust. The airflow was obtained from the preliminary design specifications for the system.

[237] Annual gasoline usage estimated from mileage estimates for PolyMet owned light trucks at the tailings basin, on the Dunka Road and at the Mine Site assuming 10 mpg fuel usage for the trucks. The estimated usage was increased by 10% to account for various other vehicle usage
  and by 25% to account for the fueling of vehicles owned by other operations at the former LTVSMC site. Hourly usage was calculated as annual usage divided by 8760 hours per year.

[238] Per Krech Ojard, 50 trucks per day will deliver 24 tons of limestone each. Assume trucking occurs over eight hours, with a results of about 7 trucks per hour. Hourly rate is then 24 tons/truck * 7 trucks / hr = 168 ton/hr.

[239] Per Krech Ojard, 50 trucks per day will deliver limestone to the plant when the truck haul option is utilized. The distance traveled along paved roads within PolyMet's property was estimated at 2946 meters or 1.83 miles. The hourly VMT is then: 50 trucks/day / 24 hrs/day * 1.83 miles/day * 2 trips/round trip = 7.62 VMT/hr.

[240] The one way travel distance, on roads on PolyMet controlled land, from the haul roads to the Area 1 shops where the haul truck maintenance will be performed was estimated from aerial photographs with a result of 3.9609 miles.
  Note: the heavy equipment will be diverted to a route through former mining areas to avoid mixing with light truck traffic. Based on information obtained from PolyMet, 8 trucks would be used for mine hauling and 2 for construction purposes, for a total of 10 trucks.
  Based on Barr's knowledge of mining operations, we assumed that maintenance would
  be required on each truck every 250 hours. The maintenance interval in days, assuming worst case 24 hr/day continuous operation is 250/24 = 10.42 days. Trips per day are then 1/10.42 trips/truck/day * 10 trucks = 0.9597 trips/day. A conservative worst case hourly VMT was estimated as having 2 trucks make
  a one way trip in the hour and 3.9609 miles/trip * 2 trips/hr = 7.92 VMT/hr max. VMT assigned to Road segments B, B2, B3, J and J2 based on percent of trip on each segment. Values are A: 9.2% , B: 49.0%, B2: 4.0%, B3: 29.4%, J: 2.2%, J2: 6.0%. Only segments B2, J, and J2 are located at the Plant Site.
  Emissions from the remaining segments are calculated in the Mine Site calculation spreadsheet.

[241] Estimates of light truck traffic on the portions of the Dunka Rd. surrounded by land that will be controlled by PolyMet were made based on information in the 43-101 document, the DFS executive summary, Summary Description of Proposed Mining Operations (2004) and communications with PolyMet.
  Personnel traveling to the mine site and Area 2 are assumed to be as follows: 149 mine operations staff (mine), 18 mine technical services (12 mine, 6 area 2), 25 railroad operations (Area 2), 3 mine management (area 2), 3 EHS etc. (plant to mine).
  The above staff were assigned to shifts as shown in the table below. The road segments traveled are also included:

Category	Location	1st shift	2nd Shift	3rd Shift	Road Segments Traveled		Road S	Distance (miles)	Max Hourly Trips	Max Daily Trips	Hourly VMT	Annual VMT	Daily VMT
Mine Ops	Mine	64	43	42	A, B, B2, B3, C, D, H		A	0.366	33	90	12.09	12034.15	32.97
Mine Tech Serv	Mine	4	4	4	A, B, B2, B3, C, D, H		B	1.940	33	90	64.02	63725.13	174.59
Mine Tech Serv	Area 2	4	2	0	D, H		B2	0.160	33	90	5.27	5250.60	14.39
Mine Manage.	Area 2	3	0	0	D, H		B3	1.166	33	90	38.49	38316.15	104.98
RR Ops	Area 2	13	9	3	D, H		C	1.928	33	90	63.62	63326.89	173.50
EHS	PP to mine	3	0	0	A, B, B2, B3, C, D, E, F		D	0.148	171	456	25.24	24566.69	67.31
Total		91	58	49			E	0.722	3	6	2.17	1580.93	4.33
							F	0.370	3	6	1.11	810.25	2.22
							H	0.114	146	390	16.62	16208.90	44.41

  The distance for each road segment was estimated from an aerial photograph. It was assumed that the mine operations personnel would travel to Area 2 in personal vehicles and then be shuttled in 6 passenger vans to the mine site. All other personnel were assumed to drive a vehicle all the way to their
  destination. Maximum hourly emissions will occur at shift changes where the vehicles transporting both shifts would be on the road during the same hour. To be conservative it was assumed that all travel would occur between the eight hour shifts although at least some railroad personnel will be
  working 12 hour shifts and other personnel may travel at other times. The maximum daily and hourly trips are shown in the table above as well as the hourly and annual miles. Only segments B2, C, D, E, F, and H are located at the Plant Site.
  Emissions from the other segments are calculated in the Mine Site emission calculation spreadsheet.

[242] Based on Barr's knowledge of mining operations, we have assumed that three 7,500 gallon fuel tankers per day would be needed. Only one trip per hour would likely be completed. The distance from the public road south of the plant to the Mine Site on roads on land controlled by
  PolyMet was estimated as 5.674 miles from aerial photographs. VMT assigned to road segments A, B, B2, B3, C, and H based on the percent of the trip occurring on each segment. The values are: A: 6.5%, B: 34.2%, B2: 2.8%, B3: 20.5%, C: 34.0, and H: 2.0%. Only segments B2, C, and H are located at the Plant Site.
  Emissions from the other segments are included in the Mine Site emission calculation spreadsheet.

[243] Maximum throughput for waste water treatment facility estimated as 5,000 tpy lime in wet and 10,000 tpy sludge out. Lime will be transported from Plant Site in 40 ton over the road trucks with 24 ton payload. Similar trucks will haul sludge back to Plant Site.
  Assume different trucks used as worst case. Annual trips = (5000 ton + 10000 ton) /24 ton/truck = 625 trips/yr. Assume 5 day per week, 52 week per year trucking schedule: 625 / (5 * 52) = 2.4 truck per day, round up to 3 trucks per day. Assume maximum hourly rate is one round trip.
  Maximum VMT for each time period calculated by multiplying the number of trips 2 for round trips and times the appropriate segment length: B2 = 0.16 miles, C = 1.928 miles, D = 0.148 miles, E = 0.722 miles, and F = 0.370 miles.

[244] A additional portion of road segment H has been incorporated within the PolyMet ambient air boundary. This segment is identified as "H2". The segment length is within a few meters of the length of segment H and the traffic levels would be identical. Therefore, the same VMT is used for segment H2 as for segment H.

[245] Wind erosion emissions are calculated by utilizing an entire year's meteorological data and daily fastest wind speed. Short term (< 24 hour) emission rates are not readily calculated by this procedure and the hourly "throughput" is not really a relevant concept.

[246] Light truck traffic at tailings basin estimated by scaling data from when the tailings basin was operated by Cliffs Erie. The previous estimates of VMT were scaled by the relative quantity of tailings produced or 30,887 ton/day / 66,000 ton/day. Tailings generation rate taken from MetSim Rev. U3.
  The Cliffs Erie VMT estimate was based on a maximum of 9 trucks traveling 15 mph.

Maximum Annual Throughput References:
[301] Max. Annual Throughput = Max. Hourly Throughput * 8,760 hr/yr. Projected utilization varies by process area , but all will be less than 8760 hr/yr.
[302] Max. Annual Fuel Usage (or heat input) = Max. Hourly Fuel Usage (or heat input) * 8,760 hr/yr. Projected utilization varies by process area , but all will be less than 8760 hr/yr.
[303] As recommended by EPA guidance, 500 hours operation was assumed for emergency generators. Annual heat input is then hourly heat input * 500 hours/year.
[304] Annual fuel use estimated by assuming 500 hour per year operation of the generators (per EPA guidance) and 8760 hour per year operation for the zinc pots.
[305] Assume max. Annual exhaust = Max. Hourly Exhaust * 8,760 hr/yr. Projected utilization varies by process area , but all will be less than 8760 hr/yr.
[306] The estimated surface area of the flotation tanks was provided by NORAMCO with a value of 7740 ft^3. The units are expressed as ft^3 * hr, because the emission factor is the quantity emitted by a facility in an hour per square foot of operation. Therefore, the ft^3 * hr per year is 7740 * 8760 hrs/yr = 67,802,400 ft^3 * hr/yr.
[307] Max. Annual Production = Max. Hourly Production * 8760 hr/yr. Projected utilization varies by process area, but all are less than 8760 hr/yr.
[308] Max. Annual usage = Max. hourly usage * 8760 hr/yr. Actual operation of the plant will be less. Projected utilization varies by process area , but all will be less than 8760 hr/yr.
[309] Annual usage taken from "General and Process Design Criteria" (rev. E1), prepared by plant design company. Annual max for PTE calculation taken as 115% of the annual usage, unless a maximum usage value if given in the spreadsheet, in which case this value was used.
[310] Annual usage estimate of 16 mt/yr provided by Bateman. A safety factor of 15% was added with a result of 20.2 ston/yr.
[311] Annual usage data from Process Study Report - Process Plant, Revision A. Usage data in tons converted to gallons with specific gravity. Safety factor of 15% applied.
[312] Annual usage at Plant Site taken from "General and Process Design Criteria" (rev. E1), prepared by plant design company. Annual max for PTE calculation taken as 115% of the annual usage. Lime will also be used in the waste water treatment facility and added to the East Pit at the Mine Site.
  A maximum demand of 5000 tons/year at the Mine Site was estimated by the Barr engineers working on waste water treatment. Lime will also be added to the hydrometallurgical residues. The quantity required was estimated as 44,000 tons/yr of Ca(OH)2 by the project geochemist,
  which is equivalent to 33,297 tons/year CaO. The total annual throughput for the lime handling system is the sum of the plant usage, the usage at the Mine Site, and the quantity added to the residues.
  Lime will also be used when two separate concentrates are produced in the flotation process. However, the lime usage for this processing step will be less than that used to neutralize the hydrometallurgical residues. Therefore, the lime usage will be at a maximum when the hydrometallurgical plant is operating at full capacity.
[313] Annual gasoline usage estimated from mileage estimates for PolyMet owned light trucks at the tailings basin, on the Dunka Road and at the Mine Site assuming 10 mpg fuel usage for the trucks. The estimated usage was increased by 10% to account for various other vehicle usage
  and by 25% to account for the fueling of vehicles owned by other operations at the former LTVSMC site. Hourly usage was calculated as annual usage divided by 8760 hours per year.
[314] Per Krech Ojard 50 trucks per day, 5 days per week, will deliver limestone when the truck haul option is utilized. The distance traveled over paved roads on PolyMet's property is estimated from aerial photographs as 1.83 miles.
  Annual VMT are then 50 trucks per day * 5 days/week * 52 weeks / year * 1.83 miles/trip * 2 trips/round trip = 47580 VMT/yr.
[315] The one way travel distance, on roads on land controlled by PolyMet, from the mine roads to the Area 1 shops where the haul truck maintenance will be performed was estimated from aerial photographs with a result of 3.9609 miles. Note: the heavy equipment will be diverted to a route through former
  mining areas to avoid mixing with light truck traffic. Based on information obtained from PolyMet, 8 trucks will be used for mine hauling and 2 for construction and other purposes for a total of 10.
  Based on Barr's knowledge of mining operations, we assumed that maintenance would be required on each truck every 250 hours. The maintenance interval in days, assuming worst case 24 hr/day continuous operation is 250/24 = 10.42 days.
  Trips per day are then 1/10.42 trips/truck/day * 10 trucks = 0.9597 trips/day. The annual VMT is then: 3.9609 miles per trip * 2 trips/round trip * 0.9597 trips/day * 365 days/yr = 2774.9 VMT/yr. VMT assigned to Road segments A, B, B2, B3, J and J2 based on percent of trip on each segment.
  Values are A: 9.2% , B: 49.0%, B2: 4.0%, B3: 29.4%, J: 2.2%, J2: 6.0%. Only segments J and J2 are located at the Plant Site. The emissions from the remaining segments are calculated in the Mine Site emission calculation spreadsheet.

																		Emission Rates for Model Input - If daily calculations are blank,				
	Indicates source that will only operate for first 1 to 2 years of plant operation.																	g/sec is based on hourly emission rate				
Stack ID	Emission Unit		APCD ID	Throughput				Annual days with	Pollutant	PSD	HAP?	Emission Factor		Max. Uncontrolled		Proj. Act. Uncontrolled	Control Efficiency	Max. Controlled Potential	Proj. Act. Controlled	Emission Std or	Limited Controlled	Maximum		Max. Unc.	Max Cont.	g/sec
	ID	Description		Maximum		Projected Actual		precipitation		Applicability				Potential to Emit [1]		Emissions		to Emit [2]	Emissions	Operational	Potential to Emit	Throughput		Emissions	Emissions	Model
				(Units/hr)	Note	(Units/yr)	Note	(Units/yr)	Note	Units		(Y/N)	(Y/N)	(lb/Unit)	Note	(lb/hr)	(tons/yr)	(ton/yr)	(%)	Note	(lb/hr)	(tons/yr)	(tons/yr)	Limit	(tons/yr)	units/day	Note	lb/day	lb/day	Input

[316] See note 241 above.

[317] Based on Barr's knowledge of mining operations, we have assumed that three 7,500 gallon fuel tankers would be needed per day. The total annual VMT is then: 6 trips/day * 5.674 miles/trip (1 way) * 365 days/yr = 12,426.1 VMT/yr.

VMT assigned to road segments A, B, B2, B3, C, and H based on the percent of the trip occurring on each segment. The values are: A: 6.5%, B: 34.2%, B2: 2.8, B3: 20.5%, C: 34.0, and H: 2.0%. Only segments B2, C and H are located at the Plant Site.

The emissions from the remaining segments are calculated in the Mine Site emission calculation spreadsheet.

[318] Total annual truck trips = (5000 ton lime + 10000 ton sludge) / 24 ton/truck = 625 trips/yr. Number of trips multiplied by 2 for round trips and by the length of the appropriate segment: B2 = 0.16 miles, C = 1.928 miles, D = 0.148 miles, E = 0.722 miles, and F = 0.370 miles.

[319] A additional portion of road segment H has been incorporated within the PolyMet ambient air boundary. This segment is identified as "H2". The segment length is within a few meters of the length of segment H and the traffic levels would be identical. Therefore, the same VMT is used for segment H2 as for segment H.

[320] Light truck traffic at tailings basin estimated by scaling data from when the tailings basin was operated by Cliffs Erie. The previous estimates of VMT were scaled by the relative quantity of tailings produced or 30,881 ton/day / 66,000 ton/day.

The Cliffs Erie VMT estimate was based on estimated odometer readings for vehicles used in the tailings basin.

[321] Estimated beach area subject to wind erosion based on south beach area being active in 20 year configuration. South beach has sufficient area for approximately 8 months of operation. Assumed coarse beach area would be mulched every two months, so that approximately 1/4 of the coarse beach area would be subject to wind erosion

at a given time. Fine beach area is predicted to remain at or near saturation conditions, so wind erosion will not occur in this area. Total coarse beach area along south dike is 118.24 acres * 1/4 = 29.56 acres not mulched. In addition, at the active deposition area where recently deposited tailings would still be wet, wind erosion will not occur.

This area is estimated as 2.8 acres. The area subject to wind erosion is then: 29.56 - 2.8 - 26.76 acres.

Projected Actual Throughput References

[401] Estimated actual emissions based on 6% utilization as per specification prepared by Bateman dated 2/17/06.
[402] Projected actual emissions based on 16 hours per day operation.
[403] Projected actual emissions based on 40% utilization of space heaters. This is a conservative estimate based on historic heating demand at the site with adjustments for changes to the operation.
[404] Projected actual emissions assume 10 days per year or 240 hours operation. This is expected to be a conservative assumption since most operation will be for testing and occasionally to safely shut down plant during power outage. Annual throughput = 240 hours * hourly heat input rate.
[405] Projected actual gallons of fuel added to the tank based on projected annual fuel consumption for generators and zinc pots.
[406] Annual actual operating hours estimated as 1 hour per week for testing and 12 hours per year operation for a total of 64 hours. Annual throughput = 64 * hourly heat input.
[407] Projected actual gallons of fuel added to the tank based on projected actual fuel consumption for the fire pumps.
[408] Projected actual emissions based on 10% utilization.
[409] Projected actual emissions based on 50% utilization, a conservative assumption for heating systems.
[410] Projected actual emissions for the crushing are calculated by assuming the appropriate number of crushers, bins, and transfer points required to process the average daily throughput for the Process Plant (32,000 tons) are operated for 8760 hours per year.
Various combinations of equipment may be operated at a given time, but the approach used to estimate actual emissions is conservative because the equipment assumed to operate would not need to operate 8760 hours per year to meet the crushed ore demand for the concentrator.
[411] The projected actual throughput is equivalent to the hourly throughput times the projected operating hours for the Hydrometallurgical plant, 7884 hours/yr.
[412]   Actual emissions estimates are based on the expected annual usage, without a 15% safety factor or use average projected usage rates as appropriate.
[413] Total annual airflow from the baghouse estimated by multiplying the potential airflow (8760 hr/yr) times the ratio of the projected PAX usage to the PAX usage assumed in the PTE calculation. The accounts for the fact that the mix tank will not need to operate continuously to deliver the process demand.
[414]   Projected actual emission estimated based on an annual usage estimate of 16 mt/yr provided by Bateman.
[415] Projected actual emissions assume the cooling tower will operate 8760 hours per year (i.e. actual emission = potential emissions).
[416] Projected actual emissions were estimated based on the total volume of air displaced by the annual estimated demand for lime throughout the NorthMet operation (50910 tons).
[417] Projected actual emission from lime processing were calculated based on the total projected lime usage for the NorthMet operation.
[418] Total annual airflow from the baghouse estimated by multiplying the potential airflow (8760 hr/yr) times the ratio of the projected limestone usage to the design capacity of the unloading system. This accounts for the fact that emission will only occur when trains are unloaded.
[419] Actual emissions based on the projected annual limestone usage without the 15% safety factor.
[420] Projected actual emissions were estimated by multiplying the potential annual airflow (8760 hr/yr) times the ratio of the actual projected limestone throughput to the design capacity of the crusher.
[421] Actual emissions conservatively assumed to be equivalent to potential emissions.
[422] Actual total annual airflow estimated based on the potential airflow (8760 hr/yr) times the ratio of the expected actual maximum throughput to the design throughput.
[423] Projected actual emissions are equivalent to potential emissions.

Control Efficiency References:

[501] Level 3A control measures, consistent with agreement reached by the IMA-MPCA Fugitive Emissions Workgroup as described in the November 18, 1998 "Taconite Industry Haul Truck Unpaved Road Fugitive Particulate Emission Factor and Control Efficiency" were observed at the Cliffs Erie facility;
control practices are expected to be similar at the PolyMet facilities. 60% control efficiency was used in the calculations as a reasonably conservative first estimate of controls. (The referenced document allows 80% for Level 3A control measures).
[502] Either no Air Pollution Control Devices (APCDs) are used in this process or the APCD does not control this pollutant. Therefore, Control Efficiency is 0.
[503] Based on an evaluation of the capture systems in the crushing plant, the capture efficiency either is or can be made to be 100%. Therefore, 100% capture efficiency was used in the calculations. Removal efficiency (99%) taken from MPCA Title V Instructions, Table GI-05A.1 for CE Code 018. The overall control efficiency is then 99%.
Because trace metals comprise a portion of the rock dust that make up the PM and PM10 emissions it is appropriate to use the same control efficiency for metals as for PM.
[504] The exhaust from each autoclave and flash vessel is routed to a separate venturi scrubber and then to a common packed bed scrubber. The units the vent to the scrubber are enclosed vessels, so capture efficiency will be 100%. Overall removal efficiency for both scrubbers calculated from stream composition before and after scrubber in the process flow simulation. Removal efficiency for solid and aqueous
components found to be 99.8%. For now as a reasonably conservative estimate, we have assumed 99.06% for particulate matter and metals except for Hg and 99% for HCl, HF, and H2SO4 due to high water solubility.
H2S removal assumed 70% for water scrubbing. This was the low end value for scrubbing in the EPA BACT/LAER clearinghouse database.
[505]   The autoclaves are enclosed systems with 100% capture. 25% removal efficiency for Hg assumed because a portion of the mercury may be in an elemental, non-particle bound form and therefore difficult to remove with water scrubbing.
[506] The autoclaves and flash vessels are enclosed systems with 100% capture. VOC removal efficiency assumed to be 50% to provide a conservative emission rate for the emission control technology review (see RS58A).
[507] The autoclaves and flash vessels are enclosed systems with 100% capture. Removal efficiency for hexavalent chromium conservatively estimated as 90%. In actual operation, hexchrome should behave in a similar manner to the other metals and total PM.
[508] The autoclave flash vessels are enclosed systems with 100% capture. A Teflon knockout was utilized in front of the Tedlar bag used to accumulate gas for sampling during the pilot scale test. Hg in the knockout would be expected to be in a particle bound form and therefore amenable to scrubbing. A 90% control efficiency was assigned to this portion of the sample.
25% control was assumed for the Hg detected (or not detected) in the standard Method 29 sampling train. A weighted average control efficiency of 72% was calculated.
[509] The hydrometallurgical plant tanks will be covered and vented to a wet scrubber. This system will provide 100% capture. We have assumed 90% control for SO2 based on information in an e-mail received from the plant design company on October 14, 2004. Caustic can be added to the scrubber liquor if needed.
Removal efficiency for H2SO4 assumed to be 99%, which should be achievable based on its water solubility. Removal efficiency for H2S assumed to be 70% based on low end of efficiencies in EPA BACT/LAER Clearinghouse database.
[510] The electrowinning tanks will employ specially designed hoods to collect any mist generated by the process which should collect nearly all generated mist. A capture efficiency of 100% was assumed. Additional information on the capture system is included in RS58A.
The collected mist is routed to a wet scrubber with 95% removal efficiency based on information provided by the plant design company. If mercury is present in this exhaust steam it will be removed with the same efficiency as other solid and liquid pollutants. A removal efficiency of 90% for SO2 was assumed based on an engineering estimate.
[511] The autoclaves and flash vessels are enclosed systems with 100% capture. A removal efficiency for SO2 for the scrubber of 90% was assumed based on an engineering estimate.
[512] For enclosed silos, 100% capture was assumed. Fabric filters or equivalent control measures are used to control emissions from multiple silos based on information received from Table GI-05A.1 for control equipment type 018.
[513] The PAX mix tank will be covered and routed to a baghouse. The capture efficiency was assumed to be 100% and the removal efficiency was taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018.
[514] The residual copper removal process will occur in an enclosed tank with 100% capture. H2S removal efficiency assumed to be 70% based on the low end of scrubber efficiencies in the EPA BACT/LAER clearinghouse database. System can use a caustic liquor in the scrubber to improve control efficiency if needed.
[515] Limestone delivered by rail will be unloaded in an enclosed building. The final design is not complete, but PolyMet intends to install a system that will qualify as a total enclosure (100%). Removal efficiency (99%) was taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018.
[516] Final design for the limestone crushing system has not been completed, so it was assumed that a well designed hood would be installed with 80% capture. The removal efficiency (99%) was taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018. The overall control efficiency is then 80% capture efficiency * 99* control efficiency = 79.2%. The stack and fugitive emissions are assigned different lines in the spreadsheet.
[517] Final design has not been completed on the lime slaker, so it was assumed that a well designed hood with 80% capture would be used. The removal efficiencies (90%) for PM and PM10 for a high efficiency wet scrubber (CE code 001) were taken from MPCA form GI-05A instructions, Table GI-05A.1. The overall control efficiency is then: 80% capture efficiency * 90% removal efficiency = 72%. The stack and fugitive emissions are given in separate lines in the spreadsheet.
[518] This system consists of heated screws in an enclosed outer shell which is vented to the control device. This system is expected to provide 100% capture efficiency. The particulate removal efficiency for the dryer scrubbers was assumed to be 99% based on engineering estimate. Speciated metals will be incorporated in the concentrate particles, so it is appropriate to use the same control efficiency for metals as for PM.
[519] An effective control efficiency was calculated for the proposed 15 mph speed limit for limestone trucks on PolyMet property as Speed/30 or 15/30 = 50% reduction. This speed reduction factor was taken from Equation 3-1 in *Control of Open Fugitive Dust Sources* (EPA-450/3-88-008).
[520] Concentrate will be transferred pneumatically to existing silos with the transport air discharged out the silo bin vents. The system is enclosed so capture efficiency is 100%. Particulate removal efficiency taken from MPCA Title V Instructions, Table GI-05A.1 for CE Code 018. The overall control efficiency is then 99%. Speciated metals will incorporated in the concentrate particles, so it is appropriate to use the same control efficiency for metals as for PM.
[521] The system will load dried concentrate into covered railcars. Air will be drawn back out of the filling hatch into the dust collector. This system is expected to provide 100% capture efficiency. Collection efficiency taken from MPCA Title V Instructions, Table GI-05A.1 for CE Code 018. The overall control efficiency is then 99%. Speciated metals will incorporated in the concentrate particles, so it is appropriate to use the same control efficiency for metals as for PM.
[522] This unit will collect the dried concentrate pneumatically transferred from the storage silos and transfer it to the loading arm. The transport air passes through a filtering system before being discharged. This is an enclosed system so the capture efficiency will be 100%. Collection efficiency taken from MPCA Title V Instructions, Table GI-05A.1 for CE Code 018. The overall control efficiency is then 99%.
Speciated metals will incorporated in the concentrate particles, so it is appropriate to use the same control efficiency for metals as for PM.

Maximum Daily Throughput References

[601] The tank takes five hours to fill and will only be filled a maximum of once per day based on projected sulfuric acid demand. Therefore, the maximum daily throughput is five times the maximum hourly throughput (i.e. equal to one times the tank capacity).
[602] Maximum daily aiflow estimated by calculating the ratio of maximum dailiy throughput (6250 tons) to the maximum capacity of the unloading equipment (3000 tph * 24 hr/day) and multiplying this by the maximum daily airflow (i.e hourly airflow times 24 hr/day).
[603] Maximum daily reclaim rate assumes that at most a week's demand for limestone would be fed to the reclaim system in a single day. Annual demand = 252209 tons / 52 weeks = 4850 tons per week.
[604] Assumed two trains per week would deliver 5,000 tons of limestone each during the Lake Superior shipping season from April to October. This is equivalent to a total of 280,000 tons per year, which would supply the required demand. It was assumed that a maximum of one train per day would be unloaded. A safety factor of 25% was applied (5000 * 1.25 = 6250 tons/day).
[605] The one way travel distance, on roads PolyMet controlled land, from the haul roads at the mine to the Area 1 shops where the haul truck maintenance will be performed was estimated from aerial photographs with a result of 3.9609 miles.
Note: the heavy equipment will be diverted to a route through former mining areas to avoid mixing with light truck traffic. Based on information obtained from PolyMet, 8 trucks would be used for mine hauling and 2 for construction purposes, for a total of 10 trucks.
Based on Barr's knowledge of mining operations, we have assumed that maintenance would
be required on each truck every 250 hours. The maintenance interval in days, assuming worst case 24 hr/day continuous operation is 250/24 = 10.42 days. Trips per day are then 1/10.42 trips/truck/day * 10 trucks = 0.9597 trips/day. The daily VMT was estimated as having 2 trucks make
a one way trip (or one truck make a round trip) 3.9609 miles/trip * 2 trips/hr = 7.92 VMT/day. VMT assigned to Road segments A, B, B2, B3, J and J2 based on percent of trip on each segment. Values are A: 9.2% , B: 49.0%, B2: 4.0%, B3: 29.4%, J: 2.2%, J2: 6.0%. Only segments B2, J, and J2 are located at the Plant Site.
Emissions from the remaining segments are calculated in the Mine Site calculation spreadsheet.
[606] Daily VMT for light trucks are derived from note 233 above.
[607] Based on Barr's knowledge of mining operations, we have assumed that three 7,500 gallon fuel tankers would be needed per day. The total daily VMT is then: 6 trips/day * 5.674 miles/trip (1 way) = 34.04 VMT/day.
VMT assigned to road segments A, B, B2, B3, C, and H based on the percent of the trip occurring on each segment. The values are: A: 6.5%, B: 34.2%, B2: 2.8, B3: 20.5%, C: 34.0, and H: 2.0%. Only segments B2, C and H are located at the Plant Site.
The emissions from the remaining segments are calculated in the Mine Site emission calculation spreadsheet.
[608] Maximum throughput for waste water treatment facility estimated as 5,000 tpy lime and 10,000 tpy sludge out. Lime will be transported from Plant Site in 40 ton over the road trucks with 24 ton payload. Similar trucks will haul sludge back to Plant Site.
Assume different trucks used as worst case. Annual trips = (5000 ton + 10000 ton) /24 ton/truck = 625 trips/yr. Assume 5 day per week, 52 week per year trucking schedule: 625 / (5 * 52) = 2.4 truck per day, round up to 3 trucks per day.
Maximum VMT for each time period calculated by multiplying the number of trips times 2 for round trips and times the appropriate segment length: B2 = 0.16 miles, C = 1.928 miles, D = 0.148 miles, E = 0.722 miles, and F = 0.370 miles.
[609] A additional portion of road segment H has been incorporated within the PolyMet ambient air boundary. This segment is identified as "H2". The segment length is within a few meters of the length of segment H and the traffic levels would be identical. Therefore, the same VMT is used for segment H2 as for segment H.

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Emission Factors for Fugitive Sources

Stack ID	Emission Unit ID	Emission Unit Description	Pollutant	k [2]	U [3] (mph)	M [4] (%)	s [6] (%)	a	b	W [7] (tons)	Emission Factor (lb/Unit)	Note
Fugitive	FS 033, 035	Limestone Truck Unload; Stacker Conveyor	PM10	0.35	7.1	0.7					0.0077	[1]
		Limestone Truck Unload; Stacker Conveyor	PM	0.74	7.1	0.7					0.0162	[1]
Fugitive	FS 038	Paved Roads, Limestone Truck Haul	PM10	0.016			8.2			28	1.1411	[9]
		Paved Roads, Limestone Truck Haul	PM	0.082			8.2			28	5.8498	[9]
Fugitive	FS 012	Unpaved Roads, Dunka Rd. (segment B2)	PM10	1.5			4.3	0.9	0.45	8.76	0.9646	[5]
		Unpaved Roads, Dunka Rd. (segment B2)	PM	4.9			4.3	0.7	0.45	8.76	3.8688	[5]
		Unpaved Roads, Dunka Rd. (segment C)	PM10	1.5			4.3	0.9	0.45	5.42	0.7771	[5]
		Unpaved Roads, Dunka Rd. (segment C)	PM	4.9			4.3	0.7	0.45	5.42	3.1170	[5]
		Unpaved Roads, Dunka Rd. (segment D)	PM10	1.5			4.3	0.9	0.45	2.83	0.5803	[5]
		Unpaved Roads, Dunka Rd. (segment D)	PM	4.9			4.3	0.7	0.45	2.83	2.3274	[5]
		Unpaved Roads, Dunka Rd. (segment E)	PM10	1.5			4.3	0.9	0.45	15.25	1.2380	[5]
		Unpaved Roads, Dunka Rd. (segment E)	PM	4.9			4.3	0.7	0.45	15.25	4.9655	[5]
		Unpaved Roads, Dunka Rd. (segment F)	PM10	1.5			4.3	0.9	0.45	15.25	1.2380	[5]
		Unpaved Roads, Dunka Rd. (segment F)	PM	4.9			4.3	0.7	0.45	15.25	4.9655	[5]
		Unpaved Roads, Dunka Rd. (segment H/H2)	PM10	1.5			4.3	0.9	0.45	2.86	0.5833	[5]
		Unpaved Roads, Dunka Rd. (segment H/H2)	PM	4.9			4.3	0.7	0.45	2.86	2.3395	[5]
		Unpaved Roads, Dunka Rd. (segment J/J2)	PM10	1.5			4.3	0.9	0.45	181	3.7688	[5]
		Unpaved Roads, Dunka Rd. (segment J/J2)	PM	4.9			4.3	0.7	0.45	181	15.1164	[5]
Fugitive	FS 016	Unpaved Roads, Tailings Basin	PM10	1.50			4.3	0.9	0.45	2.5	0.5487	[5]
		Unpaved Roads, Tailings Basin	PM	4.90			4.3	0.7	0.45	2.5	2.2007	[5]

Notes:

[1] $EF = k \times 0.0032 \times (U/5)^{1.3} / (M/2)^{1.4}$ lb/ton

   Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Page 13.2.4-3.

[2] k = particle size multiplier (dimensionless).

   0.35 for PM10 for equation in [1].   0.74 for PM for equation in [1]

   1.50 for PM10 for equation in [5].   4.9 for PM for equation in [5]

   0.016 for PM10 for equation in [9]   0.082 for PM for equation in [9]

[3] U = mean wind speed (mph).

   7.1 mph. Source: average value from 2001 - 2005 Hibbing, MN Meteorlogical Data Set

[4] M = moisture content (%).

   0.7 % for crushed limestone from AP-42 Table 13.2.4-1

[5] $EF = k \times (s/12)^a \times (W/3)^b$ lb/VMT

   Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Pages 13.2.2-4 and 13.2.2-5.

   Precipitation is accounted for in emission calculation spreadsheet. Emission factors are multiplied by (1-p/365) for annual emission calculations; where p = days with precipitation.

   Note: the equation for roads at industrial sites is being used for the Dunka Rd. because the road will not generally be accessible to the public.

[6] s = silt content (%)

   4.3 % for taconite mine service road from AP-42 Table 13.2.2-1

   8.2 % for paved roads at a quarry from AP-42 Table 13.2.1-4

Stack ID	Emission Unit		Pollutant	Input Parameters							Emission Factor	
	ID	Description		k [2]	U [3]	M [4]	s [6]	a	b	W [7]	Factor	
					(mph)	(%)	(%)			(tons)	(lb/Unit)	Note

[7] W = mean vehicle weight (tons).

40	tons for loaded limestone delivery trucks and WWTF trucks
16	tons for empty limestone delivery trucks and WWTF trucks
28	tons average for limestone delivery trucks and WWTF trucks
2.5	tons for all light trucks (supervisor vehicles, passenger vans, etc.)
80	tons for empty 100 ton trucks going to the Area 1 Shop for Maintenance
40	tons for loaded tanker delivering fuel to mine based on information from a fuel vendor
13.2	tons for empty tanker leaving mine site
26.6	tons for mean tanker weight
40	tons for loaded WWTF truck
16	tons for empty WWTF truck
28	tons mean weight for WWTF truck
181	tons for empty 240 ton haul trucks
	See Table 2B for Mean weight calculation for Dunka Road segments with multiple vehicle types

[8] Tailings haul roads at plant assumed equivalent to mine haul roads.

[9] EF = k * (sL/2)^0.65 * (W/3)^1.5 - C lb/VMT

Source = "AP-42 Compilation of Air Pollutant Emission Factors", 5th Edit., January 1995 Page 13.2.1-4, eqn. 1

[10] C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear

0.00047 for PM and PM10 with units of lb/VMT from AP-42 Table 13.2.1-2

PolyMet - Hoyt Lakes, Minnesota
Table 3: Mean Vehicle Weight Calculations - Dunka Road

Note: Calculations based on 24-hour VMT because this will be the limiting case
for modeling compliance with PM10 standards. 24-hr VMT may not be
directly scaled from hourly VMT

Segment B2

ID	Activity	B2 VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		0.16			
FS 012B2	Empty Haul Trucks	0.3168	181.0	0.019	3.451
FS 012B2	Light Trucks	14.39	2.5	0.866	2.165
FS 012B2	Tanker	0.953	26.6	0.057	1.526
FS 012B2	WWTF Trucks	0.96	28.0	0.058	1.616
	Total	16.61		1	8.758

Segment C

ID	Activity	C VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		1.93			
FS 012C	Light Trucks	173.50	2.5	0.882	2.206
FS 012C	Tanker	11.57	26.6	0.059	1.566
FS 012C	WWTF Trucks	11.57	28.0	0.059	1.647
	Total	196.64		1	5.419

Segment D

ID	Activity	D VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		0.148			
FS 012D	Light Trucks	67.31	2.5	0.987	2.468
FS 012D	WWTF Trucks	0.886	28.0	0.013	0.364
	Total	68.19		1	2.831

Segment E

ID	Activity	E VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		0.722			
FS 012E	Light Trucks	4.331	2.5	0.500	1.250
FS 012E	WWTF Trucks	4.331	28.0	0.500	14.000
	Total	8.663		1	15.250

Segment F

ID	Activity	F VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		0.37			
FS 012F	Light Trucks	2.220	2.5	0.500	1.250
FS 012F	WWTF Trucks	2.220	28.0	0.500	14.000
	Total	4.440		1	15.250

Segment H/H2

ID	Activity	H VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		0.114			
FS 012H	Light Trucks	44.408	2.5	0.985	2.462
FS 012H	Tanker	0.681	26.6	0.015	0.402
	Total	45.089		1	2.864

PolyMet - Hoyt Lakes, Minnesota
Table 4: PP2 Autoclave Airflow Estimates and Scaleup Parameters

Date	8/30/2005	8/30-31/05	8/31/2005	8/31/2005	8/31-9/1/05	9/1/2005	9/1/2005	9/1-2/05	9/2/2005	9/2/2005	9/2-2/05
Start Time	1430	2230	630	1430	2230	630	1430	2230	630	1430	2230
Stop Time	2230	630	1430	2230	630	1430	2230	630	1430	2230	330
Data from Lakefield Report											
Fresh Solids Feed, kg/hr	4.33	3.57	3.94	3.67	3.92	3.92	2.98	2.74	2.74	2.74	2.45
Feed Sulfur Content, %	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%
O2 Flowrate, nL/min	63	63	50	38	38	38	38	39	38	38	38
Oxygen in Offgas, %	91.2	92.6	94.6	58	77.8	74.1	75	75	75	75	75
Condensate Flow, g/min	46.06	40.98	33.14	11.42	5.38	5.04	4.98	10.68	11.25	13.07	7.24
Condensate density, g/L	1000	1000	1000	1037	1000	1000	1000	1000	1000	1000	1000
Constants											
Molar Volume @ n cond., l/gmole	22.413	22.413	22.413	22.413	22.413	22.413	22.413	22.413	22.413	22.413	22.413
Molar Volume @ s cond., l/gmole	24.054	24.054	24.054	24.054	24.054	24.054	24.054	24.054	24.054	24.054	24.054
Calculated Values											
Sulfur Feed, kg/hr	0.628	0.518	0.571	0.532	0.568	0.568	0.432	0.397	0.397	0.397	0.355
Stoichiometric O2, kg/hr	1.256	1.035	1.143	1.064	1.137	1.137	0.864	0.795	0.795	0.795	0.711
O2 Flowrate, mole/min	2.811	2.811	2.231	1.695	1.695	1.695	1.695	1.740	1.695	1.695	1.695
O2 Flowrate, kg/hr	5.397	5.397	4.283	3.255	3.255	3.255	3.255	3.341	3.255	3.255	3.255
Excess Oxygen, kg/hr	4.141	4.362	3.141	2.191	2.118	2.118	2.391	2.546	2.461	2.461	2.545
Excess Oxygen, gmole/min	2.157	2.272	1.636	1.141	1.103	1.103	1.245	1.326	1.282	1.282	1.325
Excess Oxygen, sL/min	51.881	54.642	39.346	27.449	26.540	26.540	29.955	31.901	30.827	30.827	31.881
Total Exhaust, sL/min	58.375	60.282	42.229	58.522	36.895	39.461	43.798	46.642	45.073	45.073	46.613
Total Exhaust, DSCFM	2.061	2.129	1.491	2.067	1.303	1.394	1.547	1.647	1.592	1.592	1.646
Condensate Flow, LPM	0.046	0.041	0.033	0.011	0.005	0.005	0.005	0.011	0.011	0.013	0.007
Average DSCFM		2.095	1.810	1.779	1.685	1.348	1.470	1.597	1.619	1.592	1.619
Average l/min		0.044	0.037	0.022	0.008	0.005	0.005	0.008	0.011	0.012	0.010
MetSim Data											
Fresh Solids to AC, kg/hr	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7
Scale Up Calculations											
Scale Up Factor	10792.1	13089.6	11860.3	12732.9	11920.8	11920.8	15681.1	17054.6	17054.6	17054.6	19073.3
Average Scale Up Factor		11940.8	12474.9	12296.6	12326.9	11920.8	13801.0	16367.9	17054.6	17054.6	18064.0
Scaled Up DSCFM	22247.8	27865.3	17687.3	26314.9	15532.1	16612.3	24254.0	28091.4	27146.3	27146.3	31397.2
Scaled Up Condensate Flow, LPM	497.1	536.4	393.1	140.2	64.1	60.1	78.1	182.1	191.9	222.9	138.1

Not reported; estimated by Barr

PolyMet - Hoyt Lakes, Minnesota
Table 5: PP3 Autoclave Airflow Estimates and Scaleup Parameters

Parcel Fed to Autoclave	C2-C1/1	C1/1	C1/1-C1/2	C1/2	C1/2-C3	C3	C3	C3	C3	C3	C3	C3	C3
Date	9/7/2005	9/7-8/05	9/8/2005	9/8/2005	9/8-9/05	9/9/2005	9/9/2005	9/9-10/05	9/10/2005	9/10/2005	9/10/2005	9/10-11/05	9/11/2005
Start Time	1800	2230	630	1430	2230	630	1430	2230	630	1000	1430	2230	630
Stop Time	2230	630	1430	2230	630	1430	2230	630	1000	1430	2230	630	1100
Data from Lakefield Report													
Fresh Solids Feed, kg/hr	2.97	2.93	2.94	2.74	2.76	2.61	2.46	2.48	2.48	2.48	2.79	2.6	2.57
Feed Sulfur Content, %	16.9%	19.4%	19.2%	19.1%	20.0%	20.9%	20.9%	20.9%	20.9%	20.9%	20.9%	20.9%	20.9%
O2 Flowrate, nL/min	59.9	67.2	67.2	67.2	67.2	67.2	67.2	67.3	68.9	88	92.9	95.4	95.3
Oxygen in Offgas, %	94.6	93.1	90	89.4	93.4	92.2	90.5	94.7	93.8	93.5	94.8	94	94
Condensate Flow, g/min	24	26.12	23.59	22.27	21.31	22.25	21.27	22.71	24.76	24.76	40.3	41	39
Condensate density, g/L	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Constants													
Molar Volume @ n cond., l/gmole	22.413	22.413	22.413	22.413	22.413	22.413	22.413	22.413	22.413	22.413	22.413	22.413	22.413
Molar Volume @ s cond., l/gmole	24.054	24.054	24.054	24.054	24.054	24.054	24.054	24.054	24.054	24.054	24.054	24.054	24.054
Calculated Values													
Sulfur Feed, kg/hr	0.503	0.567	0.564	0.522	0.551	0.545	0.514	0.518	0.518	0.518	0.583	0.543	0.537
Stoichiometric O2, kg/hr	1.005	1.134	1.129	1.044	1.103	1.091	1.028	1.037	1.037	1.037	1.166	1.087	1.074
O2 Flowrate, mole/min	2.673	2.998	2.998	2.998	2.998	2.998	2.998	3.003	3.074	3.926	4.145	4.256	4.252
O2 Flowrate, kg/hr	5.131	5.757	5.757	5.757	5.757	5.757	5.757	5.765	5.902	7.538	7.958	8.172	8.164
Excess Oxygen, kg/hr	4.126	4.623	4.628	4.713	4.654	4.666	4.728	4.729	4.866	6.502	6.792	7.086	7.090
Excess Oxygen, gmole/min	2.149	2.408	2.410	2.455	2.424	2.430	2.463	2.463	2.534	3.386	3.538	3.690	3.692
Excess Oxygen, sL/min	51.691	57.914	57.976	59.042	58.306	58.452	59.238	59.240	60.957	81.456	85.091	88.769	88.819
Total Exhaust, sL/min	55.478	63.449	66.367	68.178	63.614	64.847	67.323	63.495	66.142	88.749	91.079	96.055	96.109
Total Exhaust, DSCFM	1.959	2.241	2.344	2.408	2.247	2.290	2.377	2.242	2.336	3.134	3.216	3.392	3.394
Condensate Flow, LPM	0.024	0.026	0.024	0.022	0.021	0.022	0.021	0.023	0.025	0.025	0.040	0.041	0.039
Average DSCFM		2.100	2.292	2.376	2.327	2.268	2.334	2.310	2.289	2.735	3.175	3.304	3.393
Average l/min		0.025	0.025	0.023	0.022	0.022	0.022	0.022	0.024	0.025	0.033	0.041	0.040
MetSim Data													
Fresh Solids to AC, kg/hr	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7	46729.7
Scale Up Calculations													
Scale Up Factor	15733.9	15948.7	15894.5	17054.6	16931.1	17904.1	18995.8	18842.6	18842.6	18842.6	16749.0	17973.0	18182.8
Average Scale Up Factor		15841.3	15921.6	16474.5	16992.8	17417.6	18450.0	18919.2	18842.6	18842.6	17795.8	17361.0	18077.9
Scaled Up DSCFM	30825.5	35735.8	37251.9	41061.9	38035.7	41000.9	45162.3	42250.5	44011.9	59055.0	53871.4	60966.9	61713.2
Scaled Up Condensate Flow, LPM	377.6	416.6	375.0	379.8	360.8	398.4	404.0	427.9	466.5	466.5	675.0	736.9	709.1

Not reported; estimated by Barr

Table 6

EPA Method 26(Modified) Hydrogen Chloride and Hydrogen Fluoride Results

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	8/30/2005	8/30 - 8/31/05	8/31/2005	---
Test Period	1803 - 1958	2105 - 0041	0120 - 0250	---
Test Duration, min.	110	210	90	137
Avg. Moisture Content, %V/V	5.5	1.9	3.0	3.4
EPA Method 26 Sample Train Analytical Results, ug				
Chloride [1] [2]	< 182	< 173	< 175	< 177
Fluoride	84	< 69	88	80
Sample Volume				
acf	33.57	20.79	37.34	30.57
dscf	32.35	20.16	37.30	29.94
EPA Method 26 Sample Train Concentrations, lb/dscf				
Hydrogen Chloride, HCl	< 1.3E-08	< 1.9E-08	< 1.1E-08	< 1.4E-08
Hydrogen Fluoride, HF	6.0E-09	< 7.93E-09	5.5E-09	6.5E-09
EPA Method 26 Sample Train Concentrations, PPM				
Hydrogen Chloride, HCl	< 0.135	< 0.205	< 0.112	< 0.151
Hydrogen Fluoride, HF	0.116	< 0.153	0.105	0.125
Pre Train Moisuture Knockout Analytical Results, mg/l				
Chloride [1]	< 200	< 200	< 20	< 140
Fluoride [1]	< 200	< 200	< 20	< 140
Autoclave Vent Condensate				
Chloride concentration, mg/liter [3] [4]	< 200	25	28.2	27
Fluoride concentration, mg/liter [4] [5]	< 200	< 20	1.2	1.2
Data From MetSim				
Releach Autoclave Vent Airflow, ACFM [2]	527	527	527	
Pressure, kPa	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	
Temp, deg. F	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
Hydrogen Chloride, HCl - lb/hr	< 1.7E-03	< 2.7E-03	< 1.5E-03	< 2.0E-03
Hydrogen Fluoride, HF - lb/hr	8.3E-04	1.1E-03	7.5E-04	8.9E-04
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all halogens are from acid				
Liter/minute Water Vapor (after condensation)	156	156	156	

Table 6

EPA Method 26(Modified) Hydrogen Chloride and Hydrogen Fluoride Results

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Hydrogen Chloride, HCl - lb/hr [4]	< 4.117	0.515	0.581	0.548
Hydrogen Fluoride, HF - lb/hr [4]	< 4.117	< 0.412	0.025	0.025
Total Mass Emission Rate - Assuming all halogens from acid				
Hydrogen Chloride, HCl - lb/hr	< 4.119	0.517	0.582	0.550
Hydrogen Fluoride, HF - lb/hr	< 4.118	< 0.413	0.025	0.025
Flowrates Calculated from Data in Lakefield Report				
Airflow, DSCFM	2.061	2.095	2.129	2.095
Condensate Flow, l/min	0.04606	0.04352	0.04098	0.04352
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Hydrogen Chloride, HCl - lb/hr	< 1.6E-06	< 2.4E-06	< 1.4E-06	< 1.8E-06
Hydrogen Fluoride, HF - lb/hr	7.4E-07	< 1.0E-06	7.0E-07	8.1E-07
Mass Emission Rate (Liquid Phase) Based on SGS Data - Assuming all halogens are from acid				
Hydrogen Chloride, HCl - lb/hr [4]	< 1.2E-03	1.4E-04	1.5E-04	1.5E-04
Hydrogen Fluoride, HF - lb/hr [4]	< 1.2E-03	< 1.2E-04	6.5E-06	6.5E-06
Total Mass Emission Rate - Assuming all halogens from acid				
Hydrogen Chloride, HCl - lb/hr	< 1.2E-03	1.5E-04	1.5E-04	1.5E-04
Hydrogen Fluoride, HF - lb/hr	1.2E-03	< 1.2E-04	7.2E-06	7.2E-06
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)				
Factor, dimensionless	10792	11941	11860	11531
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)				
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Hydrogen Chloride, HCl - lb/hr	< 1.7E-02	< 2.9E-02	< 1.6E-02	< 2.1E-02
Hydrogen Fluoride, HF - lb/hr	8.0E-03	< 1.2E-02	8.3E-03	9.4E-03
Mass Emission Rate (Liquid Phase) Based on SGS Data - Assuming all halogens are from acid				
Hydrogen Chloride, HCl - lb/hr	< 13.153	1.719	1.813	1.766
Hydrogen Fluoride, HF - lb/hr	< 13.153	< 1.375	0.077	0.077
Total Mass Emission Rate - Assuming all halogens from acid				
Hydrogen Chloride, HCl - lb/hr	< 13.170	1.748	1.829	1.789
Hydrogen Fluoride, HF - lb/hr	< 13.161	< 1.387	0.085	0.085

[1] Elevated detection limit due to a matrix interference
[2] Recommended hold time exceeded by 1 to 2 days due to equipment failure.
[3] Elevated detection limit for run 1 due to a matrix interference
[4] Detection limit values not inlcuded in average.
[5] Elevated detection limit for runs 1 and 2 due to a matrix interference

Table 7

EPA Method 26(Modified) Hydrogen Chloride and Hydrogen Fluoride Results

Chloride and Fluoride Results

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/7/2005	9/7/2005	9/7/2005	---
Test Period	1920-2020	2110-2214	2248-2348	---
Test Duration, min.	60	60	60	60
Avg. Moisture Content, %V/V				
Method 26 Analytical Results, ug				
Chloride	< 27 [1]	< 19	< 20	< 22
Fluoride	11	< 38	< 40	30
Method 26 Sample Volume				
acf	4.53	4.20	4.21	4.31
dscf	4.48	4.12	4.27	4.29
Method 26 Concentrations, lb/dscf				
Hydrogen Chloride, HCl	< 1.4E-08	< 1.0E-08	< 1.1E-08	< 1.2E-08
Hydrogen Fluoride, HF	5.7E-09	< 2.1E-08	< 2.2E-08	1.6E-08
Method 26 Concentrations, PPM				
Hydrogen Chloride, HCl	< 0.144	< 0.110	< 0.112	< 0.122
Hydrogen Fluoride, HF	0.110	< 0.412	< 0.419	0.313
Pre Train Moisture Knockout Analytical Results, mg/l				
Chloride [2]	0.58	< 0.10	< 0.11	0.26
Fluoride [2]	0.34	< 0.21	< 0.20	0.25
Pre Train Moisture Knockout Analytical Results, total ug				
Chloride [2]	22	< 7	< 7	12
Fluoride [2]	13	< 14	< 13	13
Autoclave Vent Condensate				
Chloride concentration, mg/liter [2]	17	17	21	18
Fluoride concentration, mg/liter [2]	< 0.20	0.20	0.38	0.26
Data From MetSim				
Autoclave Vent Airflow, ACFM [2]	527	527	527	
Pressure, kPa	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	
Temp, deg. F	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				

Table 7

EPA Method 26(Modified) Hydrogen Chloride and Hydrogen Fluoride Results

Chloride and Fluoride Results

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Hydrogen Chloride, HCl - lb/hr	< 1.9E-03	< 1.4E-03	< 1.5E-03	< 1.6E-03
Hydrogen Fluoride, HF - lb/hr	7.8E-04	< 2.9E-03	< 3.0E-03	2.2E-03
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all halogens are from acid				
Liter/minute Water Vapor (after condensation)	156	156	156	
Hydrogen Chloride, HCl - lb/hr (KO + Cond)	0.354	0.354	0.430	0.392
Hydrogen Fluoride, HF - lb/hr (KO + Cond)	0.004	0.004	0.008	0.008
Total Mass Emission Rate - Assuming all halogens from acid				
Hydrogen Chloride, HCl - lb/hr	0.356	0.356	0.432	0.394
Hydrogen Fluoride, HF - lb/hr	0.005	0.007	0.011	0.011
Flowrates Calculated from Data in Lakefield Report				
Airflow, DSCFM	1.959	2.241	2.241	2.147
Condensate Flow, l/min	0.0240	0.02612	0.02612	0.0254
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Hydrogen Chloride, HCl - lb/hr	< 1.6E-06	< 1.4E-06	< 1.4E-06	< 1.5E-06
Hydrogen Fluoride, HF - lb/hr	6.7E-07	< 2.9E-06	< 2.9E-06	2.2E-06
Mass Emission Rate (Liquid Phase) Based on SGS Data - Assuming all halogens are from acid				
Hydrogen Chloride, HCl - lb/hr [4]	5.7E-05	6.0E-05	7.2E-05	6.6E-05
Hydrogen Fluoride, HF - lb/hr [4]	2.4E-06	7.1E-07	1.3E-06	1.3E-06
Total Mass Emission Rate - Assuming all halogens from acid				
Hydrogen Chloride, HCl - lb/hr	5.9E-05	6.1E-05	7.4E-05	6.7E-05
Hydrogen Fluoride, HF - lb/hr	3.0E-06	3.6E-06	4.2E-06	4.2E-06
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)				
Factor, dimensionless	10792	11941	11860	11531
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)				
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Hydrogen Chloride, HCl - lb/hr	< 1.7E-02	< 1.7E-02	< 1.7E-02	< 1.7E-02
Hydrogen Fluoride, HF - lb/hr	7.2E-03	< 3.4E-02	< 3.5E-02	2.5E-02
Mass Emission Rate (Liquid Phase) Based on SGS Data - Assuming all halogens are from acid				
Hydrogen Chloride, HCl - lb/hr	0.621	0.711	0.856	0.783
Hydrogen Fluoride, HF - lb/hr	0.025	0.008	0.016	0.016
Total Mass Emission Rate - Assuming all halogens from acid				
Hydrogen Chloride, HCl - lb/hr	0.638	0.727	0.873	0.800
Hydrogen Fluoride, HF - lb/hr	0.033	0.043	0.050	0.050

[1] Detection limit elevated due to a matrix interference
[2] Method 26 analytical techniques used for results

Table 8

EPA Method 8 (Modified) SO2 and H2SO4

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	8/31/2005	8/31/2005	9/1/2005	---
Test Period	0625 - 0750	0818 - 0918	1008 - 1254	---
Test Duration, min.	85	60	160	101.7
Method 8 Analytical Results H2SO4, mg [1]	3.62	1.82	1.69	2.38
Method 8Analytical Results SO2, mg [1]	50.70	44.90	30.90	42.17
Sample Volume				
acf	37.55	34.05	25.56	32.39
dscf	37.91	34.29	25.03	32.41
Compound Concentration, lb/dscf				
H2SO4 concentration , lb/dscf	2.1E-07	1.2E-07	1.5E-07	1.6E-07
SO2 concentration , lb/dscf	2.9E-06	2.9E-06	2.7E-06	2.9E-06
Compound Concentration, PPMv				
H2SO4 concentration , PPMv	0.828	0.460	0.585	0.624
SO2 concentration , PPMv	17.8	17.4	16.4	17.2
Pre Train Moisuture Knockout Analytical Results				
Sulfate, mg/l [2]	23	25	< 20	23
Sulfate, total mg	1.27	0.78	< 0.64	0.89
Autoclave Vent Condensate, mg/l				
Sulfate	67	35	82	61
Data From MetSim				
Autoclave Vent Airflow, ACFM [2]	527	527	527	
Pressure, kPa	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	
Temp, deg. F	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
H2SO4, lb/hr	0.029	0.016	0.020	0.022
SO2, lb/hr	0.405	0.396	0.373	0.391
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all sulfate is acid (KO + Cond)				
Liter/minute Water Vapor (after condensation)	156	156	156	
H2SO4, lb/hr	1.379	0.721	1.688	1.204
Total Mass Emission Rate - Assuming all sulfate is acid				

Table 8

EPA Method 8 (Modified) SO2 and H2SO4

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
H2SO4, lb/hr	1.408	0.737	1.708	1.223
SO2, lb/hr	0.405	0.396	0.373	0.373
Flowrates Calculated from Data in Lakefield Report				
Airflow, DSCFM	1.491	1.491	1.491	1.491
Condensate Flow, l/min	0.03314	0.03314	0.03314	0.03314
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
H2SO4, lb/hr	1.88E-05	1.05E-05	1.33E-05	1.42E-05
SO2, lb/hr	2.64E-04	2.58E-04	2.44E-04	2.55E-04
Mass Emission Rate (Liquid Phase) Based on SGS Data - Assuming all sulfate is from acid				
H2SO4, lb/hr	4.6E-04	2.6E-04	3.6E-04	3.1E-04
Total Mass Emission Rate - Assuming all sulfate is acid				
H2SO4, lb/hr	4.8E-04	2.7E-04	3.7E-04	3.2E-04
SO2, lb/hr	2.6E-04	2.6E-04	2.4E-04	2.4E-04
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)				
Factor, dimensionless	11860	11941	11860	11887
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)				
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
H2SO4, lb/hr	0.223	0.125	0.158	0.169
SO2, lb/hr	3.129	3.084	2.888	3.034
Mass Emission Rate (Liquid Phase) Based on SGS Data - Assuming all sulfate is from acid				
H2SO4, lb/hr	5.469	3.057	4.264	3.660
Total Mass Emission Rate - Assuming all sulfate is from acid				
H2SO4, lb/hr	5.692	3.182	4.422	3.802
SO2, lb/hr	3.129	3.084	2.888	2.986

[1] Samples displayed titration endpoint before addition of titrant and were filtered through ion exchange resin.

[2] Run 3 had an elevated detection limit due to a matrix interference.

Table 9

EPA Method 8 (Modified) SO2 and H2SO4

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/10/2005	9/10/2005	9/10/2005	---
Test Period	1452-1552	1730-1830	2122-2222	---
Bag filling period	Same	Same	Same	
Test Duration, min.	60	60	60	60
Method 8 Analytical Results H2SO4, mg	1.23	1.96	< 0.196	1.13
Method 8 Analytical Results SO2, mg	0.24	0.22	2.06	0.84
Sample Volume				
acf	2.61	2.40	3.75	2.92
dscf	2.53	2.36	3.81	2.90
Compound Concentration, lb/dscf				
H2SO4 concentration, lb/dscf	1.1E-06	1.8E-06	< 1.1E-07	1.0E-06
SO2 concentration, lb/dscf	2.1E-07	2.0E-07	1.2E-06	5.3E-07
Compound Concentration, PPMv				
H2SO4 concentration , PPMv	4.2	7.2	< 0.45	4.0
SO2 concentration , PPMv	1.2	1.2	7.2	3.2
Pre Train Moisture Knockout Analytical Results				
Sulfate, mg/l	16	3 [1]	NA [2]	10
Sulfate, total mg	0.27	0.55	NA [2]	0.41
Autoclave Vent Condensate, mg/l				
Sulfate	27	35	30	31
Data From MetSim				
Autoclave Vent Airflow, ACFM [2]	527	527	527	
Pressure, kPa	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	
Temp, deg. F	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
H2SO4, lb/hr	0.147	0.251	< 0.016	0.138
SO2, lb/hr	0.028	0.028	0.163	0.073
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all sulfate is acid (KO + Cond)				
Liter/minute Water Vapor (after condensation)	156	156	156	
H2SO4, lb/hr	0.556	0.721	0.618	0.669

Table 9

EPA Method 8 (Modified) SO2 and H2SO4

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Total Mass Emission Rate - Assuming all sulfate is acid				
H2SO4, lb/hr	0.703	0.971	0.633	0.802
SO2, lb/hr	0.028	0.028	0.163	0.163
Flowrates Calculated from Data in Lakefield Report				
Airflow, DSCFM	3.216	3.216	3.216	3.216
Condensate Flow, l/min	0.0403	0.0403	0.041	0.0405
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
H2SO4, lb/hr	2.07E-04	3.53E-04	< 2.19E-05	1.94E-04
SO2, lb/hr	3.99E-05	3.87E-05	2.30E-04	1.03E-04
Mass Emission Rate (Liquid Phase) Based on SGS Data - Assuming all sulfate is from acid				
H2SO4, lb/hr	1.8E-04	2.6E-04	1.6E-04	2.1E-04
Total Mass Emission Rate - Assuming all sulfate is acid				
H2SO4, lb/hr	3.9E-04	6.1E-04	1.8E-04	4.0E-04
SO2, lb/hr	4.0E-05	3.9E-05	2.3E-04	2.3E-04
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)				
Factor, dimensionless	16749	16749	16749	16749
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)				
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
H2SO4, lb/hr	3.471	5.908	0.366	3.248
SO2, lb/hr	0.669	0.648	3.848	1.722
Mass Emission Rate (Liquid Phase) Based on SGS Data - Assuming all sulfate is from acid				
H2SO4, lb/hr	3.014	4.346	2.726	3.536
Total Mass Emission Rate - Assuming all sulfate is from acid				
H2SO4, lb/hr	6.485	10.254	3.092	6.673
SO2, lb/hr	0.669	0.648	3.848	2.248

[1] Initially analyzed within recommended hold time; reanalyzed six days past hold time to bring in calibration range.

[2] No liquid was collected in the knockout, so there was no sample to analyze.

Table 10

EPA Methods 5/202 (Modified) PM w/Condensables

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Average
Test Date	8/31/2005	8/31/2005	---
Test Period	1424 - 1715	1827 - 2117	---
Test Duration, min.	170	170	170
Particulate Loading, grams			
Dry Catch [1]	0.0857	0.0423	0.0640
Organic Condensibles	0.0065	0.0522	0.0293
Aqueous Phase Condensibles	0.0000	0.0083	0.0042
Total	0.0921	0.1028	0.0975
Sample Volume			
acf	6.44	6.62	6.53
dscf	6.06	6.39	6.22
Particulate Concentration, gr/dscf			
Dry Catch Only (Filterable)	0.22	0.10	0.16
Dry Catch + Organic Condensibles	0.24	0.23	0.23
Dry Catch Only + Organic Condensibles +	0.24	0.25	0.24
Aqueous Phase Condensibles (Total)			
Autoclave Vent Condensate Particulate Results, mg/liter			
Filterable particulate (TSS) [1]	1015	77	546
Organic condensibles	28	27	28
Inorganic condensibles	364	377	370
Total Particulate	1407	481	944
Data From MetSim			
Autoclave Vent Airflow, ACFM [2]	527	527	
Pressure, kPa	2900	2900	
Pressure, in Hg	856.37	856.37	
Temp, deg. F	428	428	
Moisture Content, %	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow, lb/hr			
Dry Catch Only (Filterable)	4.273	2.000	3.136
Dry Catch + Organic Condensibles	4.607	4.470	4.538
Dry Catch Only + Organic Condensibles +	4.607	4.862	4.734
Aqueous Phase Condensibles (Total)			
Mass Emission Rate (Liquid Phase) Based on MetSim Data			
Liter/minute Water Vapor (after condensation)	156	156	

Table 10

EPA Methods 5/202 (Modified) PM w/Condensables

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Average
Dry Catch Only (Filterable)	20.892	1.577	11.235
Dry Catch + Organic Condensibles	21.479	2.136	11.807
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	28.961	9.903	19.432
Total Mass Emission Rate			
Dry Catch Only (Filterable)	25.166	3.576	14.371
Dry Catch + Organic Condensibles	26.085	6.605	16.345
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	33.568	14.764	24.166
Flowrates Calculated from Data in Lakefield Report			
Airflow, DSCFM	2.067	2.067	2.067
Condensate Flow, l/min	0.0110	0.0110	0.0110
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow, lb/hr			
Dry Catch Only (Filterable)	0.0039	0.0018	0.0028
Dry Catch + Organic Condensibles	0.0042	0.0040	0.0041
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	0.0042	0.0044	0.0043
Mass Emission Rate (Liquid Phase) Based on SGS Data, lb/hr			
Dry Catch Only (Filterable)	0.0015	0.0001	0.0008
Dry Catch + Organic Condensibles	0.0015	0.0002	0.0008
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	0.0021	0.0007	0.0014
Total Mass Emission Rate, lb/hr			
Dry Catch Only (Filterable)	0.0053	0.0019	0.0036
Dry Catch + Organic Condensibles	0.0057	0.0042	0.0049
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	0.0062	0.0051	0.0057
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)			
Factor, dimensionless	12733	12733	12733
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)			
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow, lb/hr			
Dry Catch Only (Filterable)	49.17	23.01	36.09
Dry Catch + Organic Condensibles	53.01	51.43	52.22
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	53.01	55.94	54.47
Mass Emission Rate (Liquid Phase) Based on SGS Data, lb/hr			
Dry Catch Only (Filterable)	18.83	1.42	10.13
Dry Catch + Organic Condensibles	19.36	1.93	10.64

Table 10

EPA Methods 5/202 (Modified) PM w/Condensables

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Average
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	26.11	8.93	17.52
Total Mass Emission Rate, lb/hr			
Dry Catch Only (Filterable)	68.00	24.43	46.22
Dry Catch + Organic Condensibles	72.37	53.35	62.86
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	79.11	64.86	71.99

[1] Pre-train knockout and condensate analysis for total suspended solids completed
    after seven day recommended hold time

Table 11

EPA Methods 5/202 (Modified) PM w/Condensables

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/8/2005	9/8/2005	9/8/2005	---
Test Period	230 - 430	1310 - 1500	2018 - 2218	---
Test Duration, min.	120	110	120	117
Avg. Moisture Content, %V/V	1.3	1.9	0.6	1.3
Particulate Loading, grams				
Dry Catch	0.0121	0.0044	0.0051	0.0072
Organic Condensibles	0.0056	0.0040	0.0035	0.0044
Aqueous Phase Condensibles	0.0141	0.0136	0.0192	0.0157
Total	0.0319	0.0221	0.0278	0.0273
Sample Volume				
acf	39.92	37.51	37.30	38.24
dscf	40.86	37.27	39.39	39.17
Particulate Concentration, gr/dscf				
Dry Catch Only (Filterable)	0.0046	0.0018	0.002	0.0028
Dry Catch + Organic Condensibles	0.0067	0.0035	0.0034	0.0045
Dry Catch Only + Organic Condensibles +	0.0120	0.0091	0.0109	0.0107
Aqueous Phase Condensibles (Total)				
Autoclave Vent Condensate Particulate Results, mg/liter				
Filterable particulate (TSS) [1]	269	15	57	114
Organic condensibles	15	10	11	13
Inorganic condensibles	98	97	69	98
Total Particulate	383	122	138	252
Data From MetSim				
Autoclave Vent Airflow, ACFM [2]	527	527	527	
Pressure, kPa	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	
Temp, deg. F	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow, lb/hr				
Dry Catch Only (Filterable)	0.090	0.035	0.039	0.055
Dry Catch + Organic Condensibles	0.131	0.069	0.067	0.089
Dry Catch Only + Organic Condensibles +	0.235	0.178	0.214	0.209
Aqueous Phase Condensibles (Total)				
Mass Emission Rate (Liquid Phase) Based on MetSim Data				

Table 11

EPA Methods 5/202 (Modified) PM w/Condensables

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Liter/minute Water Vapor (after condensation)	141	141	141	
Dry Catch Only (Filterable)	5.035	0.276	1.072	2.128
Dry Catch + Organic Condensibles	5.317	0.468	1.284	2.356
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	7.158	2.279	2.574	4.004
Total Mass Emission Rate				
Dry Catch Only (Filterable)	5.125	0.311	1.112	2.183
Dry Catch + Organic Condensibles	5.448	0.536	1.351	2.445
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	7.393	2.458	2.787	4.213
Flowrates Calculated from Data in Lakefield Report				
Airflow, DSCFM	2.241	2.376	2.408	2.341
Condensate Flow, l/min	0.0261	0.0229	0.02293	0.024
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow, lb/hr				
Dry Catch Only (Filterable)	0.0001	0.0000	0.0000	0.0001
Dry Catch + Organic Condensibles	0.0001	0.0001	0.0001	0.0001
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	0.0002	0.0002	0.0002	0.0002
Mass Emission Rate (Liquid Phase) Based on SGS Data, lb/hr				
Dry Catch Only (Filterable)	0.0009	0.0000	0.0002	0.0004
Dry Catch + Organic Condensibles	0.0010	0.0001	0.0002	0.0004
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	0.0013	0.0004	0.0004	0.0007
Total Mass Emission Rate, lb/hr				
Dry Catch Only (Filterable)	0.0010	0.0001	0.0002	0.0004
Dry Catch + Organic Condensibles	0.0011	0.0001	0.0003	0.0005
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	0.0016	0.0006	0.0006	0.0009
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)				
Factor, dimensionless	15949	16475	17055	16493
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)				
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow, lb/hr				
Dry Catch Only (Filterable)	1.41	0.60	0.70	0.91
Dry Catch + Organic Condensibles	2.05	1.17	1.20	1.47
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	3.68	3.05	3.84	3.52
Mass Emission Rate (Liquid Phase) Based on SGS Data, lb/hr				
Dry Catch Only (Filterable)	14.83	0.74	2.97	6.18

Table 11

EPA Methods 5/202 (Modified) PM w/Condensables

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Dry Catch + Organic Condensibles	15.67	1.25	3.55	6.82
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	21.09	6.09	7.12	11.43
Total Mass Emission Rate, lb/hr				
Dry Catch Only (Filterable)	16.24	1.34	3.67	7.08
Dry Catch + Organic Condensibles	17.72	2.42	4.75	8.30
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	24.77	9.14	10.95	14.95

[1] TSS analysis for condensate samples performed after seven day holding time.

Table 12

EPA Method 306(Mod)
Total and Hexavalent Chrome

Autoclave Vent
Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	8/31-9/1/2005	8/31-9/1/2005	8/31-9/1/2005	---
Test Period	2347-0128	0203-0337	0410-0549	---
Test Duration, min.	140	134	90	121
Analytical Results- Chrome, total ug	<0.33	6.100	0.680	2.37
Analytical Results- Hex-Chrome, total ug	< 0.13	3.38	0.17	1.23
Sample Volume				
acf	4.24	4.06	4.86	4.38
dscf	4.16	4.01	4.81	4.33
Compound Concentration, lb/dscf				
Total Chromium	< 1.7E-10	3.4E-09	3.1E-10	1.3E-09
Hexavalent Chromium	< 6.9E-11	1.9E-09	7.8E-11	6.7E-10
Autoclave Vent Condensate, mg/l				
Hexavalent Chromium [1]	< 0.001	< 0.001	< 0.001	< 0.001
Data From MetSim				
Autoclave Vent Airflow, ACFM [2]	527	527	527	
Pressure, kPa	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	
Temp, deg. F	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0	
Mass Emission Rates Based on MetSim Airflow				
Total Chromium, lb/hr (train only)	< 2.4E-05	4.60E-04	4.27E-05	1.75E-04
Hexavalent Chromium, lb/hr (train only)	< 9.5E-06	2.55E-04	1.07E-05	9.16E-05
Mass Emission Rate (Liquid Phase) Based on MetSim Data				
Liter/minute Water Vapor (after condensation)	141	141	141	
Hexavalent Chromium, lb/hr	< 1.9E-05	< 1.9E-05	< 1.9E-05	< 1.9E-05
Total Mass Emission Rate				
Hexavalent Chromium, lb/hr	< 2.8E-05	2.7E-04	2.9E-05	1.10E-04
Flowrates Calculated from Data in Lakefield Report				
Airflow, DSCFM	1.303	1.303	1.303	1.303
Condensate Flow, l/min	0.00538	0.00538	0.00538	0.00538
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Total Chromium, lb/hr	< 1.4E-08	2.6E-07	2.4E-08	1.0E-07
Hexavalent Chromium, lb/hr	< 5.4E-09	1.5E-07	6.1E-09	5.2E-08
Mass Emission Rate (Liquid Phase) Based on SGS Data				
Hexavalent Chromium, lb/hr	< 7.1E-10	< 7.1E-10	< 7.1E-10	7.1E-10

Table 12

EPA Method 306(Mod)
Total and Hexavalent Chrome

Autoclave Vent
Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Total Mass Emission Rate				
Hexavalent Chromium	< 6.1E-09	1.5E-07	6.8E-09	5.3E-08
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)				
Factor, dimensionless	11921	11921	11921	11921
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)				
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Hexavalent Chromium, lb/hr	< 6.5E-05	1.7E-03	7.2E-05	6.2E-04
Mass Emission Rate (Liquid Phase) Based on SGS Data				
Hexavalent Chromium, lb/hr	< 8.5E-06	< 8.5E-06	< 8.5E-06	< 8.5E-06
Total Mass Emission Rate				
Hexavalent Chromium, lb/hr	< 7.3E-05	1.7E-03	8.1E-05	6.3E-04

Table 13

EPA Method 306 (Modified)
Total and Hexavalent Chrome

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/8/2005	9/8/2005	9/8/2005	---
Test Period	0505-0655	0756-0956	1043-1127	---
Test Duration, min.	140	134	90	121
Analytical Results- Chrome, total ug	0.18	0.20	0.19	0.19
Analytical Results- Hex-Chrome, total ug	< 0.065	< 0.056	< 0.062	< 0.061
Sample Volume				
acf	4.34	5.10	5.57	5.0
dscf	4.34	5.11	5.62	5.0
Compound Concentration, lb/dscf				
Total Chromium	9.1E-11	8.6E-11	7.4E-11	8.4E-11
Hexavalent Chromium	< 3.3E-11	< 2.4E-11	< 2.4E-11	< 2.7E-11
Autoclave Vent Condensate, mg/l				
Hexavalent Chromium [1]	< 0.001	< 0.001	< 0.001	< 0.001
Data From MetSim				
Autoclave Vent Airflow, ACFM [2]	527	527	527	
Pressure, kPa	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	
Temp, deg. F	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0	
Mass Emission Rates Based on MetSim Airflow				
Total Chromium, lb/hr (train only)	1.3E-05	1.18E-05	1.02E-05	1.15E-05
Hexavalent Chromium, lb/hr (train only)	< 4.5E-06	< 3.3E-06	< 3.3E-06	< 3.7E-06
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all halogens are from acid				
Liter/minute Water Vapor (after condensation)	141	141	141	
Hexavalent Chromium, lb/hr	< 1.9E-05	< 1.9E-05	< 1.9E-05	< 1.9E-05
Total Mass Emission Rate				
Hexavalent Chromium, lb/hr	< 2.3E-05	< 2.2E-05	< 2.2E-05	< 2.2E-05
Flowrates Calculated from Data in Lakefield Report				
Airflow, DSCFM	2.292	2.344	2.344	2.327
Condensate Flow, l/min	0.02486	0.02359	0.02359	0.024013333
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Total Chromium, lb/hr	1.3E-08	1.2E-08	1.0E-08	1.2E-08
Hexavalent Chromium, lb/hr	< 4.5E-09	< 3.4E-09	< 3.4E-09	< 3.8E-09

Table 13

EPA Method 306 (Modified)
Total and Hexavalent Chrome

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Mass Emission Rate (Liquid Phase) Based on SGS Data - Assuming all halogens are from acid				
Hexavalent Chromium, lb/hr	< 3.1E-12	< 2.9E-12	< 2.9E-12	2.9E-12
Total Mass Emission Rate				
Hexavalent Chromium	< 4.5E-09	< 3.4E-09	< 3.4E-09	< 3.4E-09
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)				
Factor, dimensionless	15922	15894	15894	15903
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)				
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Hexavalent Chromium, lb/hr	< 7.2E-05	< 5.4E-05	< 5.4E-05	< 6.0E-05
Mass Emission Rate (Liquid Phase) Based on SGS Data				
Hexavalent Chromium, lb/hr	< 4.9E-08	< 4.6E-08	< 4.6E-08	< 4.7E-08
Total Mass Emission Rate				
Hexavalent Chromium, lb/hr	< 7.2E-05	< 5.4E-05	< 5.4E-05	< 6.0E-05

Table 14

EPA Method 29 (Modified) Metals

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/1/2005	9/1/2005	9/1/2005	---
Test Period	0728 - 1023	1218 - 1518	1814 - 2034	---
Sample Train Operation, min.	180	180	140	167
Avg. Moisture Content, %V/V	3.4	4.2	2.6	3.4
Sample Volume				
acf	27.37	21.52	28.45	25.8
dscf	26.70	20.10	28.98	25.3
Metals Concentrations, lb/DSCF				
Antimony (Sb)	< 1.2E-10	< 1.6E-10	1.2E-09	4.9E-10
Arsenic (As)	< 1.2E-10	< 1.6E-10	2.4E-09	8.8E-10
Beryllium (Be)	< 1.2E-11	< 1.6E-11	< 1.1E-11	< 1.3E-11
Cadmium (Cd)	1.9E-09	3.4E-09	1.6E-10	1.8E-09
Chromium (Cr)	2.0E-10	1.2E-10	5.4E-09	1.9E-09
Cobalt (Co)	<1.24E-10	1.7E-10	7.5E-09	2.6E-09
Copper (Cu)	1.1E-09	3.3E-10	2.3E-07	7.6E-08
Lead (Pb)	2.0E-10	1.4E-10	5.5E-10	3.0E-10
Manganese (Mn)	5.2E-11	1.1E-08	3.0E-09	4.6E-09
Nickel (Ni)	4.6E-10	3.4E-10	1.4E-07	4.7E-08
Phosphorous (P)	< 4.1E-10	< 5.5E-10	5.0E-09	2.0E-09
Selenium (Se)	< 1.2E-10	< 1.6E-10	1.2E-09	5.0E-10
Zinc (Zn)	1.1E-09	7.3E-10	4.3E-08	1.5E-08
Mercury (Hg) (front half)	< 1.7E-11	< 2.2E-11	7.6E-10	2.7E-10
Mercury (Hg) (Back Half)	6.9E-10	< 1.6E-10	< 1.1E-10	3.2E-10
Mercury (Hg) (Total)	7.1E-10	< 1.8E-10	8.7E-10	5.8E-10
Autoclave Condensate metals concentration, mg/liter				
Antimony (Sb)	< 0.0020	NC	< 0.0020	< 0.0020
Arsenic (As)	0.0179	NC	0.0250	0.021
Beryllium (Be)	< 0.00020	NC	< 0.00020	< 0.00020
Cadmium (Cd)	0.00115	NC	0.0024	0.0018
Chromium (Cr)	0.35	NC	0.60	0.48
Cobalt (Co)	0.010	NC	0.011	0.010
Copper (Cu)	0.039	NC	0.057	0.048
Lead (Pb)	0.0021	NC	< 0.0020	0.0021
Manganese (Mn)	0.018	NC	0.023	0.021
Nickel (Ni)	3.23	NC	3.4	3.3
Phosphorous (P)	< 0.020	NC	< 0.020	< 0.020
Selenium (Se)	< 0.0020	NC	0.0027	0.0024
Zinc (Zn)	0.0104	NC	0.013	0.012

Table 14

EPA Method 29 (Modified) Metals

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Mercury (Hg)	0.0015	NC	0.0030	0.0022
Data From MetSim				
Autoclave Vent Airflow, ACFM [2]	527	527	527	
Pressure, kPa	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	
Temp, deg. F	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow, lb/hr				
Antimony (Sb)	< 1.70E-05	< 2.26E-05	1.61E-04	6.67E-05
Arsenic (As)	< 1.70E-05	< 2.26E-05	3.24E-04	1.21E-04
Beryllium (Be)	< 1.70E-06	< 2.26E-06	< 1.57E-06	< 1.84E-06
Cadmium (Cd)	2.64E-04	4.72E-04	2.13E-05	2.53E-04
Chromium (Cr)	2.70E-05	1.60E-05	7.38E-04	2.60E-04
Cobalt (Co)	< 1.70E-05	2.27E-05	1.03E-03	3.57E-04
Copper (Cu)	1.52E-04	4.52E-05	3.10E-02	1.04E-02
Lead (Pb)	2.78E-05	1.86E-05	7.61E-05	4.08E-05
Manganese (Mn)	7.14E-06	1.49E-03	4.12E-04	6.35E-04
Nickel (Ni)	6.31E-05	4.73E-05	1.92E-02	6.45E-03
Phosphorous (P)	< 5.66E-05	< 7.53E-05	6.86E-04	2.73E-04
Selenium (Se)	< 1.70E-05	< 2.26E-05	1.66E-04	6.85E-05
Zinc (Zn)	1.52E-04	1.00E-04	5.85E-03	2.03E-03
Mercury (Hg) - Total	9.72E-05	< 2.45E-05	1.19E-04	8.02E-05
Mass Emission Rate (Liquid Phase) Based on MetSim Data				
Liter/minute Water Vapor (after condensation)	156	156	156	
Antimony (Sb)	< 4.14E-05	NC	< 4.22E-05	< 4.18E-05
Arsenic (As)	3.69E-04	NC	5.16E-04	4.42E-04
Beryllium (Be)	< 4.14E-06	NC	< 4.22E-06	< 4.18E-06
Cadmium (Cd)	2.37E-05	NC	4.97E-05	3.67E-05
Chromium (Cr)	7.21E-03	NC	1.24E-02	9.81E-03
Cobalt (Co)	2.04E-04	NC	2.17E-04	2.10E-04
Copper (Cu)	8.01E-04	NC	1.17E-03	9.87E-04
Lead (Pb)	4.39E-05	NC	< 4.22E-05	4.30E-05
Manganese (Mn)	3.76E-04	NC	4.84E-04	4.30E-04
Nickel (Ni)	6.65E-02	NC	7.07E-02	6.86E-02
Phosphorous (P)	< 4.14E-04	NC	< 4.22E-04	< 4.18E-04
Selenium (Se)	< 4.14E-05	NC	5.62E-05	4.88E-05
Zinc (Zn)	2.15E-04	NC	2.75E-04	2.45E-04
Mercury (Hg)	3.12E-05	NC	6.10E-05	4.61E-05
Total Mass Emission Rate				
Antimony (Sb)	< 5.83E-05	NA	2.03E-04	1.31E-04
Arsenic (As)	3.86E-04	NA	8.39E-04	6.13E-04
Beryllium (Be)	< 5.83E-06	NA	< 5.79E-06	< 5.81E-06

Table 14

EPA Method 29 (Modified) Metals

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Cadmium (Cd)	2.88E-04	NA	7.10E-05	1.79E-04
Chromium (Cr)	7.23E-03	NA	1.31E-02	1.02E-02
Cobalt (Co)	2.21E-04	NA	1.25E-03	7.35E-04
Copper (Cu)	9.53E-04	NA	3.22E-02	1.66E-02
Lead (Pb)	7.16E-05	NA	1.18E-04	9.50E-05
Manganese (Mn)	3.83E-04	NA	8.95E-04	6.39E-04
Nickel (Ni)	6.65E-02	NA	9.00E-02	7.82E-02
Phosphorous (P)	< 4.70E-04	NA	1.11E-03	7.89E-04
Selenium (Se)	< 5.83E-05	NA	2.22E-04	1.40E-04
Zinc (Zn)	3.66E-04	NA	6.12E-03	3.24E-03
Mercury (Hg)	1.28E-04	NA	1.80E-04	1.54E-04
Flowrates Calculated from Data in Lakefield Report				
Airflow, DSCFM	1.394	1.470	1.547	1.470
Condensate Flow, l/min	0.00504	0.00501	0.00498	0.00501
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Antimony (Sb)	< 1.0E-08	< 1.5E-08	1.1E-07	4.5E-08
Arsenic (As)	< 1.0E-08	< 1.5E-08	2.2E-07	8.1E-08
Beryllium (Be)	< 1.0E-09	< 1.5E-09	< 1.1E-09	< 1.2E-09
Cadmium (Cd)	1.6E-07	3.0E-07	1.4E-08	1.6E-07
Chromium (Cr)	1.6E-08	1.0E-08	5.0E-07	1.8E-07
Cobalt (Co)	< 1.0E-08	1.5E-08	7.0E-07	2.4E-07
Copper (Cu)	9.3E-08	2.9E-08	2.1E-05	7.0E-06
Lead (Pb)	1.7E-08	1.2E-08	5.1E-08	2.7E-08
Manganese (Mn)	4.3E-09	9.6E-07	2.8E-07	4.1E-07
Nickel (Ni)	3.8E-08	3.0E-08	1.3E-05	4.4E-06
Phosphorous (P)	< 3.5E-08	< 4.8E-08	4.6E-07	1.8E-07
Selenium (Se)	< 1.0E-08	< 1.5E-08	1.1E-07	4.6E-08
Zinc (Zn)	9.3E-08	6.4E-08	4.0E-06	1.4E-06
Mercury (Hg) (Total)	5.9E-08	< 1.6E-08	8.1E-08	5.2E-08
Mass Emission Rate (Liquid Phase) Based on SGS Data				
Antimony (Sb)	< 1.3E-09	NA	< 1.4E-09	< 1.3E-09
Arsenic (As)	1.2E-08	NA	< 1.6E-08	1.4E-08
Beryllium (Be)	< 1.3E-10	NA	< 1.4E-10	< 1.3E-10
Cadmium (Cd)	7.7E-10	NA	< 1.6E-09	1.2E-09
Chromium (Cr)	2.3E-07	NA	< 4.0E-07	3.2E-07
Cobalt (Co)	6.6E-09	NA	< 6.9E-09	6.8E-09
Copper (Cu)	2.6E-08	NA	< 3.8E-08	3.2E-08
Lead (Pb)	1.4E-09	NA	< 1.4E-09	1.4E-09
Manganese (Mn)	1.2E-08	NA	< 1.5E-08	1.4E-08
Nickel (Ni)	2.2E-06	NA	< 2.3E-06	2.2E-06
Phosphorous (P)	< 1.3E-08	NA	< 1.4E-08	< 1.3E-08
Selenium (Se)	< 1.3E-09	NA	< 1.8E-09	1.6E-09
Zinc (Zn)	6.9E-09	NA	< 8.8E-09	7.9E-09
Mercury (Hg)	1.0E-09	NA	< 2.0E-09	1.5E-09

Table 14

EPA Method 29 (Modified) Metals

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Total Mass Emission Rate				
Antimony (Sb)	< 1.17E-08	NA	1.1E-07	6.09E-08
Arsenic (As)	2.2E-08	NA	2.4E-07	1.29E-07
Beryllium (Be)	< 1.17E-09	NA	< 1.19E-09	< 1.18E-09
Cadmium (Cd)	1.6E-07	NA	1.6E-08	8.89E-08
Chromium (Cr)	2.5E-07	NA	9.0E-07	5.73E-07
Cobalt (Co)	1.7E-08	NA	7.0E-07	3.61E-07
Copper (Cu)	1.2E-07	NA	2.1E-05	1.06E-05
Lead (Pb)	1.8E-08	NA	5.3E-08	3.56E-08
Manganese (Mn)	1.7E-08	NA	2.9E-07	1.55E-07
Nickel (Ni)	2.2E-06	NA	1.5E-05	8.73E-06
Phosphorous (P)	< 4.79E-08	NA	4.8E-07	2.63E-07
Selenium (Se)	< 1.17E-08	NA	1.1E-07	6.29E-08
Zinc (Zn)	9.9E-08	NA	4.0E-06	2.03E-06
Mercury (Hg)	6.0E-08	NA	8.2E-08	7.14E-08
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)				
Factor, dimensionless	11921	13801	15681	13801
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)				
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Antimony (Sb)	< 1.2E-04	< 2.0E-04	1.7E-03	6.8E-04
Arsenic (As)	< 1.2E-04	< 2.0E-04	3.4E-03	1.3E-03
Beryllium (Be)	< 1.2E-05	< 2.0E-05	< 1.7E-05	< 1.6E-05
Cadmium (Cd)	1.9E-03	4.2E-03	2.3E-04	2.1E-03
Chromium (Cr)	2.0E-04	1.4E-04	7.8E-03	2.7E-03
Cobalt (Co)	< 1.2E-04	2.0E-04	1.1E-02	3.8E-03
Copper (Cu)	1.1E-03	4.0E-04	3.3E-01	1.1E-01
Lead (Pb)	2.0E-04	1.6E-04	8.1E-04	3.9E-04
Manganese (Mn)	5.2E-05	1.3E-02	4.4E-03	5.9E-03
Nickel (Ni)	4.6E-04	4.2E-04	2.0E-01	6.8E-02
Phosphorous (P)	< 4.1E-04	< 6.7E-04	7.3E-03	2.8E-03
Selenium (Se)	< 1.2E-04	< 2.0E-04	1.8E-03	6.9E-04
Zinc (Zn)	1.1E-03	8.9E-04	6.2E-02	2.1E-02
Mercury (Hg)	7.1E-04	< 2.2E-04	1.3E-03	7.3E-04
Mass Emission Rate (Liquid Phase) Based on SGS Data				
Antimony (Sb)	< 1.6E-05	NA	< 2.1E-05	< 1.9E-05
Arsenic (As)	1.4E-04	NA	2.6E-04	2.0E-04
Beryllium (Be)	< 1.6E-06	NA	< 2.1E-06	< 1.9E-06
Cadmium (Cd)	9.1E-06	NA	2.5E-05	1.7E-05
Chromium (Cr)	2.8E-03	NA	6.2E-03	4.5E-03
Cobalt (Co)	7.9E-05	NA	1.1E-04	9.4E-05
Copper (Cu)	3.1E-04	NA	5.9E-04	4.5E-04
Lead (Pb)	1.7E-05	NA	< 2.1E-05	1.9E-05
Manganese (Mn)	1.5E-04	NA	2.4E-04	1.9E-04
Nickel (Ni)	2.6E-02	NA	3.5E-02	3.1E-02

Table 14

EPA Method 29 (Modified) Metals

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Phosphorous (P)	< 1.6E-04	NA	< 2.1E-04	< 1.9E-04
Selenium (Se)	< 1.6E-05	NA	2.8E-05	2.2E-05
Zinc (Zn)	8.3E-05	NA	1.4E-04	1.1E-04
Mercury (Hg)	1.2E-05	NA	3.1E-05	2.1E-05
Total Mass Emission Rate				
Antimony (Sb)	< 1.4E-04	NA	1.7E-03	9.3E-04
Arsenic (As)	2.7E-04	NA	3.7E-03	2.0E-03
Beryllium (Be)	< 1.4E-05	NA	<1.87E-05	< 1.6E-05
Cadmium (Cd)	1.9E-03	NA	2.5E-04	1.1E-03
Chromium (Cr)	3.0E-03	NA	1.4E-02	8.5E-03
Cobalt (Co)	2.0E-04	NA	1.1E-02	5.6E-03
Copper (Cu)	1.4E-03	NA	3.3E-01	1.7E-01
Lead (Pb)	2.2E-04	NA	8.3E-04	5.2E-04
Manganese (Mn)	2.0E-04	NA	4.6E-03	2.4E-03
Nickel (Ni)	2.6E-02	NA	2.4E-01	1.3E-01
Phosphorous (P)	< 5.7E-04	NA	7.5E-03	4.0E-03
Selenium (Se)	< 1.4E-04	NA	1.8E-03	9.6E-04
Zinc (Zn)	1.2E-03	NA	6.2E-02	3.2E-02
Mercury (Hg)	7.2E-04	NA	1.3E-03	1.0E-03

NC= not collected

Table 15

EPA Method 29 (Modified) Metals

Autoclave Vent

Condition 2

Parameter	Run 1	Run 3	Run 4	Average
Test Date	9/9/2005	9/9/2005	9/10/2005	---
Test Period	0650 - 0930	1930 - 2250	0115 - 408	---
Sample Train Operation, min.	160	200	174	178
Avg. Moisture Content, %V/V	2.5	2.6	1.9	2.3
Sample Volume				
acf	33.65	30.83	32.87	32.4
dscf	35.33	32.20	35.83	34.5
Metals Concentrations, lb/DSCF				
Antimony (Sb)	< 6.2E-11	< 6.8E-11	< 6.2E-11	< 6.4E-11
Arsenic (As)	< 6.2E-11	< 6.8E-11	< 6.2E-11	< 6.4E-11
Beryllium (Be)	< 6.2E-12	< 6.8E-12	< 6.2E-12	< 6.4E-12
Cadmium (Cd)	2.0E-09	3.5E-09	1.6E-08	7.1E-09
Chromium (Cr)	3.3E-10	1.7E-10	5.0E-10	3.3E-10
Cobalt (Co)	< 6.2E-11	< 6.8E-11	< 6.2E-11	< 6.4E-11
Copper (Cu)	2.9E-10	2.9E-10	2.6E-10	2.8E-10
Lead (Pb)	8.5E-11	7.7E-11	7.6E-11	8.0E-11
Manganese (Mn)	1.1E-10	4.1E-10	5.2E-10	3.5E-10
Nickel (Ni)	1.4E-09	1.9E-09	7.9E-09	3.7E-09
Phosphorous (P)	< 3.1E-10	< 3.4E-10	< 3.1E-10	< 3.2E-10
Selenium (Se)	< 6.2E-11	< 6.8E-11	< 6.2E-11	< 6.4E-11
Zinc (Zn)	1.2E-09	4.5E-10	4.9E-10	7.2E-10
Mercury (Hg) (front half)	< 6.2E-12	< 6.8E-12	< 6.2E-12	< 6.4E-12
Mercury (Hg) (Back Half)	< 9.5E-11	< 1.0E-10	< 8.7E-11	< 9.5E-11
Mercury (Hg) (Total)	< 1.0E-10	< 1.1E-10	< 9.3E-11	< 1.0E-10
Autoclave Condensate metals concentration, mg/liter				
Antimony (Sb)	< 0.0014	< 0.0030	< 0.0030	< 0.0022
Arsenic (As)	0.0036	0.0035	< 0.0030	0.0033
Beryllium (Be)	< 0.00014	< 0.00030	< 0.00030	< 0.00022
Cadmium (Cd)	< 0.00056	< 0.00120	< 0.0012	< 0.00089
Chromium (Cr)	0.46	0.43	0.41	0.44
Cobalt (Co)	0.027	0.018	0.018	0.022
Copper (Cu)	0.037	0.033	0.043	0.040
Lead (Pb)	< 0.0014	< 0.00301	< 0.00305	< 0.0022
Manganese (Mn)	0.019	0.019	0.017	0.018
Nickel (Ni)	2.82	2.68	2.45	2.6
Phosphorous (P)	< 0.014	< 0.0301	< 0.0305	< 0.022

Table 15

EPA Method 29 (Modified) Metals

Autoclave Vent

Condition 2

Parameter	Run 1	Run 3	Run 4	Average
Selenium (Se)	< 0.001	< 0.00301	< 0.0030	< 0.0022
Zinc (Zn)	0.017	0.017	0.015	0.016
Mercury (Hg)	<0.00028	< 0.0006	<0.0006	<0.00045
Data From MetSim				
Autoclave Vent Airflow, ACFM [2]	527	527	527	
Pressure, kPa	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	
Temp, deg. F	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow, lb/hr				
Antimony (Sb)	< 8.56E-06	< 9.40E-06	< 8.44E-06	< 8.80E-06
Arsenic (As)	< 8.56E-06	< 9.40E-06	< 8.44E-06	< 8.80E-06
Beryllium (Be)	< 8.56E-07	< 9.40E-07	< 8.44E-07	< 8.80E-07
Cadmium (Cd)	2.79E-04	4.78E-04	2.18E-03	9.79E-04
Chromium (Cr)	4.47E-05	2.30E-05	6.80E-05	4.52E-05
Cobalt (Co)	< 8.56E-06	< 9.40E-06	< 8.44E-06	< 8.80E-06
Copper (Cu)	3.97E-05	3.97E-05	3.55E-05	3.83E-05
Lead (Pb)	1.16E-05	1.06E-05	1.05E-05	1.09E-05
Manganese (Mn)	1.55E-05	5.68E-05	7.15E-05	4.79E-05
Nickel (Ni)	1.93E-04	2.66E-04	1.08E-03	5.13E-04
Phosphorous (P)	< 4.28E-05	< 4.70E-05	< 4.22E-05	< 4.40E-05
Selenium (Se)	< 8.56E-06	< 9.40E-06	< 8.44E-06	< 8.80E-06
Zinc (Zn)	1.68E-04	6.17E-05	6.70E-05	9.90E-05
Mercury (Hg) - Total	< 1.39E-05	< 1.50E-05	< 1.27E-05	< 1.39E-05
Mass Emission Rate (Liquid Phase) Based on MetSim Data				
Liter/minute Water Vapor (after condensation)	141	141	141	
Antimony (Sb)	< 2.64E-05	< 5.63E-05	< 5.70E-05	< 4.66E-05
Arsenic (As)	6.76E-05	6.60E-05	< 5.70E-05	6.35E-05
Beryllium (Be)	< 2.64E-06	< 5.63E-06	< 5.70E-06	< 4.66E-06
Cadmium (Cd)	< 1.06E-05	< 2.25E-05	< 2.28E-05	< 1.86E-05
Chromium (Cr)	8.61E-03	8.03E-03	7.69E-03	8.11E-03
Cobalt (Co)	5.10E-04	3.42E-04	3.30E-04	3.94E-04
Copper (Cu)	6.97E-04	6.12E-04	8.04E-04	7.04E-04
Lead (Pb)	< 2.64E-05	< 5.63E-05	< 5.70E-05	< 4.66E-05
Manganese (Mn)	3.57E-04	3.48E-04	3.26E-04	3.44E-04
Nickel (Ni)	5.28E-02	5.01E-02	4.57E-02	4.95E-02
Phosphorous (P)	< 2.64E-04	< 5.63E-04	< 5.70E-04	< 4.66E-04
Selenium (Se)	< 2.64E-05	< 5.63E-05	< 5.70E-05	< 4.66E-05
Zinc (Zn)	3.15E-04	3.19E-04	2.74E-04	3.03E-04
Mercury (Hg)	< 5.28E-06	< 1.13E-05	< 1.14E-05	< 9.32E-06
Total Mass Emission Rate				
Antimony (Sb)	< 3.50E-05	< 6.57E-05	< 6.55E-05	< 5.54E-05

Table 15

EPA Method 29 (Modified) Metals

Autoclave Vent

Condition 2

Parameter	Run 1	Run 3	Run 4	Average
Arsenic (As)	7.62E-05	7.54E-05	< 6.55E-05	7.23E-05
Beryllium (Be)	< 3.50E-06	< 6.57E-06	< 6.55E-06	< 5.54E-06
Cadmium (Cd)	2.90E-04	5.01E-04	2.20E-03	9.97E-04
Chromium (Cr)	8.66E-03	8.05E-03	7.76E-03	8.15E-03
Cobalt (Co)	5.18E-04	3.51E-04	3.38E-04	4.03E-04
Copper (Cu)	7.37E-04	6.52E-04	8.40E-04	7.43E-04
Lead (Pb)	3.81E-05	6.70E-05	6.75E-05	5.75E-05
Manganese (Mn)	3.73E-04	4.05E-04	3.98E-04	3.92E-04
Nickel (Ni)	5.30E-02	5.04E-02	4.68E-02	5.01E-02
Phosphorous (P)	< 3.07E-04	< 6.10E-04	< 6.13E-04	< 5.10E-04
Selenium (Se)	< 3.50E-05	< 6.57E-05	< 6.55E-05	< 5.54E-05
Zinc (Zn)	4.83E-04	3.81E-04	3.41E-04	4.02E-04
Mercury (Hg)	< 1.92E-05	< 2.63E-05	< 2.42E-05	< 2.32E-05
Flowrates Calculated from Data in Lakefield Report				
Airflow, DSCFM	2.290	2.377	2.242	2.303
Condensate Flow, l/min	0.02225	0.02127	0.02271	0.02208
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Antimony (Sb)	< 8.6E-09	< 9.8E-09	< 8.3E-09	< 8.9E-09
Arsenic (As)	< 8.6E-09	< 9.8E-09	< 8.3E-09	< 8.9E-09
Beryllium (Be)	< 8.6E-10	< 9.8E-10	< 8.3E-10	< 8.9E-10
Cadmium (Cd)	2.8E-07	5.0E-07	2.1E-06	9.7E-07
Chromium (Cr)	4.5E-08	2.4E-08	6.7E-08	4.5E-08
Cobalt (Co)	< 8.6E-09	< 9.8E-09	< 8.3E-09	< 8.9E-09
Copper (Cu)	4.0E-08	4.1E-08	3.5E-08	3.9E-08
Lead (Pb)	1.2E-08	1.1E-08	1.0E-08	1.1E-08
Manganese (Mn)	1.6E-08	5.9E-08	7.0E-08	4.8E-08
Nickel (Ni)	1.9E-07	2.8E-07	1.1E-06	5.1E-07
Phosphorous (P)	< 4.3E-08	< 4.9E-08	< 4.1E-08	< 4.4E-08
Selenium (Se)	< 8.6E-09	< 9.8E-09	< 8.3E-09	< 8.9E-09
Zinc (Zn)	1.7E-07	6.4E-08	6.6E-08	9.9E-08
Mercury (Hg) (Total)	< 1.4E-08	< 1.6E-08	< 1.2E-08	< 1.4E-08
Mass Emission Rate (Liquid Phase) Based on SGS Data				
Antimony (Sb)	< 4.2E-09	< 8.5E-09	< 9.2E-09	< 6.7E-09
Arsenic (As)	1.1E-08	9.9E-09	< 9.2E-09	9.9E-09
Beryllium (Be)	< 4.2E-10	< 8.5E-10	< 9.2E-10	< 6.7E-10
Cadmium (Cd)	< 1.7E-09	< 3.4E-09	< 3.7E-09	< 2.7E-09
Chromium (Cr)	1.4E-06	1.2E-06	1.2E-06	1.3E-06
Cobalt (Co)	8.0E-08	5.1E-08	5.3E-08	6.7E-08
Copper (Cu)	1.1E-07	9.2E-08	1.3E-07	1.2E-07
Lead (Pb)	< 4.2E-09	< 8.5E-09	< 9.2E-09	< 6.7E-09
Manganese (Mn)	5.6E-08	5.2E-08	5.2E-08	5.4E-08
Nickel (Ni)	8.3E-06	7.5E-06	7.3E-06	7.8E-06
Phosphorous (P)	< 4.2E-08	< 8.5E-08	< 9.2E-08	< 6.7E-08
Selenium (Se)	< 4.2E-09	< 8.5E-09	< 9.2E-09	< 6.7E-09

Table 15

EPA Method 29 (Modified) Metals

Autoclave Vent

Condition 2

Parameter	Run 1	Run 3	Run 4	Average
Zinc (Zn)	5.0E-08	4.8E-08	4.4E-08	4.7E-08
Mercury (Hg)	< 8.3E-10	< 1.7E-09	< 1.8E-09	< 1.3E-09
Total Mass Emission Rate				
Antimony (Sb)	< 1.27E-08	< 1.82E-08	< 1.7E-08	< 1.6E-08
Arsenic (As)	1.9E-08	2.0E-08	< 1.7E-08	1.88E-08
Beryllium (Be)	< 1.27E-09	< 1.82E-09	< 1.74E-09	< 1.61E-09
Cadmium (Cd)	2.8E-07	5.0E-07	2.1E-06	9.74E-07
Chromium (Cr)	1.4E-06	1.2E-06	1.3E-06	1.31E-06
Cobalt (Co)	8.9E-08	6.1E-08	6.1E-08	7.04E-08
Copper (Cu)	1.5E-07	1.3E-07	1.6E-07	1.49E-07
Lead (Pb)	1.6E-08	2.0E-08	1.9E-08	1.83E-08
Manganese (Mn)	7.2E-08	1.1E-07	1.2E-07	1.02E-07
Nickel (Ni)	8.5E-06	7.8E-06	8.4E-06	8.24E-06
Phosphorous (P)	< 8.44E-08	< 1.34E-07	< 1.3E-07	< 1.2E-07
Selenium (Se)	< 1.27E-08	< 1.82E-08	< 1.7E-08	< 1.6E-08
Zinc (Zn)	2.2E-07	1.1E-07	1.1E-07	1.47E-07
Mercury (Hg)	< 1.5E-08	< 1.7E-08	< 1.4E-08	< 1.5E-08
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)				
Factor, dimensionless	17904	18996	18843	18581
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)				
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
Antimony (Sb)	< 1.5E-04	< 1.9E-04	< 1.6E-04	< 1.7E-04
Arsenic (As)	< 1.5E-04	< 1.9E-04	< 1.6E-04	< 1.7E-04
Beryllium (Be)	< 1.5E-05	< 1.9E-05	< 1.6E-05	< 1.7E-05
Cadmium (Cd)	5.0E-03	9.4E-03	4.0E-02	1.8E-02
Chromium (Cr)	8.0E-04	4.5E-04	1.3E-03	8.4E-04
Cobalt (Co)	< 1.5E-04	< 1.9E-04	< 1.6E-04	< 1.7E-04
Copper (Cu)	7.1E-04	7.8E-04	6.6E-04	7.2E-04
Lead (Pb)	2.1E-04	2.1E-04	1.9E-04	2.0E-04
Manganese (Mn)	2.8E-04	1.1E-03	1.3E-03	9.1E-04
Nickel (Ni)	3.5E-03	5.3E-03	2.0E-02	9.6E-03
Phosphorous (P)	< 7.7E-04	< 9.3E-04	< 7.8E-04	< 8.3E-04
Selenium (Se)	< 1.5E-04	< 1.9E-04	< 1.6E-04	< 1.7E-04
Zinc (Zn)	3.0E-03	1.2E-03	1.2E-03	1.8E-03
Mercury (Hg)	< 2.5E-04	< 3.0E-04	< 2.4E-04	< 2.6E-04
Mass Emission Rate (Liquid Phase) Based on SGS Data				
Antimony (Sb)	< 7.4E-05	< 1.6E-04	< 1.7E-04	< 1.4E-04
Arsenic (As)	1.9E-04	1.9E-04	< 1.7E-04	1.8E-04
Beryllium (Be)	< 7.4E-06	< 1.6E-05	< 1.7E-05	< 1.4E-05
Cadmium (Cd)	< 3.0E-05	< 6.4E-05	< 6.9E-05	< 5.4E-05
Chromium (Cr)	2.4E-02	2.3E-02	2.3E-02	2.3E-02
Cobalt (Co)	1.4E-03	9.8E-04	1.0E-03	1.1E-03
Copper (Cu)	2.0E-03	1.7E-03	2.4E-03	2.0E-03
Lead (Pb)	< 7.4E-05	< 1.6E-04	< 1.7E-04	< 1.4E-04

Table 15

EPA Method 29 (Modified) Metals

Autoclave Vent

Condition 2

Parameter	Run 1	Run 3	Run 4	Average
Manganese (Mn)	1.0E-03	1.0E-03	9.9E-04	1.0E-03
Nickel (Ni)	1.5E-01	1.4E-01	1.4E-01	1.4E-01
Phosphorous (P)	< 7.4E-04	< 1.6E-03	< 1.7E-03	< 1.4E-03
Selenium (Se)	< 7.4E-05	< 1.6E-04	< 1.7E-04	< 1.4E-04
Zinc (Zn)	8.9E-04	9.1E-04	8.3E-04	8.8E-04
Mercury (Hg)	< 1.5E-05	< 3.2E-05	< 3.5E-05	< 2.7E-05
Total Mass Emission Rate				
Antimony (Sb)	< 2.3E-04	< 3.5E-04	< 3.3E-04	3.0E-04
Arsenic (As)	3.4E-04	3.7E-04	< 3.3E-04	3.5E-04
Beryllium (Be)	< 2.3E-05	< 3.5E-05	<3.29E-05	< 3.0E-05
Cadmium (Cd)	5.0E-03	9.5E-03	4.0E-02	1.8E-02
Chromium (Cr)	2.5E-02	2.3E-02	2.5E-02	2.4E-02
Cobalt (Co)	1.6E-03	1.2E-03	1.2E-03	1.3E-03
Copper (Cu)	2.7E-03	2.5E-03	3.1E-03	2.8E-03
Lead (Pb)	2.8E-04	3.7E-04	3.7E-04	3.4E-04
Manganese (Mn)	1.3E-03	2.1E-03	2.3E-03	1.9E-03
Nickel (Ni)	1.5E-01	1.5E-01	1.6E-01	1.5E-01
Phosphorous (P)	< 1.5E-03	< 2.5E-03	< 2.5E-03	< 2.2E-03
Selenium (Se)	< 2.3E-04	< 3.5E-04	< 3.3E-04	< 3.0E-04
Zinc (Zn)	3.9E-03	2.1E-03	2.1E-03	2.7E-03
Mercury (Hg)	< 2.6E-04	< 3.3E-04	< 2.7E-04	< 2.9E-04

Table 16

Reduced Sulfur Compound Data

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average [1]	
Test Date	9/2/2005	9/2/2005	9/2/2005	---	
Test Period	0509-0510	0630-0631	0703-0704	---	
Target Compound Concentration in Gas Sample, PPMv					
Hydrogen Sulfide	20.0	23.0	22.0	21.7	
Caronyl Sulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Methyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
Ethyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
1-Propyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
Dimethyl Sulfide	0.2	0.2	0.3	0.2	
Methyl Ethyl Sulfide	0.1	0.2	0.2	0.2	
Dimethyl Disulfide	< 0.1	< 0.1	0.1	0.1	
Sulfur Dioxide	< 0.4	< 0.4	< 0.4	< 0.4	
Carbon Disulfide	1.0	1.1	1.3	1.1	
Autoclave Vent Condensate Concentration					
Total Sulfides, mg/L [2]	< 2	< 2	< 2	< 2	
Data From MetSim					
Autoclave Vent Airflow, ACFM [2]	527	527	527		
Pressure, kPa	2900	2900	2900		
Pressure, in Hg	856.37	856.37	856.37		
Temp, deg. F	428	428	428		
Moisture Content, %	74.5%	74.5%	74.5%		
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7		
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0		
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow, lb/hr					MW
Hydrogen Sulfide	2.42E-01	2.79E-01	2.66E-01	2.62E-01	34
Caronyl Sulfide	< 2.14E-03	< 2.14E-03	< 2.14E-03	< 2.14E-03	60.07
Methyl Mercaptan	< 1.71E-03	< 1.71E-03	< 1.71E-03	< 1.71E-03	48.11
Ethyl Mercaptan	< 2.21E-03	< 2.21E-03	< 2.21E-03	< 2.21E-03	62.14
1-Propyl Mercaptan	< 2.71E-03	< 2.71E-03	< 2.71E-03	< 2.71E-03	76.16
Dimethyl Sulfide	4.42E-03	4.42E-03	6.63E-03	5.16E-03	62.1
Methyl Ethyl Sulfide	4.21E-03	8.42E-03	8.42E-03	7.02E-03	118.24
Dimethyl Disulfide	< 3.35E-03	< 3.35E-03	3.35E-03	3.35E-03	94.19
Sulfur Dioxide	< 9.12E-03	< 9.12E-03	< 9.12E-03	< 9.12E-03	64.05
Carbon Disulfide	2.71E-02	2.98E-02	3.53E-02	3.07E-02	76.14
Flowrates Calculated from Data in Lakefield Report					
Airflow, DSCFM	1.647	1.592	1.592	1.610	
Condensate Flow, l/min	0.01068	0.01125	0.01125	0.01106	
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow, lb/hr					MW

Table 16

Reduced Sulfur Compound Data

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average [1]	
Hydrogen Sulfide	1.74E-04	1.94E-04	1.85E-04	1.85E-04	34
Caronyl Sulfide	< 1.54E-06	< 1.49E-06	< 1.49E-06	< 1.5E-06	60.07
Methyl Mercaptan	< 1.23E-06	< 1.19E-06	< 1.19E-06	< 1.2E-06	48.11
Ethyl Mercaptan	< 1.59E-06	< 1.54E-06	< 1.54E-06	< 1.6E-06	62.14
1-Propyl Mercaptan	< 1.95E-06	< 1.89E-06	< 1.89E-06	< 1.9E-06	76.16
Dimethyl Sulfide	3.19E-06	3.08E-06	4.62E-06	3.63E-06	62.1
Methyl Ethyl Sulfide	3.03E-06	5.86E-06	5.86E-06	4.92E-06	118.24
Dimethyl Disulfide	< 2.42E-06	< 2.33E-06	2.33E-06	2.36E-06	94.19
Sulfur Dioxide	< 6.57E-06	< 6.35E-06	< 6.35E-06	< 6.4E-06	64.05
Carbon Disulfide	1.95E-05	2.08E-05	2.45E-05	2.16E-05	76.14
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)					
Factor, dimensionless	17055	17055	17055	17055	
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)					
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow					
Hydrogen Sulfide	2.9746	3.3057	3.1620	3.1475	
Caronyl Sulfide	< 0.0263	< 0.0254	< 0.0254	< 0.0257	
Methyl Mercaptan	< 0.0210	< 0.0203	< 0.0203	< 0.0206	
Ethyl Mercaptan	< 0.0272	< 0.0263	< 0.0263	< 0.0266	
1-Propyl Mercaptan	< 0.0333	< 0.0322	< 0.0322	< 0.0326	
Dimethyl Sulfide	0.0543	0.0525	0.0788	0.0619	
Methyl Ethyl Sulfide	0.0517	0.1000	0.1000	0.0839	
Dimethyl Disulfide	< 0.0412	< 0.0398	0.0398	0.0403	
Sulfur Dioxide	< 0.1121	< 0.1083	< 0.1083	< 0.1096	
Carbon Disulfide	0.3331	0.3541	0.4184	0.3685	

[1] When all three runs are below the detection limit, the average reflects the average detection
 limit. When all three runs are above the detection limit, the average is the average of the
 results. When only some runs are above the detection limit, the average is the average of
 the result or detection limit for each run as appropriate.
[2] Assumed no sulfides emitted in the liquid phase.

Table 17

Reduced Sulfur Compound Data

Autoclave Vent

Condition 2

Test Date	9/11/2005	9/11/2005	9/11/2005	---	
Test Period	1031-1032	1039-1040	1049-1050	---	
Target Compound Concentration, PPMv					
Hydrogen Sulfide	1.6	1.9	2.0	1.8	
Caronyl Sulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Methyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
Ethyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
1-Propyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
Dimethyl Sulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Methyl Ethyl Sulfide	0.1	0.1	0.1	0.1	
Dimethyl Disulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Sulfur Dioxide	1.0	0.5	1.3	0.9	
Carbon Disulfide	0.2	0.2	0.2	0.2	
Autoclave Vent Condensate Concentration					
Total Sulfides, mg/L [1]	< 2	< 2	< 2	< 2	
Data From MetSim					
Autoclave Vent Airflow, ACFM [2]	527	527	527		
Pressure, kPa	2900	2900	2900		
Pressure, in Hg	856.37	856.37	856.37		
Temp, deg. F	428	428	428		
Moisture Content, %	74.5%	74.5%	74.5%		
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7		
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0		
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow, lb/hr					MW
Hydrogen Sulfide	1.94E-02	2.30E-02	2.42E-02	2.22E-02	34
Caronyl Sulfide	< 2.14E-03	< 2.14E-03	< 2.14E-03	< 2.14E-03	60.07
Methyl Mercaptan	< 1.71E-03	< 1.71E-03	< 1.71E-03	< 1.71E-03	48.11
Ethyl Mercaptan	< 2.21E-03	< 2.21E-03	< 2.21E-03	< 2.21E-03	62.14
1-Propyl Mercaptan	< 2.71E-03	< 2.71E-03	< 2.71E-03	< 2.71E-03	76.16
Dimethyl Sulfide	< 2.21E-03	< 2.21E-03	< 2.21E-03	< 2.21E-03	62.1
Methyl Ethyl Sulfide	4.21E-03	4.21E-03	4.21E-03	4.21E-03	118.24
Dimethyl Disulfide	< 3.35E-03	< 3.35E-03	< 3.35E-03	< 3.35E-03	94.19
Sulfur Dioxide	2.28E-02	1.14E-02	2.97E-02	2.13E-02	64.05
Carbon Disulfide	5.42E-03	5.42E-03	5.42E-03	5.42E-03	76.14
Flowrates Calculated from Data in Lakefield Report					
Airflow, DSCFM	3.394	3.394	3.394	3.394	
Condensate Flow, l/min	0.039	0.039	0.039	0.039	
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow, lb/hr					MW
Hydrogen Sulfide	2.88E-05	3.41E-05	3.59E-05	3.29E-05	34
Caronyl Sulfide	< 3.17E-06	< 3.17E-06	< 3.17E-06	< 3.2E-06	60.07
Methyl Mercaptan	< 2.54E-06	< 2.54E-06	< 2.54E-06	< 2.5E-06	48.11
Ethyl Mercaptan	< 3.28E-06	< 3.28E-06	< 3.28E-06	< 3.3E-06	62.14
1-Propyl Mercaptan	< 4.03E-06	< 4.03E-06	< 4.03E-06	< 4.0E-06	76.16
Dimethyl Sulfide	< 3.28E-06	< 3.28E-06	< 3.28E-06	< 3.28E-06	62.1
Methyl Ethyl Sulfide	6.25E-06	6.25E-06	6.25E-06	6.25E-06	118.24

Table 17

Reduced Sulfur Compound Data

Autoclave Vent

Condition 2

Dimethyl Disulfide	< 4.98E-06	< 4.98E-06	< 4.98E-06	< 4.98E-06	94.19
Sulfur Dioxide	3.39E-05	1.69E-05	4.40E-05	3.16E-05	64.05
Carbon Disulfide	8.05E-06	8.05E-06	8.05E-06	8.05E-06	76.14
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)					
Factor, dimensionless	18183	18183	18183	18183	
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)					
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow					
Hydrogen Sulfide	0.5228	0.6208	0.6535	0.5990	
Caronyl Sulfide	< 0.0577	< 0.0577	< 0.0577	< 0.0577	
Methyl Mercaptan	< 0.0462	< 0.0462	< 0.0462	< 0.0462	
Ethyl Mercaptan	< 0.0597	< 0.0597	< 0.0597	< 0.0597	
1-Propyl Mercaptan	< 0.0732	< 0.0732	< 0.0732	< 0.0732	
Dimethyl Sulfide	< 0.0597	< 0.0597	< 0.0597	< 0.0597	
Methyl Ethyl Sulfide	0.1136	0.1136	0.1136	0.1136	
Dimethyl Disulfide	< 0.0905	< 0.0905	< 0.0905	< 0.0905	
Sulfur Dioxide	0.6155	0.3078	0.8002	0.5745	
Carbon Disulfide	0.1463	0.1463	0.1463	0.1463	

Table 18

NOx, CO, VOC, O2, CO2 Results

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Run 4	Average [5]
Test Date	9/1/2005	9/1-2/2005	9/2/2005	9/2/2005	---
Test Period	2128-2227	2342-0041	0115-0214	0244-0343	---
NOx concentration, ppm -dry	0.7	< 0.1 [1]	1.0	0.3	0.4
CO concentration, ppm-dry	38.3	57.7	150.9	164.8	124.5
VOC concentration, ppm as propane-wet	54.4	67.0	62.7	57.9	62.5
O2 concentration, %-dry	59.2	85.9	89.9	90.2	88.7
CO2 concentration, %-dry	1.9	2.1	1.8	1.7	1.9
Autoclave Vent Condensate results					
Nitrate as nitrogen, mg/liter [2] [4] [6]	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
VOC (GRO), ug/liter [3]	440	450	300	85	278
Data From MetSim					
Autoclave Vent Airflow, ACFM [2]	527	527	527	527	
Pressure, kPa	2900	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	856.37	
Temp, deg. F	428	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	8968.7	
Autoclave Vent Airlflow, DSCFM	2287.0	2287.0	2287.0	2287.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow					
NOx, lb/hr	0.0107	< 0.0016	0.0156	0.0042	0.0071
CO, lb/hr	0.3814	0.5754	1.5048	1.6429	1.2410
VOC lb/hr	0.8528	1.0497	0.9821	0.9075	0.9798
Mass Emission Rate (Liquid Phase) Based on MetSim Data					
Liter/minute Water Vapor (after condensation)	141	141	141	141	
VOC, lb/hr	0.0082	0.0084	0.0056	0.0016	0.0070
Total Mass Emission Rate					
NOx, lb/hr [6]	0.0107	< 0.0016	0.0156	0.0042	0.0071
CO, lb/hr	0.3814	0.5754	1.5048	1.6429	1.2410
VOC lb/hr	0.8610	1.0582	0.9877	0.9091	0.9850
Flowrates Calculated from Data in Lakefield Report					
Airflow, DSCFM	1.470	1.597	1.597	1.597	1.597
Airflow, SCFM - Assuming 5% H2O	1.548	1.681	1.681	1.681	1.681
Condensate Flow, l/min	0.00501	0.00783	0.00783	0.00783	0.00783
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow					
NOx, lb/hr	6.88E-06	< 1.14E-06	1.09E-05	2.91E-06	4.98E-06
CO, lb/hr	2.45E-04	4.02E-04	1.05E-03	1.15E-03	8.67E-04
VOC lb/hr	5.77E-04	7.72E-04	7.22E-04	6.67E-04	7.20E-04
Mass Emission Rate (Liquid Phase) Based on SGS Data					
VOC, lb/hr	2.92E-07	4.66E-07	3.11E-07	8.81E-08	2.88E-07
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)					
Factor, dimensionless	15681	17055	17055	17055	17055

Table 18

NOx, CO, VOC, O2, CO2 Results

Autoclave Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Run 4	Average [5]
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)					
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow					
NOx, lb/hr	0.1080	< 0.0195	0.1857	0.0496	0.085
CO, lb/hr	3.8448	6.8524	17.9194	19.5644	14.779
VOC lb/hr	9.0482	13.1586	12.3110	11.3763	12.282
Mass Emission Rate (Liquid Phase) Based on SGS Data					
VOC, lb/hr	4.57E-03	7.95E-03	5.30E-03	1.50E-03	4.92E-03
Total Mass Emission Rate					
NOx, lb/hr [6]	0.1080	< 0.0195	0.1857	0.0496	0.085
CO, lb/hr	3.845	6.852	17.919	19.564	14.779
VOC lb/hr	9.053	13.167	12.316	11.378	12.287

[1] Analyzer results negative- assume less than detection limit, 0.1 PPM.

[2] Detection limit elevated due to a matrix interference.

[3] Initially analyzed within recommended hold time; reanalyzed at a dilution due to a CCV Failure.

[4] Samples analyzed past 48 hour recommended holding time for nitrate exclusive to nitrite, not noted by laboratory.
48 hour hold time not applicable for this sampling; samples were anlayzed within appropriate 28 day hold time
See page 26 of report for further explanation.

[5] Data for run 1 suspect due to low oxygen level; run 1 not included in average.

[6] Assume NOx in liquid phase equals zero.

GRO= gasoline range organics

Table 19

NOx, CO, VOC, O2, CO2 Results

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/9/2005	9/9/2005	9/9/2005	---
Test Period	0033-0132	0157-0256	0317-0416	---
NOx concentration, ppm -dry	0.5	0.3	1.1	0.7
CO concentration, ppm-dry	61.9	62.3	63.6	62.6
VOC concentration, ppm as propane-wet	23.2	22.9	23.3	23.1
O2 concentration, %-dry	94.9	94.8	94.7	94.8
CO2 concentration, %-dry	0.6	0.6	0.6	0.6
Autoclave Vent Condensate results				
Nitrate as nitrogen, mg/liter [1]	< 0.10	< 0.10	< 0.10	< 0.10
VOC (GRO), ug/liter	74	80	84	79
Data From MetSim				
Autoclave Vent Airflow, ACFM [2]	527	527	527	
Pressure, kPa	2900	2900	2900	
Pressure, in Hg	856.37	856.37	856.37	
Temp, deg. F	428	428	428	
Moisture Content, %	74.5%	74.5%	74.5%	
Autoclave Vent Airflow, SCFM	8968.7	8968.7	8968.7	
Autoclave Vent Airlfow, DSCFM	2287.0	2287.0	2287.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
NOx, lb/hr	0.0085	0.0051	0.0188	0.0119
CO, lb/hr	0.6168	0.6216	0.6346	0.6281
VOC lb/hr	0.3632	0.3587	0.3648	0.3617
Mass Emission Rate (Liquid Phase) Based on MetSim Data				
Liter/minute Water Vapor (after condensation)	141	141	141	
VOC, lb/hr	0.0014	0.0015	0.0016	0.0015
Total Mass Emission Rate				
NOx, lb/hr [2]	0.0085	0.0051	0.0188	0.0119
CO, lb/hr	0.6168	0.6216	0.6346	0.6281
VOC lb/hr	0.3645	0.3602	0.3663	0.3633
Flowrates Calculated from Data in Lakefield Report				
Airflow, DSCFM	2.247	2.247	2.247	2.247
Airflow, SCFM - Assuming 5% H2O	2.365	2.365	2.365	2.365
Condensate Flow, l/min	0.021	0.021	0.021	0.021
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
NOx, lb/hr	8.33E-06	4.99E-06	1.84E-05	1.06E-05
CO, lb/hr	6.06E-04	6.11E-04	6.23E-04	6.13E-04
VOC lb/hr	3.76E-04	3.71E-04	3.77E-04	3.75E-04
Mass Emission Rate (Liquid Phase) Based on SGS Data				
VOC, lb/hr	2.09E-07	2.26E-07	2.37E-07	2.24E-07
Scale Up Factor (MetSim Fresh Concentrate Solids Feed/Actual Fresh Concentrate Solids Feed)				
Factor, dimensionless	16931	16931	16931	16931

Table 19

NOx, CO, VOC, O2, CO2 Results

Autoclave Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Scaled Up Emission Data (Based on Fresh Concentrate Solids Feed)				
Mass Emission Rate (Gaseous Phase) Based on Calculated Airflow				
NOx, lb/hr	0.1410	0.0844	0.3120	0.179
CO, lb/hr	10.2582	10.3374	10.5544	10.383
VOC lb/hr	6.3577	6.2801	6.3856	6.341
Mass Emission Rate (Liquid Phase) Based on SGS Data				
VOC, lb/hr	3.53E-03	3.82E-03	4.01E-03	3.79E-03
Total Mass Emission Rate				
NOx, lb/hr [6]	0.1410	0.0844	0.3120	0.179
CO, lb/hr	10.258	10.337	10.554	10.383
VOC lb/hr	6.361	6.284	6.390	6.345

[1] Samples received by laboratory after recommended 48 hold time for nitrate/nitrite specificity. This hold time does not
apply to this sampling program. Saples were analyzed within applicable 28 day hold time. See page 26 of report
for further explanation.
[2] Assume no NOx emitted in liquid phase.
GRO= gasoline range organics

Table 20

EPA Method 26(Modified) Hydrogen Chloride and Hydrogen Fluoride Results

Flash Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	8/31/2005	8/31/2005	8/31/2005	---
Test Period	1846-1957	2145-2245	2345-0105	---
Bag filling period	Same	Same	Same	
Test Duration, min.	60	60	60	60
Method 26 Analytical Results, ug				
Chloride [1] [2]	< 48	< 40	< 47	< 45
Fluoride	< 19	< 16	< 19	< 18
Method 26 Sample Volume				
acf	4.89	4.99	4.92	4.93
dscf	4.70	4.79	4.74	4.74
Method 26 Concentrations, lb/dscf				
Hydrogen Chloride, HCl	< 2.31E-08	< 1.89E-08	< 2.25E-08	< 2.15E-08
Hydrogen Fluoride, HF	< 9.37E-09	< 7.74E-09	< 9.30E-09	< 8.80E-09
Method 26 Concentrations, PPMv				
Hydrogen Chloride, HCl	<0.24	<0.20	<0.24	<0.23
Hydrogen Fluoride, HF	<0.180	<0.149	<0.179	<0.170
Pre Train Moisuture Knockout Analytical Results, mg/l				
Chloride	1560	1890	149	1200
Fluoride [1]	< 200	< 200	< 20	< 140
Pre Train Moisture Knockout Analytical Results, total mg				
Chloride	289	176	26	163
Fluoride	< 37	< 19	< 4	< 20
Data From MetSim				
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
Hydrogen Chloride, HCl - lb/hr	< 6.8E-02	< 5.6E-02	< 6.6E-02	< 6.3E-02
Hydrogen Fluoride, HF - lb/hr	< 2.8E-02	< 2.3E-02	< 2.7E-02	< 2.59E-02
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all halogens are from acid				
Liter/minute Aqueous + Solid (From Metsim)	20.85	20.85	20.85	
Condensate Collected, ml [3]	13.00	16.00	10.00	13.00
Chloride in condensate, mg/l	22200	10986	2608	6796.563
Fluoride in condensate, mg/l	2846	1163	350	756.250
Hydrogen Chloride, HCl - lb/hr	62.991	5.363	0.423	2.893
Hydrogen Fluoride, HF - lb/hr	< 8.269	< 3.377	< 1.017	< 1.017
Total Mass Emission Rate - Assuming all halogens from acid				
Hydrogen Chloride, HCl - lb/hr	63.059	5.418	0.489	2.954
Hydrogen Fluoride, HF - lb/hr	< 8.297	< 3.400	< 1.044	< 1.044

[1] Elevated detection limit due to a matrix interference

[2] Recommended hold time exceeded by 1 to 2 days due to equipment failure.

[3] Run 2 not reported, average of runs 1 and 2 used.

Table 21

EPA Method 26(mod) Hydrogen Chloride and Hydrogen Fluoride Results

Chloride and Fluoride Results

Flash Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/7/2005	9/7/2005	9/7,8/05	---
Test Period	1930-2044	2120-2223	2310-0012	---
Bag filling period	same	same	same	
Test Duration, min.	60	60	60	60
Method 26 Analytical Results, ug				
Chloride	< 26 [1]	< 39 [1]	61	42
Fluoride	10	23	13	15
Method 26 Sample Volume				
acf	4.87	5.20	4.86	4.98
dscf	4.76	5.10	4.78	4.88
Method 26 Concentrations, lb/dscf				
Hydrogen Chloride, HCl	< 1.2E-08	< 1.7E-08	2.89E-08	1.95E-08
Hydrogen Fluoride, HF	4.9E-09	1.0E-08	6.3E-09	7.2E-09
Method 26 condentration, PPMv				
Hydrogen Chloride, HCl	< 0.131	< 0.183	0.306	0.206
Hydrogen Fluoride, HF	0.094	0.201	0.122	0.139
Pre Train Moisuture Knockout Analytical Results, mg/l				
Chloride [2]	20.00	18.89	6.02	14.97
Fluoride [2]	< 0.20	< 0.21	< 0.20	< 0.20
Pre Train Moisuture Knockout Analytical Results, total mg				
Chloride [2]	1.720	1.190	0.783	1.231
Fluoride [2]	0.017	0.013	0.026	0.019
Data From MetSim				
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
Hydrogen Chloride, HCl - lb/hr	< 3.6E-02	< 5.1E-02	8.51E-02	5.75E-02
Hydrogen Fluoride, HF - lb/hr	1.43E-02	3.08E-02	1.86E-02	2.12E-02
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all halogens are from acid				
Liter/minute Aqueous + Solid (From Metsim)	20.85	20.85	20.85	
Condensate Collected, ml [3]	7	4	3	
Chloride in condensate, mg/l	246	298	261	
Fluoride in condensate, mg/l	< 2.43	< 3.25	< 8.67	
Hydrogen Chloride, HCl - lb/hr	0.697	0.844	0.741	0.792
Hydrogen Fluoride, HF - lb/hr	< 0.007	< 0.009	< 0.025	< 0.025
Total Mass Emission Rate - Assuming all halogens from acid				
Hydrogen Chloride, HCl - lb/hr	0.734	0.895	0.826	0.860
Hydrogen Fluoride, HF - lb/hr	0.021	0.040	0.044	0.044

[1] Detection limit elevated due to a matrix interference.
[2] Method 26 analytical techniques used for results

Table 22

EPA Method 8 (Modified) SO2 and H2SO4

Flash Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	8/31/2005	8/31/2005	8/31/2005	---
Test Period	0245-0345	0505-0605	0725-0825	---
Bag filling period	Same	Same	Same	
Test Duration, min.	60	60	60	60
Method 8 Analytical Results H2SO4, mg [1]	< 0.145	< 0.145	< 0.099	< 0.130
Method 8Analytical Results SO2, mg [1]	< 0.232	< 0.176	< 0.128	< 0.179
Sample Volume				
acf	3.92	3.93	4.03	3.96
dscf	3.78	3.79	3.89	3.82
Compound Concentration, lb/dscf				
H2SO4 concentration, lb/dscf	< 8.5E-08	< 8.4E-08	< 5.6E-08	< 7.5E-08
SO2 concentration, lb/dscf	< 1.4E-07	< 1.0E-07	< 7.2E-08	< 1.0E-07
Compound Concentration, PPMv				
H2SO4 concentration , PPMv	< 0.33	< 0.33	< 0.22	< 0.30
SO2 concentration , PPMv	< 0.82	< 0.62	< 0.44	< 0.62
Pre Train Moisuture Knockout Analytical Results				
Sulfate, mg/L	761	127	131	340
Sulfate, total mg	87.5	16.5	20.3	41.4
Data From MetSim				
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
H2SO4, lb/hr	< 0.249	< 0.248	< 0.165	< 0.221
SO2, lb/hr	< 0.399	< 0.302	< 0.213	< 0.305
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all sulfate is from acid				
Liter/minute Aqueous + Solid (From Metsim)	20.85	20.85	20.85	
Condensate Collected, ml	7	4	3	4.7
Sulfate in condensate, mg/l	12502	4128	6768	7799.3
H2SO4, lb/hr	35.2	11.6	19.1	22.0
Total Mass Emission Rate - Assuming all sulfate from acid				
H2SO4, lb/hr	35.461	11.873	19.228	22.188
SO2, lb/hr	< 0.399	< 0.302	< 0.213	< 0.305

[1] Samples displayed titration endpoint before addition of titrant and were filtered through ion exchange resin.

Table 23

EPA Method 8 (Modified) SO2 and H2SO4

Flash Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/10/2005	9/10/2005	9/10/2005	---
Test Period	1452-1556	1929-2029	2122-2222	---
Bag filling period	Same	Same	Same	
Test Duration, min.	60	60	60	60
Method 8 Analytical Results H2SO4, mg	< 0.167	< 0.125	< 0.123	< 0.138
Method 8 Analytical Results SO2, mg	< 0.098	< 0.083	< 0.090	< 0.090
Sample Volume				
acf	3.88	3.93	3.91	3.91
dscf	3.68	3.84	3.85	3.79
Compound Concentration, lb/dscf				
H2SO4 concentration, lb/dscf	< 1.0E-07	< 7.2E-08	< 7.0E-08	< 8.1E-08
SO2 concentration, lb/dscf	< 5.9E-08	< 4.8E-08	< 5.1E-08	< 5.3E-08
Compound Concentration, lb/dscf				
H2SO4 concentration , PPMv	< 0.39	< 0.28	< 0.28	< 0.32
SO2 concentration , PPMv	< 0.35	< 0.29	< 0.31	< 0.32
Pre Train Moisuture Knockout Analytical Results				
Sulfate, mg/L	50	53	33	45
Sulfate, total mg	10.8	3.2	2.5	5.5
Data From MetSim				
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
H2SO4, lb/hr	< 0.294	< 0.211	< 0.207	< 0.238
SO2, lb/hr	< 0.172	< 0.141	< 0.151	< 0.155
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all sulfate is from acid				
Liter/minute Aqueous + Solid (From Metsim)	20.85	20.85	20.85	
Condensate Collected, ml [1]	4	4	4	4.0
Sulfate in condensate, mg/l	2688	795	619	1367.1
H2SO4, lb/hr	7.6	2.2	1.7	3.9
Total Mass Emission Rate - Assuming all sulfate from acid				
H2SO4, lb/hr	7.864	2.451	1.950	4.088
SO2, lb/hr	< 0.172	< 0.141	< 0.151	< 0.155

[1] Volume not reported for runs 2 and 3; volume from run 1 used in calculations

Table 24

EPA Method 5/202 PM w/Condensables

Flash Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	8/31/2005	8/31/2005	8/31/2005	---
Test Period	952 - 1256	1436 - 1715	1938 - 2236	---
Bag filling period	0845-1255	1345-1715	1820-2230	
Sample train run time, min.	30	30	30	30
Particulate Loading, g				
Dry Catch [1]	0.0923	0.0997	0.1586	0.1169
Organic Condensibles	0.0060	0.0154	0.0438	0.0217
Aqueous Phase Condensibles	0.0214	0.0411	0.0941	0.0522
Total	0.1196	0.1562	0.2966	0.1908
Sample Volume				
acf	15.66	16.36	15.24	15.75
dscf	15.10	15.53	14.87	15.17
Particulate Concentration, gr/dscf				
Dry Catch Only (Filterable)	0.09	0.10	0.16	0.12
Dry Catch + Organic Condensibles	0.10	0.11	0.21	0.14
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	0.12	0.16	0.31	0.20
Data From MetSim				
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
Dry Catch Only (Filterable)	37.84	42.05	67.28	49.06
Dry Catch + Organic Condensibles	42.05	46.25	88.30	58.87
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	50.46	67.28	130.35	82.70

[1] Pre-train knockout analysis for total suspended solids completed after seven day recommended hold time

Table 25

EPA Method 5/202 PM w/Condensables

Flash Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/8/2005	9/8/2005	9/8/2005	---
Test Period	112 - 410	1334 - 1601	1840 - 0	---
Bag filling time	0019-0410	1239-1555	1625-~1920	
Sample Train Run time, min.	50	45	35	43
Particulate Loading, g				
Dry Catch [1]	0.0268	0.0063	0.0449	0.0260
Organic Condensibles	0.0220	0.0073	0.0148	0.0147
Aqueous Phase Condensibles	0.0000	0.0000	0.0000	0.0000
Total	0.0488	0.0136	0.0597	0.0407
Sample Volume				
acf	14.93	13.98	16.60	15.17
dscf	14.87	13.62	16.52	15.00
Particulate Concentration, gr/dscf				
Dry Catch Only (Filterable)	0.028	0.007	0.042	0.026
Dry Catch + Organic Condensibles	0.051	0.015	0.056	0.041
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	0.051	0.015	0.056	0.041
Data From MetSim				
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
Dry Catch Only (Filterable)	11.77	2.94	17.66	10.79
Dry Catch + Organic Condensibles	21.44	6.31	23.55	17.10
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	21.44	6.31	23.55	17.10

[1] Pre-train knockout analysis for total suspended solids completed after seven day recommended hold time

Table 26

EPA Method 306 (Modified)
Total and Hexavalent Chrome

Flash Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/1/2005	9/1/2005	9/1/2005	---
Test Period	0117-0246	0323-0453	0522-0652	---
Test Duration, min.	90	90	90	90
Analytical Results- Chrome, tot ug (train only)	0.30	0.26	0.23	0.26
Analytical Results- Hex-Chrome, tot ug (train + KO) [1]	< 0.112	< 0.203	< 0.190	< 0.168
Sample Volume				
acf	5.05	4.98	4.96	5.0
dscf	4.93	4.86	4.84	4.9
Compound Concentration, lb/dscf				
Total Chromium	1.3E-10	1.2E-10	1.0E-10	1.2E-10
Hexavalent Chromium	< 5.0E-11	< 9.2E-11	< 8.6E-11	< 7.6E-11
Data From MetSim				
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
Total Chromium, lb/hr (train only)	3.9E-04	3.5E-04	3.1E-04	3.5E-04
Hexavalent Chromium, lb/hr (train + KO)	< 1.5E-04	< 2.7E-04	< 2.5E-04	< 2.2E-04

[1] Pre-train knockout samples analyzed 8-15 hours after recommended 24 hour hold time for Method 218.6.
    Unkown sample volume for knockout hex chrome- conservatively assumed 100 mls for calcs

Table 27

EPA Method 306(Modified)
Total and Hexavalent Chrome

Flash Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/8/2005	9/8/2005	9/8/2005	---
Test Period	0524-0654	0800-0930	1045-1215	---
Test Duration, min.	90	90	90	90
Analytical Results- Chrome, tot ug (train only)	< 0.19	< 0.16	< 0.14	< 0.16
Analytical Results- Hex-Chrome, tot ug (train + KO) [1]	< 0.18	< 0.16	< 0.16	< 0.17
Sample Volume				
acf	4.98	5.03	5.05	5.02
dscf	4.84	4.88	4.89	4.87
Compound Concentration, lb/dscf				
Total Chromium	< 8.6E-11	< 7.2E-11	< 6.3E-11	< 7.4E-11
Hexavalent Chromium	< 8.0E-11	< 7.4E-11	< 7.1E-11	< 7.5E-11
Data From MetSim				
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
Total Chromium, lb/hr (train only)	2.5E-04	2.1E-04	1.9E-04	2.2E-04
Hexavalent Chromium, lb/hr (train + KO)	< 2.3E-04	< 2.2E-04	< 2.1E-04	< 2.2E-04

[1] 24 hour recommended hold time exceeded by four days due to a laboratory error.
   Unkown sample volume for knockout hex chrome- conservatively assumed 100 mls for calcs

Table 28

EPA Method 29 (Modified) Metals

Autoclave Flash Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/1/2005	9/1/2005	9/1/2005	---
Test Period	947 - 1400	1657 - 2330	145 - 620	---
Bag filling period	0755-1400	1505-2330	0000-0620	
Sample Train Operation, min.	40	55	40	45
Avg. Moisture Content, %V/V	2.7	1.4	1.4	1.8
Sample Volume				
acf	20.93	24.85	20.90	22.2
dscf	20.07	24.18	20.86	21.7
Metals Concentrations, lb/DSCF				
Antimony (Sb)	1.2E-10	< 1.4E-10	7.8E-11	1.1E-10
Arsenic (As)	3.3E-09	4.2E-09	< 1.6E-10	2.5E-09
Beryllium (Be)	< 1.6E-11	< 1.4E-11	< 1.6E-11	< 1.5E-11
Cadmium (Cd)	3.7E-10	1.7E-10	8.2E-10	4.5E-10
Chromium (Cr)	6.6E-09	7.6E-09	< 1.6E-10	4.8E-09
Cobalt (Co)	1.8E-08	1.7E-08	1.6E-10	1.18E-08
Copper (Cu)	6.8E-07	5.7E-07	6.0E-10	4.2E-07
Lead (Pb)	8.5E-10	7.6E-10	< 1.6E-10	5.91E-10
Manganese (Mn)	5.9E-09	1.3E-08	< 5.3E-11	6.16E-09
Nickel (Ni)	3.7E-07	3.3E-07	3.8E-10	2.3E-07
Phosphorous (P)	1.2E-08	8.6E-09	< 1.1E-10	6.87E-09
Selenium (Se)	1.5E-09	1.2E-09	< 1.6E-10	9.54E-10
Zinc (Zn)	7.6E-08	1.6E-07	2.9E-10	7.9E-08
Mercury (Hg) (Front Half)	5.9E-10	1.3E-09	< 2.1E-11	6.3E-10
Mercury (Hg) (Back Half)	< 1.4E-10	< 1.3E-10	< 1.6E-10	< 1.4E-10
Mercury (Hg) (Total)	7.29E-10	1.39E-09	< 1.8E-10	7.66E-10
Data From MetSim				
Autoclave Vent Airflow, ACFM	55923.3	55923.3	55923.3	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49055.3	49055.3	49055.3	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate Based on MetSim Airflow				
Antimony (Sb)	0.0003	< 4.0E-04	0.0002	3.3E-04
Arsenic (As)	0.0097	0.0122	< 4.7E-04	0.0075
Beryllium (Be)	< 4.8E-05	< 4.0E-05	< 4.7E-05	< 4.5E-05
Cadmium (Cd)	0.0011	0.0005	0.0024	0.0013
Chromium (Cr)	0.0194	0.0223	< 4.6E-04	0.0140
Cobalt (Co)	0.0537	0.0496	0.0005	0.0346
Copper (Cu)	2.0127	1.6836	0.0018	1.2327
Lead (Pb)	0.0025	0.0022	< 4.7E-04	0.0017
Manganese (Mn)	0.0174	0.0369	< 1.6E-04	0.0181
Nickel (Ni)	1.0850	0.9827	0.0011	0.6896
Phosphorous (P)	0.0351	0.0252	< 3.1E-04	0.0202
Selenium (Se)	0.0045	0.0035	< 4.7E-04	0.0028
Zinc (Zn)	0.2227	0.4696	0.0009	0.2311
Mercury (Hg) (Front Half)	0.0017	0.0037	< 6.2E-05	0.0018
Mercury (Hg) (Back Half)	0.0004	0.0004	< 4.6E-04	0.0004
Mercury (Hg) (Total)	0.0021	0.0041	< 5.2E-04	0.0023

Table 29

EPA Method 29 (Modified) Metals

Flash Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/9/2005	09/09/05-09/10/05	9/10/2005	---
Test Period	647 - 1343	~1630 - 35	332 - 1028	---
Bag filling period	0508-1343	1408-0035	1315-1028	
Sample Train Operation, min.	115	115	101	110
Avg. Moisture Content, %V/V	2.4	1.7	1.0	1.7
Sample Volume				
acf	32.43	32.44	31.53	32.1
dscf	31.86	31.85	32.18	32.0
Metals Concentrations, lb/DSCF				
Antimony (Sb)	< 1.0E-10	< 1.0E-10	5.9E-11	8.9E-11
Arsenic (As)	< 1.0E-10	6.7E-10	4.6E-10	4.1E-10
Beryllium (Be)	< 1.0E-11	< 1.0E-11	< 1.0E-11	< 1.0E-11
Cadmium (Cd)	1.4E-09	8.7E-10	6.2E-10	9.6E-10
Chromium (Cr)	1.1E-09	3.5E-09	2.5E-09	2.4E-09
Cobalt (Co)	2.0E-09	4.3E-09	5.3E-09	3.9E-09
Copper (Cu)	5.1E-08	1.4E-07	2.1E-07	1.3E-07
Lead (Pb)	2.0E-10	2.5E-10	2.0E-10	2.2E-10
Manganese (Mn)	4.6E-09	4.0E-09	2.1E-09	3.6E-09
Nickel (Ni)	3.9E-08	1.0E-07	1.2E-07	8.5E-08
Phosphorous (P)	5.6E-08	2.4E-09	2.4E-09	2.0E-08
Selenium (Se)	< 1.0E-10	3.3E-10	2.1E-10	2.2E-10
Zinc (Zn)	2.6E-08	9.7E-08	2.5E-08	4.9E-08
Mercury (Hg) (front half)	< 1.4E-11	6.9E-12	6.9E-12	9.2E-12
Mercury (Hg) (Back Half)	< 1.1E-10	< 1.1E-10	< 1.0E-10	< 1.0E-10
Mercury (Hg) (Total)	< 1.2E-10	3.01E-10	1.96E-10	2.06E-10
Data From MetSim				
Autoclave Vent Airflow, ACFM	55923.3	55923.3	55923.3	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49055.3	49055.3	49055.3	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate Based on MetSim Airflow				
Antimony (Sb)	< 3.1E-04	< 3.1E-04	0.0002	2.6E-04
Arsenic (As)	< 3.1E-04	0.0020	0.0013	0.0012
Beryllium (Be)	< 3.1E-05	< 3.1E-05	< 3.0E-05	< 3.0E-05
Cadmium (Cd)	0.0041	0.0026	0.0018	0.0028
Chromium (Cr)	0.0032	0.0104	0.0073	0.0070
Cobalt (Co)	0.0060	0.0127	0.0155	0.0114
Copper (Cu)	0.1515	0.3982	0.6081	0.3859
Lead (Pb)	0.0006	0.0007	0.0006	0.0006
Manganese (Mn)	0.0136	0.0117	0.0061	0.0105
Nickel (Ni)	0.1148	0.2942	0.3396	0.2495
Phosphorous (P)	0.1639	0.0070	0.0070	0.0593
Selenium (Se)	< 3.1E-04	0.0010	0.0006	0.0006
Zinc (Zn)	0.0769	0.2842	0.0749	0.1453
Mercury (Hg) (Front Half)	< 4.1E-05	0.0000	0.0000	0.0000
Mercury (Hg) (Back Half)	< 3.1E-04	< 3.1E-04	< 3.0E-04	< 3.1E-04
Mercury (Hg) (Total)	< 3.5E-04	0.0009	< 5.8E-04	0.0006

Table 30

Reduced Sulfur Compound Data

Flash Vent

Condition 1

Parameter	Run 1	Run 2	Run 3	Average [1]	
Test Date	9/2/2005	9/2/2005	9/2/2005	---	
Test Period	0723-0724	0730-0731	0736-0737	---	
Target Compound Concentration, PPMv					
Hydrogen Sulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Caronyl Sulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Methyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
Ethyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
1-Propyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
Dimethyl Sulfide	< 0.1	0.2	< 0.1	0.1	
Methyl Ethyl Sulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Dimethyl Disulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Sulfur Dioxide	< 0.4	< 0.4	< 0.4	< 0.4	
Carbon Disulfide	< 0.04	< 0.04	< 0.04	< 0.04	
Data From MetSim					
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5		
Pressure, kPa	115	115	115		
Pressure, in Hg	33.96	33.96	33.96		
Temp, deg. F	223.16	223.16	223.16		
Moisture Content, %	100.0%	100.0%	100.0%		
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2		
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0		
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow					MW
Hydrogen Sulfide	< 0.0260	< 0.0260	< 0.0260	< 0.0260	34
Caronyl Sulfide	< 0.0459	< 0.0459	< 0.0459	< 0.0459	60.07
Methyl Mercaptan	< 0.0368	< 0.0368	< 0.0368	< 0.0368	48.11
Ethyl Mercaptan	< 0.0475	< 0.0475	< 0.0475	< 0.0475	62.14
1-Propyl Mercaptan	< 0.0582	< 0.0582	< 0.0582	< 0.0582	76.16
Dimethyl Sulfide	< 0.0474	0.0949	< 0.0474	0.0633	62.1
Methyl Ethyl Sulfide	< 0.0903	< 0.0903	< 0.0903	< 0.0903	118.24
Dimethyl Disulfide	< 0.0720	< 0.0720	< 0.0720	< 0.0720	94.19
Sulfur Dioxide	< 0.1957	< 0.1957	< 0.1957	< 0.1957	64.05
Carbon Disulfide	< 0.0233	< 0.0233	< 0.0233	< 0.0233	76.14
Moisture Knock-Out Data					
Parameter	Runs 1-3				
Sample Volume Collected, ml [2]	6				
Sample Volume Analyzed, ml	73				
Total Sulfides, mg/L	2				
Total Sulfides, total mg	0.146				
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all sulfide from hydrogen sulfide					
Liter/minute Aqueous + Solid (From Metsim)	20.854				
Sulfide in condensate, mg/l	24.333				
Hydrogen Sulfide, lb/hr	0.071				
Total Mass Emission Rate - Assuming all sulfide is from hydrogen sulfide					
Hydrogen Sulfide, lb/hr	0.097				

[1] When all three runs are below the detection limit, the average reflects the average detection
   limit. When all three runs are above the detection limit, the average is the average of the
   results. When only some runs are above the detection limit, the average is the average of
   the result or detection limit for each run as appropriate.
[2] Value not recorded; used approximate valued reported for condition 2.

Table 31

Reduced Sulfur Compound Data

Flash Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average [1]	
Test Date	9/11/2005	9/11/2005	9/11/2005	---	
Test Period	1010-1011	1019-1020	1029-1030	---	
Target Compound Concentration, PPMv					
Hydrogen Sulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Caronyl Sulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Methyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
Ethyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
1-Propyl Mercaptan	< 0.1	< 0.1	< 0.1	< 0.1	
Dimethyl Sulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Methyl Ethyl Sulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Dimethyl Disulfide	< 0.1	< 0.1	< 0.1	< 0.1	
Sulfur Dioxide	< 0.4	< 0.4	< 0.4	< 0.4	
Carbon Disulfide	< 0.040	< 0.040	< 0.040	< 0.040	
Data From MetSim					
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5		
Pressure, kPa	115	115	115		
Pressure, in Hg	33.96	33.96	33.96		
Temp, deg. F	223.16	223.16	223.16		
Moisture Content, %	100.0%	100.0%	100.0%		
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2		
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0		
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow					MW
Hydrogen Sulfide	< 0.0260	< 0.0260	< 0.0260	< 0.0260	34
Caronyl Sulfide	< 0.0459	< 0.0459	< 0.0459	< 0.0459	60.07
Methyl Mercaptan	< 0.0368	< 0.0368	< 0.0368	< 0.0368	48.11
Ethyl Mercaptan	< 0.0475	< 0.0475	< 0.0475	< 0.0475	62.14
1-Propyl Mercaptan	< 0.0582	< 0.0582	< 0.0582	< 0.0582	76.16
Dimethyl Sulfide	< 0.0474	< 4.7E-02	< 0.0474	< 4.7E-02	62.1
Methyl Ethyl Sulfide	< 0.0903	< 0.0903	< 0.0903	< 0.0903	118.24
Dimethyl Disulfide	< 0.0720	< 0.0720	< 0.0720	< 0.0720	94.19
Sulfur Dioxide	< 0.1957	< 0.1957	< 0.1957	< 0.1957	64.05
Carbon Disulfide	< 0.0233	< 0.0233	< 0.0233	< 0.0233	76.14
Moisture Knock-Out Data					
Parameter	Runs 1-3				
Sample Volume Collected, ml [1]	6				
Sample Volume Analyzed, ml	60				
Total Sulfides, mg/L	< 2				
Total Sulfides, total mg	< 0.120				
Mass Emission Rate (Liquid Phase) Based on MetSim Data - Assuming all sulfide from hydrogen sulfide					
Liter/minute Aqueous + Solid (From Me	20.854				
Sulfide in condensate, mg/l	20.000				
Hydrogen Sulfide, lb/hr	< 0.059				
Total Mass Emission Rate - Assuming all sulfide is from hydrogen sulfide					
Hydrogen Sulfide, lb/hr	< 0.085				

[1] Value reported as approximate

Table 32

NOX, CO, VOC, O2/CO2 Results

Flash Vent

Condition 1

Parameter	Run 1	Run 2 [4]	Run 3 [4]	Average
Test Date	9/2/2005	9/2/2005	9/2/2005	---
Bag Filling Period	0750-0859	0914-1015	1037-1145	---
NOx concentration, ppm -dry	< 0.1 [1]	< 0.1 [1]	< 0.1 [1]	< 0.1 [1]
CO concentration, ppm-dry	0.3	1.1	1.4	0.9
VOC concentration, ppm as propane-wet	43.9	70.4	105.2	73.2
O2 concentration, %-dry	21.2	21.8	21.5	21.5
CO2 concentration, %-dry	0.0	0.0	0.1	0.0
Pre-bag Knockout results				
Volume of condensate, mls (measured)	3	4	NR	3.5
Laboratory sample volume, ml	19	29	NR	24
Nitrate as nitrogen, mg/liter [2] [3]	< 10.0	< 10.0	NR	< 10.0
Nitrate as nitrogen, total mg	< 0.2	< 0.3	NR	< 0.2
VOC (GRO), ug/liter	< 250	< 250	NR	< 250
VOC (GRO), total ug	< 5	< 7	NR	< 6
Data From MetSim				
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
NOx, lb/hr	< 0.035	< 0.035	< 0.035	< 0.035
CO, lb/hr	0.064	0.240	0.292	0.199
VOC, lb/hr	15.4	24.7	37.0	25.7

[1] Analyzer results negative- assume < 0.1 PPM detection limit
[2] Detection limit elevated due to a matrix interference.
[3] Samples analyzed past 48 hour recommended holding time for nitrate exclusive to nitrite, not noted by laboratory.
  48 hour hold time not applicable for this sampling; samples were anlayzed within appropriate 28 day hold time
  See page 26 of report for further explanation.
[4] Bias correction not performed due to missing calibration data. See report text.

Table 33

NOx, CO, VOC, O2/CO2 Results

Flash Vent

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/11/2005	9/11/2005	9/11/2005	---
Bag Filling Period	0018-0118	0200-0300	0318-0418	---
NOx concentration, ppm -dry [1]	< 0.1 [2]	0.4	< 0.1	0.2
CO concentration, ppm-dry [1]	< 0.1 [2]	0.6	3.2	1.3
VOC concentration, ppm as propane-wet [1]	27.8	24.7	28.8	27.1
O2 concentration, %-dry [1]	22.8	22.6	23.2	22.8
CO2 concentration, %-dry	0.0	0.0	0.0	0.0
Pre-bag Knockout results				
Volume of condensate, mls (measured)	3	3	3	3.0
Laboratory sample volume, ml	37	72	65	58.0
Nitrate as nitrogen, mg/liter [3]	< 0.1	< 0.1	< 0.1	< 0.1
Nitrate as nitrogen, total mg	< 0.004	< 0.007	< 0.007	< 0.006
VOC (GRO), ug/liter	< 250	< 50	< 50	< 117
VOC (GRO), total ug	< 9	< 4	< 3	< 5
Data From MetSim				
Autoclave Vent Airflow, ACFM	55925.5	55925.5	55925.5	
Pressure, kPa	115	115	115	
Pressure, in Hg	33.96	33.96	33.96	
Temp, deg. F	223.16	223.16	223.16	
Moisture Content, %	100.0%	100.0%	100.0%	
Autoclave Vent Airflow, SCFM	49057.2	49057.2	49057.2	
Autoclave Vent Airlfow, DSCFM	0.0	0.0	0.0	
Mass Emission Rate (Gaseous Phase) Based on MetSim Airflow				
NOx, lb/hr	< 0.035	0.144	< 0.035	0.071
CO, lb/hr	< 0.021	0.139	0.676	0.279
VOC, lb/hr	9.8	8.7	10.1	9.5

[1] Values taken from field notes, 1 minute data logger averages insufficient for stable results on bag sample

[2] Analyzer reading negative, value set to detection limit of 0.1 PPM.

[3] Samples received by laboratory after recommended 48 hold time for nitrate/nitrite specificity. This hold time does not
   apply to this sampling program. Saples were analyzed within applicable 28 day hold time. See page 26 of report
   for further explanation.

Table 34

EPA Method 5 (performed with EPA Method 29) Filterable PM

Electrowinning

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/8/2005	9/8/2005	9/8/2005	---
Test Period	1636 - 1812	1905 - 2041	2125 - 2301	---
Test Duration, min.	96	96	96	96
Avg. Stack Temperature, deg.F	76	75	73	75
Avg. Moisture Content, %V/V	1.6	1.0	1.9	1.5
Particulate Loading, g				
Dry Catch Only	0.0014	0.0010	0.0012	0.0012
Air Flow Rate				
acfm	190	180	180	183
scfm	180	180	180	180
dscfm	180	180	180	180
Sample Volume				
acf	77.12	77.02	76.78	76.97
dscf	74.28	73.79	73.70	73.92
Isokinetic Variation, %	99.9	99.6	100.0	99.8
Particulate Concentration, gr/dscf				
Dry Catch Only (Filterable)	0.00030	0.00021	0.00026	0.00026
Particulate Emission Rate, lb/hr				
Dry Catch Only (Filterable)	0.00045	0.00031	0.00039	0.00038
Data From MetSim				
Electrowinning Airflow, ACFM	72405	72405	72405	
Pressure, kPa	95.62	95.62	95.62	
Pressure, in Hg	28.24	28.24	28.24	
Temp, deg. F	68.5	68.5	68.5	
Moisture Content, %	1.8%	1.8%	1.8%	
Autoclave Vent Airflow, SCFM	68263.7	68263.7	68263.7	
Autoclave Vent Airlfow, DSCFM	67069.1	67069.1	67069.1	
Mass Emission Rate Based on MetSim Airflow				
Dry Catch Only (Filterable), lb/hr	0.8230	0.5676	0.7171	0.7026
Scale Up Based on Spent Electrolyte Feed to Stripping				
Flowrate from Metsim, l/min	5806.7	5806.7	5806.7	
Flowrate from Pilot Study, ml/min	560	500	500	
Scaleup Factor, dimensionless	10369	11613	11613	
Mass Emission Rate Based on Flow Rate Scaleup				
Dry Catch Only (Filterable), lb/hr	4.67	3.62	4.55	4.28
Pilot Plant Current, Amps	237.5	220.0	220.0	

Table 34

EPA Method 5 (performed with EPA Method 29) Filterable PM

Electrowinning

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Commercial Plant Current Density, A/m^2	300	300	300	
Commercial Plant Cathode Area, m^2	132	132	132	
Commercial Plant Current, Amps	39600	39600	39600	
Current Ratio, Commerical/Pilot	167	180	180	
Number of Commercial Cells	94	94	94	
Scale up Factor, dimentionless	15673	16920	16920	
Mass Emission Rate Based on Current Scaleup				
Dry Catch Only (Filterable), lb/hr	7.06	5.27	6.63	6.32

Table 35

EPA Method 5/202 Test Results PM w/Condensables

Electrowinning

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/9/2005	9/10/2005	9/10/2005	---
Test Period	2250 - 2354	0130 - 0234	0342 - 0446	---
Test Duration, min.	64	64	64	64
Avg. Stack Temperature, deg.F	71	67	64	67
Avg. Moisture Content, %V/V	1.2	0.8	0.9	1.0
Particulate Loading, g				
Dry Catch	0.0018	0.0036	0.0018	0.0024
Organic Condensibles	0.0002	0.0002	0.0002	0.0002
Aqueous Phase Condensibles	0.0018	0.0013	0.0020	0.0017
Total	0.0038	0.0051	0.0039	0.0043
Air Flow Rate				
acfm	180	180	170	177
scfm	180	170	170	173
dscfm	170	170	170	170
Sample Volume				
acf	50.40	49.13	49.72	50
dscf	48.86	48.18	48.80	49
Isokinetic Variation, %	100.4	99.4	101.0	100
Particulate Concentration, gr/dscf				
Dry Catch Only (Filterable)	0.0006	0.0012	0.0006	0.0008
Dry Catch + Organic Condensibles	0.0006	0.0012	0.0006	0.0008
Dry Catch Only + Organic Condensibles + Aqueous Phase Condensibles (Total)	0.0012	0.0016	0.0012	0.0013
Particulate Emission Rate, lb/hr				
Dry Catch Only (Filterable)	0.0009	0.0017	0.0008	0.0011
Dry Catch + Organic Condensibles	0.0009	0.0018	0.0009	0.0012
Dry Catch + Organic Condensibles + Aqueous Phase Condensibles	0.0018	0.0024	0.0018	0.0020
Data From MetSim				
Electrowinning Airflow, ACFM	72405	72405	72405	
Pressure, kPa	95.62	95.62	95.62	
Pressure, in Hg	28.24	28.24	28.24	
Temp, deg. F	68.5	68.5	68.5	
Moisture Content, %	1.8%	1.8%	1.8%	
Autoclave Vent Airflow, SCFM	68263.7	68263.7	68263.7	

Table 35

EPA Method 5/202 Test Results PM w/Condensables

Electrowinning

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Autoclave Vent Airlfow, DSCFM	67069.1	67069.1	67069.1	
Mass Emission Rate Based on MetSim Airflow				
Dry Catch Only (Filterable), lb/hr	0.3449	0.6899	0.3449	0.4599
Dry Catch + Organic Condensibles	0.3449	0.6899	0.3449	0.4599
Dry Catch + Organic Condensibles + Aqueous Phase Condensibles	0.6899	0.9198	0.6899	0.7665
Scale Up Based on Spent Electrolyte Feed to Stripping				
Flowrate from Metsim, l/min	5806.7	5806.7	5806.7	
Flowrate from Pilot Study, ml/min	495	505	515	
Scaleup Factor, dimensionless	11731	11498	11275	
Mass Emission Rate Based on Feed Rate Scaleup				
Dry Catch Only (Filterable), lb/hr	10.56	19.55	9.02	13.04
Dry Catch + Organic Condensibles	10.56	20.70	10.15	13.80
Dry Catch + Organic Condensibles + Aqueous Phase Condensibles	21.12	27.60	20.30	23.00
Pilot Plant Current, Amps	260.0	259.0	299.0	
Commercial Plant Current Density, A/m^2	300	300	300	
Commercial Plant Cathode Area, m^2	132	132	132	
Commercial Plant Current, Amps	39600	39600	39600	
Current Ratio, Commerical/Pilot	152	153	132	
Number of Commercial Cells	94	94	94	
Scale up Factor, dimentionless	14317	14372	12449	
Mass Emission Rate Based on Current Scaleup				
Dry Catch Only (Filterable), lb/hr	12.89	24.43	9.96	15.76
Dry Catch + Organic Condensibles	12.89	25.87	11.20	16.65
Dry Catch + Organic Condensibles + Aqueous Phase Condensibles	25.77	34.49	22.41	27.56

Table 36

EPA Method 29 Metals

Electrowinning

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/8/2005	9/8/2005	9/8/2005	--
Test Period	1636 - 1812	1905 - 2041	2125 - 2301	---
Test Duration, min.	96	96	96	96
Avg. Moisture Content, %V/V	1.6	1.0	1.9	1.5
Sample Volume				
acf	83.58	86.50	85.42	85.2
dscf	74.28	73.79	73.70	73.9
Isokinetic Variation, %	99.9	99.6	100.0	99.8
Metals Concentrations, lb/DSCF				
Antimony (Sb)	< 3.0E-11	< 3.0E-11	< 3.0E-11	< 3.0E-11
Arsenic (As)	< 3.0E-11	< 3.0E-11	< 3.0E-11	< 3.0E-11
Beryllium (Be)	< 3.0E-12	< 3.0E-12	< 3.0E-12	< 3.0E-12
Cadmium (Cd)	2.9E-10	1.6E-09	2.3E-10	6.9E-10
Chromium (Cr)	1.1E-10	5.8E-11	5.5E-11	7.4E-11
Cobalt (Co)	3.1E-11	<3.0E-11	<3.0E-11	3.0E-11
Copper (Cu)	2.9E-09	3.4E-09	2.8E-09	3.0E-09
Lead (Pb)	1.8E-10	8.6E-11	1.3E-10	1.3E-10
Manganese (Mn)	1.0E-10	1.3E-10	1.0E-10	1.1E-10
Nickel (Ni)	3.3E-10	7.8E-10	2.5E-10	4.5E-10
Phosphorous (P)	< 3.0E-11	< 3.0E-11	< 3.0E-11	< 3.0E-11
Selenium (Se)	< 3.0E-11	< 3.0E-11	< 3.0E-11	< 3.0E-11
Zinc (Zn)	7.6E-10	3.7E-10	4.7E-10	5.3E-10
Mercury (Hg) (front half)	< 5.9E-12	< 6.0E-12	< 6.0E-12	< 6.0E-12
Mercury (Hg) (Back Half)	< 8.9E-11	< 9.0E-11	< 9.2E-11	< 9.0E-11
Mercury (Hg) (total)	< 9.5E-11	< 9.6E-11	< 9.8E-11	< 9.6E-11
Metals Emission Rates, lb/hr				
Antimony (Sb)	< 3.1E-07	< 3.2E-07	< 3.1E-07	< 3.1E-07
Arsenic (As)	< 3.1E-07	< 3.2E-07	< 3.1E-07	< 3.1E-07
Beryllium (Be)	< 3.1E-08	< 3.2E-08	< 3.1E-08	< 3.1E-08
Cadmium (Cd)	3.1E-06	1.6E-05	2.4E-06	7.3E-06
Chromium (Cr)	1.1E-06	6.1E-07	5.8E-07	7.8E-07
Cobalt (Co)	3.3E-07	<3.2E-07	<3.1E-07	3.2E-07
Copper (Cu)	3.1E-05	3.6E-05	2.9E-05	3.2E-05
Lead (Pb)	2.0E-06	9.1E-07	1.4E-06	1.4E-06
Manganese (Mn)	1.1E-06	1.4E-06	1.1E-06	1.2E-06
Nickel (Ni)	3.5E-06	8.2E-06	2.7E-06	4.8E-06
Phosphorous (P)	<3.1E-07	<3.2E-07	<3.1E-07	<3.1E-07
Selenium (Se)	< 3.1E-07	< 3.2E-07	< 3.1E-07	< 3.1E-07

Table 36

EPA Method 29 Metals

Electrowinning

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Zinc (Zn)	< 8.0E-06	< 3.9E-06	< 4.9E-06	< 5.6E-06
Mercury (Hg) (front half)	< 6.3E-08	< 6.3E-08	< 6.3E-08	< 6.3E-08
Mercury (Hg) (Back Half)	< 9.4E-07	< 9.5E-07	< 9.6E-07	< 9.5E-07
Mercury (Hg) (total)	< 1.0E-06	< 1.0E-06	< 1.0E-06	< 1.0E-06
Data From MetSim				
Electrowinning Airflow, ACFM	72405	72405	72405	
Pressure, kPa	95.62	95.62	95.62	
Pressure, in Hg	28.24	28.24	28.24	
Temp, deg. F	68.5	68.5	68.5	
Moisture Content, %	1.8%	1.8%	1.8%	
Autoclave Vent Airflow, SCFM	68263.7	68263.7	68263.7	
Autoclave Vent Airlfow, DSCFM	67069.1	67069.1	67069.1	
Mass Emission Rate Based on MetSim Airflow				
Antimony (Sb)	<1.2E-04	<1.2E-04	<1.2E-04	<1.2E-04
Arsenic (As)	<1.2E-04	<1.2E-04	<1.2E-04	<1.2E-04
Beryllium (Be)	<1.2E-05	<1.2E-05	<1.2E-05	<1.2E-05
Cadmium (Cd)	1.2E-03	6.3E-03	9.2E-04	2.8E-03
Chromium (Cr)	4.4E-04	2.3E-04	2.2E-04	3.0E-04
Cobalt (Co)	1.3E-04	<1.2E-04	<1.2E-04	1.2E-04
Copper (Cu)	1.2E-02	1.4E-02	1.1E-02	1.2E-02
Lead (Pb)	7.4E-04	3.5E-04	5.4E-04	5.4E-04
Manganese (Mn)	4.0E-04	5.4E-04	4.1E-04	4.5E-04
Nickel (Ni)	1.3E-03	3.1E-03	1.0E-03	1.8E-03
Phosphorous (P)	<1.2E-04	<1.2E-04	<1.2E-04	<1.2E-04
Selenium (Se)	<1.2E-04	<1.2E-04	<1.2E-04	<1.2E-04
Zinc (Zn)	3.0E-03	1.5E-03	1.9E-03	2.1E-03
Mercury (Hg) (front half)	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
Mercury (Hg) (Back Half)	<3.6E-04	<3.6E-04	<3.7E-04	<3.6E-04
Mercury (Hg) (total)	<3.8E-04	<3.8E-04	<3.9E-04	<3.9E-04
Scale Up Based on Spent Electrolyte Feed to Stripping				
Flowrate from Metsim, l/min	5806.7	5806.7	5806.7	
Flowrate from Pilot Study, ml/min	560	500	500	
Scaleup Factor, dimensionless	10369	11613	11613	
Mass Emission Rate Based on Flow Rate Scaleup				
Antimony (Sb)	< 3.3E-03	< 3.7E-03	< 3.6E-03	< 3.5E-03
Arsenic (As)	< 3.3E-03	< 3.7E-03	< 3.6E-03	< 3.5E-03
Beryllium (Be)	< 3.3E-04	< 3.7E-04	< 3.6E-04	< 3.5E-04
Cadmium (Cd)	3.2E-02	1.9E-01	2.8E-02	8.4E-02
Chromium (Cr)	1.2E-02	7.1E-03	6.8E-03	8.6E-03
Cobalt (Co)	3.5E-03	< 3.7E-03	< 3.6E-03	3.6E-03
Copper (Cu)	3.2E-01	4.2E-01	3.4E-01	3.6E-01
Lead (Pb)	2.0E-02	1.1E-02	1.6E-02	1.6E-02
Manganese (Mn)	1.1E-02	1.6E-02	1.3E-02	1.3E-02
Nickel (Ni)	3.6E-02	9.5E-02	3.1E-02	5.4E-02

Table 36

EPA Method 29 Metals

Electrowinning

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Phosphorous (P)	< 3.3E-03	< 3.7E-03	< 3.6E-03	< 3.5E-03
Selenium (Se)	< 3.3E-03	< 3.7E-03	< 3.6E-03	< 3.5E-03
Zinc (Zn)	8.3E-02	4.5E-02	5.7E-02	6.2E-02
Mercury (Hg) (front half)	< 6.5E-04	< 7.3E-04	< 7.3E-04	< 7.0E-04
Mercury (Hg) (Back Half)	< 9.8E-03	< 1.1E-02	< 1.1E-02	< 1.1E-02
Mercury (Hg) (total)	< 1.0E-02	< 1.2E-02	< 1.2E-02	< 1.1E-02
Pilot Plant Current, Amps	237.5	220.0	220.0	
Commercial Plant Current Density, A/m^2	300	300	300	
Commercial Plant Cathode Area, m^2	132	132	132	
Commercial Plant Current, Amps	39600	39600	39600	
Current Ratio, Commerical/Pilot	167	180	180	
Number of Commercial Cells	94	94	94	
Scale up Factor, dimentionless	15673	16920	16920	
Mass Emission Rate Based on Current Scaleup				
Antimony (Sb)	< 4.9E-03	< 5.3E-03	< 5.3E-03	< 5.2E-03
Arsenic (As)	< 4.9E-03	< 5.3E-03	< 5.3E-03	< 5.2E-03
Beryllium (Be)	< 4.9E-04	< 5.3E-04	< 5.3E-04	< 5.2E-04
Cadmium (Cd)	4.8E-02	2.8E-01	4.1E-02	1.2E-01
Chromium (Cr)	1.8E-02	1.0E-02	9.8E-03	1.3E-02
Cobalt (Co)	5.2E-03	< 5.3E-03	< 5.3E-03	5.3E-03
Copper (Cu)	4.8E-01	6.1E-01	5.0E-01	5.3E-01
Lead (Pb)	3.1E-02	1.5E-02	2.4E-02	2.3E-02
Manganese (Mn)	1.7E-02	2.4E-02	1.8E-02	2.0E-02
Nickel (Ni)	5.4E-02	1.4E-01	4.5E-02	7.9E-02
Phosphorous (P)	< 4.9E-03	< 5.3E-03	< 5.3E-03	< 5.2E-03
Selenium (Se)	< 4.9E-03	< 5.3E-03	< 5.3E-03	< 5.2E-03
Zinc (Zn)	1.3E-01	6.5E-02	8.4E-02	9.1E-02
Mercury (Hg) (front half)	< 9.9E-04	< 1.1E-03	< 1.1E-03	< 1.0E-03
Mercury (Hg) (Back Half)	< 1.5E-02	< 1.6E-02	< 1.6E-02	< 1.6E-02
Mercury (Hg) (total)	< 1.6E-02	< 1.7E-02	< 1.7E-02	< 1.7E-02

Table 37

EPA Method 29 Metals

Electrowinning

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/10/2005	9/10/2005	9/10/2005	---
Test Period	728 - 1023	1218 - 1518	1814 - 2034	---
Test Duration, min.	180	180	140	167
Avg. Moisture Content, %V/V	1.3	0.8	1.5	1.2
Sample Volume				
acf	94.79	96.28	97.66	96.2
dscf	92.71	93.31	94.34	93.5
Isokinetic Variation, %	101.3	100.9	101.1	101
Metals Concentrations, lb/DSCF				
Antimony (Sb)	< 2.4E-11	< 2.4E-11	< 2.3E-11	< 2.4E-11
Arsenic (As)	< 2.4E-11	< 2.4E-11	< 2.3E-11	< 2.4E-11
Beryllium (Be)	< 2.4E-12	< 2.4E-12	< 2.3E-12	< 2.4E-12
Cadmium (Cd)	< 9.5E-12	1.193E-11	1.094E-11	1.08E-11
Chromium (Cr)	< 2.4E-11	3.922E-11	< 2.3E-11	2.88E-11
Cobalt (Co)	< 2.4E-11	< 2.4E-11	2.641E-11	2.46E-11
Copper (Cu)	3.4E-09	4.0E-09	5.8E-09	4.40E-09
Lead (Pb)	4.8E-11	4.3E-11	4.2E-11	4.46E-11
Manganese (Mn)	3.3E-10	1.7E-10	3.1E-10	2.71E-10
Nickel (Ni)	1.4E-10	1.6E-10	1.7E-10	1.56E-10
Phosphorous (P)	5.1E-10	8.3E-10	2.3E-10	5.24E-10
Selenium (Se)	< 2.4E-11	< 2.4E-11	< 2.3E-11	< 2.4E-11
Zinc (Zn)	6.7E-11	9.9E-11	1.6E-10	1.10E-10
Mercury (Hg) (front half)	< 4.8E-12	< 4.7E-12	< 4.7E-12	< 4.7E-12
Mercury (Hg) (Back Half)	< 7.2E-11	< 7.1E-11	< 7.0E-11	< 7.1E-11
Mercury (Hg) (Total)	< 7.7E-11	< 7.6E-11	< 7.5E-11	< 7.6E-11
Metals Emission Rates, lb/hr				
Antimony (Sb)	<2.5E-07	<2.5E-07	<2.5E-07	< 2.5E-07
Arsenic (As)	<2.5E-07	<2.5E-07	<2.5E-07	< 2.5E-07
Beryllium (Be)	<2.5E-08	<2.5E-08	<2.5E-08	< 2.5E-08
Cadmium (Cd)	<9.9E-08	1.3E-07	1.2E-07	1.1E-07
Chromium (Cr)	< 2.5E-07	4.1E-07	< 2.5E-07	3.0E-07
Cobalt (Co)	< 2.5E-07	< 2.5E-07	2.8E-07	2.6E-07
Copper (Cu)	3.5E-05	4.2E-05	6.2E-05	4.6E-05
Lead (Pb)	5.0E-07	4.6E-07	4.5E-07	4.7E-07
Manganese (Mn)	3.5E-06	1.8E-06	3.3E-06	2.9E-06
Nickel (Ni)	1.4E-06	1.7E-06	1.8E-06	1.6E-06
Phosphorous (P)	5.3E-06	8.8E-06	2.5E-06	5.5E-06
Selenium (Se)	< 2.5E-07	< 2.5E-07	< 2.5E-07	< 2.5E-07

Table 37

EPA Method 29 Metals

Electrowinning

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Zinc (Zn)	6.9E-07	1.0E-06	1.7E-06	1.2E-06
Mercury (Hg) (front half)	< 5.0E-08	< 5.0E-08	< 5.0E-08	< 5.0E-08
Mercury (Hg) (Back Half)	< 7.5E-07	< 7.5E-07	< 7.5E-07	< 7.5E-07
Mercury (Hg) (Total)	< 8.0E-07	< 8.0E-07	< 8.0E-07	< 8.0E-07
Data From MetSim				
Electrowinning Airflow, ACFM	72405	72405	72405	
Pressure, kPa	95.62	95.62	95.62	
Pressure, in Hg	28.24	28.24	28.24	
Temp, deg. F	68.5	68.5	68.5	
Moisture Content, %	1.8%	1.8%	1.8%	
Autoclave Vent Airflow, SCFM	68263.7	68263.7	68263.7	
Autoclave Vent Airlfow, DSCFM	67069.1	67069.1	67069.1	
Mass Emission Rate Based on MetSim Airflow				
Antimony (Sb)	<9.6E-05	<9.5E-05	<9.4E-05	<9.5E-05
Arsenic (As)	<9.6E-05	<9.5E-05	<9.4E-05	<9.5E-05
Beryllium (Be)	<9.6E-06	<9.5E-06	<9.4E-06	<9.5E-06
Cadmium (Cd)	<3.8E-05	4.8E-05	4.4E-05	4.3E-05
Chromium (Cr)	<9.6E-05	1.6E-04	<9.4E-05	1.2E-04
Cobalt (Co)	<9.6E-05	<9.5E-05	1.1E-04	9.9E-05
Copper (Cu)	1.4E-02	1.6E-02	2.3E-02	1.8E-02
Lead (Pb)	1.9E-04	1.7E-04	1.7E-04	1.8E-04
Manganese (Mn)	1.3E-03	7.0E-04	1.2E-03	1.1E-03
Nickel (Ni)	5.4E-04	6.6E-04	6.8E-04	6.3E-04
Phosphorous (P)	2.0E-03	3.4E-03	9.3E-04	2.1E-03
Selenium (Se)	<9.6E-05	<9.5E-05	<9.4E-05	<9.5E-05
Zinc (Zn)	2.7E-04	4.0E-04	6.6E-04	4.4E-04
Mercury (Hg) (front half)	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05
Mercury (Hg) (Back Half)	<2.9E-04	<2.9E-04	<2.8E-04	<2.9E-04
Mercury (Hg) (total)	<3.1E-04	<3.1E-04	<3.0E-04	<3.1E-04
Scale Up Based on Spent Electrolyte Feed to Stripping				
Flowrate from Metsim, l/min	5806.7	5806.7	5806.7	
Flowrate from Pilot Study, ml/min	513	515	530	
Scaleup Factor, dimensionless	11330	11275	10956	
Mass Emission Rate Based on Flow Rate Scaleup				
Antimony (Sb)	< 2.8E-03	< 2.8E-03	< 2.7E-03	< 2.8E-03
Arsenic (As)	< 2.8E-03	< 2.8E-03	< 2.7E-03	< 2.8E-03
Beryllium (Be)	< 2.8E-04	< 2.8E-04	< 2.7E-04	< 2.8E-04
Cadmium (Cd)	< 1.1E-03	1.4E-03	1.3E-03	1.3E-03
Chromium (Cr)	< 2.8E-03	4.7E-03	< 2.7E-03	3.4E-03
Cobalt (Co)	< 2.8E-03	< 2.8E-03	3.1E-03	2.9E-03
Copper (Cu)	4.0E-01	4.7E-01	6.8E-01	5.2E-01
Lead (Pb)	5.7E-03	5.1E-03	4.9E-03	5.3E-03
Manganese (Mn)	3.9E-02	2.1E-02	3.6E-02	3.2E-02
Nickel (Ni)	1.6E-02	1.9E-02	2.0E-02	1.8E-02

Table 37

EPA Method 29 Metals

Electrowinning

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Phosphorous (P)	6.0E-02	9.9E-02	2.7E-02	6.2E-02
Selenium (Se)	< 2.8E-03	< 2.8E-03	< 2.7E-03	< 2.8E-03
Zinc (Zn)	7.9E-03	1.2E-02	1.9E-02	1.3E-02
Mercury (Hg) (front half)	< 5.6E-04	< 5.6E-04	< 5.4E-04	< 5.6E-04
Mercury (Hg) (Back Half)	< 8.5E-03	< 8.5E-03	< 8.2E-03	< 8.4E-03
Mercury (Hg) (total)	< 9.1E-03	< 9.0E-03	< 8.7E-03	< 9.0E-03
Pilot Plant Current, Amps	319.5	319.0	300.5	
Commercial Plant Current Density, A/m^2	300	300	300	
Commercial Plant Cathode Area, m^2	132	132	132	
Commercial Plant Current, Amps	39600	39600	39600	
Current Ratio, Commerical/Pilot	124	124	132	
Number of Commercial Cells	94	94	94	
Scale up Factor, dimentionless	11651	11669	12389	
Mass Emission Rate Based on Current Scaleup				
Antimony (Sb)	< 2.9E-03	< 2.9E-03	< 3.1E-03	< 3.0E-03
Arsenic (As)	< 2.9E-03	< 2.9E-03	< 3.1E-03	< 3.0E-03
Beryllium (Be)	< 2.9E-04	< 2.9E-04	< 3.1E-04	< 3.0E-04
Cadmium (Cd)	1.2E-03	1.5E-03	1.4E-03	1.4E-03
Chromium (Cr)	2.9E-03	4.8E-03	3.1E-03	3.6E-03
Cobalt (Co)	2.9E-03	< 2.9E-03	3.5E-03	3.1E-03
Copper (Cu)	4.1E-01	4.9E-01	7.7E-01	5.6E-01
Lead (Pb)	5.9E-03	5.3E-03	5.6E-03	5.6E-03
Manganese (Mn)	4.0E-02	2.1E-02	4.0E-02	3.4E-02
Nickel (Ni)	1.6E-02	2.0E-02	2.2E-02	2.0E-02
Phosphorous (P)	6.2E-02	1.0E-01	3.0E-02	6.5E-02
Selenium (Se)	< 2.9E-03	< 2.9E-03	< 3.1E-03	< 3.0E-03
Zinc (Zn)	8.1E-03	1.2E-02	2.2E-02	1.4E-02
Mercury (Hg) (front half)	< 5.8E-04	< 5.8E-04	< 6.2E-04	< 5.9E-04
Mercury (Hg) (Back Half)	< 8.8E-03	< 8.7E-03	< 9.3E-03	< 8.9E-03
Mercury (Hg) (total)	< 9.4E-03	< 9.3E-03	< 9.9E-03	< 9.5E-03

Table 38

EPA Method 8 (SO2, H2SO4) Results

Electrowinning

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/2/2005	9/2/2005	9/2/2005	---
Test Period	1213 - 1318	1443 - 1547	1706 - 1810	---
Test Duration, min.	64	64	64	64
Avg. Stack Temperature, deg.F	79	79	77	78
Avg. Moisture Content, %V/V	2.0	1.0	1.7	1.6
Method 8 Analytical Results H2SO4, mg	< 0.56	< 0.61	< 0.56	< 0.58
Method 8Analytical Results SO2, mg	2.29	< 1.51	< 1.59	1.80
Air Flow Rate				
ACFM	200	200	200	200
SCFM	200	200	200	200
DSCFM	200	200	200	200
Sample Volume				
ACF	52.54	52.41	52.92	52.62
DSCF	50.27	50.08	50.76	50.37
Isokinetic Variation, %	100.7	99.4	101.1	100.4
Compound Concentration, lb/dscf				
H2SO4 concentration	< 2.5E-08	< 2.7E-08	< 2.4E-08	< 2.5E-08
SO2 concentration	1.0E-07	< 6.65E-08	< 6.9E-08	7.9E-08
Compound Concentration, PPMv				
H2SO4 concentration	< 0.097	< 0.105	< 0.096	< 0.099
SO2 concentration	0.60	< 0.40	< 0.42	0.474
Compound Emission Rate, lb/hr				
H2SO4 Emission Rate	< 0.00026	< 0.00029	< 0.00026	< 0.00027
SO2 Emission Rate	0.0011	< 0.00072	< 0.00074	0.00084
Data From MetSim				
Electrowinning Airflow, ACFM	72405	72405	72405	
Pressure, kPa	95.62	95.62	95.62	
Pressure, in Hg	28.24	28.24	28.24	
Temp, deg. F	68.5	68.5	68.5	
Moisture Content, %	1.8%	1.8%	1.8%	
Autoclave Vent Airflow, SCFM	68263.7	68263.7	68263.7	
Autoclave Vent Airlfow, DSCFM	67069.1	67069.1	67069.1	
Mass Emission Rate Based on MetSim Airflow				
H2SO4, lb/hr	< 0.0988	< 0.1075	< 0.0979	< 0.1014

Table 38

EPA Method 8 (SO2, H2SO4) Results

Electrowinning

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
SO2, lb/hr	0.4041	< 0.2675	< 0.2779	0.3165
Scale Up Based on Spent Electrolyte Feed to Stripping				
Flowrate from Metsim, l/min	5806.7	5806.7	5806.7	
Flowrate from Pilot Study, ml/min	520	515	510	
Scaleup Factor, dimensionless	11166.7308	11275.1456	11385.6863	
Mass Emission Rate Based on Flow Rate Scaleup				
H2SO4, lb/hr	< 2.926	< 3.244	< 2.971	< 3.0468
SO2, lb/hr	11.9650	< 8.069	< 8.435	9.4896
Pilot Plant Current, Amps	210	210	210	
Commercial Plant Current Density, A/m^2	300	300	300	
Commercial Plant Cathode Area, m^2	132	132	132	
Commercial Plant Current, Amps	39600	39600	39600	
Current Ratio, Commerical/Pilot	189	189	189	
Number of Commercial Cells	94	94	94	
Scale up Factor, dimentionless	17726	17726	17726	
Mass Emission Rate Based on Current Scaleup				
H2SO4, lb/hr	< 4.645	< 5.099	< 4.625	< 4.790
SO2, lb/hr	18.993	< 12.686	< 13.131	14.937

Table 39

EPA Method 8 (SO2, H2SO4) Results

Electrowinning

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/9/2005	9/9/2005	9/9/2005	---
Test Period	1235 - 1339	1532 - 1637	1756 - 1900	---
Test Duration, min.	64	64	64	64
Avg. Stack Temperature, deg.F	77	78	80	78
Avg. Moisture Content, %V/V	1.3	1.5	1.5	1.4
Method 8 Analytical Results H2SO4, mg	< 0.27	< 0.37	< 0.27	< 0.30
Method 8Analytical Results SO2, mg	< 0.480	< 0.528	< 0.545	< 0.518
Air Flow Rate				
ACFM	180	180	180	180
SCFM	170	170	180	170
DSCFM	170	170	170	170
Sample Volume				
ACF	48.70	49.13	51.75	49.86
DSCF	47.28	47.45	49.80	48.18
Isokinetic Variation, %	99.6	100.4	101.6	100.5
Compound Concentration, lb/dscf				
H2SO4 concentration	< 1.3E-08	< 1.7E-08	< 1.2E-08	< 1.4E-08
SO2 concentration	< 2.2E-08	< 2.5E-08	< 2.4E-08	< 2.4E-08
Compound Concentration, PPMv				
H2SO4 concentration	< 0.049	< 0.067	< 0.047	< 0.055
SO2 concentration	< 0.13	< 0.15	< 0.15	< 0.14
Compound Emission Rate, lb/hr				
H2SO2 Emission Rate	< 0.00013	< 0.00017	< 0.00013	< 0.00014
SO2 Emission Rate	< 0.00023	< 0.00025	< 0.00025	< 0.00024
Data From MetSim				
Electrowinning Airflow, ACFM	72405	72405	72405	
Pressure, kPa	95.62	95.62	95.62	
Pressure, in Hg	28.24	28.24	28.24	
Temp, deg. F	68.5	68.5	68.5	
Moisture Content, %	1.8%	1.8%	1.8%	
Autoclave Vent Airflow, SCFM	68263.7	68263.7	68263.7	
Autoclave Vent Airlfow, DSCFM	67069.1	67069.1	67069.1	
Mass Emission Rate Based on MetSim Airflow				
H2SO4, lb/hr	< 0.0507	< 0.0688	< 0.0481	< 0.0559

Table 39

EPA Method 8 (SO2, H2SO4) Results

Electrowinning

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
SO2, lb/hr	< 0.0901	< 0.0987	< 0.0971	< 0.0953
Scale Up Based on Spent Electrolyte Feed to Stripping				
Flowrate from Metsim, l/min	5806.7	5806.7	5806.7	
Flowrate from Pilot Study, ml/min	585	550	490	
Scaleup Factor, dimensionless	9926	10558	11850	
Mass Emission Rate Based on Flow Rate Scaleup				
H2SO4, lb/hr	< 1.268	< 1.823	< 1.485	< 1.525
SO2, lb/hr	< 2.255	< 2.616	< 2.997	< 2.623
Pilot Plant Current, Amps	240	229	299	
Commercial Plant Current Density, A/m^2	300	300	300	
Commercial Plant Cathode Area, m^2	132	132	132	
Commercial Plant Current, Amps	39600	39600	39600	
Current Ratio, Commerical/Pilot	165	173	132	
Number of Commercial Cells	94	94	94	
Scale up Factor, dimentionless	15510	16255	12449	
Mass Emission Rate Based on Current Scaleup				
H2SO4, lb/hr	< 1.982	< 2.807	< 1.560	< 2.116
SO2, lb/hr	< 3.524	< 4.027	< 3.148	< 3.566

PolyMet - Hoyt Lakes, Minnesota
Table 40 - Scale Up Calculations for Common Duct for PP2

Date	9/2/2006	9/2/2006	9/2/2006	9/3/2006
Shift	Night	Day	Afternoon	Night
PGM				
Feed, ml/min	184.4	120.8	235	235.3
Discharge, ml/min	328.8	280	306	295
MetSim Feed, L/min	2796.9	2796.9	2796.9	2796.9
Scaleup	15167.57	23153.15	11901.7	11886.53
Neutralization				
Feed, ml/min	200	138.8	172.9	200
MetSim Feed, L/min	2771	2771	2771	2771
Scaleup	13855	19963.98	16026.6	13855
Discharge, ml/min	180	129.1	176.4	200
Limestone Slurry, kg	11.7	14.8	13.8	4.1
Time, hrs	8	8	8	8
Limestone, kg/hr	1.4625	1.85	1.725	0.5125
% Solids	0.35	0.35	0.35	0.35
Purity	0.917	0.917	0.917	0.917
CaCO3, kg/hr	0.469389	0.593758	0.553639	0.164487
MetSim mton/hr	46.92	46.92	46.92	46.92
% Solids	0.375	0.375	0.375	0.375
Purity, %	0.98	0.98	0.98	0.98
CaCO3, mton/hr	17.2431	17.2431	17.2431	17.2431
Scaleup	36735.17	29040.64	31145.04	104829.6
Fe Removal (Not present in MetSim version U3)				
Feed, ml/min	68.9	70	71	66.3
MetSim Feed, L/min	0	0	0	0
Scaleup	0	0	0	0
Discharge, ml/min	69	96	76.9	63.7
Limestone Slurry, kg	8.9	14.5	12.7	1.8
Time, hrs	8	8	8	8
Limestone, kg/hr	1.1125	1.8125	1.5875	0.225
% Solids	0.344	0.344	0.344	0.344
Purity	0.917	0.917	0.917	0.917
CaCO3, kg/hr	0.350936	0.57175	0.500774	0.070976
MetSim mton/hr	0	0	0	0
% Solids	0.55	0.55	0.55	0.55
Purity, %	0.98	0.98	0.98	0.98
CaCO3, mton/hr	0	0	0	0
Scaleup	0	0	0	0
Total Limestone Addition				
MetSim Total Limestone	28.3	28.3	28.3	28.3
Purity (%)	98	98	98	98
mton/hr CaCO3	27.734	27.734	27.734	27.734
Total Pilot CaCO3, kg	0.820325	1.165507	1.054412	0.235463
Scaleup	33808.54	23795.65	26302.8	117785.1
Al Removal				
Feed, ml/min	76.3	31.6	41.4	0
Discharge, ml/min	NR	NR	NR	NR
Cu Removal				
Feed, ml/min	148.6	ND	150	148.6
MetSim Feed, L/min	1883.8		1883.8	1883.8
Scaleup	12676.99		12558.67	12676.99
Discharge, ml/min	149	ND	164.3	149
NaSH Addition, ml/min	11.9	ND	11.8	11.9
Conc, g/l	10		10	10

PolyMet - Hoyt Lakes, Minnesota
Table 40 - Scale Up Calculations for Common Duct for PP2

Date	9/2/2006	9/2/2006	9/2/2006	9/3/2006
Shift	Night	Day	Afternoon	Night
NaSH Addition, g/min	0.119		0.118	0.119
MetSim NaSH, mton/hr	0.302		0.302	0.302
Conc., wt. fraction	0.3		0.3	0.3
MetSim NaSH, kg/min	1.51		1.51	1.51
Scaleup	12689.08		12796.61	12689.08
Nitrogen	5	ND	5	5
1st Stage Hydroxide Precipitation				
Feed, ml/min	145	ND	ND	ND
MetSim Feed, L/min	1966			
Scaleup	13558.62			
Discharge, ml/min	140.7	ND	ND	ND
Mag Milk, g/min	5.6	ND	ND	ND
Dry MgO, g	225.6	ND	ND	ND
Comments	6.75 hrs			
2nd Stage Hydroxide Precipitation				
Feed, ml/min	60.1	ND	ND	ND
Lime, g (calc)	32.65	ND	ND	ND
Lime g/min (calc)	0.1	ND	ND	ND
Comments	5.5 hrs			
Magnesium Precipitation				
Feed, ml/min	149	ND	ND	ND
Lime, g (calc)	380	ND	ND	ND
Comments	5.5 hrs			

Date	9/9/2005	9/9/2005	9/10/2005	9/10/2005	9/11/2005
Shift	Day	Afternoon	Day	Afternoon	Day
PGM					
Feed, ml/min	285.7	343.3	384.4	295	172.6
Discharge, ml/min	655	371	578.3	557.1	575
MetSim Feed, L/min	2796.9	2796.9	2796.9	2796.9	2796.9
Scaleup	9789.639	8147.102	7276.015	9481.017	16204.52
Neutralization					
Feed, ml/min	323.8	158.3	400	285	210.7
MetSim Feed, L/min	2771	2771	2771	2771	2771
Scaleup	8557.752	17504.74	6927.5	9722.807	13151.4
Discharge, ml/min	316.3	118.3	413.8	280	205
Limestone Slurry, kg	26.9	22.9	29.5	24	11.8
Time, hrs	8	8	8	8	8
Limestone, kg/hr	3.3625	2.8625	3.6875	3	1.475
% Solids	0.35	0.35	0.35	0.35	0.35
Purity	0.917	0.917	0.917	0.917	0.917
CaCO3, kg/hr	1.079194	0.918719	1.183503	0.96285	0.473401
MetSim mton/hr	46.92	46.92	46.92	46.92	46.92
% Solids	0.375	0.375	0.375	0.375	0.375
Purity, %	0.98	0.98	0.98	0.98	0.98
CaCO3, mton/hr	17.2431	17.2431	17.2431	17.2431	17.2431
Scaleup	15977.75	18768.63	14569.54	17908.4	36423.86
Fe Removal (Not present in MetSim version U3)					
Feed, ml/min	250.9	247.6	276.9	282.5	261.7
MetSim Feed, L/min	0	0	0	0	0
Scaleup	0	0	0	0	0
Discharge, ml/min	290.5	296.3	362.5	516.3	393.3
Limestone Slurry, kg	26.2	23.5	29.8	23.2	13.8
Time, hrs	8	8	8	8	8
Limestone, kg/hr	3.275	2.9375	3.725	2.9	1.725
% Solids	0.344	0.344	0.344	0.344	0.344
Purity	0.917	0.917	0.917	0.917	0.917
CaCO3, kg/hr	1.033092	0.926629	1.175044	0.914799	0.544148
MetSim mton/hr	0	0	0	0	0
% Solids	0.55	0.55	0.55	0.55	0.55
Purity, %	0.98	0.98	0.98	0.98	0.98
CaCO3, mton/hr	0	0	0	0	0
Scaleup	0	0	0	0	0
Total Limestone Addition					
MetSim Total Limestone	28.3	28.3	28.3	28.3	28.3
Purity (%)	98	98	98	98	98
mton/hr CaCO3	27.734	27.734	27.734	27.734	27.734
Total Pilot CaCO3, kg	2.112287	1.845348	2.358547	1.877649	1.017549
Scaleup	13129.85	15029.14	11758.94	14770.6	27255.69
Al Removal					
Feed, ml/min - Total	280.9	246.5	285.6	319.3	284.3
Discharge, ml/min	ND	208.3	257.3	273.3	275
Cu Removal					
Feed, ml/min	59.8	60	201.3	190.8	175
MetSim Feed, L/min	1883.8	1883.8	1883.8	1883.8	1883.8
Scaleup	31501.67	31396.67	9358.172	9873.166	10764.57
Discharge, ml/min	62.3	66.7	214	199.3	183
NaSH Addition, ml/min	6	6.3	18	18	19.8
Conc, g/l	10	10	10	10	10

PolyMet - Hoyt Lakes, Minnesota
Table 41 - Scale Up Calculations for Common Duct for PP3

Date	9/9/2005	9/9/2005	9/10/2005	9/10/2005	9/11/2005
Shift	Day	Afternoon	Day	Afternoon	Day
NaSH Addition, g/min	0.06	0.063	0.18	0.18	0.198
MetSim NaSH, mton/hr	0.302	0.302	0.302	0.302	0.302
Conc., wt. fraction	0.3	0.3	0.3	0.3	0.3
MetSim NaSH, kg/min	1.51	1.51	1.51	1.51	1.51
Scaleup	25166.67	23968.25	8388.889	8388.889	7626.263
Nitrogen					
1st Stage Hydroxide Precipitation					
Feed, ml/min	74	ND	ND	ND	ND
MetSim Feed, L/min	1966				
Scaleup	26567.57				
Discharge, ml/min	NR	ND	ND	ND	ND
Mag Milk, g/min	NR	ND	ND	ND	ND
Dry MgO, g	76	ND	ND	ND	ND
Comments	3.5 hrs				
2nd Stage Hydroxide Precipitation					
Feed, ml/min	56.3	ND	ND	ND	ND
Lime, g (calc)	49.3	ND	ND	ND	ND
Lime g/min (calc)	0.23	ND	ND	ND	ND
Comments	3.5 hrs				
Magnesium Precipitation					
Feed, ml/min	106	ND	ND	ND	ND
Lime, g (calc)	117	ND	ND	ND	ND
Comments	2.5 hrs	ND	ND	ND	ND

Table 42

EPA Method 8 (SO2, H2SO4) Results

Common Duct

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/2/2005	9/2/2005	9/2/2005	---
Test Period	1213 - 1326	1443 - 1556	1706 - 1810	---
Test Duration, min.	64	64	64	64
Avg. Stack Temperature, deg.F	80	79	77	78
Avg. Moisture Content, %V/V	2.6	2.4	2.4	2.5
Method 8 Analytical Results H2SO4, mg	< 0.67	< 0.53	< 0.60	< 0.60
Method 8Analytical Results SO2, mg	3.01	< 1.57	2.82	2.47
Air Flow Rate				
ACFM	700	600	700	700
SCFM	700	600	700	700
DSCFM	700	600	700	700
Sample Volume				
ACF	35.48	31.78	34.56	33.94
DSCF	33.96	30.34	33.04	32.45
Isokinetic Variation, %	96.9	96.4	96.8	96.7
Compound Concentration, lb/dscf				
H2SO4 concentration	< 4.3E-08	< 3.8E-08	< 4.0E-08	< 4.0E-08
SO2 concentration	2.0E-07	< 1.14E-07	1.9E-07	1.7E-07
Compound Concentration, PPMv				
H2SO4 concentration	< 0.17	< 0.15	< 0.16	< 0.16
SO2 concentration	1.18	< 0.69	1.13	1.00
Compound Emission Rate, lb/hr				
H2SO4 Emission Rate	< 0.0017	< 0.0014	< 0.0016	< 0.0016
SO2 Emission Rate	0.0079	< 0.0041	0.0074	0.0065
EW Airflow [1]				
ACFM	200	200	200	200
SCFM	200	200	200	200
DSCFM	200	200	200	200
Adjusted H2SO4 Concentration, lb/dscf	< 6.1E-08	< 5.7E-08	< 5.6E-08	< 5.8E-08
Adjusted SO2 Concentration, lb/dscf	2.7E-07	< 1.7E-07	2.6E-07	2.4E-07
Data From MetSim				
Tank Common Duct Airflow, ACFM	8947	8947	8947	
Pressure, kPa	95.62	95.62	95.62	
Pressure, in Hg	28.24	28.24	28.24	

Table 42

EPA Method 8 (SO2, H2SO4) Results

Common Duct

Condition 1

Parameter	Run 1	Run 2	Run 3	Average
Temp, deg. F	156.4	156.4	156.4	
Moisture Content, %	31.2%	31.2%	31.2%	
Autoclave Vent Airflow, SCFM	7232.4	7232.4	7232.4	
Autoclave Vent Airlfow, DSCFM	4975.9	4975.9	4975.9	
Mass Emission Rate Based on MetSim Airflow				
H2SO4, lb/hr	< 0.018	< 0.017	< 0.017	< 0.017
SO2, lb/hr	0.082	< 0.051	0.079	0.070
Scaleup with SGS Data				
Scalup Factor (Based on Limestone Feed)	23796	25049	26303	
Scaled up Emission Rates				
H2SO4, lb/hr	< 41.42	< 34.56	< 40.94	< 38.97
SO2, lb/hr	187.22	< 103.34	194.02	161.53

[1] Airflow data from condition 1 Method 8 test.

Test 43

EPA Method 8 (SO2, H2SO4) Results

Common Duct

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Test Date	9/9/2005	9/9/2005	9/9/2005	---
Test Period	1235 - 1354	1532 - 1636	1756 - 1858	---
Test Duration, min.	60	60	60	60
Avg. Stack Temperature, deg.F	82	84	85	84
Avg. Moisture Content, %V/V	1.6	1.8	2.1	1.8
Method 8 Analytical Results H2SO4, mg	< 0.29	< 0.54	< 0.49	< 0.44
Method 8Analytical Results SO2, mg	< 0.35	< 0.50	< 0.53	< 0.46
Air Flow Rate				
ACFM	500	600	600	600
SCFM	500	500	600	500
DSCFM	500	500	600	500
Sample Volume				
ACF	27.31	28.40	31.01	28.91
DSCF	26.37	27.23	29.74	27.78
Isokinetic Variation, %	105.5	105.2	105.6	105.4
Compound Concentration, lb/dscf				
H2SO4 concentration	< 2.5E-08	< 4.4E-08	< 3.6E-08	< 3.48E-08
SO2 concentration	< 2.9E-08	< 4.0E-08	< 3.9E-08	< 3.62E-08
Compound Concentration, PPMv				
H2SO4 concentration	< 0.10	< 0.17	< 0.14	< 0.14
SO2 concentration	< 0.18	< 0.24	< 0.24	< 0.22
Compound Emission Rate, lb/hr				
H2SO2 Emission Rate	< 0.00076	< 0.0014	< 0.0013	< 0.0011
SO2 Emission Rate	< 0.00091	< 0.0013	< 0.0014	< 0.0012
EW Airflow [1]				
ACFM	180	180	180	180
SCFM	170	170	180	173
DSCFM	170	170	170	170
Adjusted H2SO4 Concentration, lb/dscf	< 3.7E-08	< 6.6E-08	< 5.1E-08	< 5.1E-08
Adjusted SO2 Concentration, lb/dscf	< 4.5E-08	< 6.1E-08	< 5.5E-08	5.3E-08
Data From MetSim				
Tank Common Duct Airflow, ACFM	8947	8947	8947	
Pressure, kPa	95.62	95.62	95.62	
Pressure, in Hg	28.24	28.24	28.24	

Test 43

EPA Method 8 (SO2, H2SO4) Results

Common Duct

Condition 2

Parameter	Run 1	Run 2	Run 3	Average
Temp, deg. F	156.4	156.4	156.4	
Moisture Content, %	31.2%	31.2%	31.2%	
Autoclave Vent Airflow, SCFM	7232.4	7232.4	7232.4	
Autoclave Vent Airlfow, DSCFM	4975.9	4975.9	4975.9	
Mass Emission Rate Based on MetSim Airflow				
H2SO4, lb/hr	< 0.011	< 0.020	< 0.015	< 0.015
SO2, lb/hr	< 0.013	< 0.018	< 0.016	< 0.016
Scaleup with SGS Data				
Scalup Factor (Based on Limestone Feed)	13130	15029	15029	
Scaled up Emission Rates				
H2SO4, lb/hr	< 10.02	< 21.09	< 19.09	< 16.73
SO2, lb/hr	< 11.99	< 19.41	< 20.57	< 17.32

[1] Airflow data from condition 2 Method 8 test.

PolyMet - Hoyt Lakes, Minnesota
Table 44: Flotation Plant Scale Up Calculations

Rougher

	Cell 1	Cell 2	Cell 3	Cell 4	Total
Width (in)	14	14	14	14	
Depth (in)	14	14	14	14	
Area (ft^2)	1.36	1.36	1.36	1.36	5.44

Commercial Scale

Cells	2
Area (ft^2)	575
Total	1150

Scale Up	211.2245

Scavenger 1

Width (in)	19	19	20	18	
Depth (in)	23.5	23.5	23.5	23.5	
Area (ft^2)	3.10	3.10	3.26	2.94	12.40

Scavenger 2

Width (in)	18	19	18.5	20	
Depth (in)	23.5	23.5	23.5	23.5	
Area (ft^2)	2.94	3.10	3.02	3.26	12.32
Scavenger Total					24.72

Commercial Scale

Cells	10
Area (ft^2)	575
Total	5750

Scale Up	232.57

Cleaner 1

Width (in)	9.5	9.5	9.5	9.5	
Depth (in)	11	11	11	11	
Area (ft2)	0.73	0.73	0.73	0.73	2.90

Commercial Scale

Cells	1
Area (ft^2)	504
Total	504

Scale Up	173.63

Cleaner 2

Width (in)	9.5	9.5			
Depth (in)	11	11			
Area (ft^2)	0.73	0.73	0.00	0.00	1.45

Commercial Scale

Cells	1
Area (ft^2)	336
Total	336

Scale Up	231.50

Total Commercial Area		7740
Total Pilot Area		34.52
Average Scale-up		224.20
Weighted Average		224.20

Table 45

Flotation Plant Total Hydrocarbon Sampling Results

Exhaust Fan N

Parameter	Run 1	Run 2	Run 3	Average
Test Date	7/19/2005	7/19/2005	8/9/2005	---
Test Period	1550 - 1436	1759 - 1846	1058 - 1221	---
Avg. Stack Temperature, deg. F	93	93	94	93
Avg. Moisture Content %V/V	1.9	2.0	2.0	2.0
Air Flow Rate				
ACFM	2480	2393	2342 [1]	2405
SCFM	2364	2282	2242 [1]	2296
DSCFM	2319	2237	2198 [1]	2251
Total Hydrocarbon Conc.				
Average PPM (as Methane)	2.5	2.6	4.4	3.2
Max PPM (as Methane)	3.0	3.0	4.7	3.6
Background (outside)	2.4	2.4	2.4	2.4
Average PPM Corr. For Backg.	0.1	0.2	2.0	0.8
Emission Rate (lb/hr)				
Average	0.015	0.015	0.025	0.018
Maximum	0.018	0.017	0.026	0.020
Background Corrected	0.001	0.001	0.011	0.004
Ore Feed Rate (g/15 sec)	1655	1665	1670	1663
Ore Feed Rate (mton/hr)	0.3972	0.3996	0.4008	0.3992
MetSim Ore Feed Rate (mton/hr)	1386	1386	1386	1386
Scale Up Factor	3489	3468	3458	3472
Scaled Up Emission Rate (lb/hr) - Surface Area				
Scale Up Factor	224.201	224.201	224.201	
Average	3.302	3.315	5.511	4.042
Maximum	3.962	3.825	5.886	4.558
Corrected for Background	0.132	0.255	2.505	0.964

[1] Average of flow measurements 3 and 4 from Table 26.

Table 46

Flotation Plant Total Hydrocarbon Sampling Results

Exhaust Fan 48

Parameter	Run 1	Run 2	Run 3 [1]	Run 4 [1]	Average [2]
Test Date	7/19/2005	7/19/2005	8/9/2005	8/9/2005	---
Test Period	1519 - 1549	1337 - 1758	0954 - 1051	1221 - 1309	---
Avg. Stack Temperature, deg. F	93	93	---	---	93
Avg. Moisture Content %V/V	1.9	1.9	---	---	1.9
Measured Air Flow Rate					
ACFM	5285	4898	5092	5092	5092
SCFM	5185	4800	4992	4992	4992
DSCFM	4943	4577	4760	4760	4760
Total Hydrocarbon Conc.					
Average PPM (as Methane)	2.4	2.5	4.4	5.0	3.6
Max PPM (as Methane)	2.8	3.2	4.6	6.1	4.2
Background (outside)	2.4	2.4	2.4	2.4	2.4
Average PPM Corr. For Backg.	0.0	0.1	2.0	2.6	1.2
Emission Rate (lb/hr) [3]					
Average	0.031	0.030	0.055	0.062	0.044
Maximum	0.036	0.038	0.057	0.076	0.052
Corrected for Background	0.000	0.001	0.025	0.032	0.015
Airflow Rate, from fan specs					
ACFM	3000	3000	3000	3000	3000
SCFM	2943	2940	2942	2942	2942
DSCFM	2806	2803	2805	2805	2805
Emission Rate (lb/hr) [4]					
Average	0.018	0.018	0.032	0.037	0.026
Maximum	0.021	0.023	0.034	0.045	0.031
Corrected for Background	0.000	0.001	0.015	0.019	0.009
Ore Feed Rate (g/15 sec)	1650	1648	1640	1645	1646
Ore Feed Rate (mton/hr)	0.396	0.3954	0.3936	0.3948	0.395
MetSim Ore Feed Rate (mton/hr)	1386	1386	1386	1386	1386
Scale Up Factor	3500	3505	3521	3511	3509
Scaled Up Emission Rate (lb/hr) - Fan Specs - Surface Area					
Scale Up Factor	224.2	224.2	224.2	224.2	
Average	3.9	4.1	7.2	8.2	5.9
Maximum	4.6	5.3	7.6	10.0	6.9
Corrected for Background	0.0	0.2	3.3	4.3	1.9

[1] The average airflow values for Runs 1 and 2 were used in the calculations for Runs 3 and 4
[2] The average airflow parameters only reflect Runs 1 and 2, VOC concentration and emission rates averages include Runs 1 through 4.
[3] Based on measured flow rate
[4] Based on manufacturer's specfications

PolyMet - Hoyt Lakes, Minnesota
Table 47: Flotation Plant Total Scaled Up Hydrocarbon Emissions
Exhaust Fans N and 48

Parameter	
Total Air Flow Rate (Measured for N, fan specs for 48)[1]	
ACFM	5405
SCFM	5238
DSCFM	5056
Total Emission Rate (lb/hr)	
Average	0.044
Maximum	0.051
Corrected for Background	0.013
Scaled Up Total Emission Rate (lb/hr) - Surface Area	
Average	9.9
Maximum	11.4
Corrected for Background	2.9

[1] Data is this table represents the combined totals for exhaust
    Fans N and 48 which are presented individually in
    Table 45 and 46

Table 48

Flotation Plant SUMMA Canister Sampling Results - Mass Emission Rate

Exhaust Fan N

Parameter	Run 1	Run 2	Run 3	Average [1]
Test Date	7/19/2005	7/19/2005	8/9/2005	---
Test Period	1430 - 1630	1645 - 1845	1030 - 1230	---
Target Compound Mass Emission Rate, lb/hr				
1,3-Butadiene	< 6.09E-06	< 5.88E-06	< 1.73E-05	< 9.77E-06
Ethanol	4.02E-06	1.92E-06	2.88E-03	9.62E-04
2-Propanol (Isopropyl alcohol)	< 2.43E-06	< 2.35E-06	2.26E-04	7.71E-05
Acetone	1.62E-04	1.64E-04	2.33E-03	8.86E-04
Carbon disulfide	4.18E-05	1.44E-05	2.03E-04	8.62E-05
Methyl tert butyl ether	< 3.25E-06	< 3.13E-06	< 9.23E-06	< 5.20E-06
Hexane	6.22E-06	< 4.29E-06	< 1.26E-05	7.72E-06
2-Butanone (MEK)	< 2.39E-06	< 2.31E-06	2.18E-04	7.42E-05
Ethyl acetate	< 2.92E-06	< 2.82E-06	< 8.31E-06	< 4.68E-06
Tetrahydrofuran	< 3.45E-06	< 3.33E-06	< 9.82E-06	< 5.53E-06
Cyclohexane	< 3.72E-06	< 3.59E-06	< 1.06E-05	< 5.96E-06
Benzene	7.94E-06	1.67E-04	3.26E-05	6.93E-05
2,2,4-Trimethylpentane	< 8.41E-06	< 8.12E-06	< 2.39E-05	< 1.35E-05
Heptane	< 4.06E-06	< 3.92E-06	< 1.15E-05	< 6.51E-06
1,4-Dioxane	< 5.84E-06	< 5.64E-06	< 1.66E-05	< 9.36E-06
4-Methyl-2-Pentanone (MIBK)	9.67E-05	< 3.92E-06	6.49E-04	2.50E-04
Toluene	4.80E-05	1.81E-05	7.43E-05	4.68E-05
2-Hexanone (MEK)	5.86E-05	5.77E-06	1.47E-05	2.64E-05
Ethyl benzene	< 3.91E-06	< 3.77E-06	< 1.11E-05	< 6.27E-06
M&P-Xylene	1.02E-05	< 3.77E-06	2.19E-05	1.19E-05
O-Xylene	3.91E-06	< 3.40E-06	1.00E-05	5.77E-06
4-Ethyltoluene	< 2.21E-06	< 2.14E-06	< 6.29E-06	< 3.55E-06
1,3,5-Trimethylbenzene	< 2.21E-06	< 2.14E-06	< 6.29E-06	< 3.55E-06
1,2,4-Trimethylbenzene	1.12E-05	< 3.42E-06	1.51E-05	9.91E-06
Scale Up Data - Ore Feed Rate				
Ore Feed Rate (g/15 sec)	1638	1646	1670	1651
Ore Feed Rate (mton/hr)	0.39312	0.39504	0.4008	0.396
MetSim Ore Feed Rate (mton/hr)	1386	1386	1386	1386
Scale Up Factor	3526	3509	3458	3497
Scaled Up Emisson Rate (lb/hr) - Ore Feed Rate				
1,3-Butadiene	< 0.0215	< 0.0206	< 0.0600	< 0.0340
Ethanol	0.01	0.01	9.96	3.33
2-Propanol (Isopropyl alcohol)	< 0.0086	< 0.0082	0.78	0.27
Acetone	0.57	0.57	8.06	3.07
Carbon disulfide	0.15	0.05	0.70	0.30
Methyl tert butyl ether	< 0.0114	< 0.0110	< 0.0319	< 0.0181
Hexane	< 0.0219	< 0.0150	0.04	0.03
2-Butanone (MEK)	< 0.0084	< 0.0081	0.75	0.26
Ethyl acetate	< 0.0103	< 0.0099	< 0.0287	< 0.0163
Tetrahydrofuran	< 0.0122	< 0.0117	< 0.0340	< 0.0193
Cyclohexane	< 0.0131	< 0.0126	< 0.0366	< 0.0208

Table 48

Flotation Plant SUMMA Canister Sampling Results - Mass Emission Rate

Exhaust Fan N

Parameter	Run 1	Run 2	Run 3	Average [1]
Benzene	0.03	0.59	0.11	0.24
2,2,4-Trimethylpentane	< 0.0297	< 0.0285	< 0.0827	< 0.0470
Heptane	< 0.0143	< 0.0137	< 0.0399	< 0.0227
1,4-Dioxane	< 0.0206	< 0.0198	< 0.0574	< 0.0326
4-Methyl-2-Pentanone (MIBK)	0.34	< 0.0137	2.24	0.87
Toluene	0.17	0.06	0.26	0.16
2-Hexanone (MEK)	0.21	0.02	0.05	0.09
Ethyl benzene	< 0.0138	< 0.0132	< 0.0385	< 0.0218
M&P-Xylene	0.04	< 0.0132	0.08	0.04
O-Xylene	0.01	< 0.0119	0.03	0.02
4-Ethyltoluene	< 0.0078	< 0.0075	< 0.0218	< 0.0124
1,3,5-Trimethylbenzene	< 0.0078	< 0.0075	< 0.0218	< 0.0124
1,2,4-Trimethylbenzene	0.04	< 0.0120	0.05	0.03
Scale Up Factor - Surface Area				
Factor, dimensionless	224.2	224.2	224.2	
Scaled Up Emission Rates, lb/hr - Surface Area				
1,3-Butadiene	< 0.0014	< 0.0013	< 0.0039	< 0.0022
Ethanol	0.00	0.00	0.65	0.22
2-Propanol (Isopropyl alcohol)	< 0.0005	< 0.0005	0.05	0.02
Acetone	0.04	0.04	0.52	0.20
Carbon disulfide	0.01	0.00	0.05	0.02
Methyl tert butyl ether	< 0.0007	< 0.0007	< 0.0021	< 0.0012
Hexane	< 0.0014	< 0.0010	0.00	0.00
2-Butanone (MEK)	< 0.0005	< 0.0005	0.05	0.02
Ethyl acetate	< 0.0007	< 0.0006	< 0.0019	< 0.0010
Tetrahydrofuran	< 0.0008	< 0.0007	< 0.0022	< 0.0012
Cyclohexane	< 0.0008	< 0.0008	< 0.0024	< 0.0013
Benzene	0.00	0.04	0.01	0.02
2,2,4-Trimethylpentane	< 0.0019	< 0.0018	< 0.0054	< 0.0030
Heptane	< 0.0009	< 0.0009	< 0.0026	< 0.0015
1,4-Dioxane	< 0.0013	< 0.0013	< 0.0037	< 0.0021
4-Methyl-2-Pentanone (MIBK)	0.02	< 0.0009	0.15	0.06
Toluene	0.01	0.00	0.02	0.01
2-Hexanone (MEK)	0.01	0.00	0.00	0.01
Ethyl benzene	< 0.0009	< 0.0008	< 0.0025	< 0.0014
M&P-Xylene	0.00	< 0.0008	0.00	0.00
O-Xylene	0.00	< 0.0008	0.00	0.00
4-Ethyltoluene	< 0.0005	< 0.0005	< 0.0014	< 0.0008
1,3,5-Trimethylbenzene	< 0.0005	< 0.0005	< 0.0014	< 0.0008
1,2,4-Trimethylbenzene	0.00	< 0.0008	0.00	0.00

[1] When all three measured concentrations were below the detection limit, the average is
the average mass flow rate based on the detection limits. When all three concentrations
were above the detection limit, the average is the average of the mass emission rates

Table 48

Flotation Plant SUMMA Canister Sampling Results - Mass Emission Rate

Exhaust Fan N

Parameter	Run 1	Run 2	Run 3	Average [1]

calculated from the results. When some runs are above the detection limit and some below, the average is the average of the mass emission rates caclulated from the results and those based on the detection limit as appropriate for each run.

Table 49

Flotation Plant SUMMA Canister Sampling Results - Mass Emission Rate

Exhaust Fan 48 - Based on Fan Specifications

Parameter	Run 1	Run 2	Run 3 [1]	Average [2]
Test Date	7/19/2005	7/19/2005	8/9/2005	---
Test Period	1430 - 1630	1645 - 1845	1030 - 1230	---
Target Compound Mass Emission Rate, lb/hr				
1,3-Butadiene	< 7.59E-06	< 7.58E-06	< 2.27E-05	< 1.26E-05
Ethanol	< 2.32E-06	< 2.32E-06	1.81E-04	6.19E-05
2-Propanol (Isopropyl alcohol)	< 3.03E-06	< 3.03E-06	< 9.08E-06	< 5.05E-06
Acetone	1.66E-04	4.55E-04	1.18E-03	6.02E-04
Carbon disulfide	8.30E-06	3.59E-04	6.00E-05	1.42E-04
Methyl tert butyl ether	< 4.04E-06	< 4.04E-06	< 1.21E-05	< 6.73E-06
Hexane	7.23E-06	< 5.52E-06	< 1.66E-05	9.78E-06
2-Butanone (MEK)	2.02E-05	< 2.97E-06	8.39E-05	3.57E-05
Ethyl acetate	< 3.63E-06	< 3.63E-06	< 1.09E-05	< 6.05E-06
Tetrahydrofuran	< 4.30E-06	< 4.29E-06	< 1.29E-05	< 7.16E-06
Cyclohexane	< 4.63E-06	< 4.62E-06	< 1.39E-05	< 7.71E-06
Benzene	8.17E-06	4.64E-04	3.16E-05	1.68E-04
2,2,4-Trimethylpentane	< 1.05E-05	< 1.05E-05	< 3.14E-05	< 1.74E-05
Heptane	< 5.05E-06	< 5.05E-06	< 1.51E-05	< 8.41E-06
1,4-Dioxane	< 7.27E-06	< 7.26E-06	< 2.18E-05	< 1.21E-05
4-Methyl-2-Pentanone (MIBK)	5.23E-05	9.58E-05	1.18E-04	8.87E-05
Toluene	3.64E-05	3.54E-05	8.36E-05	5.18E-05
2-Hexanone (MEK)	6.28E-05	2.88E-05	< 1.93E-05	3.70E-05
Ethyl benzene	< 4.87E-06	< 4.86E-06	< 1.46E-05	< 8.11E-06
M&P-Xylene	6.97E-06	5.83E-06	1.99E-05	1.09E-05
O-Xylene	< 4.38E-06	< 4.37E-06	< 1.31E-05	< 7.29E-06
4-Ethyltoluene	< 2.75E-06	< 2.75E-06	< 8.26E-06	< 4.59E-06
1,3,5-Trimethylbenzene	< 2.75E-06	3.30E-06	< 8.26E-06	4.77E-06
1,2,4-Trimethylbenzene	< 4.41E-06	8.07E-06	< 1.32E-05	8.56E-06
Scale Up Data - Ore Feed Rate				
Ore Feed Rate (g/15 sec)	1638	1646	1670	1651
Ore Feed Rate (mton/hr)	0.39312	0.39504	0.4008	0.396
MetSim Ore Feed Rate (mton/hr)	1386	1386	1386	1386
Scale Up Factor	3526	3509	3458	3497
Scaled Up Emisson Rate (lb/hr) - Ore Feed Rate				
1,3-Butadiene	< 0.0267	< 0.0267	< 0.0802	< 0.0445
Ethanol	< 0.0082	< 0.0082	0.64	0.22
2-Propanol (Isopropyl alcohol)	< 0.0107	< 0.0107	< 0.0320	< 0.0178
Acetone	0.59	1.61	4.18	2.12
Carbon disulfide	0.03	1.26	0.21	0.50
Methyl tert butyl ether	< 0.0142	< 0.0142	< 0.0427	< 0.0237
Hexane	0.03	< 0.0195	< 0.0585	0.03
2-Butanone (MEK)	0.07	< 0.0105	0.30	0.13
Ethyl acetate	< 0.0128	< 0.0128	< 0.0384	< 0.0213
Tetrahydrofuran	< 0.0151	< 0.0151	< 0.0454	< 0.0252
Cyclohexane	< 0.0163	< 0.0163	< 0.0489	< 0.0272

Table 49

Flotation Plant SUMMA Canister Sampling Results - Mass Emission Rate

Exhaust Fan 48 - Based on Fan Specifications

Parameter	Run 1	Run 2	Run 3 [1]	Average [2]	
Benzene	0.03	1.64	0.11	0.59	
2,2,4-Trimethylpentane	< 0.0369	< 0.0369	< 0.1107	< 0.0615	
Heptane	< 0.0178	< 0.0178	< 0.0534	< 0.0297	
1,4-Dioxane	< 0.0256	< 0.0256	< 0.0768	< 0.0427	
4-Methyl-2-Pentanone (MIBK)	0.18	0.34	0.42	0.31	
Toluene	0.13	0.12	0.29	0.18	
2-Hexanone (MEK)	0.22	0.10	0.07	0.13	
Ethyl benzene	< 0.0172	< 0.0171	< 0.0514	< 0.0286	
M&P-Xylene	0.02	0.02	0.07	0.04	
O-Xylene	< 0.0154	< 0.0154	< 0.0463	< 0.0257	
4-Ethyltoluene	< 0.0097	< 0.0097	< 0.0291	< 0.0162	
1,3,5-Trimethylbenzene	< 0.0097	0.01	< 0.0291	0.02	
1,2,4-Trimethylbenzene	< 0.0155	0.03	< 0.0466	0.03	
Scale Up Factor - Surface Area					
Factor, dimensionless	224.2	224.2	224.2		
Scaled Up Emission Rates, lb/hr - Surface Area					Total [3]
1,3-Butadiene	< 0.0017	< 0.0017	< 0.0051	< 0.0028	< 0.0050
Ethanol	< 0.0005	< 0.0005	0.04	0.01	0.23
2-Propanol (Isopropyl alcohol)	< 0.0007	< 0.0007	< 0.0020	< 0.0011	0.02
Acetone	0.04	0.10	0.27	0.13	0.33
Carbon disulfide	0.00	0.08	0.01	0.03	0.0512
Methyl tert butyl ether	< 0.0009	< 0.0009	< 0.0027	< 0.0015	< 0.0027
Hexane	0.00	< 0.0012	< 0.0037	0.00	0.00
2-Butanone (MEK)	0.00	< 0.0007	0.02	0.01	0.02
Ethyl acetate	< 0.0008	< 0.0008	< 0.0024	< 0.0014	< 0.0024
Tetrahydrofuran	< 0.0010	< 0.0010	< 0.0029	< 0.0016	< 0.0028
Cyclohexane	< 0.0010	< 0.0010	< 0.0031	< 0.0017	< 0.0031
Benzene	0.00	0.10	0.01	0.04	0.05
2,2,4-Trimethylpentane	< 0.0023	< 0.0023	< 0.0070	< 0.0039	< 0.0069
Heptane	< 0.0011	< 0.0011	< 0.0034	< 0.0019	< 0.0033
1,4-Dioxane	< 0.0016	< 0.0016	< 0.0049	< 0.0027	< 0.0048
4-Methyl-2-Pentanone (MIBK)	0.01	0.02	0.03	0.02	0.08
Toluene	0.01	0.01	0.02	0.01	0.02
2-Hexanone (MEK)	0.01	0.01	0.00	0.01	0.01
Ethyl benzene	< 0.0011	< 0.0011	< 0.0033	< 0.0018	< 0.0032
M&P-Xylene	0.00	0.00	0.00	0.00	0.01
O-Xylene	< 0.0010	< 0.0010	< 0.0029	< 0.0016	0.00
4-Ethyltoluene	< 0.0006	< 0.0006	< 0.0019	< 0.0010	< 0.0018
1,3,5-Trimethylbenzene	< 0.0006	0.00	< 0.0019	0.00	0.00
1,2,4-Trimethylbenzene	< 0.0010	0.00	< 0.0030	0.00	0.00

[1] The average airflow measurement for Runs 2 and 3 were used in the calcualtions for
    Run 3.
[2] When all three measured concentrations were below the detection limit, the average is

Table 49

Flotation Plant SUMMA Canister Sampling Results - Mass Emission Rate

Exhaust Fan 48 - Based on Fan Specifications

Parameter	Run 1	Run 2	Run 3 [1]	Average [2]

the average mass flow rate based on the detection limits. When all three concentrations were above the detection limit, the average is the average of the mass emission rates calculated from the results. When some runs are above the detection limit and some below, the average is the average of the mass emission rates caclulated from the results and those based on the detection limit as appropriate for each run.

[3] Total Emissions for Exhaust Fans N and 48

Table 50
Copper Solvent Extraction
Scale-up Calculations

Location	Location #	Total Hydrocarbon Concentration (PPM as Methane)			
		Run 1	Run 2	Run 3	Average
Date		9/10/2005	9/10/2005	9/11/2005	
Time		~2100	2250	1120	
Location	**Location #**				
Copper Extraction 1 (CE 1)	1	2.5	2.5	9.1	4.7
Recycled Organic Preheat	2	4.9	4.9	10.4	6.7
Copper Extraction 2 (CE 2)	3	2.3	2.3	74	26.2
Copper Extraction 3 (CE 3)	4	2.2	2.2	29	11.1
Extraction Feed Preheat	5	3.5	3.5	5.0	4.0
Wash (CB)	6	2.4	2.4	18.6	7.8
Copper Stripping 1 (CS 1)	7	2.3	2.3	19.6	8.1
Copper Stripping 2 (CS 2)	8	7.3	7.3	26.1	13.6
Barrel by CS 1	9	1.5	1.5	18.3	7.1
Barrel between CS 1 & CS 2	10	1.3	1.3	31.5	11.4
Co/Zn Extraction East	11	3.2	3.2	2.4	2.9
Co/Zn Extraction Center	12	3.3	3.3	2.0	2.9
Co/Zn Extraction West	13	3.3	3.3	2.0	2.9
In Front of EW East	14	3.7	3.7	9.0	5.5
In Front of EW Center	15	19.0	19.0	7.6	15.2
In Front of EW West	16	8.5	8.5	7.0	8.0
In Front of Bench East	17	1.3	1.3	1.4	1.3
In Front of Bench Center	18	1.5	1.3	1.5	1.4
In Front of Bench West	19	1.4	1.4	1.2	1.3
Behind Rail West	20	1.8	1.8	4.6	2.7
Behind Rail Center	21	1.9	1.9	4.3	2.7
Behind Rail East	22	2.0	2.0	4.3	2.8
By PGM South	23	1.6	1.6	3.9	2.4
By PGM Center	24	1.5	1.5	5.4	2.8
By PGM North	25	1.3	1.3	5.0	2.5
In Front of Barells South	26	2.9	2.9	3.8	3.2
In Front of Barells Center	27	3.0	3.0	3.3	3.1
In Front of Barells North	28	3.5	3.5	3.7	3.6
Behind Desks to West	29	4.0	4.0	4.0	4.0
Average (non-background)	NA	3.4	3.4	11.0	5.9
Background 1	NA	---	---	3.3	3.3
Background 2	NA	---	---	2.8	2.8
Background - Outside	NA	---	---	2.0	2.0
Scale-up Calculations					
Estimated ACFM [1]		71963	71963	71963	71963
Emission Rate (lb/hr)		0.6	0.6	2.0	1.1

[1] Assume equivalent to SCFM

Table 51
List of Abbreviations Used in Tables

Abbreviation	Meaning
% V/V	percent by volume
A	amps
AC	autoclave
acf	actual cubic feet
acfm	actual cubic feet per minute
Calc(s)	Calculation(s)
CD	Control Device
deg. C	degrees Celsius
deg. F	degrees Fahrenheit
dscf	dry standard cubic feet
dscfm	dry standard cubic feet per minute
EF	Emission Factor
EU	Emission Unit
FS	Fugitive Source
ft^2	square feet
g	grams
g/s	gram per second
gmole	gram moles
gr/dscf	grains per dry standard cubic feet
GRO	gasoline range organics
HAP	Hazardous Air Pollutant
hr	Hour
in	inches
in Hg	inches of mercury
kg	kilogram
KO	knockout
kPa	kilo Pascals
L (l)	liters
lb	Pound
LPM	liters per minute
LT	long tons (2240 pounds)
m^2	square meters
mg	milligrams
min	minutes
ml	milliliters
mton	metric tons
nL	liters corrected to normal conditions (0 deg. C, 1 standard atmosphere)
PPM	parts per million
PPMv	parts per million by volume
PSIA	pounds per square inch absolute
SCFM	standard cubic feet per minute
sec	seconds
SV	Stack/Vent
TSS	total suspended solids
ug	microgram
VMT	Vehicle Miles Traveled
Wt.	Weight
yr	Year

Figures
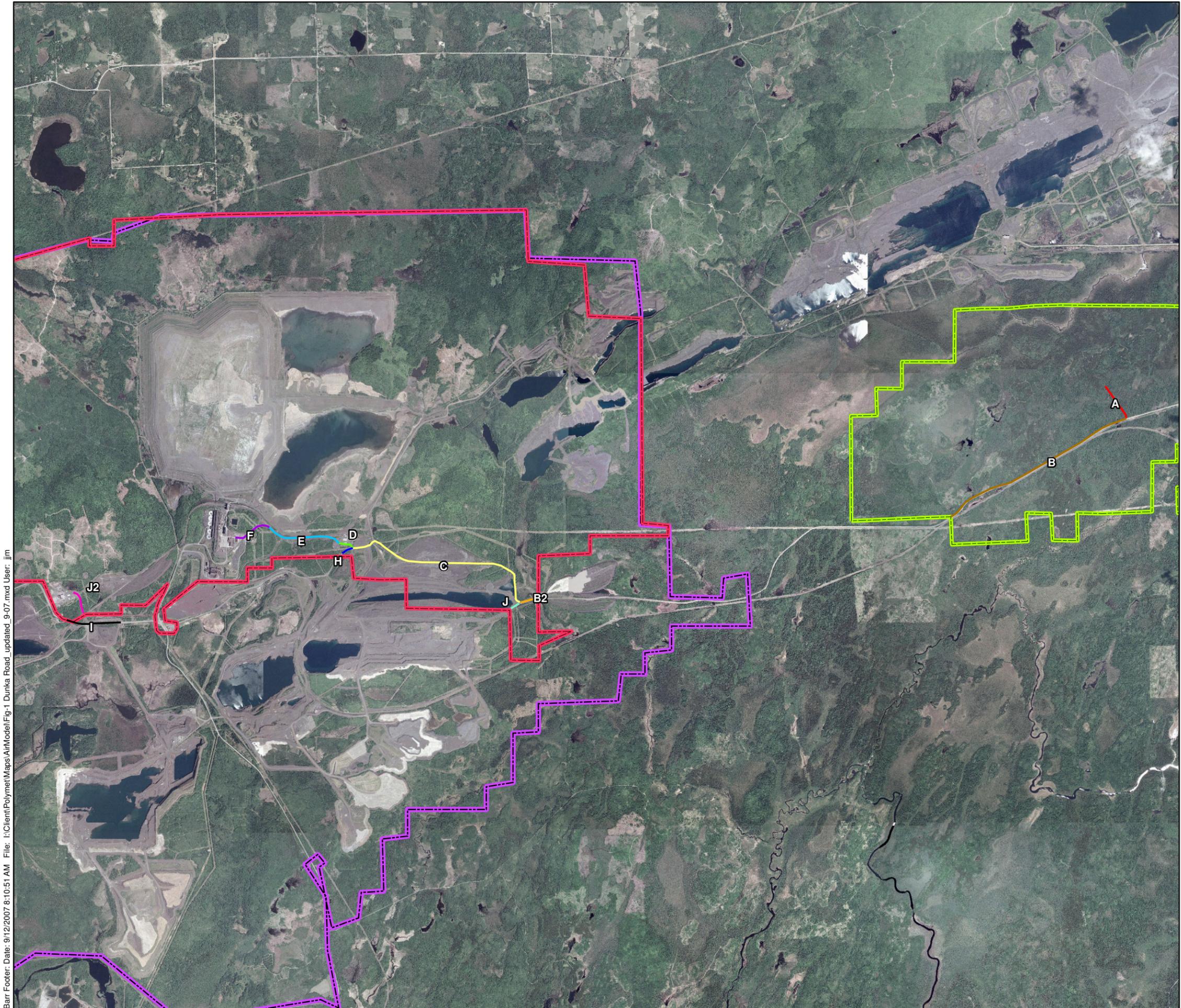
UNPAVED ROAD SEGMENTS

- A
- B
- B2
- C
- D
- E
- F
- H
- I
- J
- J2
- Mine Boundary
- Cumulative Impacts Boundary
- Projected Polymet Land Ownership
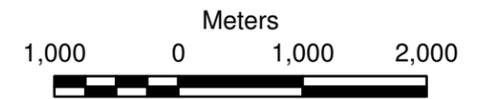
Figure 1

Dunka Road Segment Locations
PolyMet
Hoyt Lakes, MN

Barr Footer: Date: 9/12/2007 8:10:51 AM   File: I:\Client\Polymet\Maps\ArcModel\Fig-1 Dunka Road_updated_9-07.mxd User: jim

Appendix A

Autoclave Vent Exhaust Flow Rate Calculation

PolyMet Mining, Inc.
Hoyt Lakes, Minnesota

RS 57A Appendix A
Autoclave Vent Exhaust Flow Rate Calculation

This calculation is provided in support of the NorthMet project Plant Site Emission Calculations (RS57A) submitted in February of 2007 and updated in September of 2007. The exhaust flow rate from the pilot scale autoclave vent was calculated based on concentrate sulfur content assuming 100% conversion from sulfide to sulfate. Refer to RS57A for an explanation of the calculations and the preceding steps in the calculations.

The final equation on page 16 calculates the vent exhaust rate at the oxygen concentration measured in the exhaust. This equation is based on standard stack testing calculations for correcting a concentration to an alternate oxygen concentration such as those in EPA Methods 19 and 20 (40 CFR Part 60 Appendix A). However, at the high oxygen concentration present in the autoclave, it is not intuitive that this equation is appropriate to use. The equation is:

$$Qav = O_2 Exv * \frac{(20.9 - 100)}{(20.9 - \%O_2)}$$ Equation 1

Where:

Qav	=	autoclave vent exhaust rate at measured oxygen content, scfm
O_2Exv	=	calculated flow rate at 100% oxygen in the exhaust
$\%O_2$	=	measured percent oxygen in autoclave vent exhaust
100	=	the approximate oxygen content of the autoclave supply gas, %

The equation above can be written in a more general form as:

$$Qav = O_2 Exv * \frac{(20.9 - \%O_{2_i})}{(20.9 - \%O_{2_o})}$$ Equation 2

Where:

Qav	=	Autoclave vent exhaust rate at measured oxygen content, scfm
O_2Exv	=	Calculated flow rate at 100% oxygen in the exhaust
$\%O_{2i}$	=	the percent oxygen in the autoclave supply gas
$\%O_{2o}$	=	measured percent oxygen in autoclave vent exhaust

The above equations assumes that air at 20.9% oxygen is the cause of the reduced oxygen content of the autoclave vent exhaust gas (i.e. it is less than the approximately 100% pure oxygen fed to the autoclave). Per the supplier label, the oxygen used during the pilot study was 99.999% oxygen, so 100% oxygen is a reasonable assumption for the autoclave feed gas.

A more intuitive equation can be developed based on material balance to calculate the exhaust oxygen concentration as show below:

$$O_{2_o} = \frac{O_{2_i} * O_2Exv + 0.209 * Qd}{O_2Exv + Qd}$$ Equation 3

Where
Qd	=	Dilution air flow rate, scfm
O_2Exv	=	Calculated flow rate at 100% oxygen in the exhaust
O_{2i}	=	the volume fraction oxygen in the autoclave supply gas
O_{2o}	=	measured volume fraction oxygen n the autoclave vent exhaust
0.209	=	is the volume fraction oxygen in ambient air

Based on the definition of terms above:

$$Qav = O_2Exv + Qd$$ Equation 4

That is, the exhaust flow rate equals the excess oxygen plus the dilution air.

Substituting Qav for O_2Exv + Qd in Equation 3 and solving the equation for Qav produces the following equation:

$$Qav = \frac{O_{2_i} * O_2Exv + 0.209 * Qd}{O_{2_o}}$$ Equation 5

Rearranging Equation 4produces the following:

$$Qd = Qav - O_2Exv$$ Equation 6

Substituting for Qd (Equation 6) in Equation 5 results in the following equation:

$$Qav = \frac{O_{2_i} * O_2Exv + 0.209 * (Qav - O_2Exv)}{O_{2_o}} = \frac{O_{2_i} * O_2Exv + 0.209 * Qav - 0.209 * O_2Exv}{O_{2_o}}$$ Equation 7

Multiplying both sides of the equation by O_{2i} results in the following:

$$Qav * O_{2_o} = O_{2_i} * O_2Exv + 0.209 * Qav - 0.209 * O_2Exv$$ Equation 8

Rearranging to get both Qav terms on the left the side of equation results in the following:

$$Qav * O_{2_o} - 0.209 * Qav = O_{2_i} * O_2Exv - 0.209 * O_2Exv = Qav * (O_{2_o} - 0.209)$$ Equation 9

Solving for Qav results in:

$$Qav = \frac{O_{2_i} * O_2Exv - 0.209 * O_2Exv}{O_{2_o} - 0.209} = O_2Exv * \frac{O_{2_i} - 0.209}{O_{2_o} - 0.209} = O_2Exv * \frac{-1 * (0.209 - O_{2_i})}{-1 * (0.209 - O_{2_o})} = O_2Exv * \frac{0.209 - O_{2_i}}{0.209 - O_{2_o}}$$

Equation 10

Finally, if the top and bottom of the proportion on the right side of the equation are multiplied by 100, the following results:

$$Qav = O_2 Exv * \frac{100*(0.209 - O_{2_i})}{100*(0.209 - O_{2_o})} = O_2 Exv * \frac{(20.9 - \%O_{2i})}{(20.9 - \%O_{2o})} \qquad \text{Equation 11}$$

Equation 11 is identical to Equation 2 above. If 100% is substituted for $\%O_{2i}$, the equation is identical the last equation on Page 16 of the September 2007 update of RS57A, which is labeled as Equation 1 above.

Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Mine Site (RS57B)

PolyMet Mining Inc

November 2008

BARR

RS57B – Company Finalizes Emission Calculations (Mine Site)
Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Mine Site
PolyMet Mining, Inc
Hoyt Lakes, Minnesota
(RS57B)

Table of Contents

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1.0 Introduction

PolyMet Mining Inc (PolyMet) submitted updated emission calculations for the NorthMet project Mine Site as required by the Environmental Impact Statement (EIS) scoping decision in February of 2007. This document was designated RS57B. The updated emission calculations for the Plant Site were submitted as RS57A under separate cover.

Changes were made to the proposed project that affected the Mine Site emission calculations after February of 2007, including combining the overburden and Category 1/2 waste rock stockpiles, proposed use of 240 ton mine haul trucks and a change to the proposed permitting strategy for the project (see July 2007 Supplemental Project Description for additional information on changes to the project).

As noted above, the original emission calculation submittal for the EIS was contained in two separate reports. These two reports were updated and submitted as one report along with an additional Section, RS57C in September of 2007. The additional section addressed the proposed permitting strategy of limiting emission from the project to below the major source level under Prevention of Significant Deterioration (PSD) regulations by presenting an example of how emissions will remain below the major source level. RS 57C also discussed Hazardous Air Pollutant (HAP) emissions from the combined facility and the applicability of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) of 40 CFR Part 63.

At the request of the Minnesota Pollution Control Agency (MPCA), the emission calculation spreadsheets were reformatted and submitted in December of 2007. At the this time, it was agreed that two sets of calculations would be completed for the Mine Site: 1) worst case year for stockpile disposal phase of the proposed project (Year 8); and 2) worst case year for in-pit disposal phase (Year 16). The mine plan for the proposed project calls for all waste rock to placed in stockpiles for the first 11 years of mine operation. Beginning in Year 12 of operation, a portion of the waste rock will be disposed of in the mined-out East Pit. After Year 14, the Central Pit will also be available for waste rock disposal. A different plan for in-pit disposal has been developed as Reasonable Alternative RA1. This alternative is discussed in more detail below.

The reformatted spreadsheets include additional information which made some of the tables in RS57C redundant. RS 57C now references the emission calculation spreadsheets in RS57A and RS57B.

Further refinements to the emission calculations have been made since the reformatted spreadsheets were submitted as the criteria pollutant and toxic pollutant (AERA) modeling has been completed for the project and additional comments have been received from MPCA.

Due to the changes that have occurred in the emission calculation spreadsheet, the Minnesota Department of Natural Resources (MDNR), the Responsible Governmental Unit (RGU) for the NorthMet Project EIS, has requested that an updated version of the complete RS57 report be submitted. This updated report is intended to aid those reviewing the complete Preliminary Draft EIS (PDEIS) by providing the latest version of all relevant emission calculations in a single report. Because the emissions from mining vehicles and locomotives have been considered in air dispersion modeling, the calculations for these sources are also included in this document in a new section identified as RS57D. The title of the overall report has been modified to reflect this addition.

As part of the EIS preparation process, alternatives to the proposed project and potential mitigation measures are being evaluated. Calculations were performed to assess the changes in air emissions associated with one alternative (Reasonable Alternative RA1 - no long term water treatment option at Mine Site) and one proposed mitigation measure (Tailings Basin Geotechnical Mitigation - use of LTV Steel Mining Company (LTVSMC) tailings to build tailings basin dams). Those calculations are included in this report in the RS57E Section.

This report reflects the current emission calculations as of the preparation of the complete PDEIS. Further changes may occur prior to the Draft EIS being put on public notice as a result of comments from the reviewers of the PDEIS. After the completion of the review of the PDEIS, PolyMet will discuss with MDNR whether or not an additional update is needed prior to the Draft EIS public notice period.

The majority of this submittal consists of tables, which present the emissions calculations for all of the stationary sources at the mine site and the portions of the Dunka Road within the Mine Site ambient air boundary (Tables 1 and 2). Additional tables are included which show how emission factors were calculated for fugitive sources (Tables 3 and 4), show how the worst case was determined for mine haul road calculations (Tables 5 through 11), and provide calculations of quantities of material processed, where these calculations are unique to this submittal (Table 12). Figures are also included to show the mine haul road locations and how the various segments were identified. Figure 1 shows the haul roads at Year 10 of mine development; Figure 2 shows the mine

roads at Year 20. Figure 3 shows the location of the various segments of the Dunka Road and other roads connecting the PolyMet operations.

In addition to the tables and figures, a brief description of the sources, the calculation methods employed, and the sources for the data used as inputs for the calculations is included following this introduction.

References are made in this document to several other reports that have been prepared as part of the EIS process or for other purposes related to the NorthMet Project. The report identification numbers, along with the report titles are listed below:

- RS18 – Mine Plan (Draft-02, September 2007)

- RS49 – Stockpile Conceptual Design; PolyMet NorthMet Site Near Babbit, Minnesota (Draft-02, October 2007)

- RS57A – Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Plant Site (Draft-03, November 2008)

- RS67 – Waste Rock and Lean Ore – Amount and Composition (Draft-01, February 2007)

- RS57C – Comparison of Emission Levels for NorthMet Project Stationary Sources to Major Source Levels for PSD and HAPs (Draft-02, November 2008)

There are only minimal point sources at the Mine Site, using the common definition of point sources; sources that have a stack or vent associated with them. Some of the sources listed under the fugitive source section will be considered point sources for the purposes of determining the applicability of regulatory programs (e.g. PSD or Title V).

The emission calculation spreadsheet for the Mine Site (Tables 1 and 2) includes a column that indicates whether or not each source is included in the determination of PSD applicability. There are also separate totals for criteria pollutants at the bottom of the tables for PSD applicability purposes. The total facility emissions with respect to PSD requirements are discussed in detail in the RS57C section of this report.

2.1 Description of Point Sources and Emissions

The only point sources identified at the Mine Site are the three 12,000 gallon diesel fuel tanks located at the Field Service and Fueling Facility (EU 229,EU 230 and EU 345) and the small combustion sources located at the waste water treatment facility.

In the reformatted spreadsheets submitted in December of 2007 an additional point source at the Mine Site was identified, a generator for moving electrical equipment (EU 344). After further evaluation, it has been determined that this source is more accurately described as a mobile source. It is included with the point source calculations in this report for consistency with earlier submittals.

This generator is used infrequently to provide temporary power for moving the large electrical mining equipment (e.g. the primary excavators). The generator is sized only for moving the equipment, not for fully operating it for mining purposes. This generator will only be used when one of the large pieces of mining equipment is out of service because it is being moved to a different mining area. Therefore, it will be operated infrequently and only during reduced mining activities. This source has not been included in the air dispersion modeling because it is not part of the normal mining operation and it will only operate when one or more of the large electrical pieces of mining equipment are not engaged in mining activities. Because the operation of this unit is inherently restricted in a similar manner to emergency generators, a maximum of 500 hours per year of operation was used to calculate the potential to emit. The resulting emissions are 6.6 tons per year (tpy) of NO_x and 1.5 tpy of CO.

Diesel fuel is not volatile and therefore only insignificant quantities of VOC (volatile organic compounds) will be emitted by the diesel fuel tanks. The potential annual emissions for the tanks are 0.02 tpy of VOC.

The waste water treatment facility will require heating and backup power. Much of the heating demand is expected to be supplied by electric heaters, but propane heaters (EU 331) will also be installed to provide heat on the coldest days. A diesel powered backup generator (EU 332) will be installed to supply critical electrical demands in case of power failure. Potential NO_x emissions for the heaters and generator are 11.3 tpy and potential CO emissions are 2.0 tpy. Emissions for the remaining pollutants are provided in Tables 1 and 2.

The point source emissions are the same for all years of mine operations so the calculations presented in Tables 1 (stockpile disposal worst case) and 2 (in-pit disposal worst case) are identical.

2.2 Point Source Emission Calculation Procedures

Annual emissions from the tanks were calculated using the EPA TANKS program version 4.09b. Meteorological data for Duluth, Minnesota was used in the calculations. This was the closest city for which data was included in the TANKS program.

Emissions from the propane heaters were calculated with emission factors from AP-42 Section 1.5 "Liquid Petroleum Gas Combustion". The emission calculations in this report reflect the updated version of Section 1.5 dated July of 2008. The air dispersion modeling was conducted using the previous version of the AP-42 section. The primary pollutants from these sources are NO_x and CO. The NO_x emissions are lower in the updated section. CO emissions are higher, but modeling was not performed for CO. PM emissions are slightly higher in the updated version, but the potential emissions for the heaters are still less than 0.3 ton per year.

Emission factors from AP-42 Section 3.3 "Gasoline and Diesel Industrial Engines" were used to calculate emissions from the backup generator with the exception of SO_2 and sulfuric acid mist. SO_2 emissions were calculated with the fuel oil sulfur content dependent emission factor from AP-42 Section 3.4. The maximum sulfur content of the fuel was assumed to be 0.5%. This factor is expected to be more accurate for any engine size. For polycyclic organic matter (POM) compounds reported below the detection limit, ½ the detection limit was used in the calculations. A total POM emission factor was calculated by summing the emission factors for the compounds above the detection limit

Sulfuric acid mist emissions were calculated based on data presented in "The Sulfur Speciation of Diesel Emissions from a Non-road Generator" (Liu, Lu, Keener, and Liang 2005). Figure 5 in the referenced document presents sulfur conversion to SO_4^{2-}, which is indicated elsewhere in the paper to be at least 90% H_2SO_4. From the figure, for the highest sulfur fuel (0.22%) at the highest load, the percent conversion is about 1.67%. The H_2SO_4 emission factor was calculated by:

$$\%S * \frac{w/w}{100\%} * \frac{7.13\ lb\ oil}{gallon} * \frac{98\ lb}{lbmole\ H_2SO_4} * \frac{lb\ mole\ S}{32\ lb} * \frac{1.67\ mole\ H_2SO_4}{100\ mole\ S} * \frac{1\ gallon\ oil}{140000\ Btu} * \frac{10^6\ MMBtu}{Btu} = \frac{0.026 * \%S\ lb\ H_2SO_4}{MMBtu}$$

This makes the emission calculations conservative because the SO_2 factor assumes 100% conversion to SO_2.

For the generator for moving electrical equipment, emissions were calculated with emissions factors from AP-42 Section 3.4.1 "Large Stationary Diesel and All Stationary Duel-fuel Engines", with the exception of sulfuric acid mist. The maximum sulfur content of the fuel was assumed to be 0.5%. For polycyclic organic matter (POM) compounds reported below the detection limit, ½ the detection limit was used in the calculations. A total POM emission factor was calculated by summing the emission factors for the compounds above the detection limit. Emissions from the generator for sulfuric acid mist were calculated in the same manner as described above for the backup generator.

2.3 Basis for Parameters Used in Point Source Calculations

It was estimated that three 7,500 gallon tanker trucks of fuel oil would be required to fuel the diesel powered equipment at the Mine Site. To provide for a conservative estimate of emissions, it was assumed that 1.5 tankers (11,250) gallons were loaded into each of the three tanks each day.

The total heat input for the propane space heaters is based on the total heat demand at the waste water treatment facility as estimated by the Barr engineers working on the facility design. In actual operation, a significant portion of the heating is expected to be supplied by electric heaters.

The backup generator was sized based on the estimated critical power demand at the waste water treatment facility as estimated by the Barr engineers working on the design of the facility. An appropriately sized unit was located on the Caterpillar® website (Standby, 500 ekW). The website included information on the maximum fuel consumption rate for the generator.

The project mining engineers estimated that an 1100 hp engine would be sufficient for the generator used to move electrical mining equipment. Where needed, this value was converted to fuel consumption using the break specific fuel consumption of 7,000 Btu/hp-hr from AP-42 Table 3.4-1 footnote "e".

3.0 Mine Fugitive Source Calculations

3.1 Description of Fugitive Sources and Emissions

For convenience, the fugitive sources at the Mine Site have been grouped into five categories: 1) material handling, which includes the loading and unloading of haul trucks with overburden, waste rock and ore and the loading of railcars with ore; 2) crushing and screening which includes the potential processing of overburden and other approved rock for use in the construction of roads, dams, berms, etc.; 3) unpaved mine roads, which includes the dust generated from hauling material around the Mine Site in haul trucks as well as traffic from other vehicles, 4) Dunka Road emissions which includes dust generated from PolyMet traffic on the Dunka Road, through areas controlled by PolyMet at the Mine Site and 5) Blast Hole Drilling.

Emissions from the stockpiles due to wind erosion (FS 013, FS 022, FS 040, FS 041, FS 042 and FS 043) were also evaluated using the procedures in AP-42 Section 13.2.5. However, it was determined that wind erosion from the stockpiles would not occur. Details are included in Tables 1 and 2. The spreadsheet used to calculate wind erosion rates from the stockpiles and other sources was submitted to MPCA on November 6, 2007.

3.1.1 Material Handling Sources

Overburden, waste rock, lean ore, and ore will be loaded into trucks with shovels or loaders generating dust emissions (FS 001, FS 004, FS 007, and FS 017). After the material is hauled to the appropriate stockpile or the Rail Transfer Hopper, it will be dumped, which will also generate dust emissions (FS 014, FS 005, FS 009, FS 020 and FS 045). In addition, overburden may be screened to separate various fractions for construction purposes. The calculations assume that all overburden is hauled and dumped at the overburden storage pile and then loaded again into trucks, and after hauling to the overburden portion of the Category 1/2 waste rock stockpile or point of use as construction material, dumped again (FS 019, FS 002, FS 048, and FS 018). This is a conservative approach because some overburden will be hauled direct to the overburden stockpile without processing at the overburden storage area.

Railcars will be loaded with ore at the Rail Transfer Hopper for transportation to the processing plant (FS 010).

The material handling emissions in Table 1 reflect the worst case year for the stockpile disposal phase of mine operations (Year 8) and the emissions in Table 2 reflect the worst case year for the in-pit disposal phase (Year 16).

There are also material handling operations associated with the portable crushing plant that may be used to crush large rocks separated from the smaller material in the overburden or other approved materials. These are included with the crushing and screening sources below.

All of the material handling sources emit particulate matter (PM) and particulate matter less than 10 microns (PM_{10}). Total controlled potential PM_{10} emissions from material handling sources for the stockpile disposal phase are 185.8 tpy and 145.0 tpy for the in-pit disposal phase.

Small amounts of toxic air pollutants will also be emitted by the handling of ore, lean ore, waste rock and overburden. This is due to the naturally occurring mineral content of the material handled. This type of toxic air pollutant emission is not generally a serious concern because of the low likelihood that the toxic metals bound up in rock would be absorbed into the body through an inhalation exposure pathway. The highest toxic metal emissions for the in-pit disposal phase are for copper, with emissions of 0.49 tpy. The highest Hazardous Air Pollutant (HAP) emissions for both scenarios are for manganese, with emissions of 0.46 tpy for the stockpile disposal phase and 0.44 tpy for the in-pit disposal phase. The highest emissions for any toxic pollutant for the stockpile disposal phase are also for manganese.

3.1.2 Crushing and Screening

Overburden may be screened to separate larger rocks from soil and gravel. The different fractions can be stockpiled separately and used for appropriate construction or reclamation purposes. There are two sources of overburden: 1) the overburden stripped off the areas to be mined and; 2) the overburden stripped from the stockpile locations prior to construction of the foundation and liner system. Emissions from processing the overburden from the two sources are calculated separately in the emission spreadsheets (Tables 1 and 2). For each type of overburden, there is a screening source (FS 015 and FS 046) and a source for emissions associated with the material being discharged from the screen (FS 039 and FS 047).

A portable crushing and screening plant may also be operated at the Plant Site to reduce the size of large rocks from the overburden or to crush other rock approved by the Minnesota Department of Natural Resources (MDNR) for construction purposes. The rock will be crushed to produce materials suitable for construction activities at the Mine Site. It was assumed that a crushed rock product with

a maximum diameter of one to two inches would be desired. It was also assumed that this could be accomplished with a two stage crushing system with two sets of screens and the associated material transfer points. This operation is included in Tables 1 and 2 as FS 023.

PM and PM_{10} emissions will result from the crushing and screening operations. Total controlled PM_{10} emissions are estimated as 5.0 tpy for both the stockpile and in-pit disposal calculations. Because only overburden and other rock approved for construction purposes will be crushed and/or screened, toxic air pollutant emissions are not a significant concern for these processes. However, to avoid the need for additional submittals, emissions of potentially toxic metals have been estimated for these processes. The highest emission level for any potentially toxic metal is for manganese at 0.016 tpy for both the stockpile and in-pit disposal worst case. Because the metals will be bound up in rock particles they are not expected to be readily absorbed in the body via the inhalation pathway.

3.1.3 Unpaved Mine Roads

Haul roads will be constructed at the Mine Site for transportation of waste rock or lean ore to the appropriate stockpile, the transportation of ore to the Rail Transfer Hopper or Lean Ore Surge Pile, and the transportation of overburden to the overburden storage area and/or to the combined Category 1/2 Waste Rock and overburden stockpile. As noted above, the calculations assume that all overburden is hauled to the overburden storage area, unloaded, reloaded into trucks, and transported to the combined Category 1/2 Waste Rock and overburden stockpile or a construction site. A portion of the overburden equivalent to the demand for screened overburden is assumed to be screened at the storage area. In addition to traffic from the haul trucks, there will also be a small amount of light truck traffic on the mine roads due to the need for supervisors and technical personnel to visit the mining operation. A small fuel tanker will also be used to refuel the diesel powered tracked equipment.

The mine roads are identified as FS 011 and FS 021 in the Year 8 and Year 16 calculation spreadsheets (Tables 1 and 2). The mine roads will change somewhat during the mine operation. The road configurations represented in the spreadsheets are for years 10 and 20, respectively. Figures 1 and 2 show the various road segments at the Mine Site for the same years. After year 11, mining will cease in the East Pit and the Category 1/2 waste rock will be disposed of in the pit. After year 14, mining will cease in the Central Pit and it too will be available for the disposal of the Category 1/2 waste rock. This will affect the traffic patterns at the Mine Site and the location of emission generating activities, so the worst case year for each operating configuration was evaluated in the emission calculations and air dispersion modeling.

PM and PM_{10} emissions are generated by the traffic on the unpaved mine roads. Total controlled potential PM_{10} emissions are 463.9 tpy for the Year 8 calculations and 478.3 tpy for Year 16 calculations. The road surface will be constructed of rock materials separated from common glacial till or other MDNR approved construction rock, so there will be no significant impact from toxic air pollutant emissions from the mine haul roads. The worst case estimate of the potentially toxic metal composition of the road surface was used to estimate emissions of these metals. The highest emission rate is for manganese at 2.4 tpy for the Year 8 calculations and 2.4 tpy for the Year 16 calculations. Because these metals will be bound up in rock particles they are not expected to be readily absorbed in the body via the inhalation pathway.

3.1.4 Dunka Road Emissions

The Dunka Road connects the Mine Site to the Area 2 Shop that will be used for locomotive maintenance and as a base of operations for the mine. The management offices and changing facilities will be located at the Area 2 Shop. Mine workers will drive their personal vehicles from the public road to the Area 2 Shop along the Dunka Road, and then be shuttled to the Mine Site. In addition, there will be a small amount of traffic from the Process Plant to the Mine Site as supervisors and technical staff based at the Plant Site need to visit the Mine Site. The Dunka Road will also be used to bring in fuel and other supplies to the Mine Site and to haul sludge from the waste water treatment facility at the Mine Site to the Plant Site. Emissions from traffic on the Dunka Road are identified as FS 012 in Tables 1 and 2. FS 049 is the emissions from the Field Service and Fueling facility that will be located at the Mine Site. Tanker trucks will travel from this facility to mine mobile equipment when fueling mobile equipment and haul trucks will travel to the facility when they need to be fueled. Large, over the road tankers will deliver fuel to the fueling facility. No reason for variation in the calculations for this activity over the life of the mine was identified, so the calculations are the same in both the stockpile and in-pit disposal worst case spreadsheets (Tables 1 and 2).

Mine vehicle maintenance will be conducted at the Area 1 Shop, which is to the west of the Process Plant near the Dunka Road. Mine vehicles will travel part way down the Dunka Road and then travel through former Cliffs Erie mining operations to avoid mixing light and heavy vehicle traffic as a safety issue.

At the time of EAW submittal, an option for stockpile construction was being considered whereby taconite tailings would be mined from the tailings basin near the Process Plant and transported down the Dunka Road. These tailings would have been used for construction of the stockpile liner systems.

It has since been decided that tailings will not be used at the mine to construct liner systems for the stockpiles. This has made emissions from Dunka Road traffic a much less significant issue. The proposed air quality permitting strategy is to include emissions from portions of the Dunka Road within the Mine Site and Plant Site boundaries with the combined permit application for the Plant and Mine Sites.

The emissions from the road segments within the Mine Site boundary are included in Tables 1 and 2. Emissions from the road segments within the Plant Site boundary are included with the calculations for the Plant Site in RS57A.

Emissions were calculated along segments of the Dunka Road and other service roads where PolyMet will control the surrounding land within the Mine Site boundary. Emissions from light trucks, fuel tankers, trucks hauling lime to the waste water treatment facility at the Mine Site, trucks hauling sludge from the waste water treatment facility, and mining trucks traveling to the Area 1 Shop for maintenance were calculated. The total controlled potential PM_{10} emissions are 7.8 tpy for both the stockpile and in-pit disposal phase calculations. Minor improvements to the Dunka Road will be constructed using material near the improvement or similar material to the mine haul roads, so toxic air pollutants are not expected to have a significant impact, but emissions have been calculated. The highest emission rate is for manganese at 0.04 tpy for both the configurations evaluated. Because these metals will be bound up in rock particles they are not expected to be readily absorbed in the body via the inhalation pathway.

3.1.5 Blast Hole Drilling

Blast holes will be drilled in both waste rock and ore to allow for the placement of explosives. Drill rigs may have dust collection systems, but this has not been assumed to be the case for purposes of these worst case emissions calculations.

The primary pollutant emitted from blast hole drilling will be PM_{10}. Annual emissions are estimated as 14.3 tpy for the stockpile disposal worst case and 13.8 tpy for the in-pit disposal worst case. A small amount of potentially toxic metals will also be emitted due to the natural mineral content of the ore and waste rock. The highest potential emissions of any toxic compound are for copper at 0.03 tpy for the stockpile disposal worst case and 0.04 tpy for the in-pit disposal worst case. The highest HAP emissions are for manganese at 0.02 tpy for both configurations evaluated. As with other sources of potentially toxic metals at the Mine Site, the metals emitted by this process will be bound up in rock particles and not likely to contribute significantly to impacts.

3.2 Fugitive Source Emission Calculations Procedures

Appropriate emission calculation procedures from AP-42 5th edition were used to calculate fugitive emissions at the Mine Site. Further details on the calculations for each type of source are presented below.

3.2.1 Material Handling

Equation 1 from AP-42 Section 3.2.4 for calculating emissions from drop operations was used to calculate emissions from material handling operations except for emissions at the Rail Transfer Hopper. This equation relates wind speed and the moisture content of the material being handled to emissions in lb/ton of material handled. Different constants are used to estimate PM and PM_{10} emissions. A mean wind speed of 9.3 miles per hour was obtained from "Climates of the States", Vol. II, Water Information Center, 1974 for International Falls, MN. Site specific values for moisture content of ore and waste rock were used from a whole rock data set.

The whole rock data set consists of major rock forming elements reported as oxides along with some trace metal data. This data set used about 60 "whole rock" analyses for the "ore zone" (based on stratigraphic position) and about 45 "whole rock" analyses for the "waste zone" (based on stratigraphic position). These data are largely from Geerts (1994), Severson (1988), and Severson and Hauck (1990).

Emissions at the Rail Transfer Hopper were calculated using appropriate emission factors from AP-42 Section 11.19.2, "Crushed Stone Processing and Pulverized Mineral Processing". The equation for drop operations described above was not used because it is intended for drop operations completely exposed to the wind, which is not the case for the Rail Transfer Hopper.

For overburden, an average moisture content of 12.7% was obtained from the Phase I geotechnical field investigation completed at the Mine Site (Appendix B to RS49). The parameters used to calculate each material handling emission factor and the factors are shown in Table 3.

Emission of trace metals were estimated by assuming that the particulate emissions have the same composition as the rock or overburden being handled. Data from the block models developed by PolyMet was used for ore and waste rock where it was available. Other data sources were used as needed. Further details on the data sources are provided in Section 3.3 below.

3.2.2 Crushing and Screening

Emissions from the screen discharge for the overburden screens and the loading of crushed rock into trucks at the portable crushing plant were calculated using the procedure for a drop operation described above in Section 3.2.1. The details of the calculations are presented in Table 3.

Emission for the portable crushing plant, including crushing, screening and associated material transfers were calculated with emission factors taken from AP-42 Section 11.19.2, "Crushed Stone Processing and Pulverized Mineral Processing". An appropriate emission factor was chosen for each operation from Table 11.19.2-2. The specific emission factors are presented in Tables 1 and 2. Controlled emission factors that assume the use of water sprays to reduce dust emissions were used because this is a likely control technique to be used by contract crushing operations. Alternative control techniques that produce similar results may also be used.

Emissions from the overburden screening operation were also calculated using controlled emission factors from AP-42 Table 11.19.2-2. Water sprays are not planned for this operation, because the natural moisture content of the material will make the emission unit perform most similar to a unit with water sprays. As noted in footnote "b" to the AP-42 table, typical moisture contents when facilities operate wet dust suppression systems are in the range of 0.55 to 2.88%; the moisture content of the overburden is 12.7% (from Appendix B of RS49). Additional support for the use of lower emission rates for the overburden screening is provided by the instructions for MPCA Air Emission Permit Application Form GI-05A. Table GI-05A.1 indicates that a 99% control efficiency can be assigned to the processing of material with a moisture content of 6% or more (CE Code 904). The controlled screening emission factor as compared to the uncontrolled factor in AP-42 table 11.19.2-2 shows a reduction due to wet suppression of 91.5%.

Emissions of potentially toxic metals were estimated by assuming particulate emissions have the same composition as the material processed. The worst case value from various data sources was used. Further details on data sources are included in Section 3.3 below.

3.2.3 Unpaved Mine Roads

Emission factors for the unpaved mine roads were calculated using the procedures in AP-42 Section 13.2.2, "Unpaved Roads". Equation 1a was chosen, because it is for roads at industrial sites not accessible to the public, which would be the case for the mine roads. This equation calculates an emission factor as a function of road silt content and average vehicle weight. For the haul trucks, the

mean vehicle weight is the average of the loaded and empty weight of the haul trucks. Trucks with a payload of 240 tons were used in the calculations.

For the light truck traffic on the mine roads, an average vehicle weight of 2.5 tons was used in the calculations. This assumes that the light trucks would generally try to avoid the routes used heavily by the haul trucks for safety purposes. The small fuel tanker for refueling tracked vehicles was handled in a similar manner using an average vehicle weight of 11 tons.

The Mine Site is not yet in operation, so silt content data for the roads is not available. Therefore, the silt content data in AP-42 Table 13.2.2-1 was used. The value for a "Taconite mining and processing, Haul road to/from pit" was determined to be the most appropriate with an average value of 5.8%. Details on the calculation of the emission factors are presented in Table 3. Water or other dust suppressant will be used on the roads, which is reflected in the calculations.

Emissions of potentially toxic metals were estimated by assuming dust generated from traffic on the road has the same metals content as the worst case potential road surface material. This composition is equivalent to that used for the portable crushing circuit, because the crushing circuit will be used to crush rock for road construction.

3.2.4 Dunka Road Emissions

The same procedures were used to calculate emission factors for the Dunka Road and other connecting roads as for the mine haul roads as described in Section 3.2.3. The Dunka Road also will not be accessible to the public, so equation 1a was used for these calculations as well. The weighted average vehicle weight for each segment of road where multiple types of vehicles are expected to travel was calculated. This was done by determining the percent of the traffic for each vehicle type and multiplying this by the vehicle weight and summing this for all vehicles. The calculations are shown in Table 4.

Again, because the projected traffic is not yet occurring on the Dunka Road, site specific silt content data is not available. Therefore, the most representative value from table 13.2.2-1 was used. This was "Taconite mining and processing, Service road", with a mean value of 4.3%. Water or other dust suppressants will also be used on the Dunka Road, which is reflected in the emission calculations.

The same assumptions related to potentially toxic metal emissions were made for the Dunka Road as for the mine roads.

3.2.5 Blast Hole Drilling

Emission from blast hole drilling were estimated with an emission factor from AP-42 Table 11.9-4. This table includes an emission factor for drilling expressed in pounds TSP (Total Suspended Particulates) per hole drilled. TSP was assumed equal to PM and PM_{10}. This emission factor is for western surface coal mining, but rock drilling should be a similar operation regardless of the type of material mined. It should be noted that the convention for coal mining is to refer to consolidated rock that covers the coal as "overburden". In the metallic mineral mining industry, overburden typically refers to unconsolidated material that is scraped off the surface before reaching bedrock that must be blasted for removal.

Emissions of trace metals were estimated by assuming the particulate matter has the same composition as the rock being drilled. The same data was used for each rock category as was used for the material handling calculations.

3.3 Source of Parameters Used in Fugitive Source Calculations

Given the nature of mining operations, one of the challenges to calculating potential emissions, especially for shorter time periods (e.g. hourly or daily) is determining appropriate operating parameters to represent maximum rates. The sections below describe the assumptions related to operating parameters made in the calculations for the NorthMet Mine Site.

3.3.1 Material Handling

The worst case years for both mining configurations, stockpile disposal and in-pit disposal, were determined based on maximum vehicle miles traveled on the mine haul roads as described in Section 3.3.3. This was done because the majority of emissions are generated due to road dust becoming airborne.

For the overburden generated from clearing the pit areas, the quantity removed in the worst case years was determined from data provided by PolyMet in 2006. As expected, the maximum overburden stripping rate occurred early on in the project, and in fact occurred in Year 0, before significant production will occur. Separate values for overburden stripping at the East and West pit were obtained. Overburden from the Central Pit was included with the overburden for the East Pit. They are located adjacently. The worst case years for vehicle miles travelled occur later in the project when mining rates are greater and in fact there is no overburden removed from the pit areas in the worst case years. However, overburden is a minor component to total emission when compared to the emissions generated from handling and transporting waster rock, lean ore and ore.

For overburden generated from stripping the area under the stockpiles for foundation and liner construction, the annual rate of stripping was estimated from stockpile footprints for years 1, 5, 10, 15, and 20 which were determined as part of the preparation of the mine plan (RS18). The overburden stripping in the years between was assumed to be uniform. An average overburden depth of 12.7 feet and an average overburden in situ density of 1.871 ton/cubic yard were used in the calculations. The calculations are presented in Table 12. Again, as expected, the maximum rate occurs early in the project, in this case in Year 1. There is still overburden removed due to stockpile construction in Year 8, but by Year 16 (worst case for in-pit disposal) this activity has been completed.

The calculations assume that overburden from the storage pile would be used to meet the shortfall of overburden removed during the worst case years when compared to the annual demand for construction material. This material would be screened, loaded into trucks, transported to the stockpile or construction site and unloaded.

The potentially toxic metal composition of the overburden was estimated from available data sources including data on Rainy Lobe Till (Pierce, Dowdy and Grigal, 1982), information on Minnesota soil parent material (Pierce, 1980) and unpublished data from an MPCA statewide lead study (MPCA, 1989). For metals included in these data sources, the high reported value was used. For metals not reported in the referenced data sources, the same waste rock data described below was used (Category 1/2). Specific concentrations used in the calculations are given in Table 1, footnote 115. The zinc and manganese content of the overburden was updated during the preparation of the Mine Site AERA in January of 2008 (i.e. after submittal of the reformatted spreadsheets). The AERA modeling used the most current values.

For waste rock handling, the quantity of each type of waste rock generated in the East, West, and Central pits during the worst case year for each mine configuration was obtained from the stockpile chemistry data presented in RS67. The stockpile chemistry data was also used to obtain the toxic metal content of each category of waste rock. The average concentration for each year for each category of waste rock and lean ore was calculated. The highest value for the entire 20 years of projected mine life were used in the calculations for both mine configurations. For metals of interest not tracked with the stockpile chemistry data, the concentration was obtained from whole rock and geology data sets developed by PolyMet.

The whole rock data set consists of major rock forming elements reported as oxides along with some tracemetal data. This data set used about 60 "whole rock" analyses for the "ore zone" (based on stratigraphic position) and about 45 "whole rock" analyses for the "waste zone" (based on stratigraphic position). These data are largely from Geerts (1994), Severson (1988), and Severson and Hauck (1990).

The geology data set consists of elements reported as metals. The data is based on about 2000 samples of "ore" and 8500 samples of "waste". The "ore" versus "waste" calculation was based solely on metals content. The waste rock was not divided into the minimum categories expected to be used in mining: non-reactive, reactive, and lean ore. These data were taken from the proprietary PolyMet geology database in August, 2004. Additional data has been gathered since 2004, but the 2004 data is believed to be conservative.

The mercury value described below for the ore was also used in the waste rock calculations due to the absence of other more directly applicable data.

For ore handling, the quantity of ore handled in the worst case years was again determined from the mine schedule. At the worst case year for in-pit disposal (Year 16), only the west pit will be operating. In order to obtain the split between the east and west pit for production in the worst case year for stockpile disposal (Year 8), data in the ore chemistry spreadsheets (from RS67) was used. However, the total ore as represented in the ore chemistry data does not match the values in the mine schedule, which is considered the most accurate. Therefore, the data from the ore chemistry spreadsheet was used to calculate the percent of ore coming from each pit which was then used to calculate the tons of ore from each pit using the total ore mined in the mine schedule. The reason for this discrepancy is that the data in the ore chemistry spreadsheet is based on the whole "blocks" of ore as used in the block model, while the mine schedule is based on actual projected mining rates. The ore chemistry data was also used to identify the worst case average concentration of each toxic metal reported on an annual average basis. The worst case value for the 20 year mining operation was used for both mine configurations. For toxic compounds for which concentration is not tracked in the ore chemistry data, average values from geology and whole rock data sets prepared by PolyMet for waste characterization were used (these data sets are described in more detail earlier in this section), with the exception of mercury, which used the result of rod mill feed mercury concentration obtained during the year 2000 pilot study (SGS Lakefield Progress Report No. 6). The particulate emissions from the ore handling were assumed to have the same toxic compound concentration as the ore.

The above discussion describes the source of annual throughput values. These must be converted to hourly throughputs to calculate lb/hr values. Because the worst case values for vehicle miles traveled for each mine configuration (stockpile or in-pit disposal) it is reasonably representative to divide these values by 8760 hours per year to obtain hourly throughputs. The hourly rates for specific activities may fluctuate, but the total emissions from all operations on an hourly basis should be representative of the high end of mine operation. Vehicle miles travelled has the single greatest influence on emission levels and furthermore, this parameter is dependent on the total quantity of rock handled at the Mine Site along with haul distance. Note that an earth moving contractor may be used for overburden stripping, especially early in the mine life. This could mean the use of smaller trucks that would require more trips to transport the overburden. However, early in the mine life emission from other operations are below the worst case values due to lower mining rates and shorter haul distances due to shallower pits and fewer lifts on the stockpiles.

3.3.2 Crushing and Screening

The annual overburden screening rates are based on the maximum estimated demand for screened overburden for construction purposes. The maximum hourly rates are based on the capacity of equipment operated by local contractors.

The same overburden composition data as described above in the material handling section was used to estimate potentially toxic metals emissions from the overburden screening operation.

The maximum projected hourly rate for portable crushing plant operation is 300 ton/hr based on the capacity of equipment available for hire on a contract basis in the area. The maximum annual throughput is based on the estimated demand for crushed rock at the mine site with a safety factor (1,000,000 tpy).

Toxic metal composition was estimated by considering the worst case of possible materials that may be processed in the portable crushing plant. The likely candidates are overburden and Category 1 (nonreactive) waste rock. The same overburden data described above plus composition data for Category 1 waste rock were considered, with the highest value chosen. For metals for which other data was not available, the waste rock data for Category 1/2 waste rock as described in the material handling section was used. See Footnote 127 to Table 1 for the specific concentrations used. The zinc and manganese content of the construction rock was updated during the preparation of the Mine Site AERA in January of 2008 (i.e. after submittal of the reformatted spreadsheets). The AERA modeling used the most current values.

3.3.3 Unpaved Mine Roads

The mine road locations were obtained from the mine plan (RS18). Letters were assigned to intersections and terminations of the mine roads. Each segment was then assigned a name based on the letters at each end. Figures 1 and 2 show the 10 year and 20 year road configurations with the road segments identified. Years 10 and 20 are shown in the figures because, as described below, mine haul truck traffic estimates based on these road configurations are the worst case for emissions for the stockpile and in-pit disposal configurations respectively.

In order to determine the worst case year for mine road traffic, a likely route was determined for each material hauled to the appropriate destination. For example, Category 1/2 waste rock would be hauled from the pit where it is generated to the Category 1/2 stockpile in years 1 to 11 and to the East or Central pit for disposal in subsequent years. The haul distance for each material was determined by summing the length of the road segments that make up the route. This was done for each of the five years for which road locations have been identified, years 1, 5, 10, 15, and 20. For each of the 20 years of projected operation, the total quantity of each type of material generated was divided by the capacity of the trucks, 240 tons, and multiplied by the haul distance to obtain one way VMT for the year. These calculations are shown in Tables 5 through 9. The mining rates were used in conjunction with the most representative haul distances based on the operation during that year. As shown in Table 8, the haul distances after year 11 were changed to reflect the in pit disposal of Category 1/2 waste rock. Annual throughputs of each material come from the same sources as described above in the material handling section. Note that the data in tables 5 through 9 presents one way VMT, but this is not important for determining the worst case year. The actual VMT was calculated assuming round trip travel by the trucks.

During some time periods, there are multiple roads going into the East and/or West pit. Some of the data is also not divided between the East and Central pits. The data used to develop the mine plan (RS18) was used as needed to identify the specific area where mining was occurring, so to the best extent possible hauling was assigned to the correct road. Where there was doubt which road would be used, the hauling was divided evenly. This is not expected to have a significant impact on the calculations because the haul distances are similar and the physical location is not far apart for dispersion modeling purposes. Also, in some cases, even with two pit roads, the pit will be modeled as one "open pit" source for the dispersion modeling.

After the worst case years for the stockpile and in-pit disposal configurations (years 8 and 16, respectively) were determined, the total VMT for the year for each road segment was calculated in

Tables 10 and 11. The trips for each type of hauling were inserted under the heading for each road segment that the material would be hauled on. The total trips are summed at the bottom and multiplied by the length of the segment and by two to convert from one way travel to round trips. These VMT values are used in the emission calculation spreadsheets (Tables 1 and 2).

As with the material handling, the annual VMT needs to be related to the hourly VMT. Again, the annual values were divided by 8760 hours per year to obtain hourly values. The actual VMT for some activities will fluctuate during the year, but this should be representative of the total vehicle traffic in an hour.

Road dust would have the same composition as the material crushed in the portable crushing plant, so the same data as described in Section 3.3.2 was used to estimate emissions of potentially toxic metals.

3.3.4 Dunka Road Emissions

Traffic levels on the Dunka Road and other service roads were estimated based on projected staffing levels, fuel consumption, lime usage and sludge generation at the waste water treatment facility, and the projected need for truck maintenance at the Area 1 Shop. It was assumed that three 40 ton oil tankers per day would deliver fuel to the Mine Site. This results in three round trips per day. It was assumed that the maximum hourly distance traveled would be one trip going one way.

For the haul trucks going for maintenance, a 10 vehicle fleet was assumed based on information received from PolyMet (8 for mining operations, 2 for construction etc.). It was also assumed that haul trucks would require maintenance every 250 hours. Assuming 24 hour per day operation, this would mean maintenance about every 10 days. The average daily number of trucks making the trip to the Area 1 Shop would be a little less than one. The hourly worst case was assumed to be two trips, one way, and the daily average, one round trip.

The annual traffic due to the waste water treatment facility was estimated from the projected maximum lime usage of 5,000 tons per year and the projected sludge generation of 10,000 tons per year. It was assumed that the sludge and lime would be hauled in separate over the road trucks with a maximum payload of 24 tons. The number of trips per day was determined by assuming a five day per week trucking schedule, with the result rounded up to the nearest trip. For hourly emission calculations, it was assumed that the maximum traffic level was one round trip per hour.

Light truck traffic levels were calculated based on projected staffing levels at the Area 2 Shop, the Mine Site, and the Plant Site. It was assumed that all general mine workers would drive their personal vehicles to the Area 2 Shop and then be shuttled in six person vans to the Mine Site. Railroad operations will be based out of the Area 2 Shop. Mine management will be based at the Area 2 Shop. Supervisory and technical personal, when traveling to the Mine Site would drive separate vehicles. Personnel were divided into shifts and maximum hourly traffic rates were calculated assuming both the shift coming on and the one getting off would travel on the roads during the same hour. It was assumed that all personnel would travel during the eight-hour shift change, although railroad workers will be on 12 hour shifts and other staff would likely travel at different times. Detailed tables showing the trips assumed per each segment of the road are shown in footnote 217 to Tables 1 and 2. Total daily traffic levels were estimated by summing traffic from all three shift changes. The same assumptions were made for the stockpile and in-pit disposal worst case scenarios. Figure 3 shows the location of the various Dunka Road segments. For the fueling facility circle, the traffic from fuel tankers is the same as described above for the Dunka Road. For the haul trucks, it was assumed that each truck would be fueled once per shift or three times per day. The maximum hourly traffic was assumed to be one fuel tanker plus one third of the haul truck fleet rounded up or four trucks for a total of five trips. The maximum daily trips would be three tanker trucks plus three shifts times 10 trucks or 33 trips total. The annual trips are the daily trips times 365 days/year.

Road dust would have the same composition as the material crushed in the portable crushing plant, so the same data as described in Section 3.3.2 was used to estimate emissions of potentially toxic metals.

3.3.5 Blast Hole Drilling

As part of the process of estimating explosives use, the mining engineers working on the project determined to the maximum number of holes required for waste rock and ore blasting. For the typical ore production level, 11,700,000 tons per year, 14,857 blast holes would be required. The number of tons of ore mined per blast hole can be calculated by dividing the tons of ore mined by the number of holes required with a result of 787.5 tons ore per blast hole. The number of holes required to mine the ore in each pit at maximum production was determined by dividing the quantity mined by 787.5.

The same approach was used for waste rock. Mining engineers determined that 6,412 holes would be required to mine 21,800,000 tons of waste rock. The tons per hole was calculated as 3399.9 tons waste rock per hole. The number of holes required for each type of waste rock in each pit at the worst

case conditions was determined by dividing the quantity of rock mined by this value. Note: the blasting parameters (bench height, spacing and burden) are different for ore and waste rock which accounts for the higher tons rock per hole for the waste rock.

4.0 References

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Tables

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Actual (Units/yr)	Units	Annual days with precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc Emissions (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont Emissions (tons/yr)	Emission Std or Operational Limit	Limited Cont PTE (tons/yr)	g/sec Model Input
SV 226	EU 229	Mine Diesel Fuel Tank #1	NA	468.75 [201]	4,106,250 [301]	4,106,250 [401]	gallons		VOC	Y	N	3.2511E-06 [102]	0.00	0.007	0.007	0 [502]	0.00	0.007	0.007		0.007	0.000
SV 227	EU 230	Mine Diesel Fuel Tank #2	NA	468.75 [201]	4,106,250 [301]	4,106,250 [401]	gallons		VOC	Y	N	3.2511E-06 [102]	0.00	0.007	0.007	0 [502]	0.00	0.007	0.007		0.007	0.000
SV 338	EU 345	Mine Diesel Fuel Tank #3	NA	468.75 [201]	4,106,250 [301]	4,106,250 [401]	gallons		VOC	Y	N	3.2511E-06 [102]	0.00	0.007	0.007	0 [502]	0.00	0.007	0.007		0.007	0.000
SV 326	EU 332	WWTP Back up Generator	NA	5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		NOx	Y	N	4.410 [103]	23.09	5.773	5.773	0 [502]	23.09	5.773	5.773		5.773	2.909
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		PM10	Y	N	0.310 [103]	1.62	0.406	0.406	0 [502]	1.62	0.406	0.406	GP 001	0.406	0.205
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Total PM	Y	N	0.310 [103]	1.62	0.406	0.406	0 [502]	1.62	0.406	0.406	20 % Opacity GP 001	0.406	0.205
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		SO2	Y	N	0.505 [104]	2.64	0.661	0.661	0 [502]	2.64	0.661	0.661	0.5 lb/MMBtu	0.661	0.333
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		H2SO4/SO3	Y	N	0.013 [105]	0.07	0.017	0.017	0 [502]	0.07	0.017	0.017		0.017	0.009
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Carbon Monoxide	Y	N	0.95 [103]	4.97	1.244	1.244	0 [502]	4.97	1.244	1.244		1.244	0.627
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		VOC	Y	N	0.36 [103]	1.88	0.471	0.471	0 [502]	1.88	0.471	0.471		0.471	0.237
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		CO2	Y	N	164 [103]	858.70	214.676	214.676	0 [502]	858.70	214.676	214.676		214.676	108.194
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzene	Y	Y	9.33E-04 [106]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001	0.001
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Toluene	Y	Y	4.09E-04 [106]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Xylene	Y	Y	2.85E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Propylene	Y	Y	2.58E-03 [106]	0.01	0.003	0.003	0 [502]	0.01	0.003	0.003		0.003	0.002
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		1,3-Butadiene	Y	Y	1.96E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Formaldehyde	Y	Y	1.18E-03 [106]	0.01	0.002	0.002	0 [502]	0.01	0.002	0.002		0.002	0.001
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Acetaldehyde	Y	Y	7.67E-04 [106]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001	0.001
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Acrolein	Y	Y	4.63E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Naphthalene	Y	Y	8.48E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Acenaphthylene	Y	[6]	2.53E-06 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Acenaphthene	Y	[6]	7.10E-07 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Fluorene	Y	[6]	2.92E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Phenanthrene	Y	[6]	2.94E-05 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Anthracene	Y	[6]	1.87E-06 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Fluoranthene	Y	[6]	7.61E-06 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Pyrene	Y	[6]	4.78E-06 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzo(a)anthracene	Y	[6]	1.68E-06 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Chrysene	Y	[6]	3.53E-07 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzo(b)fluoranthene	Y	[6]	4.96E-08 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzo(k)fluoranthene	Y	[6]	7.75E-08 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzo(a)pyrene	Y	[6]	9.40E-08 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Indeno(1,2,3-cd)pyrene	Y	[6]	1.88E-07 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Dibenzo(a,h)anthracene	Y	[6]	2.92E-07 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzo(g,h,i)perylene	Y	[6]	2.45E-07 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		POM	Y	Y	1.60E-04 [106]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337	EU 344	Generator to Move Electrical Equipment	NA	1100 [203]	550,000 [303]	114,400 [402]	hp-hour		NOx	N	N	0.024 [107]	26.40	6.600	1.373	0 [502]	26.40	6.600	1.373		6.600	3.326
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		PM10	N	N	0.0573 [108]	0.44	0.110	0.023	0 [502]	0.44	0.110	0.023	GP 001	0.110	0.056
SV 337				1100 [203]	550,000 [303]	114,400 [402]	hp-hour		Total PM	N	N	0.0007 [107]	0.77	0.193	0.040	0 [502]	0.77	0.193	0.040	20 % Opacity GP 001	0.193	0.097
SV 337				1100 [203]	550,000 [303]	114,400 [402]	hp-hour		SO2	N	N	0.004045 [107]	4.45	1.112	0.231	0 [502]	4.45	1.112	0.231	0.5 lb/MMBtu	1.112	0.561
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		H2SO4/SO3	N	N	0.013 [109]	0.10	0.025	0.005	0 [502]	0.10	0.025	0.005		0.025	0.013
SV 337				1100 [203]	550,000 [303]	114,400 [402]	hp-hour		Carbon Monoxide	N	N	5.50E-03 [107]	6.05	1.513	0.315	0 [502]	6.05	1.513	0.315		1.513	0.762
SV 337				1100 [203]	550,000 [303]	114,400 [402]	hp-hour		VOC	N	N	0.00064155 [107]	0.71	0.176	0.037	0 [502]	0.71	0.176	0.037		0.176	0.089
SV 337				1100 [203]	550,000 [303]	114,400 [402]	hp-hour		CO2	N	N	1.16 [107]	1,276.00	319.000	66.352	0 [502]	1,276.00	319.000	66.352		319.000	160.772
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzene	N	Y	7.76E-04 [110]	0.01	0.001	0.000	0 [502]	0.01	0.001	0.000		0.001	0.001
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Toluene	N	Y	2.81E-04 [110]	0.00	0.001	0.000	0 [502]	0.00	0.001	0.000		0.001	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Xylene	N	Y	1.93E-04 [110]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Formaldehyde	N	Y	7.89E-05 [110]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Acetaldehyde	N	Y	2.52E-05 [110]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Acrolein	N	Y	7.88E-06 [110]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Naphthalene	N	Y	1.30E-04 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Acenaphthylene	N	[6]	9.23E-06 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Acenaphthene	N	[6]	4.68E-06 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Fluorene	N	[6]	1.28E-05 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Phenanthrene	N	[6]	4.08E-05 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Anthracene	N	[6]	1.23E-06 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Fluoranthene	N	[6]	4.03E-06 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Pyrene	N	[6]	3.71E-06 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzo(a)anthracene	N	[6]	6.22E-07 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Chrysene	N	[6]	1.53E-06 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzo(b)fluoranthene	N	[6]	1.11E-06 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzo(k)fluoranthene	N	[6]	1.09E-07 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzo(a)pyrene	N	[6]	1.29E-07 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Indeno(1,2,3-cd)pyrene	N	[6]	2.07E-07 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Dibenzo(a,h)anthracene	N	[6]	1.73E-07 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzo(g,h,i)perylene	N	[6]	2.78E-07 [112]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		POM	N	Y	2.10E-04 [111]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWTP	EU 331	WWTF Propane Fired Space Heaters	NA	0.0907 [204]	795 [304]	397.3 [403]	Mgal		PM10	Y	N	0.7 [113]	0.06	0.278	0.139	0 [502]	0.06	0.278	0.139	GP 001	0.139	0.008
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		Total PM	Y	N	0.7 [113]	0.06	0.278	0.139	0 [502]	0.06	0.278	0.139	GP 001	0.139	0.008
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		NOx	Y	N	13.0 [113]	1.18	5.165	2.583	0 [502]	1.18	5.165	2.583		5.165	0.149
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		SO2	Y	N	0.02 [113]	0.00	0.008	0.004	0 [502]	0.00	0.008	0.004		0.008	0.000
WWTP				0.086 [204]	795 [304]	397.3 [403]	Mgal		Carbon Monoxide	Y	N	7.5 [113]	0.68	2.980	1.490	0 [502]	0.68	2.980	1.490		2.980	0.086
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		VOC	Y	N	0.8 [113]	0.07	0.318	0.159	0 [502]	0.07	0.318	0.159		0.318	0.009
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		CO2	Y	N	12500 [113]	1,133.88	4,966.393	2,483.197	0 [502]	1,133.88	4,966.393	2483.197		4,966.393	142.866
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		CH4	Y	N	0.2 [113]	0.02	0.079	0.040	0 [502]	0.02	0.079	0.040		0.079	0.002
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		N2O	Y	N	0.9 [113]	0.08	0.358	0.179	0 [502]	0.08	0.358	0.179		0.358	0.010
EESP	FS 001	Surface Overburden, Truck Load - East (ESP)	NA	0.0 [205]	0 [305]	0 [401]	tons surface		PM10	N	N	0.0002 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Total PM	N	N	0.0002 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface		Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj. Actual (Units/yr)	Units	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE [1] (lb/hr)	(tons/yr)	Proj Act Unc Emissions (ton/yr)	Control Eff (%) Note	Max Cont PTE [2] (lb/hr)	(tons/yr)	Proj Act Cont Emissions (tons/yr)	Emission Std or Op Limit	Limited Cont PTE (tons/yr)	g/sec Model Input
EESP				0.0 [205]	0 [305]	0 [401]	tons surface	Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface	Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface	Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface	Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface	Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface	Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface	Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
EESP				0.0 [205]	0 [305]	0 [401]	tons surface	Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP	FS 001	Surface Overburden, Truck Load - West (WSP)	NA	0.0 [205]	0 [305]	0 [401]	tons surface	PM10	N	N	0.0002 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Total PM	N	N	0.0004 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
WWSP				0.0 [205]	0 [305]	0 [401]	tons surface	Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH	FS 014	Surface Overburden, Truck Unload - storage pile	NA	0.0 [205]	0 [305]	0 [401]	tons surface	PM10	N	N	0.0002 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Total PM	N	N	0.0004 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0 [205]	0 [305]	0 [401]	tons surface	Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS	FS 015	Surface Overburden, Screening	NA	198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	PM10	Y	N	0.00074 [116]	0.15	0.441	0.441	0 [502]	0.15	0.441	0.441	GP 001	0.441	0.019
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Total PM	Y	N	0.0022 [116]	0.44	1.311	1.311	0 [502]	0.44	1.311	1.311	GP 001	0.441	0.055
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Antimony	Y	Y	1.02E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Arsenic	Y	Y	1.36E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Beryllium	Y	Y	2.20E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Cadmium	Y	Y	7.46E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Chromium	Y	Y	2.44E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Cobalt	Y	Y	1.76E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Pb	Y	Y	2.20E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Manganese	Y	Y	2.36E-06 [115]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Mercury	Y	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Nickel	Y	Y	1.45E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Phosphorus	Y	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Selenium	Y	Y	2.10E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Barium	Y	N	1.88E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Boron	Y	N	2.44E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Copper	Y	N	1.10E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Molybdenum	Y	N	5.46E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Vanadium	Y	N	1.17E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Zinc	Y	N	1.73E-06 [115]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Tellurium	Y	N	5.35E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRCS				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Fluorides (as F)	Y	N	1.44E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH	FS 039	Surface Overburden, Screen Discharge	NA	198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	PM10	Y	N	0.0002 [114]	0.04	0.112	0.112	0 [502]	0.04	0.112	0.112	GP 001	0.112	0.005
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Total PM	Y	N	0.0004 [114]	0.08	0.238	0.238	0 [502]	0.08	0.238	0.238	GP 001	0.238	0.010
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Antimony	Y	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Arsenic	Y	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Beryllium	Y	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Cadmium	Y	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Chromium	Y	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Cobalt	Y	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Pb	Y	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Manganese	Y	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Mercury	Y	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Nickel	Y	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Phosphorus	Y	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Selenium	Y	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Barium	Y	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface	Boron	Y	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Actual (Units/yr)	Units	Annual days with precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont (tons/yr)	Emission Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Copper	Y	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Molybdenum	Y	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Vanadium	Y	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Zinc	Y	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Tellurium	Y	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Fluorides (as F)	Y	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH	FS 019	Surface Overburden, Truck Reload	NA	198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		PM10	N	N	0.0002 [114]	0.04	0.112	0.112	0 [502]	0.04	0.112	0.112		0.112				0.005
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Total PM	N	N	0.0004 [114]	0.08	0.238	0.238	0 [502]	0.08	0.238	0.238		0.238				0.010
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH	FS 002	Surface Overburden, Truck Unload - Stockpile	NA	198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		PM10	N	N	0.0002 [114]	0.04	0.112	0.112	0 [502]	0.04	0.112	0.112		0.112				0.005
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Total PM	N	N	0.0004 [114]	0.08	0.238	0.238	0 [502]	0.08	0.238	0.238		0.238				0.015
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP	FS 004	Cat 1/2 Waste Rock, Truck Load East	NA	1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		PM10	N	N	0.0044 [114]	7.01	30.715	30.715	0 [502]	7.01	30.715	30.715		30.715				0.884
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Total PM	N	N	0.0094 [114]	14.83	64.940	64.940	0 [502]	14.83	64.940	64.940		64.940				1.868
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Antimony	N	Y	4.17E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Arsenic	N	Y	5.94E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Cadmium	N	Y	9.49E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Chromium	N	Y	1.26E-06 [117]	0.00	0.009	0.009	0 [502]	0.00	0.009	0.009		0.009				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Cobalt	N	Y	5.10E-07 [117]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Pb	N	Y	5.24E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Manganese	N	Y	8.74E-06 [117]	0.01	0.060	0.060	0 [502]	0.01	0.060	0.060		0.060				0.002
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.00	0.019	0.019	0 [502]	0.00	0.019	0.019		0.019				0.001
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.01	0.037	0.037	0 [502]	0.01	0.037	0.037		0.037				0.001
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Barium	N	N	8.11E-07 [117]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Copper	N	N	2.82E-06 [117]	0.00	0.019	0.019	0 [502]	0.00	0.019	0.019		0.019				0.001
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Vanadium	N	N	4.98E-07 [117]	0.00	0.003	0.003	0 [502]	0.00	0.003	0.003		0.003				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Zinc	N	N	8.21E-07 [117]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
EESP				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004				0.000
EESP	FS 050	Blast Hole Drilling Cat 1/2 WR East		0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		PM10	N	N	1.3 [120]	0.60	2.644	2.644	0 [502]	0.60	2.644	2.644		2.644				0.076
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.60	2.644	2.644	0 [502]	0.60	2.644	2.644		2.644				0.076
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Antimony	N	Y	5.77E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Arsenic	N	Y	8.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Beryllium	N	Y	1.30E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Cadmium	N	Y	1.31E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Chromium	N	Y	1.75E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Cobalt	N	Y	7.05E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Pb	N	Y	7.25E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Manganese	N	Y	1.21E-03 [120]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Nickel	N	Y	3.90E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Phosphorus	N	Y	7.34E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Selenium	N	Y	1.24E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Barium	N	N	1.12E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Boron	N	N	1.44E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Copper	N	N	3.90E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
EESP				0.46 [208]	4,067 [304]	4,067 [401]	holes drilled		Molybdenum	N	N	3.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Max (Units/yr)	Note	Proj. Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Unc. PTE (lb/hr)	(tons/yr)	Proj. Act. Unc. Emissions (ton/yr)	Control Eff (%)	Note	Max. Cont. PTE (lb/hr)	(tons/yr)	Proj. Act. Cont. Emissions (tons/yr)	Emission Std or Operational Limit	Limited Cont. PTE (tons/yr)	Max Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
EESP				0.46	[208]	4,067	[304]	4,067	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.46	[208]	4,067	[304]	4,067	[401]	holes drilled		Zinc	N	N	1.14E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.46	[208]	4,067	[304]	4,067	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.46	[208]	4,067	[304]	4,067	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP	FS 004	Category 3 Waste Rock, Truck Load East		59	[207]	516,407	[307]	516,407	[401]	tons rock		PM10	N	N	0.0044	[114]	0.26	1.147	1.147	0	[502]	0.26	1.147	1.147		1.147					0.033
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Total PM	N	N	0.0094	[114]	0.55	2.425	2.425	0	[502]	0.55	2.425	2.425		2.425					0.070
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Antimony	N	Y	4.24E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Arsenic	N	Y	6.23E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Beryllium	N	Y	1.03E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Cadmium	N	Y	9.67E-09	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Chromium	N	Y	1.27E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Cobalt	N	Y	4.98E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Pb	N	Y	5.33E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Manganese	N	Y	9.32E-06	[117]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Nickel	N	Y	2.82E-06	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Barium	N	N	8.35E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Copper	N	N	6.58E-06	[117]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Zinc	N	N	8.36E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				59	[207]	516,407	[307]	516,407	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP	FS 050	Blast Hole Drilling Cat 3 WR East		0.02	[208]	152	[304]	152	[401]	holes drilled		PM10	N	N	1.3	[120]	0.02	0.099	0.099	0	[502]	0.02	0.099	0.099		0.099					0.003
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.02	0.099	0.099	0	[502]	0.02	0.099	0.099		0.099					0.003
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Antimony	N	Y	5.86E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Arsenic	N	Y	8.62E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Beryllium	N	Y	1.43E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Cadmium	N	Y	1.34E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Chromium	N	Y	1.75E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Cobalt	N	Y	6.89E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Pb	N	Y	7.37E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Manganese	N	Y	1.29E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Nickel	N	Y	3.90E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Phosphorus	N	Y	7.34E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Selenium	N	Y	1.24E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Barium	N	N	1.16E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Boron	N	N	1.44E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Copper	N	N	9.10E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Zinc	N	N	1.16E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	152	[304]	152	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP	FS 004	Category 3 Lean Ore, Truck Load East		58	[207]	511,171	[307]	511,171	[401]	tons rock		PM10	N	N	0.0044	[114]	0.26	1.135	1.135	0	[502]	0.26	1.135	1.135		1.135					0.033
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Total PM	N	N	0.0094	[114]	0.55	2.401	2.401	0	[502]	0.55	2.401	2.401		2.401					0.069
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Antimony	N	Y	4.19E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Arsenic	N	Y	6.37E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Beryllium	N	Y	9.39E-09	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Cadmium	N	Y	1.03E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Chromium	N	Y	1.27E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Cobalt	N	Y	6.40E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Pb	N	Y	5.64E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Manganese	N	Y	8.87E-06	[117]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Nickel	N	Y	3.76E-06	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Barium	N	Y	9.03E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Copper	N	N	9.39E-06	[117]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Zinc	N	N	8.55E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				58	[207]	511,171	[307]	511,171	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP	FS 050	Blast Hole Drilling Cat 3 LO East		0.02	[208]	150	[304]	150	[401]	holes drilled		PM10	N	N	1.3	[120]	0.02	0.098	0.098	0	[502]	0.02	0.098	0.098		0.098					0.003
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.02	0.098	0.098	0	[502]	0.02	0.098	0.098		0.098					0.003
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Antimony	N	Y	5.80E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Arsenic	N	Y	8.81E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Beryllium	N	Y	1.30E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Cadmium	N	Y	1.43E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Chromium	N	Y	1.76E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Cobalt	N	Y	8.86E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Pb	N	Y	7.80E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Manganese	N	Y	1.23E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Nickel	N	Y	5.20E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Phosphorus	N	Y	7.34E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Selenium	N	Y	1.24E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Barium	N	N	1.25E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Boron	N	N	1.44E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Copper	N	N	1.30E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Zinc	N	N	1.18E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	Maximum (Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Unc. PTE [1] (lb/hr)	(tons/yr)	Proj. Act. Unc. Emis. (ton/yr)	Control Eff. (%)	Note	Max. Cont. PTE [2] (lb/hr)	(tons/yr)	Proj. Act. Cont. Emis. (tons/yr)	Emis. Std or Op. Limit	Limited Cont. PTE (tons/yr)	Max. Throughput units/day	Note	Max. Unc. Emis. lb/day	Max. Cont. Emis. lb/day	g/sec Model Input
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	150	[304]	150	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP	FS 004	Category 4 Waste Rock, Truck Load East		55	[207]	479,489	[307]	479,489	[401]	tons rock		PM10	N	N	0.0044	[114]	0.24	1.065	1.065	0	[502]	0.24	1.065	1.065		1.065					0.031
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Total PM	N	N	0.0094	[114]	0.51	2.252	2.252	0	[502]	0.51	2.252	2.252		2.252					0.065
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Antimony	N	Y	4.70E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Arsenic	N	Y	4.34E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Beryllium	N	Y	1.88E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Cadmium	N	Y	2.14E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Chromium	N	Y	1.58E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Cobalt	N	Y	3.12E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Pb	N	Y	2.72E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Manganese	N	Y	1.24E-05	[117]	0.00	0.003	0.003	0	[502]	0.00	0.003	0.003		0.003					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Nickel	N	Y	9.39E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Barium	N	N	5.11E-06	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Copper	N	N	2.82E-06	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Vanadium	N	N	4.98E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Zinc	N	N	3.04E-06	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				55	[207]	479,489	[307]	479,489	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP	FS 050	Blast Hole Drilling Cat 4 WR East		0.02	[208]	141	[304]	141	[401]	holes drilled		PM10	N	N	1.3	[120]	0.02	0.092	0.092	0	[502]	0.02	0.092	0.092		0.092					0.003
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.02	0.092	0.092	0	[502]	0.02	0.092	0.092		0.092					0.003
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Antimony	N	Y	6.50E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Arsenic	N	Y	6.00E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Beryllium	N	Y	2.60E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Cadmium	N	Y	2.96E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Chromium	N	Y	2.18E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Cobalt	N	Y	4.32E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Pb	N	Y	3.77E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Manganese	N	Y	1.71E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Nickel	N	Y	1.30E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Phosphorus	N	Y	7.34E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Selenium	N	Y	1.24E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Barium	N	N	7.07E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Boron	N	N	1.44E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Copper	N	N	3.90E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Zinc	N	N	4.21E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.02	[208]	141	[304]	141	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP	FS 004	Category 4 Lean Ore, Truck Load East		11	[207]	99,203	[307]	99,203	[401]	tons rock		PM10	N	N	0.0044	[114]	0.05	0.220	0.220	0	[502]	0.05	0.220	0.220		0.220					0.006
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Total PM	N	N	0.0094	[114]	0.11	0.466	0.466	0	[502]	0.11	0.466	0.466		0.466					0.013
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Antimony	N	Y	3.99E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Arsenic	N	Y	6.55E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Beryllium	N	Y	1.01E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Cadmium	N	Y	1.11E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Chromium	N	Y	1.27E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Cobalt	N	Y	6.15E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Pb	N	Y	5.42E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Manganese	N	Y	8.31E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Nickel	N	Y	3.76E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Barium	N	N	9.03E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Copper	N	N	1.22E-05	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Vanadium	N	N	4.98E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Zinc	N	N	8.55E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				11	[207]	99,203	[307]	99,203	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP	FS 050	Blast Hole Drilling Cat 4 LO East		0.00	[208]	29	[304]	29	[401]	holes drilled		PM10	N	N	1.3	[120]	0.00	0.019	0.019	0	[502]	0.00	0.019	0.019		0.019					0.001
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.00	0.019	0.019	0	[502]	0.00	0.019	0.019		0.019					0.001
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Antimony	N	Y	5.53E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Arsenic	N	Y	9.06E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Beryllium	N	Y	1.40E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Cadmium	N	Y	1.53E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Chromium	N	Y	1.75E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Cobalt	N	Y	8.51E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Pb	N	Y	7.50E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Manganese	N	Y	1.15E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Nickel	N	Y	5.20E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Phosphorus	N	Y	7.34E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Selenium	N	Y	1.24E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Barium	N	N	1.25E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Boron	N	N	1.44E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Copper	N	N	1.69E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Zinc	N	N	1.18E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EESP				0.00	[208]	29	[304]	29	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Actual (Units/yr)	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE [1] (lb/hr)	Max Unc PTE (ton/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%)	Max Cont PTE [2] (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont Emiss (tons/yr)	Emiss Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
WWSP	FS 004	Cat 1/2 Waste Rock, Truck Load West		1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		PM10	N	N	0.0044 [114]	7.25	31.774	31.774	0 [502]	7.25	31.774	31.774		31.774					0.914
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Total PM	N	N	0.0094 [114]	15.34	67.178	67.178	0 [502]	15.34	67.178	67.178		67.178					1.932
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Antimony	N	Y	4.42E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Arsenic	N	Y	5.61E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Cadmium	N	Y	1.16E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Chromium	N	Y	9.17E-07 [117]	0.00	0.007	0.007	0 [502]	0.00	0.007	0.007		0.007					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Cobalt	N	Y	5.31E-07 [117]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Pb	N	Y	4.97E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Manganese	N	Y	1.36E-05 [117]	0.02	0.097	0.097	0 [502]	0.02	0.097	0.097		0.097					0.003
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.00	0.020	0.020	0 [502]	0.00	0.020	0.020		0.020					0.001
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.01	0.038	0.038	0 [502]	0.01	0.038	0.038		0.038					0.001
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Barium	N	N	6.49E-07 [117]	0.00	0.005	0.005	0 [502]	0.00	0.005	0.005		0.005					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Copper	N	N	3.76E-06 [117]	0.01	0.027	0.027	0 [502]	0.01	0.027	0.027		0.027					0.001
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Vanadium	N	N	4.98E-07 [117]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Zinc	N	N	1.03E-06 [117]	0.00	0.007	0.007	0 [502]	0.00	0.007	0.007		0.007					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
WWSP				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004					0.000
WWSP	FS 050	Blast Hole Drilling Cat 1/2 West		0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		PM10	N	N	1.3 [120]	0.62	2.735	2.735	0 [502]	0.62	2.735	2.735		2.735					0.079
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.62	2.735	2.735	0 [502]	0.62	2.735	2.735		2.735					0.079
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Antimony	N	Y	6.12E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Arsenic	N	Y	7.76E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Beryllium	N	Y	1.30E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Cadmium	N	Y	1.60E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Chromium	N	Y	1.27E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Cobalt	N	Y	7.35E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Pb	N	Y	6.88E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Manganese	N	Y	1.88E-03 [120]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Nickel	N	Y	3.90E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Phosphorus	N	Y	7.34E-04 [120]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Selenium	N	Y	1.24E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Barium	N	N	8.98E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Boron	N	N	1.44E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Copper	N	N	5.20E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Molybdenum	N	N	3.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Vanadium	N	N	6.90E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Zinc	N	N	1.43E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Tellurium	N	N	3.16E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.48 [208]	4,207 [304]	4,207 [401]	holes drilled		Fluorides (as F)	N	N	8.52E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP	FS 004	Cat 3 Waste Rock, Truck Load West		26 [207]	226,665 [307]	226,665 [401]	tons rock		PM10	N	N	0.0044 [114]	0.11	0.503	0.503	0 [502]	0.11	0.503	0.503		0.503					0.014
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.24	1.065	1.065	0 [502]	0.24	1.065	1.065		1.065					0.031
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Antimony	N	Y	4.31E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Arsenic	N	Y	5.23E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Beryllium	N	Y	9.58E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Cadmium	N	Y	1.16E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Chromium	N	Y	9.30E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Cobalt	N	Y	5.08E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Pb	N	Y	4.97E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Manganese	N	Y	1.36E-05 [117]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Barium	N	N	5.34E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Copper	N	N	6.58E-06 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Vanadium	N	N	4.98E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Zinc	N	N	1.04E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				26 [207]	226,665 [307]	226,665 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP	FS 050	Blast Hole Drilling Cat 3 WR West		0.01 [208]	67 [304]	67 [401]	holes drilled		PM10	N	N	1.3 [120]	0.01	0.043	0.043	0 [502]	0.01	0.043	0.043		0.043					0.001
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.01	0.043	0.043	0 [502]	0.01	0.043	0.043		0.043					0.001
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Antimony	N	Y	5.97E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Arsenic	N	Y	7.24E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Beryllium	N	Y	1.33E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Cadmium	N	Y	1.60E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Chromium	N	Y	1.29E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Cobalt	N	Y	7.03E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Pb	N	Y	6.88E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Manganese	N	Y	1.89E-03 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Nickel	N	Y	3.90E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Phosphorus	N	Y	7.34E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Selenium	N	Y	1.24E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Barium	N	N	7.39E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Boron	N	N	1.44E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Copper	N	N	9.10E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Molybdenum	N	N	3.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Vanadium	N	N	6.90E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Zinc	N	N	1.44E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Tellurium	N	N	3.16E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.01 [208]	67 [304]	67 [401]	holes drilled		Fluorides (as F)	N	N	8.52E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP	FS 004	Cat 3 Lean Ore, Truck Load West		227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		PM10	N	N	0.0044 [114]	1.01	4.409	4.409	0 [502]	1.01	4.409	4.409		4.409					0.127
WWSP				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Total PM	N	N	0.0094 [114]	2.13	9.321	9.321	0 [502]	2.13	9.321	9.321		9.321					0.268

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Max (Units/yr)	Note	Proj Actual (Units/yr)	Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Note	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont (tons/yr)	Emission Std or Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Antimony	N	Y	4.33E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Arsenic	N	Y	5.46E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Beryllium	N	Y	9.39E-09	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Cadmium	N	Y	1.14E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Chromium	N	Y	9.61E-07	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Cobalt	N	Y	6.13E-07	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Pb	N	Y	4.95E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Manganese	N	Y	1.33E-05	[117]	0.00	0.013	0.013	0	[502]	0.00	0.013	0.013		0.013					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Nickel	N	Y	3.76E-06	[117]	0.00	0.004	0.004	0	[502]	0.00	0.004	0.004		0.004					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.005	0.005	0	[502]	0.00	0.005	0.005		0.005					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Barium	N	N	6.30E-07	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Copper	N	N	1.03E-05	[117]	0.00	0.010	0.010	0	[502]	0.00	0.010	0.010		0.010					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Zinc	N	N	1.03E-06	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				227	[207]	1,984,690	[307]	1,984,690	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WWSP	FS 050	Blast Hole Drilling Cat 3 LO West		0.07	[208]	584	[304]	584	[401]	holes drilled		PM10	N	N	1.3	[120]	0.09	0.379	0.379	0	[502]	0.09	0.379	0.379		0.379					0.011
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.09	0.379	0.379	0	[502]	0.09	0.379	0.379		0.379					0.011
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Antimony	N	Y	5.99E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Arsenic	N	Y	7.55E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Beryllium	N	Y	1.30E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Cadmium	N	Y	1.57E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Chromium	N	Y	1.33E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Cobalt	N	Y	8.49E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Pb	N	Y	6.85E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Manganese	N	Y	1.84E-03	[120]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Nickel	N	Y	5.20E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Phosphorus	N	Y	7.34E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Selenium	N	Y	1.24E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Barium	N	N	8.72E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Boron	N	N	1.44E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Copper	N	N	1.43E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Zinc	N	N	1.42E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.07	[208]	584	[304]	584	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP	FS 004	Cat 4 Waste Rock, Truck Load West		2	[207]	18,534	[307]	18,534	[401]	tons rock		PM10	N	N	0.0044	[114]	0.01	0.041	0.041	0	[502]	0.01	0.041	0.041		0.041					0.001
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Total PM	N	N	0.0094	[114]	0.02	0.087	0.087	0	[502]	0.02	0.087	0.087		0.087					0.003
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Antimony	N	Y	4.41E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Arsenic	N	Y	4.74E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Beryllium	N	Y	1.61E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Cadmium	N	Y	1.66E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Chromium	N	Y	2.80E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Cobalt	N	Y	7.11E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Pb	N	Y	1.21E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Manganese	N	Y	1.43E-05	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Nickel	N	Y	3.76E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Barium	N	N	2.56E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Copper	N	N	8.45E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Zinc	N	N	2.02E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				2	[207]	18,534	[307]	18,534	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP	FS 050	Blast Hole Drilling Cat 4 WR West		0.00	[208]	5	[304]	5	[401]	holes drilled		PM10	N	N	1.3	[120]	0.00	0.004	0.004	0	[502]	0.00	0.004	0.004		0.004					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.00	0.004	0.004	0	[502]	0.00	0.004	0.004		0.004					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Antimony	N	Y	6.11E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Arsenic	N	Y	6.56E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Beryllium	N	Y	2.22E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Cadmium	N	Y	2.30E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Chromium	N	Y	3.88E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Cobalt	N	Y	9.84E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Pb	N	Y	1.67E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Manganese	N	Y	1.98E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Nickel	N	Y	5.20E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Phosphorus	N	Y	7.34E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Selenium	N	Y			0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Barium	N	N	3.55E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Boron	N	N	1.44E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Copper	N	N	1.17E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Zinc	N	N	2.79E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.00	[208]	5	[304]	5	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP	FS 004	Cat 4 Lean Ore, Truck Load West		7	[207]	61,630	[307]	61,630	[401]	tons rock		PM10	N	N	0.0044	[114]	0.03	0.137	0.137	0	[502]	0.03	0.137	0.137		0.137					0.004
WWSP				7	[207]	61,630	[307]	61,630	[401]	tons rock		Total PM	N	N	0.0094	[114]	0.07	0.289	0.289	0	[502]	0.07	0.289	0.289		0.289					0.008
WWSP				7	[207]	61,630	[307]	61,630	[401]	tons rock		Antimony	N	Y	4.51E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WWSP				7	[207]	61,630	[307]	61,630	[401]	tons rock		Arsenic	N	Y	6.08E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled Potential to Emit [1] (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	Max. Controlled Potential to Emit [2] (tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Beryllium	N	Y	1.03E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Cadmium	N	Y	1.32E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Chromium	N	Y	1.09E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Cobalt	N	Y	7.20E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Pb	N	Y	5.95E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Manganese	N	Y	1.43E-05 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Nickel	N	Y	4.70E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Barium	N	N	7.66E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Copper	N	N	1.32E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Zinc	N	N	1.07E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				7 [207]	61,630 [307]	61,630 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP	FS 050	Blast Hole Drilling Cat 4 LO West		0.00 [208]	18 [304]	18 [401]	holes drilled		PM10	N	N	1.3 [120]	0.00	0.012	0.012	0 [502]	0.00	0.012	0.012		0.012				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.00	0.012	0.012	0 [502]	0.00	0.012	0.012		0.012				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Antimony	N	Y	6.24E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Arsenic	N	Y	8.41E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Beryllium	N	Y	1.43E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Cadmium	N	Y	1.82E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Chromium	N	Y	1.51E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Cobalt	N	Y	9.97E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Pb	N	Y	8.23E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Manganese	N	Y	1.98E-03 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Nickel	N	Y	6.50E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Phosphorus	N	Y	7.54E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Selenium	N	Y	1.24E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Barium	N	N	1.06E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Boron	N	N	1.44E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Copper	N	N	1.82E-03 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Molybdenum	N	N	3.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Vanadium	N	N	6.90E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Zinc	N	N	1.48E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Tellurium	N	N	3.16E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WWSP				0.00 [208]	18 [304]	18 [401]	holes drilled		Fluorides (as F)	N	N	8.52E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH	FS 005	East Waste Rock, Truck Unload - Cat 1/2	NA	1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		PM10	N	N	0.0044 [114]	7.01	30.715	30.715	0 [502]	7.01	30.715	30.715		30.715				0.884
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Total PM	N	N	0.0094 [114]	14.83	64.940	64.940	0 [502]	14.83	64.940	64.940		64.940				1.868
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Antimony	N	Y	4.17E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Arsenic	N	Y	5.94E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Cadmium	N	Y	9.49E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Chromium	N	Y	1.26E-06 [117]	0.00	0.009	0.009	0 [502]	0.00	0.009	0.009		0.009				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Cobalt	N	Y	5.10E-07 [117]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Pb	N	Y	5.24E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Manganese	N	Y	8.74E-06 [117]	0.01	0.060	0.060	0 [502]	0.01	0.060	0.060		0.060				0.002
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.00	0.019	0.019	0 [502]	0.00	0.019	0.019		0.019				0.001
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.01	0.037	0.037	0 [502]	0.01	0.037	0.037		0.037				0.001
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Barium	N	N	8.11E-07 [117]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Copper	N	N	2.82E-06 [117]	0.00	0.019	0.019	0 [502]	0.00	0.019	0.019		0.019				0.001
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.003	0.003	0 [502]	0.00	0.003	0.003		0.003				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Zinc	N	N	8.21E-07 [117]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
C12MH				1,578 [207]	13,827,438 [307]	13,827,438 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004				0.000
C12MH	FS 005	West Waste Rock, Truck Unload - Cat 1/2		1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		PM10	N	N	0.0044 [114]	7.25	31.774	31.774	0 [502]	7.25	31.774	31.774		31.774				0.914
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Total PM	N	N	0.0094 [114]	15.34	67.178	67.178	0 [502]	15.34	67.178	67.178		67.178				1.932
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Antimony	N	Y	4.41E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Arsenic	N	Y	4.98E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Cadmium	N	Y	1.13E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Chromium	N	Y	7.85E-07 [117]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Cobalt	N	Y	5.35E-07 [117]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Pb	N	Y	4.70E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Manganese	N	Y	1.36E-05 [117]	0.02	0.097	0.097	0 [502]	0.02	0.097	0.097		0.097				0.003
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.00	0.020	0.020	0 [502]	0.00	0.020	0.020		0.020				0.001
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.01	0.038	0.038	0 [502]	0.01	0.038	0.038		0.038				0.001
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Barium	N	N	5.31E-07 [117]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Copper	N	N	3.76E-06 [117]	0.01	0.027	0.027	0 [502]	0.01	0.027	0.027		0.027				0.001
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Zinc	N	N	1.03E-06 [117]	0.00	0.007	0.007	0 [502]	0.00	0.007	0.007		0.007				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
C12MH				1,633 [207]	14,304,124 [307]	14,304,124 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004				0.000
C3WRMH	FS 005	East Waste Rock, Truck Unload - Cat 3		59 [207]	516,407 [307]	516,407 [401]	tons rock		PM10	N	N	0.0044 [114]	0.26	1.147	1.147	0 [502]	0.26	1.147	1.147		1.147				0.033
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.55	2.425	2.425	0 [502]	0.55	2.425	2.425		2.425				0.070
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Antimony	N	Y	4.24E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Arsenic	N	Y	6.23E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Beryllium	N	Y	1.03E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Cadmium	N	Y	9.67E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled Potential to Emit [1] (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	Max. Controlled Potential to Emit [2] (tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Chromium	N	Y	1.27E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Cobalt	N	Y	4.98E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Pb	N	Y	5.33E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Manganese	N	Y	9.32E-06 [117]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Barium	N	N	8.35E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Copper	N	N	6.58E-06 [117]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Zinc	N	N	8.36E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				59 [207]	516,407 [307]	516,407 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH	FS 005	West Waste Rock, Truck Unload - Cat 3		26 [207]	226,665 [307]	226,665 [401]	tons rock		PM10	N	N	0.0044 [114]	0.11	0.503	0.503	0 [502]	0.11	0.503	0.503		0.503					0.014
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.24	1.065	1.065	0 [502]	0.24	1.065	1.065		1.065					0.031
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Antimony	N	Y	4.31E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Arsenic	N	Y	5.23E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Beryllium	N	Y	9.58E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Cadmium	N	Y	1.16E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Chromium	N	Y	9.30E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Cobalt	N	Y	5.08E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Pb	N	Y	4.97E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Manganese	N	Y	1.36E-05 [117]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Barium	N	N	5.34E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Copper	N	N	6.58E-06 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Zinc	N	N	1.04E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				26 [207]	226,665 [307]	226,665 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH	FS 005	East Lean Ore, Truck Unload - Cat 3		58 [207]	511,171 [307]	511,171 [401]	tons rock		PM10	N	N	0.0044 [114]	0.26	1.135	1.135	0 [502]	0.26	1.135	1.135		1.135					0.033
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.55	2.401	2.401	0 [502]	0.55	2.401	2.401		2.401					0.069
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Antimony	N	Y	4.19E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Arsenic	N	Y	6.37E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Cadmium	N	Y	1.03E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Chromium	N	Y	1.27E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Cobalt	N	Y	6.40E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Pb	N	Y	5.64E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Manganese	N	Y	8.87E-06 [117]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Nickel	N	Y	3.76E-06 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Barium	N	N	9.03E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Copper	N	N	9.39E-06 [117]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Zinc	N	N	8.55E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				58 [207]	511,171 [307]	511,171 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH	FS 005	West Lean Ore, Truck Unload - Cat 3		227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		PM10	N	N	0.0044 [114]	1.01	4.409	4.409	0 [502]	1.01	4.409	4.409		4.409					0.127
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Total PM	N	N	0.0094 [114]	2.13	9.321	9.321	0 [502]	2.13	9.321	9.321		9.321					0.268
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Antimony	N	Y	4.33E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Arsenic	N	Y	5.46E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Cadmium	N	Y	1.14E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Chromium	N	Y	9.61E-07 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Cobalt	N	Y	6.13E-07 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Pb	N	Y	4.95E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Manganese	N	Y	1.33E-05 [117]	0.00	0.013	0.013	0 [502]	0.00	0.013	0.013		0.013					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Nickel	N	Y	3.76E-06 [117]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.005	0.005	0 [502]	0.00	0.005	0.005		0.005					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Barium	N	N	6.30E-07 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Copper	N	N	1.03E-05 [117]	0.00	0.010	0.010	0 [502]	0.00	0.010	0.010		0.010					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Zinc	N	N	1.03E-06 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				227 [207]	1,984,690 [307]	1,984,690 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C4WRMH	FS 005	East Waste Rock, Truck Unload - Cat 4		55 [207]	479,489 [307]	479,489 [401]	tons rock		PM10	N	N	0.0044 [114]	0.24	1.065	1.065	0 [502]	0.24	1.065	1.065		1.065					0.031
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.51	2.252	2.252	0 [502]	0.51	2.252	2.252		2.252					0.065
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Antimony	N	Y	4.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Arsenic	N	Y	5.46E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Beryllium	N	Y	9.39E-09 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Cadmium	N	Y	1.14E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Chromium	N	Y	9.61E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Cobalt	N	Y	6.13E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000

11/11/2008

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Throughput Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE [1] (lb/hr)	Max. Unc. PTE [1] (tons/yr)	Proj. Act. Unc. Emissions (ton/yr)	Control Efficiency (%) Note	Max. Cont. PTE [2] (lb/hr)	Max. Cont. PTE [2] (tons/yr)	Proj. Act. Cont. Emissions (tons/yr)	Emission Std or Operational Limit	Limited Cont. PTE (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Pb	N	Y	4.95E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Manganese	N	Y	1.33E-05 [119]	0.00	0.003	0.003	0 [502]	0.00	0.003	0.003		0.003					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Mercury	N	Y	4.32E-11 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Nickel	N	Y	3.76E-06 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Barium	N	N	6.30E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Copper	N	N	1.03E-05 [119]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Zinc	N	N	1.03E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				55 [207]	479,489 [307]	479,489 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH	FS 005	West Waste Rock, Truck Unload - Cat 4		2 [207]	18,534 [307]	18,534 [401]	tons rock		PM10	N	N	0.0044 [114]	0.01	0.041	0.041	0 [502]	0.01	0.041	0.041		0.041					0.001
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.02	0.087	0.087	0 [502]	0.02	0.087	0.087		0.087					0.003
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Antimony	N	Y	4.41E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Arsenic	N	Y	4.74E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Beryllium	N	Y	1.61E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Cadmium	N	Y	1.66E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Chromium	N	Y	2.80E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Cobalt	N	Y	7.11E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Pb	N	Y	1.21E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Manganese	N	Y	1.43E-05 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Nickel	N	Y	3.76E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Barium	N	N	2.56E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Copper	N	N	8.45E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Zinc	N	N	2.02E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				2 [207]	18,534 [307]	18,534 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH	FS 005	East Lean Ore, Truck Unload - Cat 4		11 [207]	99,203 [307]	99,203 [401]	tons rock		PM10	N	N	0.0044 [114]	0.05	0.220	0.220	0 [502]	0.05	0.220	0.220		0.220					0.006
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.11	0.466	0.466	0 [502]	0.11	0.466	0.466		0.466					0.013
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Antimony	N	Y	3.99E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Arsenic	N	Y	6.55E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Beryllium	N	Y	1.01E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Cadmium	N	Y	1.11E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Chromium	N	Y	1.27E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Cobalt	N	Y	6.15E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Pb	N	Y	5.42E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Manganese	N	Y	8.31E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Nickel	N	Y	3.76E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Barium	N	N	9.03E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Copper	N	N	1.22E-05 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Zinc	N	N	8.55E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				11 [207]	99,203 [307]	99,203 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH	FS 005	West Lean Ore, Truck Unload - Cat 4		7 [207]	61,630 [307]	61,630 [401]	tons rock		PM10	N	N	0.0044 [114]	0.03	0.137	0.137	0 [502]	0.03	0.137	0.137		0.137					0.004
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.07	0.289	0.289	0 [502]	0.07	0.289	0.289		0.289					0.008
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Antimony	N	Y	4.51E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Arsenic	N	Y	6.08E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Beryllium	N	Y	1.03E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Cadmium	N	Y	1.32E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Chromium	N	Y	1.09E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Cobalt	N	Y	7.20E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Pb	N	Y	5.95E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Manganese	N	Y	1.43E-05 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Nickel	N	Y	4.70E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Barium	N	N	7.66E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Copper	N	N	1.32E-05 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Zinc	N	N	1.07E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				7 [207]	61,630 [307]	61,630 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP	FS 007	Ore, Truck Load East	NA	853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		PM10	N	N	0.0062 [114]	5.28	23.119	23.119	0 [502]	5.28	23.119	23.119		23.119					0.665
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Total PM	N	N	0.0131 [114]	11.16	48.880	48.880	0 [502]	11.16	48.880	48.880		48.880					1.406
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Antimony	N	Y	5.88E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Arsenic	N	Y	9.68E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Beryllium	N	Y	1.31E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Cadmium	N	Y	1.70E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Chromium	N	Y	1.75E-06 [121]	0.00	0.007	0.007	0 [502]	0.00	0.007	0.007		0.007					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Cobalt	N	Y	1.18E-06 [121]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Pb	N	Y	9.15E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Manganese	N	Y	1.22E-05 [121]	0.01	0.046	0.046	0 [502]	0.01	0.046	0.046		0.046					0.001

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled Potential to Emit (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	Max. Controlled Potential to Emit (tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Mercury	N	Y	6.02E-11 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Nickel	N	Y	1.31E-05 [121]	0.01	0.049	0.049	0 [502]	0.01	0.049	0.049		0.049					0.001
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Phosphorus	N	Y	7.81E-06 [121]	0.01	0.029	0.029	0 [502]	0.01	0.029	0.029		0.029					0.001
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Selenium	N	Y	7.24E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Barium	N	N	1.12E-06 [121]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Boron	N	N	1.32E-07 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Copper	N	N	4.32E-05 [121]	0.04	0.161	0.161	0 [502]	0.04	0.161	0.161		0.161					0.005
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Molybdenum	N	N	2.48E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Vanadium	N	N	1.01E-06 [121]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Zinc	N	N	1.15E-06 [121]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Hafnium	N	N	2.39E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Tellurium	N	N	5.57E-07 [101]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
EESP				853 [209]	7,475,434 [308]	7,475,434 [401]	tons ore		Fluorides (as F)	N	N	2.34E-06 [101]	0.00	0.009	0.009	0 [502]	0.00	0.009	0.009		0.009					0.000
EESP	FS 050	Blast Hole Drilling, Ore East		1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		PM10	N	N	1.3 [120]	1.41	6.170	6.170	0 [502]	1.41	6.170	6.170		6.170					0.177
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Total PM	N	N	1.3 [120]	1.41	6.170	6.170	0 [502]	1.41	6.170	6.170		6.170					0.177
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Antimony	N	Y	5.85E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Arsenic	N	Y	9.62E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Beryllium	N	Y	1.30E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Cadmium	N	Y	1.69E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Chromium	N	Y	1.74E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Cobalt	N	Y	1.17E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Pb	N	Y	9.10E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Manganese	N	Y	1.21E-03 [120]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Nickel	N	Y	1.30E-03 [120]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Phosphorus	N	Y	7.76E-04 [120]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Selenium	N	Y	7.20E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Barium	N	N	1.12E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Boron	N	N	1.31E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Copper	N	N	4.29E-03 [120]	0.00	0.020	0.020	0 [502]	0.00	0.020	0.020		0.020					0.001
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Molybdenum	N	N	2.47E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Vanadium	N	N	1.01E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Zinc	N	N	1.14E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Hafnium	N	N	2.38E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Tellurium	N	N	5.54E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
EESP				1.08 [210]	9,493 [304]	9,493 [401]	holes drilled		Fluorides (as F)	N	N	2.33E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP	FS 007	Ore, Truck Load West		274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		PM10	N	N	0.0062 [114]	1.70	7.432	7.432	0 [502]	1.70	7.432	7.432		7.432					0.214
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Total PM	N	N	0.0131 [114]	3.59	15.714	15.714	0 [502]	3.59	15.714	15.714		15.714					0.452
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Antimony	N	Y	5.75E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Arsenic	N	Y	9.02E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Beryllium	N	Y	1.31E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Cadmium	N	Y	1.79E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Chromium	N	Y	2.59E-06 [121]	0.00	0.003	0.003	0 [502]	0.00	0.003	0.003		0.003					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Cobalt	N	Y	1.11E-06 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Pb	N	Y	1.05E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Manganese	N	Y	1.83E-05 [121]	0.01	0.022	0.022	0 [502]	0.01	0.022	0.022		0.022					0.001
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Mercury	N	Y	6.02E-11 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Nickel	N	Y	1.31E-05 [121]	0.00	0.016	0.016	0 [502]	0.00	0.016	0.016		0.016					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Phosphorus	N	Y	7.19E-06 [121]	0.00	0.009	0.009	0 [502]	0.00	0.009	0.009		0.009					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Selenium	N	Y	7.24E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Barium	N	N	1.02E-06 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Boron	N	N	1.32E-07 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Copper	N	N	5.23E-05 [121]	0.01	0.063	0.063	0 [502]	0.01	0.063	0.063		0.063					0.002
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Molybdenum	N	N	2.35E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Vanadium	N	N	8.85E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Zinc	N	N	1.43E-06 [121]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Hafnium	N	N	2.39E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Tellurium	N	N	5.57E-07 [101]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				274 [209]	2,403,245 [308]	2,403,245 [401]	tons ore		Fluorides (as F)	N	N	2.34E-06 [101]	0.00	0.003	0.003	0 [502]	0.00	0.003	0.003		0.003					0.000
WWSP	FS 050	Blast Hole Drilling, Ore West		0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		PM10	N	N	1.3 [120]	0.45	1.984	1.984	0 [502]	0.45	1.984	1.984		1.984					0.057
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.45	1.984	1.984	0 [502]	0.45	1.984	1.984		1.984					0.057
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Antimony	N	Y	5.72E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Arsenic	N	Y	8.97E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Beryllium	N	Y	1.30E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Cadmium	N	Y	1.78E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Chromium	N	Y	2.57E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Cobalt	N	Y	1.11E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Pb	N	Y	1.04E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Manganese	N	Y	1.82E-03 [120]	0.00	0.003	0.003	0 [502]	0.00	0.003	0.003		0.003					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Nickel	N	Y	1.30E-03 [120]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Phosphorus	N	Y	7.15E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Selenium	N	Y	7.20E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Barium	N	N	1.01E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Boron	N	N	1.31E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Copper	N	N	5.20E-03 [120]	0.00	0.008	0.008	0 [502]	0.00	0.008	0.008		0.008					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Molybdenum	N	N	2.34E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Vanadium	N	N	8.80E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Zinc	N	N	1.42E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Hafnium	N	N	2.38E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Tellurium	N	N	5.54E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
WWSP				0.35 [210]	3,052 [304]	3,052 [401]	holes drilled		Fluorides (as F)	N	N	2.33E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
LPMH	FS 009	East Ore, Truck Unload - Rail Transfer Hopper	NA	956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		PM10	N	N	1.60E-05 [122]	0.02	0.067	0.067	0 [502]	0.02	0.067	0.067		0.067					0.002
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Total PM	N	N	4.80E-05 [122]	0.05	0.201	0.201	0 [502]	0.05	0.201	0.201		0.201					0.006
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Antimony	N	Y	2.16E-10 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Arsenic	N	Y	3.55E-10 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Beryllium	N	Y	4.80E-11 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Cadmium	N	Y	6.24E-11 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Chromium	N	Y	6.41E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Cobalt	N	Y	4.32E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000					0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Projected Actual (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Pb	N	Y	3.36E-10 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Manganese	N	Y	4.48E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Mercury	N	Y	2.21E-13 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Nickel	N	Y	4.80E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Phosphorus	N	Y	2.87E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Selenium	N	Y	2.66E-10 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Barium	N	N	4.13E-09 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Boron	N	N	4.84E-10 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Copper	N	N	1.58E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Molybdenum	N	N	9.12E-11 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Vanadium	N	N	3.72E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Zinc	N	N	4.22E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Hafnium	N	N	8.78E-11 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Tellurium	N	N	2.05E-09 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Fluorides (as F)	N	N	8.59E-09 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH	FS 009	West Ore, Truck Unload - Rail Transfer Hopper		377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		PM10	N	N	1.60E-05 [122]	0.01	0.026	0.026	0 [502]	0.01	0.026	0.026		0.026				0.001
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Total PM	N	N	4.80E-05 [122]	0.02	0.079	0.079	0 [502]	0.02	0.079	0.079		0.079				0.002
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Antimony	N	Y	2.11E-10 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Arsenic	N	Y	3.31E-10 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Beryllium	N	Y	4.80E-11 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Cadmium	N	Y	6.58E-11 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Chromium	N	Y	9.50E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Cobalt	N	Y	4.08E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Pb	N	Y	3.84E-10 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Manganese	N	Y	6.72E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Mercury	N	Y	2.21E-13 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Nickel	N	Y	4.80E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Phosphorus	N	Y	2.64E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Selenium	N	Y	2.66E-10 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Barium	N	N	3.74E-09 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Boron	N	N	4.84E-10 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Copper	N	N	1.92E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Molybdenum	N	N	8.64E-11 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Vanadium	N	N	3.25E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Zinc	N	N	5.23E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Hafnium	N	N	8.78E-11 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Tellurium	N	N	2.05E-09 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Fluorides (as F)	N	N	8.59E-09 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH	FS 020	East Ore, Truck Load - Stockpile	NA	103 [212]	900,661 [310]	900,661 [401]	tons ore		PM10	N	N	0.0062 [114]	0.64	2.785	2.785	0 [502]	0.64	2.785	2.785		2.785				0.080
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Total PM	N	N	0.0131 [114]	1.34	5.889	5.889	0 [502]	1.34	5.889	5.889		5.889				0.169
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Antimony	N	Y	5.88E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Arsenic	N	Y	9.68E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Beryllium	N	Y	1.31E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Cadmium	N	Y	1.70E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Chromium	N	Y	1.75E-06 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Cobalt	N	Y	1.18E-06 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Pb	N	Y	9.15E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Manganese	N	Y	1.22E-05 [121]	0.00	0.005	0.005	0 [502]	0.00	0.005	0.005		0.005				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Mercury	N	Y	6.02E-11 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Nickel	N	Y	1.31E-05 [121]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Phosphorus	N	Y	7.81E-06 [121]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Selenium	N	Y	7.24E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Barium	N	N	1.12E-06 [101]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Boron	N	N	1.32E-07 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Copper	N	N	4.32E-05 [121]	0.00	0.019	0.019	0 [502]	0.00	0.019	0.019		0.019				0.001
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Molybdenum	N	N	2.48E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Vanadium	N	N	1.01E-06 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Zinc	N	N	1.15E-06 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Hafnium	N	N	2.39E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Tellurium	N	N	5.57E-07 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Fluorides (as F)	N	N	2.34E-06 [101]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4LOMH	FS 020	West Ore, Truck Load - Stockpile		103 [212]	900,661 [310]	900,661 [401]	tons ore		PM10	N	N	0.0062 [114]	0.64	2.785	2.785	0 [502]	0.64	2.785	2.785		2.785				0.080
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Total PM	N	N	0.0131 [114]	1.34	5.889	5.889	0 [502]	1.34	5.889	5.889		5.889				0.169
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Antimony	N	Y	5.75E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Arsenic	N	Y	9.02E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Beryllium	N	Y	1.31E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Cadmium	N	Y	1.79E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Chromium	N	Y	2.59E-06 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Cobalt	N	Y	1.11E-06 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Pb	N	Y	1.05E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Manganese	N	Y	1.83E-05 [121]	0.00	0.008	0.008	0 [502]	0.00	0.008	0.008		0.008				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Mercury	N	Y	6.02E-11 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Nickel	N	Y	1.31E-05 [121]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Phosphorus	N	Y	7.19E-06 [121]	0.00	0.003	0.003	0 [502]	0.00	0.003	0.003		0.003				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Selenium	N	Y	7.24E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Barium	N	N	1.02E-06 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Boron	N	N	1.32E-07 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Copper	N	N	5.23E-05 [121]	0.01	0.024	0.024	0 [502]	0.01	0.024	0.024		0.024				0.001
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Molybdenum	N	N	2.35E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Vanadium	N	N	8.85E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Zinc	N	N	1.43E-06 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Hafnium	N	N	2.39E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Tellurium	N	N	5.57E-07 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				103 [212]	900,661 [310]	900,661 [401]	tons ore		Fluorides (as F)	N	N	2.34E-06 [101]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
LPMH	FS 010	East Ore, Railcar Load	NA	956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		PM10	N	N	0.0011 [123]	1.05	4.607	4.607	0 [502]	1.05	4.607	4.607		4.607				0.133
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Total PM	N	N	0.0030 [123]	2.87	12.564	12.564	0 [502]	2.87	12.564	12.564		12.564				0.361
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Antimony	N	Y	1.35E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Arsenic	N	Y	2.22E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Beryllium	N	Y	3.00E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Cadmium	N	Y	3.90E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	EU ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Act (Units/yr)	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont (tons/yr)	Limited Cont PTE (tons/yr)	g/sec Model Input
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Chromium	N	Y	4.01E-07 [121]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002	0.002	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Cobalt	N	Y	2.70E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Pb	N	Y	2.10E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Manganese	N	Y	2.80E-06 [121]	0.00	0.012	0.012	0 [502]	0.00	0.012	0.012	0.012	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Mercury	N	Y	1.38E-11 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Nickel	N	Y	3.00E-06 [121]	0.00	0.013	0.013	0 [502]	0.00	0.013	0.013	0.013	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Phosphorus	N	Y	1.79E-06 [121]	0.00	0.008	0.008	0 [502]	0.00	0.008	0.008	0.008	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Selenium	N	Y	1.66E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Barium	N	N	2.58E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Boron	N	N	3.02E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Copper	N	N	9.90E-06 [121]	0.01	0.041	0.041	0 [502]	0.01	0.041	0.041	0.041	0.001
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Molybdenum	N	N	5.70E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Vanadium	N	N	2.33E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Zinc	N	N	2.64E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Hafnium	N	N	5.49E-09 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Tellurium	N	N	1.28E-07 [101]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001	0.000
LPMH				956 [211]	8,376,095 [309]	8,376,095 [401]	tons ore		Fluorides (as F)	N	N	5.37E-07 [101]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002	0.002	0.000
LPMH	FS 010	West Ore, Railcar Load		377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		PM10	N	N	0.0011 [123]	0.41	1.817	1.817	0 [502]	0.41	1.817	1.817	1.817	0.052
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Total PM	N	N	0.0030 [123]	1.13	4.956	4.956	0 [502]	1.13	4.956	4.956	4.956	0.143
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Antimony	N	Y	1.32E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Arsenic	N	Y	2.07E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Beryllium	N	Y	3.00E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Cadmium	N	Y	4.11E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Chromium	N	Y	5.94E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Cobalt	N	Y	2.55E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Pb	N	Y	2.40E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Manganese	N	Y	4.20E-06 [121]	0.00	0.007	0.007	0 [502]	0.00	0.007	0.007	0.007	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Mercury	N	Y	1.38E-11 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Nickel	N	Y	3.00E-06 [121]	0.00	0.005	0.005	0 [502]	0.00	0.005	0.005	0.005	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Phosphorus	N	Y	1.65E-06 [121]	0.00	0.003	0.003	0 [502]	0.00	0.003	0.003	0.003	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Selenium	N	Y	1.66E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Barium	N	N	2.34E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Boron	N	N	3.02E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Copper	N	N	1.20E-05 [121]	0.00	0.020	0.020	0 [502]	0.00	0.020	0.020	0.020	0.001
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Molybdenum	N	N	5.40E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Vanadium	N	N	2.03E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Zinc	N	N	3.27E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Hafnium	N	N	5.49E-09 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Tellurium	N	N	1.28E-07 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000	0.000
LPMH				377 [211]	3,303,906 [309]	3,303,906 [401]	tons ore		Fluorides (as F)	N	N	5.37E-07 [101]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001	0.000
AABB	FS 011	Mine Haul Roads, Segment AA to BB	NA	1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	PM10	N	N	6.2224 [114]	6.31	17.489	17.489	80 [501]	1.26	3.498	3.498	3.498	0.159
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Total PM	N	N	23.5077 [114]	23.84	66.074	66.074	80 [501]	4.77	13.215	13.215	13.215	0.601
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002	0.002	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.03	0.092	0.092	80 [501]	0.01	0.018	0.018	0.018	0.001
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.01	0.018	0.018	80 [501]	0.00	0.004	0.004	0.004	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001	0.001	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.01	0.022	0.022	80 [501]	0.00	0.004	0.004	0.004	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.02	0.052	0.052	80 [501]	0.00	0.010	0.010	0.010	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
AABB				1.01 [213]	8,882 [311]	8,882 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
AAFF	FS 011	Mine Haul Roads, Segment AA to FF	NA	0.05 [213]	417 [311]	417 [401]	VMT	134	PM10	N	N	6.2224 [114]	0.30	0.820	0.820	80 [501]	0.06	0.164	0.164	0.164	0.007
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Total PM	N	N	23.5077 [114]	1.12	3.100	3.100	80 [501]	0.22	0.620	0.620	0.620	0.028
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
AAFF				0.05 [213]	417 [311]	417 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3LORD	FS 011	Mine Haul Roads, Segment BB to CC	NA	1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	PM10	N	N	6.2224 [114]	6.29	17.429	17.429	80 [501]	1.26	3.486	3.486	3.486	0.158
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Total PM	N	N	23.5077 [114]	23.75	65.847	65.847	80 [501]	4.75	13.169	13.169	13.169	0.599
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Proj Actual (Units/yr)	(Units/yr)	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE lb/hr	Max Unc PTE tons/yr	Proj Act Unc ton/yr	Control Eff (%)	Max Cont PTE lb/hr	Max Cont PTE tons/yr	Proj Act Cont tons/yr	Limited Cont PTE tons/yr	g/sec Model Input
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002	0.002	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.03	0.091	0.091	80 [501]	0.01	0.018	0.018	0.018	0.001
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.01	0.018	0.018	80 [501]	0.00	0.004	0.004	0.004	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001	0.001	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.01	0.022	0.022	80 [501]	0.00	0.004	0.004	0.004	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.02	0.052	0.052	80 [501]	0.00	0.010	0.010	0.010	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
C3LORD				1.01 [213]	8,852 [311]	8,852 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
DK	FS 011	Mine Haul Roads, Segment D to K	NA	7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	PM10	N	N	6.2224 [114]	47.95	132.908	132.908	80 [501]	9.59	26.582	26.582	26.582	1.208
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Total PM	N	N	23.5077 [114]	181.14	502.118	502.118	80 [501]	36.23	100.424	100.424	100.424	4.565
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.02	0.068	0.068	80 [501]	0.00	0.014	0.014	0.014	0.001
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.01	0.029	0.029	80 [501]	0.00	0.006	0.006	0.006	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.02	0.050	0.050	80 [501]	0.00	0.010	0.010	0.010	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.25	0.697	0.697	80 [501]	0.05	0.139	0.139	0.139	0.006
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.05	0.137	0.137	80 [501]	0.01	0.027	0.027	0.027	0.001
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.02	0.043	0.043	80 [501]	0.00	0.009	0.009	0.009	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.02	0.056	0.056	80 [501]	0.00	0.011	0.011	0.011	0.001
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.06	0.169	0.169	80 [501]	0.01	0.034	0.034	0.034	0.002
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.01	0.027	0.027	80 [501]	0.00	0.005	0.005	0.005	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.14	0.395	0.395	80 [501]	0.03	0.079	0.079	0.079	0.004
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002	0.002	0.000
DK				7.71 [213]	67,500 [311]	67,500 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.01	0.033	0.033	80 [501]	0.00	0.007	0.007	0.007	0.000
DU	FS 011	Mine Haul Roads, Segment D to U	NA	1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	PM10	N	N	6.2224 [114]	7.47	20.709	20.709	80 [501]	1.49	4.142	4.142	4.142	0.188
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Total PM	N	N	23.5077 [114]	28.22	78.236	78.236	80 [501]	5.64	15.647	15.647	15.647	0.711
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002	0.002	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.04	0.109	0.109	80 [501]	0.01	0.022	0.022	0.022	0.001
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.01	0.021	0.021	80 [501]	0.00	0.004	0.004	0.004	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002	0.002	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.01	0.026	0.026	80 [501]	0.00	0.005	0.005	0.005	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.02	0.062	0.062	80 [501]	0.00	0.012	0.012	0.012	0.001
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
DU				1.20 [213]	10,517 [311]	10,517 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
ED	FS 011	Mine Haul Roads, Segment E to D	NA	3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	PM10	N	N	6.2224 [114]	20.32	56.338	56.338	80 [501]	4.06	11.268	11.268	11.268	0.512
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Total PM	N	N	23.5077 [114]	76.78	212.841	212.841	80 [501]	15.36	42.568	42.568	42.568	1.935
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.01	0.029	0.029	80 [501]	0.00	0.006	0.006	0.006	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002	0.002	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.01	0.021	0.021	80 [501]	0.00	0.004	0.004	0.004	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.11	0.295	0.295	80 [501]	0.02	0.059	0.059	0.059	0.003
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.02	0.058	0.058	80 [501]	0.00	0.012	0.012	0.012	0.001
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.01	0.018	0.018	80 [501]	0.00	0.004	0.004	0.004	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.01	0.024	0.024	80 [501]	0.00	0.005	0.005	0.005	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.03	0.072	0.072	80 [501]	0.01	0.014	0.014	0.014	0.001
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.06	0.168	0.168	80 [501]	0.01	0.034	0.034	0.034	0.002
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
ED				3.27 [213]	28,613 [311]	28,613 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.01	0.014	0.014	80 [501]	0.00	0.003	0.003	0.003	0.000
ET	FS 011	Mine Haul Roads, Segment E to T	NA	1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	PM10	N	N	6.2224 [114]	6.70	18.569	18.569	80 [501]	1.34	3.714	3.714	3.714	0.169
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Total PM	N	N	23.5077 [114]	25.31	70.151	70.151	80 [501]	5.06	14.030	14.030	14.030	0.638
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002	0.002	0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Max (Units/hr) Note	Throughput Proj Actual (Units/yr) Note	(Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applic (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max Unc PTE [1] (lb/hr)	(tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%) Note	Max Cont PTE [2] (lb/hr)	(tons/yr)	Proj Act Cont Emiss (tons/yr)	Emission Std or Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Note	Max Unc Emiss lb/day	Max Cont Emiss lb/day	g/sec Model Input
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.04	0.097	0.097	80 [501]	0.01	0.019	0.019		0.019					0.001
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.01	0.019	0.019	80 [501]	0.00	0.004	0.004		0.004					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001		0.001					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002		0.002					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.01	0.024	0.024	80 [501]	0.00	0.005	0.005		0.005					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.02	0.055	0.055	80 [501]	0.00	0.011	0.011		0.011					0.001
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000					0.000
ET				1.08 [213]	9,430 [311]	9,430 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001					0.000
FE	FS 011	Mine Haul Roads, Segment F to E	NA	1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	PM10	N	N	6.2224 [114]	11.10	30.767	30.767	80 [501]	2.22	6.153	6.153		6.153					0.280
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Total PM	N	N	23.5077 [114]	41.93	116.236	116.236	80 [501]	8.39	23.247	23.247		23.247					1.057
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.01	0.016	0.016	80 [501]	0.00	0.003	0.003		0.003					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002		0.002					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.06	0.161	0.161	80 [501]	0.01	0.032	0.032		0.032					0.001
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.01	0.032	0.032	80 [501]	0.00	0.006	0.006		0.006					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.010	0.010	80 [501]	0.00	0.002	0.002		0.002					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003		0.003					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.01	0.039	0.039	80 [501]	0.00	0.008	0.008		0.008					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001		0.001					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.03	0.091	0.091	80 [501]	0.01	0.018	0.018		0.018					0.001
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001					0.000
FE				1.78 [213]	15,626 [311]	15,626 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002		0.002					0.000
FM	FS 011	Mine Haul Roads, Segment F to M	NA	0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	PM10	N	N	6.2224 [114]	3.69	10.230	10.230	80 [501]	0.74	2.046	2.046		2.046					0.093
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Total PM	N	N	23.5077 [114]	13.94	38.649	38.649	80 [501]	2.79	7.730	7.730		7.730					0.351
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.054	0.054	80 [501]	0.00	0.011	0.011		0.011					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002		0.002					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003		0.003					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.030	0.030	80 [501]	0.00	0.006	0.006		0.006					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000					0.000
FM				0.59 [213]	5,196 [311]	5,196 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001					0.000
C4WRRD	FS 011	Mine Haul Roads, Segment FF to GG	NA	0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	PM10	N	N	6.2224 [114]	1.52	4.224	4.224	80 [501]	0.30	0.845	0.845		0.845					0.038
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Total PM	N	N	23.5077 [114]	5.76	15.960	15.960	80 [501]	1.15	3.192	3.192		3.192					0.145
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.01	0.022	0.022	80 [501]	0.00	0.004	0.004		0.004					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003		0.003					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0.24 [213]	2,145 [311]	2,145 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000					0.000
GF	FS 011	Mine Haul Roads, Segment G to F	NA	0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	PM10	N	N	6.2224 [114]	4.51	12.490	12.490	80 [501]	0.90	2.498	2.498		2.498					0.114
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Total PM	N	N	23.5077 [114]	17.02	47.188	47.188	80 [501]	3.40	9.438	9.438		9.438					0.429
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001		0.001					0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001					0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001					0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.066	0.066	80 [501]	0.00	0.013	0.013		0.013					0.001

11/11/2008

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Description	APCD ID	Throughput Max (Units/hr) [Note]	Throughput Proj Max (Units/yr) [Note]	Projected Actual (Units/yr) [Note]	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) [Note]	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%) [Note]	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont (tons/yr)	Emission Std or Op Limit	Limited Cont PTE (tons/yr)	g/sec Model Input
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003		0.003	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.01	0.016	0.016	80 [501]	0.00	0.003	0.003		0.003	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.037	0.037	80 [501]	0.00	0.007	0.007		0.007	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	0.000
GF				0.72 [213]	6,344 [311]	6,344 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001	0.000
EESP	FS 011	Mine Haul Roads, Segment I to H	NA	27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	PM10	N	N	6.2224 [114]	168.09	465.952	465.952	80 [501]	33.62	93.190	93.190		93.190	4.236
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Total PM	N	N	23.5077 [114]	635.04	1,760.339	1,760.339	80 [501]	127.01	352.068	352.068		352.068	16.003
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002		0.002	0.000
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002		0.002	0.000
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	0.000
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001		0.001	0.000
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.09	0.237	0.237	80 [501]	0.02	0.047	0.047		0.047	0.002
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.04	0.101	0.101	80 [501]	0.01	0.020	0.020		0.020	0.001
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.06	0.176	0.176	80 [501]	0.01	0.035	0.035		0.035	0.002
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.88	2.444	2.444	80 [501]	0.18	0.489	0.489		0.489	0.022
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.17	0.479	0.479	80 [501]	0.03	0.096	0.096		0.096	0.004
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.01	0.017	0.017	80 [501]	0.00	0.003	0.003		0.003	0.000
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.05	0.150	0.150	80 [501]	0.01	0.030	0.030		0.030	0.001
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.07	0.195	0.195	80 [501]	0.01	0.039	0.039		0.039	0.002
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.21	0.593	0.593	80 [501]	0.04	0.119	0.119		0.119	0.005
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	0.000
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.03	0.093	0.093	80 [501]	0.01	0.019	0.019		0.019	0.001
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.50	1.385	1.385	80 [501]	0.10	0.277	0.277		0.277	0.013
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.02	0.043	0.043	80 [501]	0.00	0.009	0.009		0.009	0.000
EESP				27.01 [213]	236,645 [311]	236,645 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.04	0.115	0.115	80 [501]	0.01	0.023	0.023		0.023	0.001
JI	FS 011	Mine Haul Roads, Segment J to I	NA	0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	PM10	N	N	6.2224 [114]	4.56	12.637	12.637	80 [501]	0.91	2.527	2.527		2.527	0.115
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Total PM	N	N	23.5077 [114]	17.22	47.741	47.741	80 [501]	3.44	9.548	9.548		9.548	0.434
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001		0.001	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.066	0.066	80 [501]	0.00	0.013	0.013		0.013	0.001
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003		0.003	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.01	0.016	0.016	80 [501]	0.00	0.003	0.003		0.003	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.038	0.038	80 [501]	0.00	0.008	0.008		0.008	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	0.000
JI				0.73 [213]	6,418 [311]	6,418 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001	0.000
JW	FS 011	Mine Haul Roads, Segment J to W	NA	0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	PM10	N	N	6.2224 [114]	1.45	4.032	4.032	80 [501]	0.29	0.806	0.806		0.806	0.037
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Total PM	N	N	23.5077 [114]	5.50	15.234	15.234	80 [501]	1.10	3.047	3.047		3.047	0.138
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.01	0.021	0.021	80 [501]	0.00	0.004	0.004		0.004	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002		0.002	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
JW				0.23 [213]	2,048 [311]	2,048 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used	FS 011	Mine Haul Roads, Segment JJ to L	NA	0.00 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.2224 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.5077 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000
Not Used				0.00 [213]	0 [311]	0 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Max (Units/hr)	Note	Max (Units/yr)	Note	Proj Actual (Units/yr)	Note	Units	Annual days with precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%)	Note	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont Emiss (tons/yr)	Emiss Std or Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Note	Max Unc Emiss lb/day	Max Cont Emiss lb/day	g/sec Model Input
Not Used				0.00 [213]		0 [311]		0 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
Not Used				0.00 [213]		0 [311]		0 [401]		VMT	134	Selenium	N	Y	2.25E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
Not Used				0.00 [213]		0 [311]		0 [401]		VMT	134	Barium	N	N	2.01E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
Not Used				0.00 [213]		0 [311]		0 [401]		VMT	134	Boron	N	N	2.61E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
Not Used				0.00 [213]		0 [311]		0 [401]		VMT	134	Copper	N	N	7.92E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
Not Used				0.00 [213]		0 [311]		0 [401]		VMT	134	Molybdenum	N	N	5.83E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
Not Used				0.00 [213]		0 [311]		0 [401]		VMT	134	Vanadium	N	N	1.25E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
Not Used				0.00 [213]		0 [311]		0 [401]		VMT	134	Zinc	N	N	1.85E-02 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
Not Used				0.00 [213]		0 [311]		0 [401]		VMT	134	Tellurium	N	N	5.71E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
Not Used				0.00 [213]		0 [311]		0 [401]		VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KJ	FS 011	Mine Haul Roads, Segment K to J	NA	4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	PM10	N	N	6.2224 [114]		28.85	79.960	79.960	80 [501]		5.77	15.992	15.992		15.992					0.727
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Total PM	N	N	23.5077 [114]		108.98	302.084	302.084	80 [501]		21.80	60.417	60.417		60.417					2.746
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Antimony	N	Y	1.09E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Arsenic	N	Y	1.46E-04 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Beryllium	N	Y	2.35E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Cadmium	N	Y	7.97E-05 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Chromium	N	Y	3.16E-03 [127]		0.01	0.041	0.041	80 [501]		0.00	0.008	0.008		0.008					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Cobalt	N	Y	1.35E-03 [127]		0.01	0.017	0.017	80 [501]		0.00	0.003	0.003		0.003					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Pb	N	Y	2.35E-03 [127]		0.01	0.030	0.030	80 [501]		0.00	0.006	0.006		0.006					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Manganese	N	Y	3.26E-02 [127]		0.15	0.419	0.419	80 [501]		0.03	0.084	0.084		0.084					0.004
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Nickel	N	Y	6.39E-03 [127]		0.03	0.082	0.082	80 [501]		0.01	0.016	0.016		0.016					0.001
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Selenium	N	Y	2.25E-04 [127]		0.00	0.003	0.003	80 [501]		0.00	0.001	0.001		0.001					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Barium	N	N	2.01E-03 [127]		0.01	0.026	0.026	80 [501]		0.00	0.005	0.005		0.005					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Boron	N	N	2.61E-03 [127]		0.01	0.034	0.034	80 [501]		0.00	0.007	0.007		0.007					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Copper	N	N	7.92E-03 [127]		0.04	0.102	0.102	80 [501]		0.01	0.020	0.020		0.020					0.001
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Molybdenum	N	N	5.83E-05 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Vanadium	N	N	1.25E-03 [127]		0.01	0.016	0.016	80 [501]		0.00	0.003	0.003		0.003					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Zinc	N	N	1.85E-02 [127]		0.09	0.238	0.238	80 [501]		0.02	0.048	0.048		0.048					0.002
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Tellurium	N	N	5.71E-04 [127]		0.00	0.007	0.007	80 [501]		0.00	0.001	0.001		0.001					0.000
KJ				4.64 [213]		40,610 [311]		40,610 [401]		VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]		0.01	0.020	0.020	80 [501]		0.00	0.004	0.004		0.004					0.000
KO	FS 011	Mine Haul Roads, Segment K to O	NA	1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	PM10	N	N	6.2224 [114]		6.38	17.689	17.689	80 [501]		1.28	3.538	3.538		3.538					0.161
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Total PM	N	N	23.5077 [114]		24.11	66.830	66.830	80 [501]		4.82	13.366	13.366		13.366					0.608
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Antimony	N	Y	1.09E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Arsenic	N	Y	1.46E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Beryllium	N	Y	2.35E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Cadmium	N	Y	7.97E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Chromium	N	Y	3.16E-03 [127]		0.00	0.009	0.009	80 [501]		0.00	0.002	0.002		0.002					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Cobalt	N	Y	1.35E-03 [127]		0.00	0.004	0.004	80 [501]		0.00	0.001	0.001		0.001					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Pb	N	Y	2.35E-03 [127]		0.00	0.007	0.007	80 [501]		0.00	0.001	0.001		0.001					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Manganese	N	Y	3.26E-02 [127]		0.03	0.093	0.093	80 [501]		0.01	0.019	0.019		0.019					0.001
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Nickel	N	Y	6.39E-03 [127]		0.01	0.018	0.018	80 [501]		0.00	0.004	0.004		0.004					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Selenium	N	Y	2.25E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Barium	N	N	2.01E-03 [127]		0.00	0.006	0.006	80 [501]		0.00	0.001	0.001		0.001					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Boron	N	N	2.61E-03 [127]		0.00	0.007	0.007	80 [501]		0.00	0.001	0.001		0.001					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Copper	N	N	7.92E-03 [127]		0.01	0.023	0.023	80 [501]		0.00	0.005	0.005		0.005					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Molybdenum	N	N	5.83E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Vanadium	N	N	1.25E-03 [127]		0.00	0.004	0.004	80 [501]		0.00	0.001	0.001		0.001					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Zinc	N	N	1.85E-02 [127]		0.02	0.053	0.053	80 [501]		0.00	0.011	0.011		0.011					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Tellurium	N	N	5.71E-04 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
KO				1.03 [213]		8,984 [311]		8,984 [401]		VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]		0.00	0.004	0.004	80 [501]		0.00	0.001	0.001		0.001					0.000
OBSRRD	FS 011	Mine Haul Roads, Segment KK to G	NA	0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	PM10	N	N	6.2224 [114]		5.99	16.591	16.591	80 [501]		1.20	3.318	3.318		3.318					0.151
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Total PM	N	N	23.5077 [114]		22.61	62.679	62.679	80 [501]		4.52	12.536	12.536		12.536					0.570
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Antimony	N	Y	1.09E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Arsenic	N	Y	1.46E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Beryllium	N	Y	2.35E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Cadmium	N	Y	7.97E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Chromium	N	Y	3.16E-03 [127]		0.00	0.008	0.008	80 [501]		0.00	0.002	0.002		0.002					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Cobalt	N	Y	1.35E-03 [127]		0.00	0.004	0.004	80 [501]		0.00	0.001	0.001		0.001					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Pb	N	Y	2.35E-03 [127]		0.00	0.006	0.006	80 [501]		0.00	0.001	0.001		0.001					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Manganese	N	Y	3.26E-02 [127]		0.03	0.087	0.087	80 [501]		0.01	0.017	0.017		0.017					0.001
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Nickel	N	Y	6.39E-03 [127]		0.01	0.017	0.017	80 [501]		0.00	0.003	0.003		0.003					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Selenium	N	Y	2.25E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Barium	N	N	2.01E-03 [127]		0.00	0.005	0.005	80 [501]		0.00	0.001	0.001		0.001					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Boron	N	N	2.61E-03 [127]		0.00	0.007	0.007	80 [501]		0.00	0.001	0.001		0.001					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Copper	N	N	7.92E-03 [127]		0.01	0.021	0.021	80 [501]		0.00	0.004	0.004		0.004					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Molybdenum	N	N	5.83E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Vanadium	N	N	1.25E-03 [127]		0.00	0.003	0.003	80 [501]		0.00	0.001	0.001		0.001					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Zinc	N	N	1.85E-02 [127]		0.02	0.049	0.049	80 [501]		0.00	0.010	0.010		0.010					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Tellurium	N	N	5.71E-04 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
OBSRRD				0.96 [213]		8,426 [311]		8,426 [401]		VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]		0.00	0.004	0.004	80 [501]		0.00	0.001	0.001		0.001					0.000
LLL	FS 011	Mine Haul Roads, Segment L to LL	NA	0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	PM10	N	N	6.2224 [114]		3.15	8.721	8.721	80 [501]		0.63	1.744	1.744		1.744					0.079
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Total PM	N	N	23.5077 [114]		11.89	32.947	32.947	80 [501]		2.38	6.589	6.589		6.589					0.300
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Antimony	N	Y	1.09E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Arsenic	N	Y	1.46E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Beryllium	N	Y	2.35E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Cadmium	N	Y	7.97E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Chromium	N	Y	3.16E-03 [127]		0.00	0.004	0.004	80 [501]		0.00	0.001	0.001		0.001					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Cobalt	N	Y	1.35E-03 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Pb	N	Y	2.35E-03 [127]		0.00	0.003	0.003	80 [501]		0.00	0.001	0.001		0.001					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Manganese	N	Y	3.26E-02 [127]		0.02	0.046	0.046	80 [501]		0.00	0.009	0.009		0.009					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Nickel	N	Y	6.39E-03 [127]		0.00	0.009	0.009	80 [501]		0.00	0.002	0.002		0.002					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
LLL				0.51 [213]		4,429 [311]		4,429 [401]		VMT	134	Selenium	N	Y	2.25E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000

11/11/2008

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Act (Units/yr)	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont (tons/yr)	Limited Cont PTE (tons/yr)	g/sec Model Input
LLL				0.51 [213]	4,429 [311]	4,429 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
LLL				0.51 [213]	4,429 [311]	4,429 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
LLL				0.51 [213]	4,429 [311]	4,429 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
LLL				0.51 [213]	4,429 [311]	4,429 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLL				0.51 [213]	4,429 [311]	4,429 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
LLL				0.51 [213]	4,429 [311]	4,429 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.026	0.026	80 [501]	0.00	0.005	0.005	0.005	0.000
LLL				0.51 [213]	4,429 [311]	4,429 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
LLL				0.51 [213]	4,429 [311]	4,429 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN	FS 011	Mine Haul Roads, Segment LL to N	NA	3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	PM10	N	N	6.2224 [114]	18.93	52.471	52.471	80 [501]	3.79	10.494	10.494	10.494	0.477
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Total PM	N	N	23.5077 [114]	71.51	198.233	198.233	80 [501]	14.30	39.647	39.647	39.647	1.802
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.01	0.027	0.027	80 [501]	0.00	0.005	0.005	0.005	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.01	0.020	0.020	80 [501]	0.00	0.004	0.004	0.004	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.10	0.275	0.275	80 [501]	0.02	0.055	0.055	0.055	0.003
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.02	0.054	0.054	80 [501]	0.00	0.011	0.011	0.011	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.01	0.017	0.017	80 [501]	0.00	0.003	0.003	0.003	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.01	0.022	0.022	80 [501]	0.00	0.004	0.004	0.004	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.02	0.067	0.067	80 [501]	0.00	0.013	0.013	0.013	0.001
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.06	0.156	0.156	80 [501]	0.01	0.031	0.031	0.031	0.001
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
LLN				3.04 [213]	26,649 [311]	26,649 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003	0.003	0.000
ML	FS 011	Mine Haul Roads, Segment M to L	NA	0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	PM10	N	N	6.2224 [114]	3.67	10.160	10.160	80 [501]	0.73	2.032	2.032	2.032	0.092
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Total PM	N	N	23.5077 [114]	13.85	38.386	38.386	80 [501]	2.77	7.677	7.677	7.677	0.349
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.053	0.053	80 [501]	0.00	0.011	0.011	0.011	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.010	0.010	80 [501]	0.00	0.002	0.002	0.002	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003	0.003	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.030	0.030	80 [501]	0.00	0.006	0.006	0.006	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ML				0.59 [213]	5,160 [311]	5,160 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
NM	FS 011	Mine Haul Roads, Segment N to M	NA	0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	PM10	N	N	6.2224 [114]	6.19	17.157	17.157	80 [501]	1.24	3.431	3.431	3.431	0.156
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Total PM	N	N	23.5077 [114]	23.38	64.818	64.818	80 [501]	4.68	12.964	12.964	12.964	0.589
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002	0.002	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001	0.001	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.03	0.090	0.090	80 [501]	0.01	0.018	0.018	0.018	0.001
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.01	0.018	0.018	80 [501]	0.00	0.004	0.004	0.004	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001	0.001	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.01	0.022	0.022	80 [501]	0.00	0.004	0.004	0.004	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.02	0.051	0.051	80 [501]	0.00	0.010	0.010	0.010	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				0.99 [213]	8,714 [311]	8,714 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
ON	FS 011	Mine Haul Roads, Segment O to N	NA	2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	PM10	N	N	6.2224 [114]	13.66	37.875	37.875	80 [501]	2.73	7.575	7.575	7.575	0.344
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Total PM	N	N	23.5077 [114]	51.62	143.091	143.091	80 [501]	10.32	28.618	28.618	28.618	1.301
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.01	0.019	0.019	80 [501]	0.00	0.004	0.004	0.004	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002	0.002	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.01	0.014	0.014	80 [501]	0.00	0.003	0.003	0.003	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.07	0.199	0.199	80 [501]	0.01	0.040	0.040	0.040	0.002
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.01	0.039	0.039	80 [501]	0.00	0.008	0.008	0.008	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002	0.002	0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.01	0.016	0.016	80 [501]	0.00	0.003	0.003	0.003	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Maximum (Units/hr) Note	Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE [1] (lb/hr)	Max. Unc. PTE [1] (tons/yr)	Proj. Act. Unc. Emissions (ton/yr)	Control Efficiency (%) Note	Max. Cont. PTE [2] (lb/hr)	Max. Cont. PTE [2] (tons/yr)	Proj. Act. Cont. Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled PTE (tons/yr)	Max Throughput units/day Note	Max. Unc. Emissions lb/day	Max Cont. Emissions lb/day	g/sec Model Input
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.02	0.048	0.048	80 [501]	0.00	0.010	0.010		0.010				0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002		0.002				0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.04	0.113	0.113	80 [501]	0.01	0.023	0.023		0.023				0.001
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
ON				2.20 [213]	19,236 [311]	19,236 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002		0.002				0.000
OOO	FS 011	Mine Haul Roads, Segment O to OO	NA	0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	PM10	N	N	6.2224 [114]	1.98	5.476	5.476	80 [501]	0.40	1.095	1.095		1.095				0.050
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Total PM	N	N	23.5077 [114]	7.46	20.687	20.687	80 [501]	1.49	4.137	4.137		4.137				0.188
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.01	0.029	0.029	80 [501]	0.00	0.006	0.006		0.006				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001		0.001				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.016	0.016	80 [501]	0.00	0.003	0.003		0.003				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0.32 [213]	2,781 [311]	2,781 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
OP	FS 011	Mine Haul Roads, Segment O to P	NA	0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	PM10	N	N	6.2224 [114]	2.28	6.328	6.328	80 [501]	0.46	1.266	1.266		1.266				0.058
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Total PM	N	N	23.5077 [114]	8.62	23.905	23.905	80 [501]	1.72	4.781	4.781		4.781				0.217
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.01	0.033	0.033	80 [501]	0.00	0.007	0.007		0.007				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002		0.002				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.019	0.019	80 [501]	0.00	0.004	0.004		0.004				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				0.37 [213]	3,214 [311]	3,214 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD	FS 011	Mine Haul Roads, Segment OO to EE	NA	0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	PM10	N	N	6.2224 [114]	3.88	10.768	10.768	80 [501]	0.78	2.154	2.154		2.154				0.098
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Total PM	N	N	23.5077 [114]	14.68	40.683	40.683	80 [501]	2.94	8.137	8.137		8.137				0.370
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.056	0.056	80 [501]	0.00	0.011	0.011		0.011				0.001
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002		0.002				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.014	0.014	80 [501]	0.00	0.003	0.003		0.003				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.032	0.032	80 [501]	0.00	0.006	0.006		0.006				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0.62 [213]	5,469 [311]	5,469 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
PQ	FS 011	Mine Haul Roads, Segment P to Q	NA	0.00 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.2224 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.5077 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.000	0.000	80 [501]	0.40	0.000	0.000		0.000				0.000
PQ				0.00 [213]	0 [311]	0 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	(Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max Cont. Emissions lb/day	g/sec Model Input
PQ				0.00 [213]		0 [311]		0 [401]		VMT	134	Vanadium	N	N	1.25E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PQ				0.00 [213]		0 [311]		0 [401]		VMT	134	Zinc	N	N	1.85E-02 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PQ				0.00 [213]		0 [311]		0 [401]		VMT	134	Tellurium	N	N	5.71E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PQ				0.00 [213]		0 [311]		0 [401]		VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ	FS 011	Mine Haul Roads, Segment P to Z	NA	0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	PM10	N	N	6.2224 [114]		2.35	6.504	6.504	80 [501]		0.47	1.301	1.301		1.301					0.059
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Total PM	N	N	23.5077 [114]		8.86	24.570	24.570	80 [501]		1.77	4.914	4.914		4.914					0.223
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Antimony	N	Y	1.09E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Arsenic	N	Y	1.46E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Beryllium	N	Y	2.35E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Cadmium	N	Y	7.97E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Chromium	N	Y	3.16E-03 [127]		0.00	0.003	0.003	80 [501]		0.00	0.001	0.001		0.001					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Cobalt	N	Y	1.35E-03 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Pb	N	Y	2.35E-03 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Manganese	N	Y	3.26E-02 [127]		0.01	0.034	0.034	80 [501]		0.00	0.007	0.007		0.007					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Nickel	N	Y	6.39E-03 [127]		0.00	0.007	0.007	80 [501]		0.00	0.001	0.001		0.001					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Selenium	N	Y	2.25E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Barium	N	N	2.01E-03 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Boron	N	N	2.61E-03 [127]		0.00	0.003	0.003	80 [501]		0.00	0.001	0.001		0.001					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Copper	N	N	7.92E-03 [127]		0.00	0.008	0.008	80 [501]		0.00	0.002	0.002		0.002					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Molybdenum	N	N	5.83E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Vanadium	N	N	1.25E-03 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Zinc	N	N	1.85E-02 [127]		0.01	0.019	0.019	80 [501]		0.00	0.004	0.004		0.004					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Tellurium	N	N	5.71E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
PZ				0.38 [213]		3,303 [311]		3,303 [401]		VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP	FS 011	Mine Haul Roads, Segment S to HH	NA	7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	PM10	N	N	6.2224 [114]		43.90	121.678	121.678	80 [501]		8.78	24.336	24.336		24.336					1.106
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Total PM	N	N	23.5077 [114]		165.83	459.692	459.692	80 [501]		33.17	91.938	91.938		91.938					4.179
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Antimony	N	Y	1.09E-04 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Arsenic	N	Y	1.46E-04 [127]		0.00	0.003	0.003	80 [501]		0.00	0.001	0.001		0.001					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Beryllium	N	Y	2.35E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Cadmium	N	Y	7.97E-05 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Chromium	N	Y	3.16E-03 [127]		0.02	0.062	0.062	80 [501]		0.00	0.012	0.012		0.012					0.001
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Cobalt	N	Y	1.35E-03 [127]		0.01	0.026	0.026	80 [501]		0.00	0.005	0.005		0.005					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Pb	N	Y	2.35E-03 [127]		0.02	0.046	0.046	80 [501]		0.00	0.009	0.009		0.009					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Manganese	N	Y	3.26E-02 [127]		0.23	0.638	0.638	80 [501]		0.05	0.128	0.128		0.128					0.006
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Nickel	N	Y	6.39E-03 [127]		0.05	0.125	0.125	80 [501]		0.01	0.025	0.025		0.025					0.001
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Selenium	N	Y	2.25E-04 [127]		0.00	0.004	0.004	80 [501]		0.00	0.001	0.001		0.001					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Barium	N	N	2.01E-03 [127]		0.01	0.039	0.039	80 [501]		0.00	0.008	0.008		0.008					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Boron	N	N	2.61E-03 [127]		0.02	0.051	0.051	80 [501]		0.00	0.010	0.010		0.010					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Copper	N	N	7.92E-03 [127]		0.06	0.155	0.155	80 [501]		0.01	0.031	0.031		0.031					0.001
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Molybdenum	N	N	5.83E-05 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Vanadium	N	N	1.25E-03 [127]		0.01	0.024	0.024	80 [501]		0.00	0.005	0.005		0.005					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Zinc	N	N	1.85E-02 [127]		0.13	0.362	0.362	80 [501]		0.03	0.072	0.072		0.072					0.003
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Tellurium	N	N	5.71E-04 [127]		0.00	0.011	0.011	80 [501]		0.00	0.002	0.002		0.002					0.000
WESP				7.05 [213]		61,797 [311]		61,797 [401]		VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]		0.01	0.030	0.030	80 [501]		0.00	0.006	0.006		0.006					0.000
WESP		Mine Haul Roads, Segment S to II		14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	PM10	N	N	6.2224 [114]		87.32	242.056	242.056	80 [501]		17.46	48.411	48.411		48.411					2.200
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Total PM	N	N	23.5077 [114]		329.90	914.475	914.475	80 [501]		65.98	182.895	182.895		182.895					8.313
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Antimony	N	Y	1.09E-04 [127]		0.00	0.004	0.004	80 [501]		0.00	0.001	0.001		0.001					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Arsenic	N	Y	1.46E-04 [127]		0.00	0.006	0.006	80 [501]		0.00	0.001	0.001		0.001					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Beryllium	N	Y	2.35E-05 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Cadmium	N	Y	7.97E-05 [127]		0.00	0.003	0.003	80 [501]		0.00	0.001	0.001		0.001					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Chromium	N	Y	3.16E-03 [127]		0.04	0.123	0.123	80 [501]		0.01	0.025	0.025		0.025					0.001
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Cobalt	N	Y	1.35E-03 [127]		0.02	0.052	0.052	80 [501]		0.01	0.010	0.010		0.010					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Pb	N	Y	2.35E-03 [127]		0.03	0.091	0.091	80 [501]		0.01	0.018	0.018		0.018					0.001
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Manganese	N	Y	3.26E-02 [127]		0.46	1.269	1.269	80 [501]		0.09	0.254	0.254		0.254					0.012
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Nickel	N	Y	6.39E-03 [127]		0.09	0.249	0.249	80 [501]		0.02	0.050	0.050		0.050					0.002
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Selenium	N	Y	2.25E-04 [127]		0.00	0.009	0.009	80 [501]		0.00	0.002	0.002		0.002					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Barium	N	N	2.01E-03 [127]		0.03	0.078	0.078	80 [501]		0.01	0.016	0.016		0.016					0.001
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Boron	N	N	2.61E-03 [127]		0.04	0.102	0.102	80 [501]		0.01	0.020	0.020		0.020					0.001
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Copper	N	N	7.92E-03 [127]		0.11	0.308	0.308	80 [501]		0.02	0.062	0.062		0.062					0.003
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Molybdenum	N	N	5.83E-05 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Vanadium	N	N	1.25E-03 [127]		0.02	0.049	0.049	80 [501]		0.00	0.010	0.010		0.010					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Zinc	N	N	1.85E-02 [127]		0.26	0.720	0.720	80 [501]		0.05	0.144	0.144		0.144					0.007
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Tellurium	N	N	5.71E-04 [127]		0.01	0.022	0.022	80 [501]		0.00	0.004	0.004		0.004					0.000
WESP				14.03 [213]		122,934 [311]		122,934 [401]		VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]		0.02	0.060	0.060	80 [501]		0.00	0.012	0.012		0.012					0.001
WESP	FS 011	Mine Haul Roads, Segment T to S	NA	10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	PM10	N	N	6.2224 [114]		62.87	174.278	174.278	80 [501]		12.57	34.856	34.856		34.856					1.584
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Total PM	N	N	23.5077 [114]		237.52	658.413	658.413	80 [501]		47.50	131.683	131.683		131.683					5.985
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Antimony	N	Y	1.09E-04 [127]		0.00	0.003	0.003	80 [501]		0.00	0.001	0.001		0.001					0.000
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Arsenic	N	Y	1.46E-04 [127]		0.00	0.004	0.004	80 [501]		0.00	0.001	0.001		0.001					0.000
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Beryllium	N	Y	2.35E-05 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Cadmium	N	Y	7.97E-05 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Chromium	N	Y	3.16E-03 [127]		0.03	0.089	0.089	80 [501]		0.01	0.018	0.018		0.018					0.001
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Cobalt	N	Y	1.35E-03 [127]		0.01	0.038	0.038	80 [501]		0.00	0.008	0.008		0.008					0.000
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Pb	N	Y	2.35E-03 [127]		0.02	0.066	0.066	80 [501]		0.00	0.013	0.013		0.013					0.001
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Manganese	N	Y	3.26E-02 [127]		0.33	0.914	0.914	80 [501]		0.07	0.183	0.183		0.183					0.008
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Nickel	N	Y	6.39E-03 [127]		0.06	0.179	0.179	80 [501]		0.01	0.036	0.036		0.036					0.002
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Selenium	N	Y	2.25E-04 [127]		0.00	0.006	0.006	80 [501]		0.00	0.001	0.001		0.001					0.000
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Barium	N	N	2.01E-03 [127]		0.02	0.056	0.056	80 [501]		0.00	0.011	0.011		0.011					0.001
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Boron	N	N	2.61E-03 [127]		0.03	0.073	0.073	80 [501]		0.01	0.015	0.015		0.015					0.001
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Copper	N	N	7.92E-03 [127]		0.08	0.222	0.222	80 [501]		0.02	0.044	0.044		0.044					0.002
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Molybdenum	N	N	5.83E-05 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Vanadium	N	N	1.25E-03 [127]		0.01	0.035	0.035	80 [501]		0.00	0.007	0.007		0.007					0.000
WESP				10.10 [213]		88,511 [311]		88,511 [401]		VMT	134	Zinc	N	N	1.85E-02 [127]		0.19	0.518	0.518	80 [501]		0.04	0.104	0.104		0.104					0.005

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Actual (Units/yr)	Units	Annual days with precipitation	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont Emiss (tons/yr)	Emission Std / Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Max Unc Emiss lb/day	Max Cont Emiss lb/day	g/sec Model Input
WESP				10.10 [213]	88,511 [311]	88,511 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.01	0.016	0.016	80 [501]	0.00	0.003	0.003		0.003				0.000
WESP				10.10 [213]	88,511 [311]	88,511 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.02	0.043	0.043	80 [501]	0.00	0.009	0.009		0.009				0.000
UV	FS 011	Mine Haul Roads, Segment U to V	NA	20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	PM10	N	N	6.2224 [114]	125.86	348.875	348.875	80 [501]	25.17	69.775	69.775		69.775				3.172
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Total PM	N	N	23.5077 [114]	475.48	1,318.028	1,318.028	80 [501]	95.10	263.606	263.606		263.606				11.982
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001		0.001				0.000
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002		0.002				0.000
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001				0.000
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.06	0.177	0.177	80 [501]	0.01	0.035	0.035		0.035				0.002
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.03	0.076	0.076	80 [501]	0.01	0.015	0.015		0.015				0.001
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.05	0.132	0.132	80 [501]	0.01	0.026	0.026		0.026				0.001
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.66	1.830	1.830	80 [501]	0.13	0.366	0.366		0.366				0.017
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.13	0.359	0.359	80 [501]	0.03	0.072	0.072		0.072				0.003
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003		0.003				0.000
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.04	0.113	0.113	80 [501]	0.01	0.023	0.023		0.023				0.001
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.05	0.146	0.146	80 [501]	0.01	0.029	0.029		0.029				0.001
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.16	0.444	0.444	80 [501]	0.03	0.089	0.089		0.089				0.004
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.03	0.070	0.070	80 [501]	0.01	0.014	0.014		0.014				0.001
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.37	1.037	1.037	80 [501]	0.07	0.207	0.207		0.207				0.009
UV				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.01	0.032	0.032	80 [501]	0.00	0.006	0.006		0.006				0.000
WX				20.23 [213]	177,184 [311]	177,184 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.03	0.086	0.086	80 [501]	0.01	0.017	0.017		0.017				0.001
WX	FS 011	Mine Haul Roads, Segment W to X	NA	0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	PM10	N	N	6.2224 [114]	2.45	6.793	6.793	80 [501]	0.49	1.359	1.359		1.359				0.062
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Total PM	N	N	23.5077 [114]	9.26	25.665	25.665	80 [501]	1.85	5.133	5.133		5.133				0.233
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.01	0.036	0.036	80 [501]	0.00	0.007	0.007		0.007				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002		0.002				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.020	0.020	80 [501]	0.00	0.004	0.004		0.004				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
WX				0.39 [213]	3,450 [311]	3,450 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD	FS 011	Mine Haul Roads, Segment X to Y	NA	0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	PM10	N	N	6.2224 [114]	1.28	3.542	3.542	80 [501]	0.26	0.708	0.708		0.708				0.032
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Total PM	N	N	23.5077 [114]	4.83	13.380	13.380	80 [501]	0.97	2.676	2.676		2.676				0.122
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.01	0.019	0.019	80 [501]	0.00	0.004	0.004		0.004				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002		0.002				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C3WRRD				0.21 [213]	1,799 [311]	1,799 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA	FS 011	Mine Haul Roads, Segment Z to AA	NA	0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	PM10	N	N	6.2224 [114]	3.49	9.687	9.687	80 [501]	0.70	1.937	1.937		1.937				0.088
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Total PM	N	N	23.5077 [114]	13.20	36.597	36.597	80 [501]	2.64	7.319	7.319		7.319				0.333
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.051	0.051	80 [501]	0.00	0.010	0.010		0.010				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.010	0.010	80 [501]	0.00	0.002	0.002		0.002				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002		0.002				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.029	0.029	80 [501]	0.00	0.006	0.006		0.006				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
ZAA				0.56 [213]	4,920 [311]	4,920 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Emission Unit Description	APCD ID	Max (Units/hr) Note	Max (Units/yr) Note	Proj. Actual (Units/yr) Note	Units	Annual days with precip	Pollutant	PSD Appl. (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE [1] (lb/hr)	(tons/yr)	Proj. Act. Unc. Emissions (ton/yr)	Control Eff. (%) Note	Max. Cont. PTE [2] (lb/hr)	(tons/yr)	Proj. Act. Cont. Emissions (tons/yr)	Limited Cont. PTE (tons/yr)	g/sec Model Input
ZW	FS 011	Mine Haul Roads, Segment Z to W	NA	0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	PM10	N	N	6.2224 [114]	1.56	4.332	4.332	80 [501]	0.31	0.866	0.866	0.866	0.039
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Total PM	N	N	23.5077 [114]	5.90	16.366	16.366	80 [501]	1.18	3.273	3.273	3.273	0.149
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.01	0.023	0.023	80 [501]	0.00	0.005	0.005	0.005	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001	0.001	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003	0.003	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0.25 [213]	2,200 [311]	2,200 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
VMM	FS 011	Mine Haul Roads, Segment V to MM	NA	3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	PM10	N	N	6.2224 [114]	24.25	67.229	67.229	80 [501]	4.85	13.446	13.446	13.446	0.611
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Total PM	N	N	23.5077 [114]	91.63	253.988	253.988	80 [501]	18.33	50.798	50.798	50.798	2.309
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.01	0.034	0.034	80 [501]	0.00	0.007	0.007	0.007	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.01	0.015	0.015	80 [501]	0.00	0.003	0.003	0.003	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.01	0.025	0.025	80 [501]	0.00	0.005	0.005	0.005	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.13	0.353	0.353	80 [501]	0.03	0.071	0.071	0.071	0.003
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.02	0.069	0.069	80 [501]	0.00	0.014	0.014	0.014	0.001
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.01	0.022	0.022	80 [501]	0.00	0.004	0.004	0.004	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.01	0.028	0.028	80 [501]	0.00	0.006	0.006	0.006	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.03	0.086	0.086	80 [501]	0.01	0.017	0.017	0.017	0.001
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003	0.003	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.07	0.200	0.200	80 [501]	0.01	0.040	0.040	0.040	0.002
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001	0.001	0.000
VMM				3.90 [213]	34,144 [311]	34,144 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.01	0.017	0.017	80 [501]	0.00	0.003	0.003	0.003	0.000
VNN	FS 011	Mine Haul Roads, Segment V to NN	NA	12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	PM10	N	N	6.2224 [114]	76.89	213.136	213.136	80 [501]	15.38	42.627	42.627	42.627	1.938
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Total PM	N	N	23.5077 [114]	290.48	805.215	805.215	80 [501]	58.10	161.043	161.043	161.043	7.320
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.04	0.108	0.108	80 [501]	0.01	0.022	0.022	0.022	0.001
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.02	0.046	0.046	80 [501]	0.00	0.009	0.009	0.009	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.03	0.080	0.080	80 [501]	0.01	0.016	0.016	0.016	0.001
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.40	1.118	1.118	80 [501]	0.08	0.224	0.224	0.224	0.010
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.08	0.219	0.219	80 [501]	0.02	0.044	0.044	0.044	0.002
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002	0.002	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.02	0.069	0.069	80 [501]	0.00	0.014	0.014	0.014	0.001
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.03	0.089	0.089	80 [501]	0.01	0.018	0.018	0.018	0.001
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.10	0.271	0.271	80 [501]	0.02	0.054	0.054	0.054	0.002
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.02	0.043	0.043	80 [501]	0.00	0.009	0.009	0.009	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.23	0.634	0.634	80 [501]	0.05	0.127	0.127	0.127	0.006
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.01	0.020	0.020	80 [501]	0.00	0.004	0.004	0.004	0.000
VNN				12.36 [213]	108,246 [311]	108,246 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.02	0.053	0.053	80 [501]	0.01	0.011	0.011	0.011	0.000
FS11MN	FS 011	Unpaved Roads, Mine (Light Trucks)	NA	18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	PM10	N	N	0.7183 [114]	13.11	36.336	36.336	80 [501]	2.62	7.267	7.267	7.267	0.330
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Total PM	N	N	2.7135 [114]	49.52	137.276	137.276	80 [501]	9.90	27.455	27.455	27.455	1.248
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Antimony	N	Y	1.26E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Arsenic	N	Y	1.68E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Beryllium	N	Y	2.71E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Cadmium	N	Y	9.20E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Chromium	N	Y	3.65E-04 [127]	0.01	0.018	0.018	80 [501]	0.00	0.004	0.004	0.004	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Cobalt	N	Y	1.55E-04 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002	0.002	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Pb	N	Y	2.71E-04 [127]	0.00	0.014	0.014	80 [501]	0.00	0.003	0.003	0.003	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Manganese	N	Y	3.77E-03 [127]	0.07	0.191	0.191	80 [501]	0.01	0.038	0.038	0.038	0.002
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Nickel	N	Y	7.38E-04 [127]	0.01	0.037	0.037	80 [501]	0.01	0.007	0.007	0.007	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Selenium	N	Y	2.60E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Barium	N	N	2.32E-04 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002	0.002	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Boron	N	N	3.01E-04 [127]	0.01	0.015	0.015	80 [501]	0.00	0.003	0.003	0.003	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Copper	N	N	9.14E-04 [127]	0.02	0.046	0.046	80 [501]	0.00	0.009	0.009	0.009	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Molybdenum	N	N	6.73E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Vanadium	N	N	1.44E-04 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Zinc	N	N	2.14E-03 [127]	0.04	0.108	0.108	80 [501]	0.01	0.022	0.022	0.022	0.001
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Tellurium	N	N	6.59E-05 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
FS11MN				18.25 [214]	159,870 [312]	159,870 [401]	VMT	134	Fluorides (as F)	N	N	1.78E-04 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002	0.002	0.000
FS11MN		Unpaved Roads, Mine (tanker truck)	NA	1.50 [215]	13,140 [312]	13,140 [401]	VMT	134	PM10	N	N	1.3991 [114]	2.10	5.817	5.817	80 [501]	0.42	1.163	1.163	1.163	0.053
FS11MN				1.50 [215]	13,140 [312]	13,140 [401]	VMT	134	Total PM	N	N	5.2856 [114]	7.93	21.977	21.977	80 [501]	1.59	4.395	4.395	4.395	0.200

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Description	APCD ID	Throughput Max (Units/hr)	Note	Throughput Max (Units/yr)	Note	Proj. Actual (Units/yr)	Note	Units	Annual days with precip	Pollutant	PSD Appl. (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Unc. PTE [1] (lb/hr)	(tons/yr)	Proj. Act. Unc. Emis. (ton/yr)	Control Eff (%)	Note	Max. Cont. PTE [2] (lb/hr)	(tons/yr)	Proj. Act. Cont. Emis. (tons/yr)	Emis. Std or Oper. Limit	Limited Cont. PTE (tons/yr)	Max. Throughput units/day	Note	Max. Unc. Emis. lb/day	Max. Cont. Emis. lb/day	g/sec Model Input
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Antimony	N	Y	2.45E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Arsenic	N	Y	3.28E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Beryllium	N	Y	5.29E-06 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Cadmium	N	Y	1.79E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Chromium	N	Y	7.11E-04 [127]		0.00	0.003	0.003	80 [501]		0.00	0.001	0.001		0.001					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Cobalt	N	Y	3.03E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Pb	N	Y	5.28E-04 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Manganese	N	Y	7.34E-03 [127]		0.01	0.031	0.031	80 [501]		0.00	0.006	0.006		0.006					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Nickel	N	Y	1.44E-03 [127]		0.00	0.006	0.006	80 [501]		0.00	0.001	0.001		0.001					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Selenium	N	Y	5.06E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Barium	N	N	4.51E-04 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Boron	N	N	5.87E-04 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Copper	N	N	1.78E-03 [127]		0.00	0.007	0.007	80 [501]		0.00	0.001	0.001		0.001					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Molybdenum	N	N	1.31E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Vanadium	N	N	2.81E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Zinc	N	N	4.16E-03 [127]		0.01	0.017	0.017	80 [501]		0.00	0.003	0.003		0.003					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Tellurium	N	N	1.28E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
FS11MN				1.50 [215]		13,140 [312]		13,140 [401]		VMT	134	Fluorides (as F)	N	N	3.47E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000					0.000
FS012A	FS 012	Unpaved Roads, Dunka Rd. A (Haul Trucks)	NA	0.73 [216]		255 [313]		255 [401]		VMT	134	PM10	N	N	0.905 [114]		0.66	0.073	0.073	80 [501]		0.13	0.015	0.015		0.015	0.729 [601]		0.660	0.132	0.001
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Total PM	N	N	3.631 [114]		2.65	0.293	0.293	80 [501]		0.53	0.059	0.059		0.059	0.729 [601]		2.646	0.529	0.003
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Antimony	N	Y	1.68E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Arsenic	N	Y	2.25E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Beryllium	N	Y	3.63E-06 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Cadmium	N	Y	1.23E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Chromium	N	Y	4.88E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Cobalt	N	Y	2.08E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Pb	N	Y	3.63E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Manganese	N	Y	5.04E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.004	0.001	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Nickel	N	Y	9.88E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.001	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Selenium	N	Y	3.47E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Barium	N	N	3.10E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Boron	N	N	4.03E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Copper	N	N	1.22E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.001	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Molybdenum	N	N	9.00E-06 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Vanadium	N	N	1.93E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Zinc	N	N	2.86E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.002	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Tellurium	N	N	8.82E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A				0.73 [216]		255 [313]		255 [401]		VMT	134	Fluorides (as F)	N	N	2.38E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	0.729 [601]		0.000	0.000	0.000
FS012A		Unpaved Roads, Dunka Rd. A (Light Trucks)	NA	12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	PM10	N	N	0.905 [114]		10.94	3.447	3.447	80 [501]		2.19	0.689	0.689		0.689	32.970 [602]		29.847	5.969	0.031
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Total PM	N	N	3.631 [114]		43.90	13.827	13.827	80 [501]		8.78	2.765	2.765		2.765	32.970 [602]		119.717	23.943	0.126
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Antimony	N	Y	1.68E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.001	0.000	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Arsenic	N	Y	2.25E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.001	0.000	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Beryllium	N	Y	3.63E-06 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.000	0.000	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Cadmium	N	Y	1.23E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.000	0.000	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Chromium	N	Y	4.88E-04 [127]		0.01	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.016	0.003	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Cobalt	N	Y	2.08E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.007	0.001	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Pb	N	Y	3.63E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.012	0.002	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Manganese	N	Y	5.04E-03 [127]		0.06	0.019	0.019	80 [501]		0.01	0.004	0.004		0.004	32.970 [602]		0.166	0.033	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.000	0.000	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Nickel	N	Y	9.88E-04 [127]		0.01	0.004	0.004	80 [501]		0.00	0.001	0.001		0.001	32.970 [602]		0.033	0.007	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.000	0.000	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Selenium	N	Y	3.47E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.001	0.000	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Barium	N	N	3.10E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.010	0.002	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Boron	N	N	4.03E-04 [127]		0.00	0.002	0.002	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.013	0.003	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Copper	N	N	1.22E-03 [127]		0.01	0.005	0.005	80 [501]		0.00	0.001	0.001		0.001	32.970 [602]		0.040	0.008	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Molybdenum	N	N	9.00E-06 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.000	0.000	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Vanadium	N	N	1.93E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.006	0.001	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Zinc	N	N	2.86E-03 [127]		0.03	0.011	0.011	80 [501]		0.01	0.002	0.002		0.002	32.970 [602]		0.094	0.019	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Tellurium	N	N	8.82E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.003	0.001	0.000
FS012A				12.09 [217]		12,034 [314]		12,034 [401]		VMT	134	Fluorides (as F)	N	N	2.38E-04 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000	32.970 [602]		0.008	0.002	0.000
FS012A		Unpaved Roads, Dunka Rd. A (Fuel Tanker)	NA	0.37 [218]		808 [315]		808 [401]		VMT	134	PM10	N	N	0.905 [114]		0.33	0.231	0.231	80 [501]		0.07	0.046	0.046		0.046	2.213 [603]		2.003	0.401	0.002
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Total PM	N	N	3.631 [114]		1.34	0.928	0.928	80 [501]		0.27	0.186	0.186		0.186	2.213 [603]		8.035	1.607	0.008
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Antimony	N	Y	1.68E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Arsenic	N	Y	2.25E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Beryllium	N	Y	3.63E-06 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Cadmium	N	Y	1.23E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Chromium	N	Y	4.88E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.001	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Cobalt	N	Y	2.08E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Pb	N	Y	3.63E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.001	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Manganese	N	Y	5.04E-03 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.011	0.002	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Mercury	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Nickel	N	Y	9.88E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.002	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Phosphorus	N	Y	0.00E+00 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Selenium	N	Y	3.47E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Barium	N	N	3.10E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.001	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Boron	N	N	4.03E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.001	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Copper	N	N	1.22E-03 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.003	0.001	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Molybdenum	N	N	9.00E-06 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Vanadium	N	N	1.93E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Zinc	N	N	2.86E-03 [127]		0.00	0.001	0.001	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.006	0.001	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Tellurium	N	N	8.82E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012A				0.37 [218]		808 [315]		808 [401]		VMT	134	Fluorides (as F)	N	N	2.38E-04 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	2.213 [603]		0.000	0.000	0.000
FS012B	FS 012	Unpaved Roads, Dunka Rd. B (Haul Trucks)	NA	3.88 [216]		1,360 [313]		1,360 [401]		VMT	134	PM10	N	N	0.966 [114]		3.75	0.416	0.416	80 [501]		0.75	0.083	0.083		0.083	3.881 [601]		3.750	0.750	0.004
FS012B				3.88 [216]		1,360 [313]		1,360 [401]		VMT	134	Total PM	N	N	15.04 [114]		15.04	1.668	1.668	80 [501]		3.01	0.334	0.334		0.334	3.881 [601]		15.043	3.009	0.016
FS012B				3.88 [216]		1,360 [313]		1,360 [401]		VMT	134	Antimony	N	Y	1.79E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	3.881 [601]		0.000	0.000	0.000
FS012B				3.88 [216]		1,360 [313]		1,360 [401]		VMT	134	Arsenic	N	Y	2.40E-05 [127]		0.00	0.000	0.000	80 [501]		0.00	0.000	0.000		0.000	3.881 [601]		0.000	0.000	0.000

11/11/2008

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Act (Units/yr)	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont Emiss (tons/yr)	Emission Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Max Unc Emiss (lb/day)	Max Cont Emiss (lb/day)	g/sec Model Input
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Beryllium	N	Y	3.88E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.000	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.002	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.001	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.002	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.002	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.02	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.021	0.004	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.000	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.004	0.001	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.000	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.000	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.001	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.002	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.01	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.005	0.001	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.000	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.001	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.01	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.012	0.002	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.000	0.000	0.000
FS012B				3.88 [216]	1,360 [313]	1,360 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	3.881 [601]	0.001	0.000	0.000
FS012B		Unpaved Roads, Dunka Rd. B (Light Trucks)	NA	64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	PM10	N	N	0.966 [114]	61.87	19.488	19.488	80 [501]	12.37	3.898	3.898		3.898	174.589 [602]	168.725	33.745	0.177
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Total PM	N	N	3.876 [114]	248.14	78.164	78.164	80 [501]	49.63	15.633	15.633		15.633	174.589 [602]	676.747	135.349	0.711
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.003	0.001	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.004	0.001	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Beryllium	N	Y	3.88E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.001	0.000	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.002	0.000	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.03	0.011	0.011	80 [501]	0.01	0.002	0.002		0.002	174.589 [602]	0.091	0.018	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	174.589 [602]	0.039	0.008	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.02	0.008	0.008	80 [501]	0.00	0.002	0.002		0.002	174.589 [602]	0.068	0.014	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.34	0.109	0.109	80 [501]	0.07	0.022	0.022		0.022	174.589 [602]	0.939	0.188	0.001
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.000	0.000	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.07	0.021	0.021	80 [501]	0.01	0.004	0.004		0.004	174.589 [602]	0.184	0.037	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.000	0.000	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.006	0.001	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.02	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001	174.589 [602]	0.058	0.012	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.03	0.009	0.009	80 [501]	0.01	0.002	0.002		0.002	174.589 [602]	0.075	0.015	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.08	0.026	0.026	80 [501]	0.02	0.005	0.005		0.005	174.589 [602]	0.228	0.046	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.002	0.000	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	174.589 [602]	0.036	0.007	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.20	0.062	0.062	80 [501]	0.04	0.012	0.012		0.012	174.589 [602]	0.533	0.107	0.001
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.016	0.003	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.02	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001	174.589 [602]	0.044	0.009	0.000
FS012B		Unpaved Roads, Dunka Rd. B (Fuel Tanker)	NA	1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	PM10	N	N	0.966 [114]	1.88	1.300	1.300	80 [501]	0.38	0.260	0.260		0.260	11.643 [603]	11.252	2.250	0.012
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Total PM	N	N	3.876 [114]	7.52	5.213	5.213	80 [501]	1.50	1.043	1.043		1.043	11.643 [603]	45.131	9.026	0.047
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Beryllium	N	Y	3.88E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.006	0.001	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.003	0.001	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.005	0.001	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.01	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001	11.643 [603]	0.063	0.013	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.012	0.002	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.004	0.001	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.005	0.001	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.015	0.003	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.002	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	11.643 [603]	0.036	0.007	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.001	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.003	0.001	0.000
FS012B		Unpaved Roads, Dunka Rd. B (WWTF Trucks)	NA	3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	PM10	N	N	0.966 [114]	3.75	0.742	0.742	80 [501]	0.75	0.148	0.148		0.148	11.639 [604]	11.248	2.250	0.012
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Total PM	N	N	3.876 [114]	15.04	2.974	2.974	80 [501]	3.01	0.595	0.595		0.595	11.639 [604]	45.116	9.023	0.047
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Beryllium	N	Y	3.88E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.006	0.001	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.003	0.001	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.005	0.001	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.02	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	11.639 [604]	0.063	0.013	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.012	0.002	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.004	0.001	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.005	0.001	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.01	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.015	0.003	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.002	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.036	0.007	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.001	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.003	0.001	0.000
FS012B3	FS 012	Unpaved Roads, Dunka Rd. B3 (Haul Trucks)	NA	2.33 [216]	816 [313]	816 [401]	VMT	134	PM10	N	N	0.966 [114]	2.25	0.249	0.249	80 [218]	0.45	0.050	0.050		0.050	2.328 [601]	2.249	0.450	0.002
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Total PM	N	N	3.874 [114]	9.02	1.000	1.000	80 [218]	1.80	0.200	0.200		0.200	2.328 [601]	9.022	1.804	0.009
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Beryllium	N	Y	3.87E-06 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. Pot. to Emit [1] (lb/hr)	Max. Unc. Pot. to Emit [1] (tons/yr)	Proj. Act. Unc. Emissions (ton/yr)	Control Efficiency (%) Note	Max. Cont. Pot. to Emit [2] (lb/hr)	Max. Cont. Pot. to Emit [2] (tons/yr)	Proj. Act. Cont. Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.001	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.001	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.001	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.01	0.001	0.001	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.013	0.003	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.002	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.001	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.001	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.003	0.001	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.01	0.001	0.001	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.007	0.001	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	2.328 [601]	0.001	0.000	0.000
FS012B3		Unpaved Roads, Dunka Rd. B3 (Light Trucks)	NA	38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	PM10	N	N	0.966 [114]	37.17	11.708	11.708	80 [218]	7.43	2.342	2.342		2.342	104.940 [602]	101.370	20.274	0.106
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Total PM	N	N	3.874 [114]	149.08	46.961	46.961	80 [218]	29.82	9.392	9.392		9.392	104.940 [602]	406.589	81.318	0.427
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	104.940 [602]	0.002	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	104.940 [602]	0.003	0.001	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Beryllium	N	Y	3.87E-06 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	104.940 [602]	0.000	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	104.940 [602]	0.001	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.02	0.006	0.006	80 [218]	0.00	0.001	0.001		0.001	104.940 [602]	0.055	0.011	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.01	0.003	0.003	80 [218]	0.00	0.001	0.001		0.001	104.940 [602]	0.023	0.005	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.01	0.005	0.005	80 [218]	0.00	0.001	0.001		0.001	104.940 [602]	0.041	0.008	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.21	0.065	0.065	80 [218]	0.04	0.013	0.013		0.013	104.940 [602]	0.564	0.113	0.001
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	104.940 [602]	0.000	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.04	0.013	0.013	80 [218]	0.01	0.003	0.003		0.003	104.940 [602]	0.111	0.022	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	104.940 [602]	0.000	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	104.940 [602]	0.004	0.001	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.01	0.004	0.004	80 [218]	0.00	0.001	0.001		0.001	104.940 [602]	0.035	0.007	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.02	0.005	0.005	80 [218]	0.00	0.001	0.001		0.001	104.940 [602]	0.045	0.009	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.05	0.016	0.016	80 [218]	0.01	0.003	0.003		0.003	104.940 [602]	0.137	0.027	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	104.940 [602]	0.001	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.01	0.002	0.002	80 [218]	0.00	0.000	0.000		0.000	104.940 [602]	0.022	0.004	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.12	0.037	0.037	80 [218]	0.02	0.007	0.007		0.007	104.940 [602]	0.320	0.064	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.001	0.001	80 [218]	0.00	0.000	0.000		0.000	104.940 [602]	0.010	0.002	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.01	0.003	0.003	80 [218]	0.00	0.001	0.001		0.001	104.940 [602]	0.027	0.005	0.000
FS012B3		Unpaved Roads, Dunka Rd. B3 (Fuel Tanker)	NA	1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	PM10	N	N	0.966 [114]	1.12	0.779	0.779	80 [218]	0.22	0.156	0.156		0.156	6.979 [603]	6.742	1.348	0.007
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Total PM	N	N	3.874 [114]	4.51	3.123	3.123	80 [218]	0.90	0.625	0.625		0.625	6.979 [603]	27.040	5.408	0.028
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Beryllium	N	Y	3.87E-06 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.004	0.001	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.002	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.003	0.001	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.01	0.004	0.004	80 [218]	0.00	0.001	0.001		0.001	6.979 [603]	0.038	0.008	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.001	0.001	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.007	0.001	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.002	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.003	0.001	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.00	0.001	0.001	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.009	0.002	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.001	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.00	0.002	0.002	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.021	0.004	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.001	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.979 [603]	0.002	0.000	0.000
FS012B3		Unpaved Roads, Dunka Rd. B3 (WWTF Trucks)	NA	2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	PM10	N	N	0.966 [114]	2.25	0.446	0.446	80 [218]	0.45	0.089	0.089		0.089	6.996 [604]	6.758	1.352	0.007
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Total PM	N	N	3.874 [114]	9.04	1.787	1.787	80 [218]	1.81	0.357	0.357		0.357	6.996 [604]	27.106	5.421	0.028
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Beryllium	N	Y	3.87E-06 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.004	0.001	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.002	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.003	0.001	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.01	0.002	0.002	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.038	0.008	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.007	0.001	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.002	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.003	0.001	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.00	0.001	0.001	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.009	0.002	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.001	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.01	0.001	0.001	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.021	0.004	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.001	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [218]	0.00	0.000	0.000		0.000	6.996 [604]	0.002	0.000	0.000
OP	FS 012 O to P	Unpaved Roads, Mine Roads (Haul Trucks)	NA	0.27 [220]	95 [317]	95 [401]	VMT	134	PM10	N	N	0.905 [114]	0.25	0.027	0.027	80 [501]	0.05	0.005	0.005		0.005	0.272 [605]	0.247	0.049	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Total PM	N	N	3.631 [114]	0.99	0.110	0.110	80 [501]	0.20	0.022	0.022		0.022	0.272 [605]	0.989	0.198	0.001
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Antimony	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Arsenic	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Beryllium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Cadmium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Chromium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Cobalt	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Act (Units/yr)	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont (tons/yr)	Emission Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Max Unc (lb/day)	Max Cont (lb/day)	g/sec Model Input
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Pb	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Manganese	N	Y	0.005 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.001	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Mercury	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Nickel	N	Y	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Phosphorus	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Selenium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Barium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Boron	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Copper	N	N	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Molybdenum	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Vanadium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Zinc	N	N	0.003 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.001	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Tellurium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Fluorides (as F)	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP		Unpaved Roads, Mine Roads (Light Trucks) O to P	NA	4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	PM10	N	N	0.905 [114]	4.07	1.282	1.282	80 [501]	0.81	0.256	0.256		0.256	12.258 [605]	11.097	2.219	0.012
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Total PM	N	N	3.631 [114]	16.32	5.141	5.141	80 [501]	3.26	1.028	1.028		1.028	12.258 [605]	44.509	8.902	0.047
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Antimony	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.000	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Arsenic	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.000	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Beryllium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.000	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Cadmium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.000	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Chromium	N	Y	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.006	0.001	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Cobalt	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.003	0.001	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Pb	N	Y	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.004	0.001	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Manganese	N	Y	0.005 [127]	0.02	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001	12.258 [605]	0.062	0.012	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Mercury	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.000	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Nickel	N	Y	0.001 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.012	0.002	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Phosphorus	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.000	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Selenium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.000	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Barium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.005	0.001	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Boron	N	N	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.005	0.001	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Copper	N	N	0.001 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.015	0.003	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Molybdenum	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.000	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Vanadium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.002	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Zinc	N	N	0.003 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	12.258 [605]	0.035	0.007	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Tellurium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.001	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Fluorides (as F)	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.003	0.001	0.000
OP		Unpaved Roads, Mine Roads (Fuel Tanker) O to P	NA	0.14 [220]	298 [317]	298 [401]	VMT	134	PM10	N	N	0.905 [114]	0.12	0.085	0.085	80 [501]	0.02	0.017	0.017		0.017	0.817 [605]	0.740	0.148	0.001
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Total PM	N	N	3.631 [114]	0.49	0.343	0.343	80 [501]	0.10	0.069	0.069		0.069	0.817 [605]	2.967	0.593	0.003
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Antimony	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Arsenic	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Beryllium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Cadmium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Chromium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Cobalt	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Pb	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Manganese	N	Y	0.005 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.004	0.001	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Mercury	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Nickel	N	Y	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.001	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Phosphorus	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Selenium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Barium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Boron	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Copper	N	N	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.001	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Molybdenum	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Vanadium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Zinc	N	N	0.003 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.002	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Tellurium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
OP				0.14 [220]	298 [317]	298 [401]	VMT	134	Fluorides (as F)	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.817 [605]	0.000	0.000	0.000
ON	FS 012	Unpaved Roads, Mine Roads (Haul Trucks) O to N	NA	0.43 [220]	150 [317]	150 [401]	VMT	134	PM10	N	N	0.905 [114]	0.39	0.043	0.043	80 [501]	0.08	0.009	0.009		0.009	0.428 [605]	0.388	0.078	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Total PM	N	N	3.631 [114]	1.56	0.172	0.172	80 [501]	0.31	0.034	0.034		0.034	0.428 [605]	1.556	0.311	0.002
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Antimony	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Arsenic	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Beryllium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Cadmium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Chromium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Cobalt	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Pb	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Manganese	N	Y	0.005 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.002	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Mercury	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Nickel	N	Y	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.001	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Phosphorus	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Selenium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Barium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Boron	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Copper	N	N	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.001	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Molybdenum	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Vanadium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Zinc	N	N	0.003 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.001	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Tellurium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON				0.43 [220]	150 [317]	150 [401]	VMT	134	Fluorides (as F)	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.428 [605]	0.000	0.000	0.000
ON		Unpaved Roads, Mine Roads (Light Trucks) O to N	NA	7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	PM10	N	N	0.905 [114]	6.40	2.016	2.016	80 [501]	1.28	0.403	0.403		0.403	19.278 [605]	17.452	3.490	0.018
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Total PM	N	N	3.631 [114]	25.67	8.085	8.085	80 [501]	5.13	1.617	1.617		1.617	19.278 [605]	69.999	14.000	0.073
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Antimony	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.000	0.000	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Arsenic	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.000	0.000	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Beryllium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.000	0.000	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Cadmium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.000	0.000	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Chromium	N	Y	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.009	0.002	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Cobalt	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.004	0.001	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Pb	N	Y	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.007	0.001	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Manganese	N	Y	0.005 [127]	0.04	0.011	0.011	80 [501]	0.01	0.002	0.002		0.002	19.278 [605]	0.097	0.019	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Proj. Actual (Units/yr)	(Units/yr)	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont (tons/yr)	Emission Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Mercury	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.000	0.000	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Nickel	N	Y	0.001 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.019	0.004	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Phosphorus	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.000	0.000	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Selenium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.001	0.000	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Barium	N	N	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.006	0.001	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Boron	N	N	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.008	0.002	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Copper	N	N	0.001 [127]	0.01	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001	19.278 [605]	0.024	0.005	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Molybdenum	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.000	0.000	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Vanadium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.004	0.001	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Zinc	N	N	0.003 [127]	0.02	0.006	0.006	80 [501]	0.00	0.001	0.001		0.001	19.278 [605]	0.055	0.011	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Tellurium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.002	0.000	0.000
ON				7.07 [220]	7,036 [317]	7,036 [401]	VMT	134	Fluorides (as F)	N	N	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	19.278 [605]	0.005	0.001	0.000
ON		Unpaved Roads, Mine Roads (Fuel Tanker) O to N	NA	0.21 [220]	469 [317]	469 [401]	VMT	134	PM10	N	N	0.905 [114]	0.19	0.134	0.134	80 [501]	0.04	0.027	0.027		0.027	1.285 [605]	1.163	0.233	0.001
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Total PM	N	N	3.631 [114]	0.78	0.539	0.539	80 [501]	0.16	0.108	0.108		0.108	1.285 [605]	4.667	0.933	0.005
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Antimony	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Arsenic	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Beryllium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Cadmium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Chromium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.001	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Cobalt	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Pb	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Manganese	N	Y	0.005 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.006	0.001	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Mercury	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Nickel	N	Y	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.001	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Phosphorus	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Selenium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Barium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Boron	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.001	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Copper	N	N	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.002	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Molybdenum	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Vanadium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Zinc	N	N	0.003 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.004	0.001	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Tellurium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Fluorides (as F)	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
LLN	FS 012	Unpaved Roads, Mine Roads (Haul Trucks) LL to N	NA	0.81 [220]	284 [317]	284 [401]	VMT	134	PM10	N	N	0.905 [114]	0.73	0.081	0.081	80 [501]	0.15	0.016	0.016		0.016	0.811 [605]	0.735	0.147	0.001
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Total PM	N	N	3.631 [114]	2.95	0.327	0.327	80 [501]	0.59	0.065	0.065		0.065	0.811 [605]	2.946	0.589	0.003
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Antimony	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Arsenic	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Beryllium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Cadmium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Chromium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Cobalt	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Pb	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Manganese	N	Y	0.005 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.004	0.001	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Mercury	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Nickel	N	Y	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.001	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Phosphorus	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Selenium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Barium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Boron	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Copper	N	N	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.001	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Molybdenum	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Vanadium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Zinc	N	N	0.003 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.002	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Tellurium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Fluorides (as F)	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN		Unpaved Roads, Mine Roads (Light Trucks) LL to N	NA	13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	PM10	N	N	0.905 [114]	12.12	3.818	3.818	80 [501]	2.42	0.764	0.764		0.764	36.513 [605]	33.055	6.611	0.035
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Total PM	N	N	3.631 [114]	48.61	15.313	15.313	80 [501]	9.72	3.063	3.063		3.063	36.513 [605]	132.580	26.516	0.139
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Antimony	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.001	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Arsenic	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.001	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Beryllium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Cadmium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Chromium	N	Y	0.000 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.018	0.004	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Cobalt	N	Y	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.008	0.002	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Pb	N	Y	0.000 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.013	0.003	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Manganese	N	Y	0.005 [127]	0.07	0.021	0.021	80 [501]	0.01	0.004	0.004		0.004	36.513 [605]	0.184	0.037	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Mercury	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Nickel	N	Y	0.001 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	36.513 [605]	0.036	0.007	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Phosphorus	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Selenium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.001	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Barium	N	N	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.011	0.002	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Boron	N	N	0.000 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.015	0.003	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Copper	N	N	0.001 [127]	0.02	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001	36.513 [605]	0.045	0.009	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Molybdenum	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Vanadium	N	N	0.000 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.007	0.001	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Zinc	N	N	0.003 [127]	0.04	0.012	0.012	80 [501]	0.01	0.002	0.002		0.002	36.513 [605]	0.104	0.021	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Tellurium	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.003	0.001	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Fluorides (as F)	N	N	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN		Unpaved Roads, Mine Roads (Fuel Tanker) LL to N	NA	0.41 [220]	888 [317]	888 [401]	VMT	134	PM10	N	N	0.905 [114]	0.37	0.255	0.255	80 [501]	0.07	0.051	0.051		0.051	2.434 [605]	2.204	0.441	0.002
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Total PM	N	N	3.631 [114]	1.47	1.021	1.021	80 [501]	0.29	0.204	0.204		0.204	2.434 [605]	8.839	1.768	0.009
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Antimony	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Arsenic	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Beryllium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Cadmium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Chromium	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.001	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Cobalt	N	Y	0.000 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.001	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Manganese	N	Y	0.005 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.012	0.002	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Mercury	N	Y	0 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Nickel	N	Y	0.001 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.002	0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Max (Units/yr)	Note	Proj Actual (Units/yr)	Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP (Y/N)	EF (lb/Unit)	Note	Max Unc lb/hr	Max Unc tons/yr	Proj Act Unc ton/yr	CE %	Note	Max Cont lb/hr	Max Cont tons/yr	Proj Act Cont tons/yr	Em Std/Op Limit	Limited Cont PTE tons/yr	Max Thruput units/day	Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
LLN				0.41	[220]	888	[317]	888	[401]	VMT	134	Phosphorus	N	Y	0	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.434	[605]	0.000	0.000	0.000
LLN				0.41	[220]	888	[317]	888	[401]	VMT	134	Selenium	N	Y	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.434	[605]	0.000	0.000	0.000
LLN				0.41	[220]	888	[317]	888	[401]	VMT	134	Barium	N	N	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.434	[605]	0.001	0.000	0.000
LLN				0.41	[220]	888	[317]	888	[401]	VMT	134	Boron	N	N	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.434	[605]	0.001	0.000	0.000
LLN				0.41	[220]	888	[317]	888	[401]	VMT	134	Copper	N	N	0.001	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.434	[605]	0.003	0.001	0.000
LLN				0.41	[220]	888	[317]	888	[401]	VMT	134	Molybdenum	N	N	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.434	[605]	0.000	0.000	0.000
LLN				0.41	[220]	888	[317]	888	[401]	VMT	134	Vanadium	N	N	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.434	[605]	0.000	0.000	0.000
LLN				0.41	[220]	888	[317]	888	[401]	VMT	134	Zinc	N	N	0.003	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	2.434	[605]	0.007	0.001	0.000
LLN				0.41	[220]	888	[317]	888	[401]	VMT	134	Tellurium	N	N	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.434	[605]	0.000	0.000	0.000
LLN				0.41	[220]	888	[317]	888	[401]	VMT	134	Fluorides (as F)	N	N	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.434	[605]	0.001	0.000	0.000
RFCRD	FS 049	Fueling Facility Circle		1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Phosphorus	N	N	4.332	[114]	4.83	3.682	3.682	80	[501]	0.97	0.736	0.736		0.736	7.359	[606]	31.879	6.376	0.033
RFCRD		(Fuel Tankers, Haul Trucks)		1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Total PM	N	N	17.376	[114]	19.37	14.768	14.768	80	[501]	3.87	2.954	2.954	2.954	7.359	[606]	127.865	25.573	0.134
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Antimony	N	Y	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.001	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Arsenic	N	Y	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.001	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Beryllium	N	Y	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.000	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Cadmium	N	Y	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.000	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Chromium	N	Y	0.002	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.017	0.003	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Cobalt	N	Y	0.001	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.007	0.001	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Pb	N	Y	0.002	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.013	0.003	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Manganese	N	Y	0.024	[127]	0.03	0.021	0.021	80	[501]	0.01	0.004	0.004		0.004	7.359	[606]	0.178	0.036	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Mercury	N	Y	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.000	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Nickel	N	Y	0.005	[127]	0.01	0.004	0.004	80	[501]	0.00	0.001	0.001		0.001	7.359	[606]	0.035	0.007	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Phosphorus	N	Y	0	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.000	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Selenium	N	Y	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.001	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Barium	N	N	0.001	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.011	0.002	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Boron	N	N	0.002	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.014	0.003	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Copper	N	N	0.006	[127]	0.01	0.005	0.005	80	[501]	0.00	0.001	0.001		0.001	7.359	[606]	0.043	0.009	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Molybdenum	N	N	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.000	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Vanadium	N	N	0.001	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.007	0.001	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Zinc	N	N	0.014	[127]	0.02	0.012	0.012	80	[501]	0.00	0.002	0.002		0.002	7.359	[606]	0.101	0.020	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Tellurium	N	N	0.000	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.003	0.001	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Fluorides (as F)	N	N	0.001	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.008	0.002	0.000
WEC12	FS 013	Cat 1 & 2 Stockpile Wind Erosion	NA	NA	[222]	459	[319]	459	[401]	acres		PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC12				NA	[222]	459	[319]	459	[401]	acres		Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC3WR	FS 022	Cat 3 Waste Rock Stockpile Wind Erosion	NA	NA	[222]	47	[319]	47	[401]	acres		PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC3WR				NA	[222]	47	[319]	47	[401]	acres		Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC3LO	FS 040	Cat 3 Lean Ore East Stockpile	NA	NA	[222]	98	[319]	98	[401]	acres		PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC3LO				NA	[222]	98	[319]	98	[401]	acres		Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC4WR	FS 041	Cat 4 Waste Rock Stockpile	NA	NA	[222]	63	[319]	63	[401]	acres		PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC4WR				NA	[222]	63	[319]	63	[401]	acres		Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC4LO	FS 042	Cat 4 Lean Ore/Surge Stockpile	NA	NA	[222]	55	[319]	55	[401]	acres		PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC4LO				NA	[222]	55	[319]	55	[401]	acres		Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEOBSG	FS 043	Overburden Storage Pile Wind Erosion	NA	NA	[222]	62	[319]	62	[401]	acres		PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEOBSG				NA	[222]	62	[319]	62	[401]	acres		Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEOBSK	FS 044	Overburden Stockpile Wind Erosion	NA	NA	[222]	185	[319]	185	[401]	acres		PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEOBSK				NA	[222]	185	[319]	185	[401]	acres		Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000

Stockpile Liner Construction Emissions

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Max (Units/yr)	Note	Proj Actual (Units/yr)	Note	Units	Pollutant	PSD	HAP	EF (lb/Unit)	Note	Max Unc lb/hr	Max Unc tons/yr	Proj Act Unc ton/yr	CE %	Note	Max Cont lb/hr	Max Cont tons/yr	Proj Act Cont tons/yr	Limited Cont PTE tons/yr	g/sec Model Input
C12MH	FS 017	Surface Overburden, Truck Load - Cat 1/2	NA	89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	PM10	N	N	0.0002	[114]	0.02	0.071	0.071	0	[502]	0.02	0.071	0.071	0.071	0.002
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Total PM	N	N	0.0004	[114]	0.04	0.150	0.150	0	[502]	0.04	0.150	0.150	0.150	0.005
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Antimony	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Arsenic	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Beryllium	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Cadmium	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Chromium	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Cobalt	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Pb	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Manganese	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Mercury	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Nickel	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Phosphorus	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Selenium	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Barium	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Boron	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Copper	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Molybdenum	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Vanadium	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Zinc	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Tellurium	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C12MH				89.6	[223]	752,573	[320]	752,573	[401]	Tons surface	Fluorides (as F)	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH		Surface Overburden, Truck Load - Cat 3	NA	19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	PM10	N	N	0.0002	[114]	0.00	0.015	0.015	0	[502]	0.00	0.015	0.015	0.015	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Total PM	N	N	0.0004	[114]	0.01	0.032	0.032	0	[502]	0.01	0.032	0.032	0.032	0.001
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Antimony	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Arsenic	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Beryllium	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Cadmium	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Chromium	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Cobalt	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Pb	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Manganese	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Mercury	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Nickel	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Phosphorus	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Selenium	N	Y	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Barium	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Boron	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Copper	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Molybdenum	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Vanadium	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Zinc	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000
C3WRMH				19.4	[223]	162,860	[320]	162,860	[401]	Tons surface	Tellurium	N	N	0.000	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled Potential to Emit [1] (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	Max. Controlled Potential to Emit [2] (tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
C3WRMH				19.4 [223]	162,860 [320]	162,860 [401]	Tons surface		Fluorides (as F)	N	N	0.000 [115]	0.00	0.00	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH		Surface Overburden, Truck Load - Cat 3 LO	NA	31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		PM10	N	N	0.0002 [115]	0.01	0.025	0.025	0 [502]	0.01	0.025	0.025		0.025				0.001
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Total PM	N	N	0.0004 [115]	0.01	0.052	0.052	0 [502]	0.01	0.052	0.052		0.052				0.002
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Antimony	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Arsenic	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Beryllium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Cadmium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Chromium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Cobalt	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Pb	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Manganese	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Mercury	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Nickel	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Phosphorus	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Selenium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Barium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Boron	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Copper	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Molybdenum	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Vanadium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Zinc	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Tellurium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				31.0 [223]	260,210 [320]	260,210 [401]	Tons surface		Fluorides (as F)	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH		Surface Overburden, Truck Load - Cat 4	NA	21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		PM10	N	N	0.0002 [114]	0.00	0.017	0.017	0 [502]	0.00	0.017	0.017		0.017				0.001
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Total PM	N	N	0.0004 [114]	0.01	0.036	0.036	0 [502]	0.01	0.036	0.036		0.036				0.001
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Antimony	N	Y	0.000 [115]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Arsenic	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Beryllium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Cadmium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Chromium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Cobalt	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Pb	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Manganese	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Mercury	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Nickel	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Phosphorus	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Selenium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Barium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Boron	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Copper	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Molybdenum	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Vanadium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Zinc	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Tellurium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				21.3 [223]	178,957 [320]	178,957 [401]	Tons surface		Fluorides (as F)	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH		Surface Overburden, Truck Load - Cat 4 LO	NA	0.0 [223]	0 [320]	0 [401]	Tons surface		PM10	N	N	0.0002 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Total PM	N	N	0.0004 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Antimony	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Arsenic	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Beryllium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Cadmium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Chromium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Cobalt	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Pb	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Manganese	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Mercury	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Nickel	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Phosphorus	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Selenium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Barium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Boron	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Copper	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Molybdenum	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Vanadium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Zinc	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Tellurium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Fluorides (as F)	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH	FS 045	Surface Overburden, Truck Unload, storage pile	NA	161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		PM10	N	N	0.0002 [114]	0.03	0.128	0.128	0 [502]	0.03	0.128	0.128		0.128				0.004
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Total PM	N	N	0.0004 [114]	0.06	0.270	0.270	0 [502]	0.06	0.270	0.270		0.270				0.008
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Antimony	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Arsenic	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Beryllium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Cadmium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Chromium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Cobalt	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Pb	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Manganese	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Mercury	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Nickel	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Phosphorus	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Selenium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Barium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Boron	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Copper	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Molybdenum	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Vanadium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Zinc	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Tellurium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				161.3 [223]	1,354,600 [320]	1,354,600 [401]	Tons surface		Fluorides (as F)	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS	FS 046	Surface Overburden, Screening	NA	301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		PM10	Y	N	0.00074 [116]	0.22	0.669	0.669	0 [502]	0.22	0.669	0.669	GP 001	0.669				0.028

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Throughput Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE [1] (lb/hr)	Max. Unc. PTE [1] (tons/yr)	Proj. Act. Unc. Emissions (ton/yr)	Control Eff. (%) Note	Max. Cont. PTE [2] (lb/hr)	Max. Cont. PTE [2] (tons/yr)	Proj. Act. Cont. Emissions (tons/yr)	Emission Std or Operational Limit	Limited Cont. PTE (tons/yr)	Max. Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Total PM	Y	N	0.0022 [116]	0.66	1.989	1.989	0 [502]	0.66	1.989	1.989	GP 001					0.084
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Antimony	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Arsenic	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Beryllium	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Cadmium	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Chromium	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Cobalt	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Pb	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Manganese	Y	Y	0.000 [115]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Mercury	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Nickel	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Phosphorus	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Selenium	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Barium	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Boron	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Copper	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Molybdenum	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Vanadium	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Zinc	Y	N	0.000 [115]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Tellurium	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRCS				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Fluorides (as F)	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH	FS 047	Surface Overburden, Screen Discharge	NA	301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		PM10	Y	N	0.0002 [114]	0.06	0.171	0.171	0 [502]	0.06	0.171	0.171	GP 001					0.007
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Total PM	Y	N	0.0004 [114]	0.12	0.361	0.361	0 [502]	0.12	0.361	0.361	GP 001					0.015
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Antimony	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Arsenic	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Beryllium	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Cadmium	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Chromium	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Cobalt	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Pb	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Manganese	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Mercury	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Nickel	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Phosphorus	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Selenium	Y	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Barium	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Boron	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Copper	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Molybdenum	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Vanadium	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Zinc	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Tellurium	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Fluorides (as F)	Y	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH	FS 048	Surface Overburden, Truck Reload	NA	301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		PM10	N	N	0.0002 [114]	0.06	0.171	0.171	0 [502]	0.06	0.171	0.171		0.171				0.007
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Total PM	N	N	0.0004 [114]	0.12	0.361	0.361	0 [502]	0.12	0.361	0.361		0.361				0.015
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Antimony	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Arsenic	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Beryllium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Cadmium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Chromium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Cobalt	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Pb	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Manganese	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Mercury	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Nickel	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Phosphorus	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Selenium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Barium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Boron	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Copper	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Molybdenum	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Vanadium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Zinc	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Tellurium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	tons surface		Fluorides (as F)	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH	FS 018	Surface Overburden, Truck Unload - Stockpile	NA	301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		PM10	N	N	0.0002 [114]	0.06	0.171	0.171	0 [502]	0.06	0.171	0.171		0.171				0.007
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Total PM	N	N	0.0004 [114]	0.12	0.361	0.361	0 [502]	0.12	0.361	0.361		0.361				0.015
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Antimony	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Arsenic	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Beryllium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Cadmium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Chromium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Cobalt	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Pb	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Manganese	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Mercury	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Nickel	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Phosphorus	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Selenium	N	Y	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Barium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Boron	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Copper	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Molybdenum	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Vanadium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Zinc	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Tellurium	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				301.4 [206]	1,808,100 [306]	1,808,100 [401]	Tons surface		Fluorides (as F)	N	N	0.000 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
Dup	FS 021	Overburden Haul - storage pile - Cat 1/2	NA	[224]	[321]	[401]	VMT	134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
Dup				[224]	[321]	[401]	VMT	134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
Dup		Overburden Haul - storage pile - Cat 3		[224]	[321]	[401]	VMT	134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max Cont. Emissions lb/day	g/sec Model Input
Dup				[224]	[321]	[401] VMT		134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
Dup		Overburden Haul - storage pile - Cat 3 LO		[224]	[321]	[401] VMT		134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
Dup				[224]	[321]	[401] VMT		134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
Dup		Overburden Haul - storage pile - Cat 4		[224]	[321]	[401] VMT		134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
Dup				[224]	[321]	[401] VMT		134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
Dup		Overburden Haul - storage pile Cat 4 LO		[224]	[321]	[401] VMT		134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
Dup				[224]	[321]	[401] VMT		134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
Dup		Overburden Haul - stockpile		[224]	[321]	[401] VMT		134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
Dup				[224]	[321]	[401] VMT		134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000					0.000
Contractor Crushing Operations (for road construction, etc.)																										
OBSRCS	FS 023	Primary Crushing		300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		PM10	Y	N	0.00054 [126]	0.16	0.270	0.270	0 [503]	0.16	0.270	0.270	10% opacity	GP 001					0.020
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Total PM	Y	N	0.0012 [126]	0.36	0.600	0.600	0 [503]	0.36	0.600	0.600	(NSPS)	GP 001					0.045
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Antimony	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Arsenic	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Beryllium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cadmium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Chromium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cobalt	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Pb	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Manganese	Y	Y	0.000 [127]	0.00	0.001	0.001	0 [503]	0.00	0.001	0.001		0.001					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Mercury	Y	Y	0 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Nickel	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Phosphorus	Y	Y	0 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Selenium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Barium	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Boron	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Copper	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Molybdenum	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Vanadium	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Zinc	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Tellurium	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Fluorides (as F)	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS		Screening		300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		PM10	Y	N	0.00074 [128]	0.22	0.370	0.370	0 [503]	0.22	0.370	0.370	10% opacity	GP 001					0.028
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Total PM	Y	N	0.0022 [128]	0.66	1.100	1.100	0 [503]	0.66	1.100	1.100	(NSPS)	GP 001					0.083
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Antimony	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Arsenic	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Beryllium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cadmium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Chromium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cobalt	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Pb	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Manganese	Y	Y	0.000 [127]	0.00	0.002	0.002	0 [503]	0.00	0.002	0.002		0.002					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Mercury	Y	Y	0 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Nickel	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Phosphorus	Y	Y	0 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Selenium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Barium	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Boron	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Copper	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Molybdenum	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Vanadium	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Zinc	Y	N	0.000 [127]	0.00	0.001	0.001	0 [503]	0.00	0.001	0.001		0.001					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Tellurium	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Fluorides (as F)	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS		To Product Conveyor		300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		PM10	Y	N	4.60E-05 [129]	0.01	0.023	0.023	0 [503]	0.01	0.023	0.023	10% opacity	GP 001					0.002
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Total PM	Y	N	0.00014 [129]	0.04	0.070	0.070	0 [503]	0.04	0.070	0.070	(NSPS)	GP 001					0.005
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Antimony	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Arsenic	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Beryllium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cadmium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Chromium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cobalt	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Pb	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Manganese	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Mercury	Y	Y	0 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Nickel	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Phosphorus	Y	Y	0 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Selenium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Barium	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Boron	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Copper	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Molybdenum	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Vanadium	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Zinc	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Tellurium	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Fluorides (as F)	Y	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS		Conveyor to Secondary Crushing (2 transfers)		300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		PM10	Y	N	9.20E-05 [129]	0.03	0.046	0.046	0 [503]	0.03	0.046	0.046	10% opacity	GP 001					0.003
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Total PM	Y	N	2.80E-04 [129]	0.08	0.140	0.140	0 [503]	0.08	0.140	0.140	(NSPS)	GP 001					0.011
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Antimony	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Arsenic	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Beryllium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cadmium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Chromium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cobalt	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Pb	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Manganese	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Mercury	Y	Y	0 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Nickel	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Phosphorus	Y	Y	0 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Selenium	Y	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000					0.000

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	Throughput Maximum (Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS		Secondary Crushing		300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	Y	N	0.00054	[126]	0.16	0.270	0.270	0	[503]	0.16	0.270	0.270	10% opacity	GP 001					0.020
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	Y	N	0.0012	[126]	0.36	0.600	0.600	0	[503]	0.36	0.600	0.600	(NSPS)	GP 001					0.045
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	Y	Y	0.000	[127]	0.00	0.001	0.001	0	[503]	0.00	0.001	0.001		0.001					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	Y	Y	0	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	Y	Y	0	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS		Screening		300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	Y	N	0.00074	[128]	0.22	0.370	0.370	0	[503]	0.22	0.370	0.370	10% opacity	GP 001					0.028
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	Y	N	0.0022	[128]	0.66	1.100	1.100	0	[503]	0.66	1.100	1.100	(NSPS)	GP 001					0.083
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	Y	Y	0.000	[127]	0.00	0.002	0.002	0	[503]	0.00	0.002	0.002		0.002					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	Y	Y	0	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	Y	Y	0	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	0.000	[127]	0.00	0.001	0.001	0	[503]	0.00	0.001	0.001		0.001					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS		Return Conveyor (2 transfers)		300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	Y	N	9.20E-05	[129]	0.03	0.046	0.046	0	[503]	0.03	0.046	0.046	10% opacity	GP 001					0.003
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	Y	N	2.80E-04	[129]	0.08	0.140	0.140	0	[503]	0.08	0.140	0.140	(NSPS)	GP 001					0.011
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	Y	Y	0	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	Y	Y	0	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	Y	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS		Product to Stock Pile		300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	N	N	4.60E-05	[129]	0.01	0.023	0.023	0	[503]	0.01	0.023	0.023		0.023					0.002
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	N	N	0.00014	[129]	0.04	0.070	0.070	0	[503]	0.04	0.070	0.070		0.070					0.005
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	N	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	N	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	N	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	N	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	N	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	N	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	N	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	N	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	N	Y	0	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	N	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	N	Y	0	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	N	Y	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	N	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRCS				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	N	N	0.000	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Throughput Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled Potential to Emit [1] (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	Max. Controlled Potential to Emit [2] (tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Copper	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Molybdenum	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Vanadium	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Zinc	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Tellurium	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Fluorides (as F)	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS		Truck Loading		300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		PM10	N	N	0.0044 [114]	1.33	2.221	2.221	0 [503]	1.33	2.221	2.221		2.221				0.168
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Total PM	N	N	0.0094 [114]	2.82	4.696	4.696	0 [503]	2.82	4.696	4.696		4.696				0.355
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Antimony	N	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Arsenic	N	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Beryllium	N	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cadmium	N	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Chromium	N	Y	0.000 [127]	0.00	0.001	0.001	0 [503]	0.00	0.001	0.001		0.001				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cobalt	N	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Pb	N	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Manganese	N	Y	0.000 [127]	0.00	0.007	0.007	0 [503]	0.00	0.007	0.007		0.007				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Mercury	N	Y	0 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Nickel	N	Y	0.000 [127]	0.00	0.001	0.001	0 [503]	0.00	0.001	0.001		0.001				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Phosphorus	N	Y	0 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Selenium	N	Y	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Barium	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Boron	N	N	0.000 [127]	0.00	0.001	0.001	0 [503]	0.00	0.001	0.001		0.001				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Copper	N	N	0.000 [127]	0.00	0.002	0.002	0 [503]	0.00	0.002	0.002		0.002				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Molybdenum	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Vanadium	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Zinc	N	N	0.000 [127]	0.00	0.004	0.004	0 [503]	0.00	0.004	0.004		0.004				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Tellurium	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRCS				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Fluorides (as F)	N	N	0.000 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
NA	GP 001	All PM/PM10 Point Sources	[3]	NA	NA	NA	NA		PM10	Y	N	NA	NA	NA		NA	NA	NA	See above	See above	240			NA
NA				NA	NA	NA	NA		Total PM	Y	N	NA	NA	NA		NA	NA	NA	See above	See above	240			NA

Totals for PSD Applicability (i.e. PSD Point Sources)

Criteria Pollutant Totals	Pollutant	Max. Uncontrolled (lb/hr)	(tons/yr)	Proj. Act. (ton/yr)	Max. Controlled (lb/hr)	(tons/yr)	Proj. Act. (tons/yr)	Limited (tons/yr)
	PM10	2.99	3.47	3.33	2.99	3.47	3.33	240.00
	SO2	2.65	0.67	0.67	2.65	0.67	0.67	0.67
	H2SO4/SO3	0.07	0.02	0.02	0.07	0.02	0.02	0.02
	Total PM	5.24	8.33	8.19	5.24	8.33	8.19	240.00
	NOx	24.27	10.94	8.36	24.27	10.94	8.36	10.94
	VOC	1.96	0.81	0.65	1.96	0.81	0.65	0.81
	Carbon Monoxide	5.65	4.22	2.73	5.65	4.22	2.73	4.22
	Pb	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Toxic Air Pollutant Totals [7]	Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CS2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fluorides (as F)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mine Site Totals (Point and Fugitive Sources)

Criteria Pollutant Totals [4]	Pollutant	Max. Uncontrolled (lb/hr)	(tons/yr)	Proj. Act. (ton/yr)	Max. Controlled (lb/hr)	(tons/yr)	Proj. Act. (tons/yr)	Limited (tons/yr)
	PM10	1038.58	2564.21	2563.99	248.12	677.53	677.30	913.95
	SO2	7.10	1.78	0.90	7.10	1.78	0.90	1.78
	H2SO4/SO3	0.17	0.04	0.02	0.17	0.04	0.02	0.04
	Total PM	3871.95	9345.78	9345.49	856.66	2208.62	2208.33	2440.09
	NOx	50.67	17.54	9.73	50.67	17.54	9.73	17.54
	VOC	2.67	0.99	0.69	2.67	0.99	0.69	0.99
	Carbon Monoxide	11.70	5.74	3.05	11.70	5.74	3.05	5.74
	Pb	0.38	0.90	0.90	0.08	0.18	0.18	0.18
Toxic Air Pollutant Totals [5]	Antimony	0.02	0.04	0.04	0.00	0.01	0.01	0.01
	Arsenic	0.02	0.06	0.06	0.01	0.01	0.01	0.01
	Beryllium	0.00	0.01	0.01	0.00	0.00	0.00	0.00
	Cadmium	0.01	0.03	0.03	0.00	0.01	0.01	0.01
	Chromium	0.52	1.25	1.25	0.11	0.29	0.29	0.29
	Cobalt	0.22	0.54	0.54	0.05	0.13	0.13	0.13
	Manganese	5.35	12.88	12.88	1.16	2.97	2.97	2.97
	Mercury	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Nickel	1.07	2.63	2.63	0.25	0.68	0.68	0.68
	Phosphorus	0.05	0.23	0.23	0.05	0.23	0.23	0.23
	Selenium	0.04	0.09	0.09	0.01	0.02	0.02	0.02
	Barium	0.33	0.80	0.80	0.07	0.19	0.19	0.19
	Boron	0.42	1.00	1.00	0.09	0.20	0.20	0.20
	Copper	1.38	3.50	3.50	0.37	1.09	1.09	1.09
	Molybdenum	0.01	0.02	0.02	0.00	0.01	0.01	0.01
	Vanadium	0.21	0.50	0.50	0.05	0.12	0.12	0.12
	Zinc	2.98	7.07	7.07	0.61	1.46	1.46	1.46
	Tellurium	0.09	0.23	0.23	0.02	0.06	0.06	0.06
	Hafnium	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	POM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2-Methylnaphthalene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3-Methylchloranthrene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	7,12-Dimethylbenz (a)anthracene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Acenaphthene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Acenaphthylene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Anthracene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzo(a)anthracene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzo(a)pyrene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzo(b)fluoranthene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzo(g,h,i)perylene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzo(k)fluoranthene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Chrysene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Dibenzo(a,h)anthracene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fluoranthene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fluorene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Indeno(1,2,3-cd)pyrene	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Stack ID	Emission Unit ID	Description	APCD ID	Throughput Maximum (Units/hr)	Note	(Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max Cont. Emissions lb/day	g/sec Model Input
												Phenanthrene					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Pyrene					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Benzene					0.01	0.00	0.00			0.01	0.00	0.00		0.00					
												Dichlorobenzene					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Formaldehyde					0.01	0.00	0.00			0.01	0.00	0.00		0.00					
												Hexane					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Toluene					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Naphthalene					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Xylene					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												MIBC					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												HF					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												HCl					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Hydrogen Sulfide					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												CS2					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												TRS					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Crystalline Silica					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Fluorides (as F)					0.26	0.62	0.62			0.06	0.16	0.16		0.16					
												Acetaldehyde					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Acrolein					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Propylene					0.01	0.00	0.00			0.01	0.00	0.00		0.00					
												Hexchrome					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												PGME					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												1,3-Butadiene					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Total HAP					7.74	18.67	18.66			1.78	4.56	4.56		4.56					
Greenhouse Gas Totals												Carbon Dioxide					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												N2O					0.08	0.36	0.18			0.08	0.36	0.18		0.36					
												CH4					0.02	0.08	0.04			0.02	0.08	0.04		0.08					

Notes:

General References:
[1] Max. Uncontrolled Emissions (lb/hr) = EF (lb/unit) x Max. Hourly Throughput (units/hr).
    Max. Uncontrolled Emissions (tons/yr) = EF (lb/unit) x Max. Annual Throughput (units/yr) / 2,000 (lb/ton).
[2] Max. Controlled Emissions (lb/hr) = Max. Uncontrolled Emissions (lb/hr) x (1-Control Eff./100).
    Max. Controlled Emissions (tons/yr) = Max. Uncontrolled Emissions (tons/yr) x (1-Control Eff./100).
[3] Control devices are listed with the individual emission limits
[4] Lead is both a criteria pollutant and a toxic air pollutant, as well as a HAP.
[5] Pollutants evaluated included HAPs as well as other toxic compounds that may be evaluated in the AERA.
[6] These speciated compounds are HAPs because they are POM. HAP emissions are calculated with the total POM emission factor, which only included compounds measured above the detection limit in AP-42. The speciated compound data will be used as inputs to the AERA.
[7] CS2 is not a PSD pollutant, but the CS2 total, along with the H2S total are used to calculate TRS which is a PSD pollutant.

Emission Factor References:
[101] For metals for which block model data was not available, emissions are based on ore composition data obtained from various sources. Details are provided below:

Metal	Conc.	Source
Mercury	4.6 PPB	Rod mill feed analyses from 2000 pilot study
Selenium	5.54 PPM	Whole rock data set
Boron	10.08 PPM	Geology data set
Hafnium	1.83 PPM	Whole rock data set
Tellurium	42.63 PPM	Whole rock data set
Fluorides	178.95 PPM	Whole rock data set

Emission factors are calculated by converting the PPB, PPM or percent value to a weight fraction and multiplying this value times the PM emission factor.
All fluorine in the ore assumed to be in a form that would be measured as total fluoride by EPA Method 13A or 13B.
[102] Annual emissions calculated utilizing EPA Tanks Program version 4.09b using meteorological data for Duluth, MN. Tanks were assume to be horizontal cylindrical shape. Tank dimensions estimated from information available on commercially available tanks. Tanks assumed to be painted white.
    The tanks were also assumed to be vented at atmospheric pressure (i.e. no breather vents with vacuum and pressure settings). Hourly emissions are annual emissions divided by 8760 hours per year.
[103] Emission factors taken from AP-42 Table 3.3.-1, Diesel Fuel. VOC assumed equal to total organic compounds (TOC).
[104] Emission factor for SO2 taken from AP-42 Table 3.4-1. The fuel oil sulfur content based emission factor from this AP-42 section is expected to be more accurate for all engine sizes. Fuel oil sulfur content assumed to be 0.5% for worst case of purchasing used generator not subject to NSPS.
[105] Emission factor for H2SO4 calculated from data presented in "The Sulfur Speciation of Diesel Emissions from a Non-road Generator" by Zifei Liu, Mingming Lu, Tim C. Keener, and Fuyan Liang. Figure 5 presents sulfur conversion to SO4^{2-}, which is indicated elsewhere in the paper to be at least 90% H2SO4.
    From the figure, for the highest sulfur fuel (0.22%) at the highest load, the percent conversion is about 1.67%. The H2SO4 emission factor was calculated by %S / 100 * 7.13 lb/gallon * 98 lb/lb-mole H2SO4 / 32 lb/lb-mole S * 1.67/100 mole H2SO4/Mole S * / 140000 Btu/gallon * 10^6 MMBtu/Btu =
    0.026 * %S lb/MMBtu. This makes the emission calculations conservative since the SO2 factor assumes 100% conversion to SO2.
[106] Emission factors taken from AP-42 Table 3.3-2. For compounds measured below the detection limit, an emission factor based on 1/2 the detection limit was used. Total POM calculated as the sum of the emission factors for PAHs found above the detection limit.
[107] Emission factors taken from AP-42 Table 3.4-1 for Diesel Fuel. Maximum sulfur content of fuel assumed to be 0.5%. VOC assumed equivalent to non-methane total organics.
[108] Emission factor taken from AP-42 Table 3.4-2 for total PM10, including filterable and condensable particulate.
[109] Emission factor for H2SO4 calculated from data presented in "The Sulfur Speciation of Diesel Emissions from a Non-road Generator" by Zifei Liu, Mingming Lu, Tim C. Keener, and Fuyan Liang. Figure 5 presents sulfur conversion to SO4^{2-}, which is indicated elsewhere in the paper to be at least 90% H2SO4.
    From the figure, for the highest sulfur fuel (0.22%) at the highest load, the percent conversion is about 1.67%. The H2SO4 emission factor was calculated by %S / 100 * 7.13 lb/gallon * 98 lb/lb-mole H2SO4 / 32 lb/lb-mole S * 1.67/100 mole H2SO4/Mole S * / 140000 Btu/gallon * 10^6 MMBtu/Btu =
    0.026 * %S lb/MMBtu. This makes the emission calculations conservative since the SO2 factor assumes 100% conversion to SO2.
[110] Emission factors taken from AP-42 Table 3.4-3.
[111] Emission factors taken from AP-42 Table 3.4-4. A total POM emission factor was calculated as the sum of the emission factors for the compounds detected.
[112] Compound not detected per data in AP-42 Table 3.4-4. Emission factor based on 1/2 the detection limit.
[113] Emission factors taken from Table 1.5-1 of AP-42 for propane fired commercial boilers (0.3 to 10 MMBtu/hr). PM10 assumed equal to PM based on footnote d. Maximum sulfur concentration 0.2 gr/100 cf per Title V permit application for LTVSMC.
[114] See "Table 3: Calculation of Emission Factors for Fugitive Sources".
[115] Speciated emissions from overburden handling calculated by using available data on overburden composition.

Metal	Conc. (ppm Source	
Cadmium	3.39 Schmidt Paper	
Chromium	111 Rainy Lobe Till Data	
Copper	50 Rainy Lobe Till Data	
Nickel	66 Rainy Lobe Till Data	
Zinc	787 MPCA Lead Survey	
Lead	99.9 MPCA Lead Survey	
Manganese	1071 MPCA Lead Survey	
Arsenic	6.2 Category 1 Waste Rock	
Barium	85.4 Category 1 Waste Rock	Concentration, where available, taken from worst case of
Beryllium	1 Category 1 Waste Rock	data for Rainy Lobe Till from Table 2 of Concentrations
Antimony	4.63 Category 1 Waste Rock	of Six Trace Metals in Some Major Minnesota Soil
Selenium	9.564 Waste Rock Data	Series by F.J. Pierce, R.H. Dowdy, and D.F. Grigal, data
Boron	111 Category 1/2 Waste Rock	for Minnesota soils parent material from The Content
Molybdenum	2.48 Category 1/2 Waste Rock	and Distribution of Cd, Cr, Cu, Ni, Pb, and Zn in 16
Vanadium	53.07 Category 1/2 Waste Rock	selected Minnesota Soil Series by F.J. Pierce and
Tellurium	24.3 Category 1/2 Waste Rock	unpublished data from the 1989 MPCA statewide soil
Fluorides	65.56 Category 1/2 Waste Rock	lead survey. When data for an element was not provided

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	(Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Note	Proj. Act. Uncontrolled Emissions (tons/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Cobalt   8 Category 1/2 Waste Rock   in these sources, waste rock data was used.

Particulate emissions assumed to have same composition as overburden

[116] Emission factor taken from 11.19.2-2 Emission Factors for Crushed Stone Processing Operations (lb/ton), Screening (controlled). The use of water sprays is not planned for this emission unit, but the natural moisture content of the material, 12.7% per
    RS49 Appendix B, make the use of the controlled emission factor more appropriate. Footnote "b" to Table 11.19.2-1 indicates that the range of moisture content for facilities with wet suppression systems is 0.55 to 2.88 percent.
    The same footnote also notes that direct spraying is not needed for each source, except for crushers.
[117] Trace mineral emissions based on waste rock composition developed from block models by PolyMet for each category of waste rock or lean ore. The average concentration for each year was determined. The maximum value for all 20 years of projected operation is used in the calculations.
    Particulate emissions are assumed to have the same metal content as the waste rock.
[118] Mercury composition of waste rock assume to be the same as that for the ore as described above. Particulate emissions assumed to contain same fraction of ore as waste rock.
[119] For metals not tracked in the block model, trace mineral emissions are based on waste rock composition data from the geology and whole rock data sets. Particulate emissions are assumed to have the same composition as the waste rock analyzed.
    All values taken from geology data except selenium, tellurium, and fluorine which were taken from whole rock data. All fluorine in the waste rock was assumed to be in a form that would be measured as total fluorides by EPA methods 13A or 13B.
[120] Emission factor in lb TSP emitted per blast hole drilled taken from AP-42 Table 11.9-4. Speciated metals emissions based on composition data for each type of rock as described in the truck loading emission calculations.
[121] Trace mineral emission factors based on ore composition data developed by PolyMet from block models. An average composition for each pit for each year was determined. The highest value from each pit for the 20 year projected life of the mine is used in the calculations.
    Particulate emissions assumed to have same composition as the ore.
[122] Emission factor for PM10 taken from 11.19.2-2 Emission Factors for Crushed Stone Processing Operations (lb/ton), Truck Unloading - Fragmented Stone. PM estimated to be 3 x PM10 value based on relationship between PM and PM10 for other operations in Table 11.19.2-2.
[123] Emission factor taken from 11.19.2-2 Emission Factors for Crushed Stone Processing Operations (lb/ton), Conveyor Transfer Point.
[124] The potential for wind erosion from the stockpiles was evaluated by utilizing the procedure in AP-42 Section 13.2.5 and no wind erosion emissions were predicted to occur. The data used for the calculation included interpolated fastest mile data based on
    the 1974 Hibbing Airport meteorological data, and the following assumptions of a flat pile shape, daily pile disturbance and a threshold friction velocity (u*t) of 1.33 m/s (scoria).
[125] Emissions included under individual mine road segments above.
[126] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Tertiary Crushing (controlled). Emission factors are not given for primary and secondary crushing,
    but footnote n indicates that the tertiary crushing factors can be used as an upper bound.
[127] Speciated emissions from construction rock processing and from use as road surface material calculated based on worst case expected composition. Overburden or Category 1 waste rock may be used for construction purposes, so data for both of these materials were considered.

Metal	Conc. (ppm	Source
Cadmium	3.39	Schmidt Paper
Chromium	134.5	Category 1 Waste Rock
Copper	337	Category 1 Waste Rock
Nickel	272	Category 1 Waste Rock
Zinc	787	MPCA Lead Survey
Lead	99.9	MPCA Lead Survey
Manganese	1388.2	Category 1 Waste Rock
Arsenic	6.2	Category 1 Waste Rock
Barium	85.4	Category 1 Waste Rock
Beryllium	1	Category 1 Waste Rock
Antimony	4.63	Category 1 Waste Rock
Selenium	9.564	Category 1/2 Waste Rock Data
Boron	111	Category 1/2 Waste Rock Data
Molybdenum	2.48	Category 1/2 Waste Rock Data
Vanadium	53.07	Category 1/2 Waste Rock Data
Tellurium	24.3	Category 1/2 Waste Rock Data
Fluorides	65.56	Category 1/2 Waste Rock Data
Cobalt	57.3	Category 1/2 Waste Rock Data

Concentration, where available, taken from worst case of
data for Category 1 Waste Rock, Rainy Lobe Till from
Table 2 of Concentrations of Six Trace Metals in Some
Major Minnesota Soil Series by F.J. Pierce, R.H. Dowdy,
and D.F. Grigal, data for Minnesota soils parent material
from The Content and Distribution of Cd, Cr, Cu, Ni, Pb,
and Zn in 16 selected Minnesota Soil Series by F.J.
Pierce and data from the 1989 MPCA statewide soil
lead survey. When data for an element was not provided
in these sources, Category 1/2 waste rock data was used.

Particulate emissions assumed to have same composition as worst case construction rock composition

[128] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Screening (controlled).
[129] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Conveyor Transfer Point (controlled). Where the emission unit consists of a transfer to and from the conveyor, the emission factor is multiplied by 2.

Maximum Hourly Throughput References:
[201] Throughput estimate based on Barr assumption that three 7,500 gallons tankers per day would deliver diesel fuel to the mine. Assumed a maximum of one and a half tankers would go to each tank. Average hourly throughput is: 7,500 gallon/tanker * 1.5 tankers/day / 24 hours/day = 468.75 gallons/hr.
[202] Based on preliminary design of waste water treatment facility by Barr, critical power demand is about 500 kW. It was assumed that a Caterpillar Standby 500 ekW would be installed. Based on literature available on the manufacturer's website, the fuel consumption at maximum load is 37.4 gallons/hr.
    This is converted to MMBtu/hr by 37.4 gal/hr * 140,000 Btu/gallon / 10^6 Btu/MMBtu = 5.236 MMBtu/hr.
[203] A portable generator will be used to provide temporary power to move large electric powered mining vehicles (e.g. excavators and drills). The generator will only provide power while the equipment is moved from one location with available electrical power to another. It was estimated that a 1100 hp engine would provide sufficient power for this operation.
    For emission factors expressed as lb/MMBtu, the hp rating was converted to MMBtu based on the Brake Specific Fuel Consumption of 7000 Btu/hp-hr from AP-42 Table 3.4-1 footnote e.
[204] Based on preliminary design of waste water treatment facility by Barr, heating demand can be supplied by propane space heaters with a maximum hourly heat input of 8.3 MMBtu/hr. This can be converted to Mgal propane by: 8.3 MMBtu/hr / 91.5 MMBtu/Mgal = 0.0907 MGal/hr.
    A conservative estimate of annual emissions was made by assuming 50% utilization for the heaters. In actual operation a substantial portion of the heating demand is expected to be supplied by electric heaters.
[205] Per spreadsheet provided by PolyMet, no overburden will be stripped at the mine pits in year eight of mine development.
[206] The maximum hourly overburden screening rate is based on the capacity of equipment available for hire from local contractors. The split between overburden from pit development and that
    removed for stockpile foundation and liner system construction is based on the ratio of each source of overburden to the total in the peak year for overburden stripping (year 0). It was assumed that stockpiled overburden may be screened in years where the stripping rate does not equal the maximum projected demand for screened overburden, as is the case for year 8.
[207] Per Mine Schedule as reported in RS18, the maximum waste rock generation rate for the projected mine life of 20 years occurs in year 8, about 32 million tons. Therefore, Year 8 is representative of worst case operation during the stockpile disposal phase of mine operation.
    The annual quantity of each category of waste rock and lean ore mined in the east and west pits in Year 8 was taken from data in RS67. The hourly rate was assumed to be the annual rate divided by 8760 hours per year.
    Hourly rates of the various categories would be expected to fluctuate during the year, but this should be representative of the total rock mined. Waste rock and lean ore are mined, loaded into trucks, transported to the appropriate stockpile, and then dumped.
[208] Total number of holes calculated based on explosive use data for waste rock blasting. 6412 holes will be required for 21,800,000 tons of waste rock, resulting in a blast hole for every 3399.9 tons of waste rock.
    For each type of waste rock in each pit, the number of holes is calculated by dividing the tons mined by 3399.9.
[209] Per the Mine Schedule, the total projected ore mined in Year 8 is 9,878,679. The split between the East and West pits was obtained from the data used to prepare RS18.
    The split in the composition spreadsheet was scaled to match the total ore in the mine schedule. The hourly mining rate is assumed to be the annual rate divided by 8760. Operation between the two pits may fluctuate during the year, but this should reflect the total mining rate.
[210] Total number of holes calculated based on explosive use data for ore blasting. 14,857 holes will be required for 11,700,000 tons of ore, resulting in a blast hole for every 787.5 tons of ore.
    For the ore in each pit, the number of holes is calculated by dividing the tons mined by 787.5.
[211] In Year 8, sufficient ore will not be mined to supply the Process Plant with 32,000 tpd of ore. Therefore, stockpiled ore will be used to supplement the mined ore. It was assumed that the stockpiled ore would be 50% from the East Pit and 50% from the West Pit. The quantity needed from each pit = (32,000 tpd * 365 day/hr - 9,878,679 tons mined year 8)/2 = 900,661 tons.
    This amount was added to the amount from each pit that would be unloaded at the railroad transfer hopper as well as to the amount loaded into railcars. The hourly throughput was estimated from annual throughput by assuming 8760 hour/yr operation.
[212] The difference between the Process Plant capacity of 32,000 tpd and the quantity mined in Year 8 will be made up with stockpiled ore. It was assumed that the stockpiled ore would be 50% from the East Pit and 50% from the West Pit. The quantity needed from each pit = (32,000 tpd * 365 day/hr - 9,878,679 tons mined year 8)/2 = 900,661 tons
    The hourly throughput was estimated from annual throughput by assuming 8760 hour/yr operation.
[213] Haul distances for ore, waste rock, lean ore and overburden were determined by assigning a letter to each intersection or termination for the haul roads. The distance between each point assigned a letter was determined from aerial photographs. The route for each haul was determined.
    The worst case year for hauling was determined by calculating the total haul distance for each category of material, multiplying by the length of each segment, and calculating the total VMT based on 240 ton trucks.
    Because emission are directly proportional to the total VMT, the year with the highest VMT value is the worst case. This was found to be year 8. Which is why year 8 was chosen as one of the two years to be modeled.
    The emission for each segment were calculated by summing the trips for the hauling of each category of material, multiplying by the length of the segment, and multiplying by 2 to account for round trips. Hourly VMT assumed to be annual VMT divided by 8760 hours/year.
[214] A rough estimate of light truck traffic at the mine was made by scaling down VMT for light trucks at the Cliffs Erie mine by the ratio of the production levels. VMT for Cliffs Erie = 57.02 VMT/hr * 32000 tpd PolyMet/100000 tpd Cliffs Erie = 18.25 VMT/hr.
[215] We have assumed a tanker truck with a capacity of 1,500 gallons would be utilized to refuel the tracked vehicles and would travel 12 miles/shift or 1.5 miles/hr.
[216] The one way travel distance, on roads on PolyMet controlled land, from the haul roads at the mine to the Area 1 shops where the haul truck maintenance will be performed was estimated from aerial photographs with a result of 3.9609 miles.
    Note: the heavy equipment will be diverted to a route through former mining areas to avoid mixing with light truck traffic. Based on information obtained from PolyMet, 8 trucks would be used for mine hauling and 2 for construction purposes, for a total of 10 trucks.
    Based on Barr's knowledge of mining operations, we assumed that maintenance would
    be required on each truck every 250 hours. The maintenance interval in days, assuming worst case 24 hr/day continuous operation is 250/24 = 10.42 days. Trips per day are then 1/10.42 trips/truck/day * 10 trucks = 0.96 trips/day. A conservative worst case hourly VMT was estimated as having 2 trucks make
    a one way trip in the hour or 3.9609 miles/trip * 2 trips/hr = 7.92 VMT/hr max. VMT assigned to Road segments A, B, B3, J and J2 based on percent of trip on each segment. Values are A: 9.2%, B: 49.0%, B2: 4.0%, B3: 29.4%, J: 2.2%, J2: 6.0%. Only segments A, B, and B3 are at the Mine Site.
    The emissions for the other segments are calculated in the Plant Site emission calculation spreadsheet.
[217] Estimates of light truck traffic on the portions the Dunka Rd where PolyMet will control the surrounding land were made based on information in the 43-101 document, the DFS executive summary, Summary Description of Proposed Mining Operations (2004) and communications with PolyMet.
    Personnel traveling to the mine site and Area 2 are assumed to be as follows: 149 mine operations staff (mine), 18 mine technical services (12 mine, 6 area 2), 25 railroad operations (Area 2), 3 mine management (area 2), 3 EHS etc. (plant to mine).
    The above staff were assigned to shifts as shown in the table below. The road segments traveled are also included:

Category	Location	1st shift	2nd Shift	3rd Shift	Road Segments Traveled
Mine Ops	Mine	64	43	42	A, B, B2, C, D, H
Mine Tech Serv	Mine	4	4	4	A, B, B2, C, D, H
Mine Tech Serv	Area 2	4	2	0	D, H
Mine Manage.	Area 2	3	0	0	D, H
RR Ops	Area 2	13	9	3	D, H
EHS	PP to mine	3	0	0	A, B, B2, C, D, E, F

Road	Distance (miles)	Max Hourly Trips	Max Daily Trips	Hourly VMT	Annual VMT	Daily VMT
A	0.366	33	90	12.09	12034.15	32.97
B	1.940	33	90	64.02	63725.13	174.59
B2	0.160	33	90	5.27	5250.60	14.39
B3	1.166	33	90	38.48	38303.10	104.94
C	1.928	33	90	63.62	63326.89	173.50
D	0.148	171	456	25.24	24566.69	67.31

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	Emission Unit		APCD ID	Throughput				Annual days with precipitation	Pollutant	PSD Applicability	HAP?	Emission Factor	Max. Uncontrolled Potential to Emit [1]		Proj. Act. Uncontrolled Emissions	Control Efficiency		Max. Controlled Potential to Emit [2]		Proj. Act. Controlled Emissions	Emission Std or Operational Limit	Limited Controlled Potential to Emit	Maximum Throughput		Max. Unc. Emissions	Max. Cont. Emissions	g/sec Model Input
	ID	Description		Maximum	Projected Actual		Units			(Y/N)	(Y/N)		(lb/hr)	(tons/yr)	(ton/yr)	(%)	Note	(lb/hr)	(tons/yr)	(tons/yr)		(tons/yr)	units/day	Note	lb/day	lb/day	
				(Units/hr) Note	(Units/yr) Note	(Units/yr) Note						(lb/Unit) Note															
Total				91	58	49			E	0.722		3	6	2.17	1580.93	4.33											
									F	0.370		3	6	1.11	810.25	2.22											
									H	0.114		146	390	16.62	16208.90	44.41											

The distance for each road segment was estimated from an aerial photograph. It was assumed that the mine operations personnel would travel to Area 2 in personal vehicles and then be shuttled in 6 passenger vans to the mine site. All other personal were assumed to drive a vehicle all the way to their destination. Maximum hourly emissions will occur at shift changes where the vehicles transporting both shifts could be on the road during the same hour. To be conservative it was assumed that all travel would occur between the eight hour shifts although at least some railroad personnel will be working 12 hour shifts and other personnel may travel at other times. The maximum daily and hourly trips are shown in the table above as well as the hourly and annual miles. Only segments A, B, and B3 are located at the Mine Site. The emissions from the other segments are calculated in the Plant Site emission calculation spreadsheet.

[218] Based on Barr's knowledge of mining operations, we have assumed that three 7,500 gallon fuel tankers per day would be needed. Only one trip per hour would likely be completed. The distance from the public road south of the plant to the mine site on roads on land controlled by PolyMet was estimated as 5.674 miles from aerial photographs. VMT assigned to road segments A, B, B2, B3, C, and H based on the percent of the trip occurring on each segment. The values are: A: 6.5%, B: 34.2%, B2: 2.8, B3: 20.5%, C: 34.0, and H: 2.0%. Only segments A, B, and B3 are at the Mine Site. The emission calculations for the remaining segments are included in the Plant Site emission calculation spreadsheet.

[219] Maximum throughput for waste water treatment facility estimated as 5,000 tpy lime in and 10,000 tpy sludge out. Lime will be transported from Plant Site in 40 ton over the road trucks with 24 ton payload. Similar trucks will haul sludge back to Plant Site. Assume different trucks used as worst case. Annual trips = (5000 ton + 10000 ton) /24 ton/truck = 625 trips/yr. Assume 5 day per week, 52 week per year trucking schedule: 625 / (5 * 52) = 2.4 truck per day, round up to 3 trucks per day. Assume maximum hourly rate is one round trip. Length of segment B = 1.94, B3 = 1.166 miles. Segment B Example: Max hourly VMT = 1.94 (miles/trip) * 2 (trip/round trip) = 3.89 VMT/hr. Maximum daily VMT = 3 round trips * 2 (trips/round trip) * 1.94 miles/trip = 11.64 VMT.

[220] Haul truck, light truck and fuel tanker traffic assumed to start and end by the Rail Transfer Hopper at the mine site. This will necessitate travel over three of mine road segments, O to P (0.1362 miles), O to N (0.2142 miles), and LL to N (0.4057). The number of trips was calculated in the same manner as described above for the Dunka Road Segment A. VMTs are calculated as the number of trips per hour times the distance for each segment.

[221] The fueling facility circle is 0.223 miles long. The maximum traffic in an hour was assumed to be one tanker and 1/3 of the truck fleet or 4 haul trucks. Maximum hourly VMT is then 5 trips * 0.223 miles/trip = 1.115 VMT/hr.

[222] Wind erosion emission are calculated by utilizing an entire year's meteorological data and daily fastest wind speed. Short term (< 24 hour) emission rates are not readily calculated by this procedure and the hourly "throughput" is not really a relevant concept.

[223] Hourly rates calculated from annual rates by assuming 8400 hours/year of overburden stripping.

[224] VMTs for hauling the overburden removed from under the stockpiles were calculated in the same manner as for the other hauling activities. The number of trips was calculated based on 240 ton payload trucks and the total VMT is the number of trips times the haul distance from each stockpile to the overburden storage pile and the distance from the overburden storage pile to the overburden stockpile. The VMTs were added to the totals for the other hauling activities on each segment to determine total VMT per segment above.

[225] Screened till and other rock approved for construction purposes may be crushed to produce construction rock. It was assumed that a product with a maximum size of one to two inches would be desired. It was also assumed that this could be achieved with two crushing stages (primary and secondary). A typical crushing circuit with two screens was also assumed. Maximum hourly throughput based on the high end of the equipment available for hire on a contract basis in the project area.

Maximum Annual Throughput References:

[301] Annual throughput estimated based on Barr assumption that three 7,500 gallon tankers would deliver diesel fuel to the mine each day. Assumed a maximum of one and a half trucks would be loaded in each tank each day. Annual usage is then: 7,500 gallons/tanker * 1.5 tankers/tank/day * 365 days/year = 4106250 gallons/tank/yr.

[302] As recommended by EPA guidance, annual fuel usage for calculating potential emissions for the emergency generator is based on 500 hours per year of operation.

[303] Use of this equipment has an inherent restraint as with emergency generators. The generator is intended to provide temporary power for relocating large electrical mining vehicles, which is inherently an infrequent activity. As allowed for emergency generators, potential emissions were calculated based on 500 hours per year of operation.

[304] Maximum annual fuel usage = maximum hourly fuel usage * 8760 hours per year.

[305] Per spreadsheet prepared by PolyMet no overburden will be screened at the mine pits during year eight of mine operation.

[306] The annual overburden screening rate is based on the maximum estimated demand for screened overburden for construction purposes. The split of screened overburden from pit development and that from stockpile foundation and liner system construction is based on the ratio of each type of overburden to the total during the peak stripping year (year 0). It was assumed that stockpiled overburden may be screened in years where the stripping rate does not equal the maximum projected demand for screened overburden, as is the case for year 8.

[307] Per the Mine Schedule as reported in RS18, the maximum waste rock generation rate for 20 year projected mine life occurs in year 8, about 32 million tons. Therefore, Year 8 is representative of worst case operation during the stockpile disposal phase of mine operation. The annual quantity of each category of waste rock and lean ore mined in the east and west pits was taken from data in RS67. Waste rock and lean ore is mined, loaded into trucks, taken to the appropriate stockpile and dumped.

[308] Per the Mine Schedule, the total projected ore mined in Year 8 is 9,878,679. The split between the East and West pits was obtained from the data used to prepare RS18. The split in the composition spreadsheet was scaled to match the total ore in the mine schedule, which is the most accurate data.

[309] In Year 8, sufficient ore will not be mined to supply the Process Plant with 32,000 tpd of ore. Therefore, stockpiled ore will be used to supplement the mined ore. It was assumed that the stockpile ore would be 50% from the East Pit and 50% from the West Pit. The quantity needed from each pit = (32,000 tpd * 365 day/hr - 9,878,679 tons mined year 8)/2 = 900,661 tons. This amount was added to the amount from each pit that would be unloaded at the railroad transfer hopper as well as to the amount loaded into railcars.

[310] The difference between the Process Plant capacity of 32,000 tpd and the quantity mined in Year 8 will be made up with stockpiled ore. It was assumed that the stockpiled ore would be 50% from the East Pit and 50% from the West Pit. The quantity needed from each pit = (32,000 tpd * 365 day/hr - 9,878,679 tons mined year 8)/2 = 900,661 tons

[311] Haul distances for ore, waste rock, lean ore and overburden were determined by assigning a letter to each intersection or termination for the haul roads. The distance between each point assigned a letter was determined from aerial photographs. The route for each haul was determined. The worst case year for hauling was determined by calculating the total haul distance for each category of material for each year of operation under the stockpile disposal scenario and calculating the total VMT based on 240 ton trucks. Because emission are directly proportional to the total VMT, the year with the highest VMT value is the worst case. This was found to be year 8. Which is why year 8 was chosen as one of the two years to be modeled. The emission for each segment were calculated by summing the trips for the hauling of each category of material, multiplying by the length of the segment, and multiplying by 2 to account for round trips.

[312] Annual VMT calculated by multiplying hourly VMT by 8760 hours per year.

[313] The one way travel distance, on roads on land controlled by PolyMet, from the mine roads to the Area 1 shops where the haul truck maintenance will be performed was estimated from aerial photographs with a result of 3.9609 miles. Note: the heavy equipment will be diverted to a route through former mining areas to avoid mixing with light truck traffic. Based on information obtained from PolyMet, 8 trucks will be used for mine hauling and 2 trucks for construction and other purposes for a total of 10. Based on Barr's knowledge of mining operations, we assumed that maintenance would be required on each truck every 250 hours. The maintenance interval in days, assuming worst case 24 hr/day continuous operation is 250/24 = 10.42 days. Trips per day are then 1/10.42 trips/truck/day * 10 trucks = 0.9597 trips/day. The annual VMT is then: 3.9609 miles per trip * 2 trips/round trip * 0.9597 trips/day * 365 days/yr = 2774.9 VMT/yr. VMT assigned to Road segments A, B, B2, B3, J, and J2 based on percent of trip on each segment. Values are A: 9.2% , B: 49.0%, B2: 4.0%, B3: 29.4%, J: 2.2%, J2: 6.0%. Only segments A, B, and B3 are located at the mine site. The emissions from the remaining segments are calculated in the processing plan emission calculation spreadsheet.

[314] See note 217 above.

[315] Based on Barr's knowledge of mining operations, we have assumed that three 7,500 gallon fuel tankers would be needed per day. The total annual VMT is then: 6 trips/day * 5.674 miles/trip (1 way) * 365 days/yr = 12,426.1 VMT/yr. VMT assigned to road segments A, B, B2, B3, C, and H based on the percent of the trip occurring on each segment. The values are A: 6.5%, B: 34.2%, B2: 2.8, B3: 20.5%, C: 34.0, and H: 2.0%. Only segments A, B, and B3 are at the Mine Site. The emissions from the remaining segments are calculated in the processing plant emission calculation spreadsheet.

[316] Total annual truck trips = (5000 ton lime + 10000 ton sludge) / 24 ton/truck = 625 trips/yr. Length of segment B = 1.94 miles. Total VMT = 625 trips/yr * 1.94 miles/trip * 2 trips/round trip = 2425 VMT/yr.

[317] Haul truck, light truck and fuel tanker traffic assumed to start and end by the Rail Transfer Hopper at the mine site. This will necessitate travel over three of mine road segments, O to P (0.1362 miles), O to N (0.2142 miles), and LL to N (0.4057). The number of trips was calculated in the same manner as described above for the Dunka Road Segment A. VMTs are calculated as the number of trips per year times the distance for each segment.

[318] Maximum daily VMT on fueling facility circle = (10 trucks * 3 fuelings per day + 3 tankers) * 0.223 miles/loop = 7.359 VMT/day * 365 days/year = 2686.0 VMT/yr.

[319] Stockpile erodable surface assumed equivalent to stockpile footprint at Year 10. Stockpile footprint obtained from stockpile design prepared by Barr.

[320] Quantities of underlying soils/till below each stockpile requiring excavation estimated based on stockpile footprint estimates calculated by Barr. Stockpile footprints were determined for years 1, 5, 10, 15, and 20 and the footprint was assumed to increase uniformly over the period between calculated values (years 2-4, 5-9, etc.). The quantity of overburden removed was estimated based on an average depth of 12.7 feet obtained from PolyMet. An in-situ density of 1.871 ston/yd^3 was used to calculated tons of overburden stripped. This value was calculated from data used to develop the Mine Plan (RS18). The estimated annual total overburden stripping ratio for Years 5 to 9 of Mine Operation was used in the calculations. It was assumed that all soils/till would be hauled to the overburden storage pile, screened, and then loaded back into trucks and hauled to the overburden stockpile.

[321] VMTs for hauling the overburden removed from under the stockpiles were calculated in the same manner as for the other hauling activities. The number of trips was calculated based on 240 ton payload trucks and the total VMT is the number of trips times the haul distance from each stockpile to the overburden storage pile and the distance from the overburden storage pile to the overburden stockpile. The VMTs were added to the totals for the other hauling activities on each segment to determine total VMT per segment above.

[322] The annual throughput for the portable crushing plant is based on the demand for crushed rock at the Mine Site with a safety factor.

Projected Actual Throughput References:

[401] Projected actual emissions are equivalent to potential emissions.

[402] Actual operation estimated as two hours per week or 104 hours per year.

[403] Projected actual emissions based on 50% utilization, a conservative assumption for heating systems.

Control Efficiency References:

[501] Level 3A control measures, consistent with agreement reached by the IMA-MPCA Fugitive Emissions Workgroup as described in the November 18, 1998 "Taconite Industry Haul Truck Unpaved Road Fugitive Particulate Emission Factor and Control Efficiency" were observed at the Cliffs Erie facility; control practices are expected to be similar at the PolyMet facilities. The referenced document allows 80% for Level 3A control measures.

[502] Either no Air Pollution Control Devices (APCDs) are used in this process or the APCD does not control this pollutant. Therefore, Control Efficiency is 0.

[503] Controlled emission factors (with wet suppression) were used for all sources except truck loading. The material in the stockpile may be wet due to residual moisture from the wet suppression, depending on how long the material remains in the pile. If this is the case, then the emissions may be overestimated. Adjustment to the material moisture content can be made to reflect this phenomenon.

Maximum Daily Throughput References

[601] The one way travel distance, on roads on PolyMet controlled land, from the haul roads at the mine to the Area 1 shops where the haul truck maintenance will be performed was estimated from aerial photographs with a result of 3.9609 miles. Note: the heavy equipment will be diverted to a route through former mining areas to avoid mixing with light truck traffic. Based on information obtained from PolyMet, 8 trucks would be used for mine hauling and 2 trucks for construction and other purposes, for a total of 10 trucks. Based on Barr's knowledge of mining operations, we assumed that maintenance would be required on each truck every 250 hours. The maintenance interval in days, assuming worst case 24 hr/day continuous operation is 250/24 = 10.42 days. Trips per day are then 1/10.42 trips/truck/day * 10 trucks = 0.9597 trips/day. The daily VMT was estimated as having 2 trucks make a one way trip (or one truck make a round trip) 3.9609 miles/trip * 2 trips/hr = 7.92 VMT/day. VMT assigned to Road segments A, B, B2, B3, J and J2 based on percent of trip on each segment. Values are A: 9.2% , B: 49.0%, B2: 4.0%, B3: 29.4%, J: 2.2%, J2: 6.0%. Only segments A, B, and B3 are located at the Mine Site. The emissions from the remaining segments are calculated in the Plant Site calculation spreadsheet.

[602] Daily VMT for light trucks are derived in note 216 above.

[603] Based on Barr's knowledge of mining operations, we have assumed that three 7,500 gallon fuel tankers would be needed per day. The total daily VMT is then: 6 trips/day * 5.674 miles/trip (1 way) = 34.04 VMT/day. VMT assigned to road segments A, B, B2, B3, C, and H based on the percent of the trip occurring on each segment. The values are: A: 6.5%, B: 34.2%, B2: 2.8, B3: 20.5%, C: 34.0, and H: 2.0%. Only segments A, B, and B3 are located at the Mine Site. The emissions from the remaining segments are calculated in the Plant Site emission calculation spreadsheet.

PolyMet - Hoyt Lakes, Minnesota
Table 1: Calculation of Potential Emissions at Mine Site - Year 8 - Stockpile Disposal

Stack ID	Emission Unit		APCD ID	Throughput				Annual days with precipitation	Pollutant	PSD Applicability	HAP?	Emission Factor		Max. Uncontrolled Potential to Emit [1]		Proj. Act. Uncontrolled Emissions	Control Efficiency		Max. Controlled Potenital to Emit [2]		Proj. Act. Controlled Emissions	Emission Std or Operational Limit	Limited Controlled Potential to Emit	Maximum Throughput		Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate		
	ID	Description		Maximum		Projected Actual	Units																				Max. Unc. Emissions	Max Cont. Emissions	g/sec
				(Units/hr)	Note	(Units/yr)	Note	(Units/yr)	Note	precipitation		(Y/N)	(Y/N)	(lb/Unit)	Note	(lb/hr)	(tons/yr)	(ton/yr)	(%)	Note	(lb/hr)	(tons/yr)	(tons/yr)		(tons/yr)	units/day	Note	lb/day	lb/day	Model Input

[604] Maximum throughput for waste water treatment facility estimated as 5,000 tpy lime in and 10,000 tpy sludge out. Lime will be transported from Plant Site in 40 ton over the road trucks with 24 ton payload. Similar trucks will haul sludge back to Plant Site.
   Assume different trucks used as worst case. Annual trips = (5000 ton + 10000 ton) /24 ton/truck = 625 trips/yr. Assume 5 day per week, 52 week per year trucking schedule: 625 / (5 * 52) = 2.4 truck per day, round up to 3 trucks per day.
   Maximum VMT for each time period calculated by multiplying the number of trips times 2 for round trips and times the appropriate segment length: B = 1.94 miles, B3 = 1.166 miles.
[605] Haul truck, light truck and fuel tanker traffic assumed to start and end by the Rail Transfer Hopper at the mine site. This will necessitate travel over three of mine road segments, O to P (0.1362 miles), O to N (0.2142 miles), and LL to N (0.4057).
   The number of trips was calculated in the same manner as described above for the Dunka Road Segment A. VMTs are calculated as the number of trips per day times the distance for each segment.
[606] Maximum daily VMT on fueling facility circle = (10 trucks * 3 fuelings per day + 3 tankers) * 0.223 miles/loop = 7.359 VMT/day

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

															Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate					
Stack ID	Emission Unit		APCD ID	Throughput				Annual days with precipitation	Pollutant	PSD Applicability	HAP?	Emission Factor		Max. Uncontrolled Potential to Emit [1]		Proj. Act. Uncontrolled Emissions	Control Efficiency		Max. Controlled Potential to Emit [2]		Proj. Act. Controlled Emissions	Emission Std or Operational Limit	Limited Controlled Potential to Emit	Maximum Throughput	Max. Unc. Emissions	Max. Cont. Emissions	g/sec
	ID	Description		Maximum		Projected Actual	Units			Applicability																		Model
				(Units/hr) Note	(Units/yr) Note	(Units/yr) Note		precipitation		(Y/N)	(Y/N)	(lb/Unit) Note		(lb/hr)	(tons/yr)	(ton/yr)	(%) Note		(lb/hr)	(tons/yr)	(tons/yr)	Limit	(tons/yr)	units/day Note	lb/day	lb/day	Input

Mine Point Sources

Stack ID	ID 1	Description 2	3	4.00 5	6 7	8 9	Units 10		Pollutant 11	12	13.00	14.000 15		16	17.00	18.000 19	20.000		21.000 lb/hr	tpy	22.000	23.000	24.000 lim tpy	25.000 Tput	26	27	28 g/sec
SV 226	EU 229	Mine Diesel Fuel Tank #1	NA	468.75 [201]	4,106,250 [301]	4,106,250 [401]	gallons		VOC	Y	N	3.2511E-06 [102]		0.00	0.007	0.007	0 [502]		0.00	0.007	0.007		0.007				0.000
SV 227	EU 230	Mine Diesel Fuel Tank #2	NA	468.75 [201]	4,106,250 [301]	4,106,250 [401]	gallons		VOC	Y	N	3.2511E-06 [102]		0.00	0.007	0.007	0 [502]		0.00	0.007	0.007		0.007				0.000
SV 338	EU 345	Mine Diesel Fuel Tank #3	NA	468.75 [201]	4,106,250 [301]	4,106,250 [401]	gallons		VOC	Y	N	3.2511E-06 [102]		0.00	0.007	0.007	0 [502]		0.00	0.007	0.007		0.007				0.000
SV 326	EU 332	WWTF Back up Generator	NA	5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		NOx	Y	N	4.410 [103]		23.09	5.773	5.773	0 [502]		23.09	5.773	5.773		5.773				2.909
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		PM10	Y	N	0.310 [103]		1.62	0.406	0.406	0 [502]		1.62	0.406	0.406		GP 001				0.205
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Total PM	Y	N	0.310 [103]		1.62	0.406	0.406	0 [502]		1.62	0.406	0.406	20 % Opacity	GP 001				0.205
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		SO2	Y	N	0.505 [104]		2.64	0.661	0.661	0 [502]		2.64	0.661	0.661	0.5 lb/MMBtu	0.661				0.333
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		H2SO4/SO3	Y	N	0.013 [105]		0.07	0.017	0.017	0 [502]		0.07	0.017	0.017		0.017				0.009
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Carbon Monoxide	Y	N	0.95 [103]		4.97	1.244	1.244	0 [502]		4.97	1.244	1.244		1.244				0.627
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		VOC	Y	N	0.36 [103]		1.88	0.471	0.471	0 [502]		1.88	0.471	0.471		0.471				0.237
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		CO2	Y	N	164 [103]		858.70	214.676	214.676	0 [502]		858.70	214.676	214.676		214.676				108.194
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzene	Y	Y	9.33E-04 [106]		0.00	0.001	0.001	0 [502]		0.00	0.001	0.001		0.001				0.001
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Toluene	Y	Y	4.09E-04 [106]		0.00	0.001	0.001	0 [502]		0.00	0.001	0.001		0.001				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Xylene	Y	Y	2.85E-04 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Propylene	Y	Y	2.58E-03 [106]		0.01	0.003	0.003	0 [502]		0.01	0.003	0.003		0.003				0.002
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		1,3-Butadiene	Y	Y	1.96E-05 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Formaldehyde	Y	Y	1.18E-03 [106]		0.01	0.002	0.002	0 [502]		0.01	0.002	0.002		0.002				0.001
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Acetaldehyde	Y	Y	7.67E-04 [106]		0.00	0.001	0.001	0 [502]		0.00	0.001	0.001		0.001				0.001
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Acrolein	Y	Y	4.63E-05 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Naphthalene	Y	Y	8.48E-05 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Acenaphthylene	Y	[6]	2.53E-06 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Acenaphthene	Y	[6]	7.10E-07 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Fluorene	Y	[6]	2.92E-05 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Phenanthrene	Y	[6]	2.94E-05 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Anthracene	Y	[6]	1.87E-06 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Fluoranthene	Y	[6]	7.61E-06 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Pyrene	Y	[6]	4.78E-06 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzo(a)anthracene	Y	[6]	1.68E-06 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Chrysene	Y	[6]	3.53E-07 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzo(b)fluoranthene	Y	[6]	4.96E-08 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzo(k)fluoranthene	Y	[6]	7.75E-08 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzo(a)pyrene	Y	[6]	9.40E-08 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Indeno(1,2,3-cd)pyrene	Y	[6]	1.88E-07 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Dibenzo(a,h)anthracene	Y	[6]	2.92E-07 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		Benzo(g,h,i)perylene	Y	[6]	2.45E-07 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 326				5.236 [202]	2,618 [302]	2,618 [401]	MMBtu		POM	Y	Y	1.60E-04 [106]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337	EU 344	Generator to Move Electrical Equipment	NA	1100 [203]	550,000 [303]	114,400 [402]	hp-hour		NOx	N	N	0.024 [107]		26.40	6.600	1.373	0 [502]		26.40	6.600	1.373		6.600				3.326
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		PM10	N	N	0.0573 [108]		0.44	0.110	0.023	0 [502]		0.44	0.110	0.023		GP 001				0.056
SV 337				1100 [203]	550,000 [303]	114,400 [402]	hp-hour		Total PM	N	N	0.0007 [107]		0.77	0.193	0.040	0 [502]		0.77	0.193	0.040	20 % Opacity	GP 001				0.097
SV 337				1100 [203]	550,000 [303]	114,400 [402]	hp-hour		SO2	N	N	0.004045 [107]		4.45	1.112	0.231	0 [502]		4.45	1.112	0.231	0.5 lb/MMBtu	1.112				0.561
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		H2SO4/SO3	N	N	0.013 [109]		0.10	0.025	0.005	0 [502]		0.10	0.025	0.005		0.025				0.013
SV 337				1100 [203]	550,000 [303]	114,400 [402]	hp-hour		Carbon Monoxide	N	N	5.50E-03 [107]		6.05	1.513	0.315	0 [502]		6.05	1.513	0.315		1.513				0.762
SV 337				1100 [203]	550,000 [303]	114,400 [402]	hp-hour		VOC	N	N	0.00064155 [107]		0.71	0.176	0.037	0 [502]		0.71	0.176	0.037		0.176				0.089
SV 337				1100 [203]	550,000 [303]	114,400 [402]	hp-hour		CO2	N	N	1.16 [107]		1,276.00	319.000	66.352	0 [502]		1,276.00	319.000	66.352		319.000				160.772
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzene	N	Y	7.76E-04 [110]		0.01	0.001	0.000	0 [502]		0.01	0.001	0.000		0.001				0.001
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Toluene	N	Y	2.81E-04 [110]		0.00	0.001	0.000	0 [502]		0.00	0.001	0.000		0.001				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Xylene	N	Y	1.93E-04 [110]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Formaldehyde	N	Y	7.89E-05 [110]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Acetaldehyde	N	Y	2.52E-05 [110]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Acrolein	N	Y	7.88E-06 [110]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Naphthalene	N	Y	1.30E-04 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Acenaphthylene	N	[6]	9.23E-06 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Acenaphthene	N	[6]	4.68E-06 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Fluorene	N	[6]	1.28E-05 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Phenanthrene	N	[6]	4.08E-05 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Anthracene	N	[6]	1.23E-06 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Fluoranthene	N	[6]	4.03E-06 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Pyrene	N	[6]	3.71E-06 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzo(a)anthracene	N	[6]	6.22E-07 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Chrysene	N	[6]	1.53E-06 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzo(b)fluoranthene	N	[6]	1.11E-06 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzo(k)fluoranthene	N	[6]	1.09E-07 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzo(a)pyrene	N	[6]	1.29E-07 [112]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Indeno(1,2,3-cd)pyrene	N	[6]	2.07E-07 [112]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Dibenzo(a,h)anthracene	N	[6]	1.73E-07 [112]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		Benzo(g,h,i)perylene	N	[6]	2.78E-07 [112]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
SV 337				7.7 [203]	3,850 [303]	801 [402]	MMBtu		POM	N	Y	2.10E-04 [111]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
WWTP	EU 331	WWTF Propane Fired Space Heaters	NA	0.0907 [204]	795 [304]	397.3 [403]	Mgal		PM10	Y	N	0.7 [113]		0.06	0.278	0.139	0 [502]		0.06	0.278	0.139		GP 001				0.008
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		Total PM	Y	N	0.7 [113]		0.06	0.278	0.139	0 [502]		0.06	0.278	0.139		GP 001				0.008
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		NOx	Y	N	13.0 [113]		1.18	5.165	2.583	0 [502]		1.18	5.165	2.583		5.165				0.149
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		SO2	Y	N	0.02 [113]		0.00	0.008	0.004	0 [502]		0.00	0.008	0.004		0.008				0.000229
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		Carbon Monoxide	Y	N	7.5 [113]		0.68	2.980	1.490	0 [502]		0.68	2.980	1.490		2.980				0.086
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		VOC	Y	N	0.8 [113]		0.07	0.318	0.159	0 [502]		0.07	0.318	0.159		0.318				0.009
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		CO2	Y	N	12500 [113]		1,133.88	4,966.393	2,483.197	0 [502]		1,133.88	4,966.393	2483.197		4,966.393				142.866
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		CH4	Y	N	0.2 [113]		0.02	0.079	0.040	0 [502]		0.02	0.079	0.040		0.079				0.002
WWTP				0.0907 [204]	795 [304]	397.3 [403]	Mgal		N2O	Y	N	0.9 [113]		0.08	0.358	0.179	0 [502]		0.08	0.358	0.179		0.358				0.010
EASTP	FS 001	Surface Overburden, Truck Load - East (ESP)	NA	0.0 [205]	0 [305]	0 [401]	tons surface		PM10	N	N	0.0002 [114]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Total PM	N	N	0.0004 [114]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Antimony	N	Y	1.85E-09 [115]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Arsenic	N	Y	2.47E-09 [115]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Beryllium	N	Y	3.99E-10 [115]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Cadmium	N	Y	1.35E-09 [115]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Chromium	N	Y	4.43E-08 [115]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Cobalt	N	Y	3.19E-09 [115]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Pb	N	Y	3.99E-08 [115]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Manganese	N	Y	4.27E-07 [115]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Mercury	N	Y	0.00E+00 [115]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000
EASTP				0.0 [205]	0 [305]	0 [401]	tons surface		Nickel	N	Y	2.63E-08 [115]		0.00	0.000	0.000	0 [502]		0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Proj Act (Units/yr)	Note	(Units/yr)	Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Note	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont (tons/yr)	Emission Std/Op Limit	Limited Cont PTE (tons/yr)	g/sec Model Input
EASTP				0.0	[205]	0	[305]	0	[401]	tons surface		Phosphorus	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
EASTP				0.0	[205]	0	[305]	0	[401]	tons surface		Selenium	N	Y	3.82E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
EASTP				0.0	[205]	0	[305]	0	[401]	tons surface		Barium	N	N	3.41E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
EASTP				0.0	[205]	0	[305]	0	[401]	tons surface		Boron	N	N	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
EASTP				0.0	[205]	0	[305]	0	[401]	tons surface		Copper	N	N	1.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
EASTP				0.0	[205]	0	[305]	0	[401]	tons surface		Molybdenum	N	N	9.89E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
EASTP				0.0	[205]	0	[305]	0	[401]	tons surface		Vanadium	N	N	2.12E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
EASTP				0.0	[205]	0	[305]	0	[401]	tons surface		Zinc	N	N	3.14E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
EASTP				0.0	[205]	0	[305]	0	[401]	tons surface		Tellurium	N	N	9.69E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
EASTP				0.0	[205]	0	[305]	0	[401]	tons surface		Fluorides (as F)	N	N	2.62E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP	FS 001	Surface Overburden, Truck Load - West (WSP)	NA	0.0	[205]	0	[305]	0	[401]	tons surface		PM10	N	N	0.0002	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Total PM	N	N	0.0004	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Antimony	N	Y	1.85E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Arsenic	N	Y	2.47E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Beryllium	N	Y	3.99E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Cadmium	N	Y	1.35E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Chromium	N	Y	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Cobalt	N	Y	3.19E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Pb	N	Y	3.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Manganese	N	Y	4.27E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Mercury	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Nickel	N	Y	2.63E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Phosphorus	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Selenium	N	Y	3.82E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Barium	N	N	3.41E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Boron	N	N	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Copper	N	N	1.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Molybdenum	N	N	9.89E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Vanadium	N	N	2.12E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Zinc	N	N	3.14E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Tellurium	N	N	9.69E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
WESTP				0.0	[205]	0	[305]	0	[401]	tons surface		Fluorides (as F)	N	N	2.62E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH	FS 014	Surface Overburden, Truck Unload - storage pile	NA	0.0	[205]	0	[305]	0	[401]	tons surface		PM10	N	N	0.0002	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Total PM	N	N	0.0004	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Antimony	N	Y	1.85E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Arsenic	N	Y	2.47E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Beryllium	N	Y	3.99E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Cadmium	N	Y	1.35E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Chromium	N	Y	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Cobalt	N	Y	3.19E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Pb	N	Y	3.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Manganese	N	Y	4.27E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Mercury	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Nickel	N	Y	2.63E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Phosphorus	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Selenium	N	Y	3.82E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Barium	N	N	3.41E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Boron	N	N	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Copper	N	N	1.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Molybdenum	N	N	9.89E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Vanadium	N	N	2.12E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Zinc	N	N	3.14E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Tellurium	N	N	9.69E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH				0.0	[205]	0	[305]	0	[401]	tons surface		Fluorides (as F)	N	N	2.62E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000	0.000
OBSRMH	FS 015	Surface Overburden, Screening	NA	198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		PM10	Y	N	0.00074	[116]	0.15	0.441	0.441	0	[502]	0.15	0.441	0.441	GP 001		0.019
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Total PM	Y	N	0.0022	[116]	0.44	1.311	1.311	0	[502]	0.44	1.311	1.311	GP 001		0.055
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Antimony	Y	Y	1.02E-08	[116]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Arsenic	Y	Y	1.36E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Beryllium	Y	Y	2.20E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Cadmium	Y	Y	7.46E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Chromium	Y	Y	2.44E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Cobalt	Y	Y	1.76E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Pb	Y	Y	2.20E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Manganese	Y	Y	2.36E-06	[115]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Mercury	Y	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Nickel	Y	Y	1.45E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Phosphorus	Y	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Selenium	Y	Y	2.10E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Barium	Y	N	1.88E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Boron	Y	N	2.44E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Copper	Y	N	1.10E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Molybdenum	Y	N	5.46E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Vanadium	Y	N	1.17E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Zinc	Y	N	1.73E-06	[115]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Tellurium	Y	N	5.35E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Fluorides (as F)	Y	N	1.44E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH	FS 039	Surface Overburden, Screen Discharge	NA	198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		PM10	Y	N	0.0002	[114]	0.04	0.112	0.112	0	[502]	0.04	0.112	0.112	GP 001		0.005
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Total PM	Y	N	0.0004	[114]	0.08	0.238	0.238	0	[502]	0.08	0.238	0.238	GP 001		0.010
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Antimony	Y	Y	1.85E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Arsenic	Y	Y	2.47E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Beryllium	Y	Y	3.99E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Cadmium	Y	Y	1.35E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Chromium	Y	Y	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Cobalt	Y	Y	3.19E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Pb	Y	Y	3.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Manganese	Y	Y	4.27E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Mercury	Y	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Nickel	Y	Y	2.63E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Phosphorus	Y	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000
OBSRMH				198.7	[206]	1,191,900	[306]	1,191,900	[401]	tons surface		Selenium	Y	Y	3.82E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000			0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	(Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Barium	Y	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Boron	Y	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Copper	Y	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Molybdenum	Y	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Vanadium	Y	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Zinc	Y	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Tellurium	Y	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Fluorides (as F)	Y	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH	FS 019	Surface Overburden, Truck Reload	NA	198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		PM10	N	N	0.0002 [114]	0.04	0.112	0.112	0 [502]	0.04	0.112	0.112		0.112				0.005
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Total PM	N	N	0.0004 [114]	0.08	0.238	0.238	0 [502]	0.08	0.238	0.238		0.238				0.010
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH	FS 002	Surface Overburden, Truck Unload - SW	NA	198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		PM10	N	N	0.0002 [114]	0.04	0.112	0.112	0 [502]	0.04	0.112	0.112		0.112				0.005
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Total PM	N	N	0.0004 [114]	0.08	0.238	0.238	0 [502]	0.08	0.238	0.238		0.238				0.010
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSKMH				198.7 [206]	1,191,900 [306]	1,191,900 [401]	tons surface		Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP	FS 004	Cat 1/2 Waste Rock, Truck Load East	NA	0 [207]	0 [307]	0 [401]	tons rock		PM10	N	N	0.0044 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Antimony	N	Y	4.17E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Arsenic	N	Y	5.94E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Cadmium	N	Y	9.49E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Chromium	N	Y	1.26E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Cobalt	N	Y	5.10E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Pb	N	Y	5.24E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Manganese	N	Y	8.74E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Barium	N	N	8.11E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Copper	N	N	2.82E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Zinc	N	N	8.21E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP	FS 050	Blast Hole Drilling Cat 1/2 WR East	NA	0.00 [208]	0 [304]	0 [401]	holes drilled		PM10	N	N	1.3 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.050
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Antimony	N	Y	5.77E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Arsenic	N	Y	8.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Beryllium	N	Y	1.30E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Cadmium	N	Y	1.31E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Chromium	N	Y	1.75E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Cobalt	N	Y	7.05E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Pb	N	Y	7.25E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Manganese	N	Y	1.21E-03 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Nickel	N	Y	3.90E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Phosphorus	N	Y	7.34E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Selenium	N	Y	1.24E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Barium	N	N	1.12E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Boron	N	N	1.44E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

Stack ID	ID	Description	APCD ID	Maximum (Units/hr)	Note	Projected Actual (Units/yr)	Note	(Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Unc. Pot. to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Cont. Pot. to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Copper	N	N	3.90E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Zinc	N	N	1.14E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP	FS 004	Category 3 Waste Rock, Truck Load East	NA	0	[207]	0	[307]	0	[401]	tons rock		PM10	N	N	4.44E-03	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Total PM	N	N	9.39E-03	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Antimony	N	Y	4.24E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Arsenic	N	Y	6.23E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Beryllium	N	Y	1.03E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Cadmium	N	Y	9.67E-09	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Chromium	N	Y	1.27E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Cobalt	N	Y	4.98E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Pb	N	Y	5.33E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Manganese	N	Y	9.32E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Nickel	N	Y	2.82E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Barium	N	N	8.35E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Copper	N	N	6.58E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Zinc	N	N	8.36E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP	FS 050	Blast Hole Drilling Cat 3 WR East	NA	0.00	[208]	0	[304]	0	[401]	holes drilled		PM10	N	N	1.3	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Antimony	N	Y	5.86E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Arsenic	N	Y	8.62E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Beryllium	N	Y	1.43E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Cadmium	N	Y	1.34E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Chromium	N	Y	1.75E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Cobalt	N	Y	6.89E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Pb	N	Y	7.37E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Manganese	N	Y	1.29E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Nickel	N	Y	3.90E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Phosphorus	N	Y	7.34E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Selenium	N	Y	1.24E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Barium	N	N	1.16E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Boron	N	N	1.44E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Copper	N	N	9.10E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Zinc	N	N	1.16E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP	FS 004	Category 3 Lean Ore, Truck Load East	NA	0	[207]	0	[307]	0	[401]	tons rock		PM10	N	N	4.44E-03	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Total PM	N	N	9.39E-03	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Antimony	N	Y	4.19E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Arsenic	N	Y	6.37E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Beryllium	N	Y	9.39E-09	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Cadmium	N	Y	1.03E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Chromium	N	Y	1.27E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Cobalt	N	Y	6.40E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Pb	N	Y	5.64E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Manganese	N	Y	8.87E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Nickel	N	Y	3.76E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Barium	N	N	9.03E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Copper	N	N	9.39E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Zinc	N	N	8.55E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP	FS 050	Blast Hole Drilling Cat 3 LO East	NA	0.00	[208]	0	[304]	0	[401]	holes drilled		PM10	N	N	1.3	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.050
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Antimony	N	Y	5.80E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Arsenic	N	Y	8.81E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Beryllium	N	Y	1.30E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Cadmium	N	Y	1.43E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Chromium	N	Y	1.76E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Cobalt	N	Y	8.86E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Pb	N	Y	7.80E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Manganese	N	Y	1.23E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Nickel	N	Y	5.20E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Phosphorus	N	Y	7.34E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Selenium	N	Y	1.24E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Barium	N	N	1.25E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Boron	N	N	1.44E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Copper	N	N	1.30E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Proj Actual (Units/yr)	Note	(Units/yr)	Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP (Y/N)	EF (lb/Unit)	Note	Max Unc PTE lb/hr	tons/yr	Proj Act Unc (ton/yr)	Control Eff (%)	Note	Max Cont PTE lb/hr	tons/yr	Proj Act Cont (tons/yr)	Emiss Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Zinc	N	N	1.18E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP	FS 004	Category 4 Waste Rock, Truck Load East	NA	0	[207]	0	[307]	0	[401]	tons rock		PM10	N	N	4.44E-03	[114]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Total PM	N	N	9.39E-03	[114]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Antimony	N	Y	4.70E-08	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Arsenic	N	Y	4.34E-07	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Beryllium	N	Y	1.88E-08	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Cadmium	N	Y	2.14E-08	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Chromium	N	Y	1.58E-06	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Cobalt	N	Y	3.12E-07	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Pb	N	Y	2.72E-07	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Manganese	N	Y	1.24E-05	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Nickel	N	Y	9.39E-07	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Barium	N	N	5.11E-06	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Copper	N	N	2.82E-06	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Zinc	N	N	3.04E-06	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP	FS 050	Blast Hole Drilling Cat 4 WR East	NA	0.00	[208]	0	[304]	0	[401]	holes drilled		PM10	N	N	1.3	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Antimony	N	Y	6.50E-06	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Arsenic	N	Y	6.00E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Beryllium	N	Y	2.60E-06	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Cadmium	N	Y	2.96E-06	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Chromium	N	Y	2.18E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Cobalt	N	Y	4.32E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Pb	N	Y	3.77E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Manganese	N	Y	1.71E-03	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Nickel	N	Y	1.30E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Phosphorus	N	Y	7.34E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Selenium	N	Y	1.24E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Barium	N	N	7.07E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Boron	N	N	1.44E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Copper	N	N	3.90E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Zinc	N	N	4.21E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Tellurium	N	N	3.16E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Fluorides (as F)	N	N	8.52E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP	FS 004	Category 4 Lean Ore, Truck Load East	NA	0	[207]	0	[307]	0	[401]	tons rock		PM10	N	N	4.44E-03	[114]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.004
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Total PM	N	N	9.39E-03	[114]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Antimony	N	Y	3.99E-08	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Arsenic	N	Y	6.55E-08	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Beryllium	N	Y	1.01E-08	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Cadmium	N	Y	1.11E-08	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Chromium	N	Y	1.27E-06	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Cobalt	N	Y	6.15E-07	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Pb	N	Y	5.42E-08	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Manganese	N	Y	8.31E-06	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Nickel	N	Y	3.76E-06	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Barium	N	N	9.03E-07	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Copper	N	N	1.22E-05	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Zinc	N	N	8.55E-07	[117]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[207]	0	[307]	0	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP	FS 050	Blast Hole Drilling Cat 4 LO East	NA	0.00	[208]	0	[304]	0	[401]	holes drilled		PM10	N	N	1.3	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.050
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Antimony	N	Y	5.53E-06	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Arsenic	N	Y	9.06E-06	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Beryllium	N	Y	1.40E-06	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Cadmium	N	Y	1.53E-06	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Chromium	N	Y	1.75E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Cobalt	N	Y	8.51E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Pb	N	Y	7.50E-06	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Manganese	N	Y	1.15E-03	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Nickel	N	Y	5.20E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Phosphorus	N	Y	7.34E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Selenium	N	Y	1.24E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Barium	N	N	1.25E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Boron	N	N	1.44E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Copper	N	N	1.69E-03	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Molybdenum	N	N	3.22E-06	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Vanadium	N	N	6.90E-05	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[208]	0	[304]	0	[401]	holes drilled		Zinc	N	N	1.18E-04	[120]	0.00	0.000		0	[502]	0.00	0.000	0.000		0.000					0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Projected Actual (Units/yr) Note	(Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max Cont. Emissions lb/day	g/sec Model Input
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Tellurium	N	N	3.16E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0.00 [208]	0 [304]	0 [401]	holes drilled		Fluorides (as F)	N	N	8.52E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP	FS 004	Cat 1/2 Waste Rock, Truck Load West	NA	2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		PM10	N	N	0.0044 [114]	9.40	41.154	41.154	0 [502]	9.40	41.154	41.154		41.154				1.184
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Total PM	N	N	0.0094 [114]	19.87	87.010	87.010	0 [502]	19.87	87.010	87.010		87.010				2.503
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Antimony	N	Y	4.42E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Arsenic	N	Y	5.61E-08 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Cadmium	N	Y	1.16E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Chromium	N	Y	9.17E-07 [117]	0.00	0.008	0.008	0 [502]	0.00	0.008	0.008		0.008				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Cobalt	N	Y	5.31E-07 [117]	0.00	0.005	0.005	0 [502]	0.00	0.005	0.005		0.005				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Pb	N	Y	4.97E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Manganese	N	Y	1.36E-05 [117]	0.03	0.126	0.126	0 [502]	0.03	0.126	0.126		0.126				0.004
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.01	0.026	0.026	0 [502]	0.01	0.026	0.026		0.026				0.001
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.01	0.049	0.049	0 [502]	0.01	0.049	0.049		0.049				0.001
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Barium	N	N	6.49E-07 [117]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Copper	N	N	3.76E-06 [117]	0.01	0.035	0.035	0 [502]	0.01	0.035	0.035		0.035				0.001
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.005	0.005	0 [502]	0.00	0.005	0.005		0.005				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Zinc	N	N	1.03E-06 [117]	0.00	0.010	0.010	0 [502]	0.00	0.010	0.010		0.010				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
WESTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006				0.000
WESTP	FS 050	Blast Hole Drilling Cat 1/2 WR West	NA	0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		PM10	N	N	1.3 [120]	0.81	3.542	3.542	0 [502]	0.81	3.542	3.542		3.542				0.102
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.81	3.542	3.542	0 [502]	0.81	3.542	3.542		3.542				0.102
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Antimony	N	Y	6.12E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Arsenic	N	Y	7.76E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Beryllium	N	Y	1.30E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Cadmium	N	Y	1.60E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Chromium	N	Y	1.27E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Cobalt	N	Y	7.35E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Pb	N	Y	6.88E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Manganese	N	Y	1.88E-03 [120]	0.00	0.005	0.005	0 [502]	0.00	0.005	0.005		0.005				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Nickel	N	Y	3.90E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Phosphorus	N	Y	7.34E-04 [120]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Selenium	N	Y	1.24E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Barium	N	N	8.98E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Boron	N	N	1.44E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Copper	N	N	5.20E-04 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Molybdenum	N	N	3.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Vanadium	N	N	6.90E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Zinc	N	N	1.43E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Tellurium	N	N	3.16E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.62 [208]	5,449 [304]	5,449 [401]	holes drilled		Fluorides (as F)	N	N	8.52E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP	FS 004	Cat 3 Waste Rock, Truck Load West	NA	63 [207]	547,644 [307]	547,644 [401]	tons rock		PM10	N	N	0.0044 [114]	0.28	1.216	1.216	0 [502]	0.28	1.216	1.216		1.216				0.035
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.59	2.572	2.572	0 [502]	0.59	2.572	2.572		2.572				0.074
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Antimony	N	Y	4.31E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Arsenic	N	Y	5.23E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Beryllium	N	Y	9.58E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Cadmium	N	Y	1.16E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Chromium	N	Y	9.30E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Cobalt	N	Y	5.08E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Pb	N	Y	4.97E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Manganese	N	Y	1.36E-05 [117]	0.00	0.004	0.004	0 [502]	0.00	0.004	0.004		0.004				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Barium	N	N	5.34E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Copper	N	N	6.58E-06 [117]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Zinc	N	N	1.04E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				63 [207]	547,644 [307]	547,644 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP	FS 050	Blast Hole Drilling Cat 3 WR East	NA	0.02 [208]	161 [304]	161 [401]	holes drilled		PM10	N	N	1.3 [120]	0.02	0.105	0.105	0 [502]	0.02	0.105	0.105		0.105				0.003
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.02	0.105	0.105	0 [502]	0.02	0.105	0.105		0.105				0.003
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Antimony	N	Y	5.97E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Arsenic	N	Y	7.24E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Beryllium	N	Y	1.33E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Cadmium	N	Y	1.60E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Chromium	N	Y	1.29E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Cobalt	N	Y	7.03E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Pb	N	Y	6.88E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Manganese	N	Y	1.89E-03 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Nickel	N	Y	3.90E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Phosphorus	N	Y	7.34E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Selenium	N	Y	1.24E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Barium	N	N	7.39E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Boron	N	N	1.44E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Copper	N	N	9.10E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Molybdenum	N	N	3.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Vanadium	N	N	6.90E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Zinc	N	N	1.44E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Tellurium	N	N	3.16E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.02 [208]	161 [304]	161 [401]	holes drilled		Fluorides (as F)	N	N	8.52E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
WESTP	FS 004	Cat 3 Lean Ore, Truck Load West	NA	417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		PM10	N	N	0.0044 [114]	1.85	8.108	8.108	0 [502]	1.85	8.108	8.108		8.108				0.233
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Total PM	N	N	0.0094 [114]	3.91	17.143	17.143	0 [502]	3.91	17.143	17.143		17.143				0.493
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Antimony	N	Y	4.33E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Arsenic	N	Y	5.46E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Cadmium	N	Y	1.14E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Chromium	N	Y	9.61E-07 [117]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Cobalt	N	Y	6.13E-07 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Pb	N	Y	4.95E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Manganese	N	Y	1.33E-05 [117]	0.01	0.024	0.024	0 [502]	0.01	0.024	0.024		0.024				0.001
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Nickel	N	Y	3.76E-06 [117]	0.00	0.007	0.007	0 [502]	0.00	0.007	0.007		0.007				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.010	0.010	0 [502]	0.00	0.010	0.010		0.010				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Barium	N	N	6.30E-07 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Copper	N	N	1.03E-05 [117]	0.00	0.019	0.019	0 [502]	0.00	0.019	0.019		0.019				0.001
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Zinc	N	N	1.03E-06 [117]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				417 [207]	3,650,319 [307]	3,650,319 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP	FS 050	Blast Hole Drilling Cat 3 LO East	NA	0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		PM10	N	N	1.3 [120]	0.16	0.698	0.698	0 [502]	0.16	0.698	0.698		0.698				0.020
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.16	0.698	0.698	0 [502]	0.16	0.698	0.698		0.698				0.020
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Antimony	N	Y	5.99E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Arsenic	N	Y	7.55E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Beryllium	N	Y	1.30E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Cadmium	N	Y	1.57E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Chromium	N	Y	1.33E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Cobalt	N	Y	8.49E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Pb	N	Y	6.85E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Manganese	N	Y	1.84E-03 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Nickel	N	Y	5.20E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Phosphorus	N	Y	7.34E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Selenium	N	Y	1.24E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Barium	N	N	8.72E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Boron	N	N	1.44E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Copper	N	N	1.43E-03 [120]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Molybdenum	N	N	3.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Vanadium	N	N	6.90E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Zinc	N	N	1.42E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Tellurium	N	N	3.16E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.12 [208]	1,074 [304]	1,074 [401]	holes drilled		Fluorides (as F)	N	N	8.52E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP	FS 004	Cat 4 Waste Rock, Truck Load West	NA	13 [207]	110,320 [307]	110,320 [401]	tons rock		PM10	N	N	0.0044 [114]	0.06	0.245	0.245	0 [502]	0.06	0.245	0.245		0.245				0.007
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.12	0.518	0.518	0 [502]	0.12	0.518	0.518		0.518				0.015
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Antimony	N	Y	4.41E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Arsenic	N	Y	4.74E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Beryllium	N	Y	1.61E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Cadmium	N	Y	1.66E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Chromium	N	Y	2.80E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Cobalt	N	Y	7.11E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Pb	N	Y	1.21E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Manganese	N	Y	1.43E-05 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Nickel	N	Y	3.76E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Barium	N	N	2.56E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Copper	N	N	8.45E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Zinc	N	N	2.02E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				13 [207]	110,320 [307]	110,320 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP	FS 050	Blast Hole Drilling Cat 4 WR East	NA	0.00 [208]	32 [304]	32 [401]	holes drilled		PM10	N	N	1.3 [120]	0.00	0.021	0.021	0 [502]	0.00	0.021	0.021		0.021				0.001
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.00	0.021	0.021	0 [502]	0.00	0.021	0.021		0.021				0.001
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Antimony	N	Y	6.11E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Arsenic	N	Y	6.56E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Beryllium	N	Y	2.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Cadmium	N	Y	2.30E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Chromium	N	Y	3.88E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Cobalt	N	Y	9.84E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Pb	N	Y	1.67E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Manganese	N	Y	1.98E-03 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Nickel	N	Y	5.20E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Phosphorus	N	Y	7.34E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Selenium	N	Y	1.24E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Barium	N	N	3.55E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Boron	N	N	1.44E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Copper	N	N	1.17E-03 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Molybdenum	N	N	3.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Vanadium	N	N	6.90E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Zinc	N	N	2.79E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Tellurium	N	N	3.16E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	32 [304]	32 [401]	holes drilled		Fluorides (as F)	N	N	8.52E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP	FS 004	Cat 4 Lean Ore, Truck Load West	NA	10 [207]	88,755 [307]	88,755 [401]	tons rock		PM10	N	N	0.0044 [114]	0.05	0.197	0.197	0 [502]	0.05	0.197	0.197		0.197				0.006
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.10	0.417	0.417	0 [502]	0.10	0.417	0.417		0.417				0.012

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr) Note	Proj Actual (Units/yr) Note	(Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Appl (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max Unc PTE [1] (lb/hr)	(tons/yr)	Proj Act Unc Emissions (ton/yr)	Control Eff (%) Note	Max Cont PTE [2] (lb/hr)	(tons/yr)	Proj Act Cont Emissions (tons/yr)	Emission Std or Oper Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day Note	Max Unc Emis lb/day	Max Cont Emis lb/day	g/sec Model Input
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Antimony	N	Y	4.51E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Arsenic	N	Y	6.08E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Beryllium	N	Y	1.03E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Cadmium	N	Y	1.32E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Chromium	N	Y	1.09E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Cobalt	N	Y	7.20E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Pb	N	Y	5.95E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Manganese	N	Y	1.43E-05 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Nickel	N	Y	4.70E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Barium	N	N	7.66E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Copper	N	N	1.32E-05 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Zinc	N	N	1.07E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				10 [207]	88,755 [307]	88,755 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP	FS 050	Blast Hole Drilling Cat 4 LO East	NA	0.00 [208]	26 [304]	26 [401]	holes drilled		PM10	N	N	1.3 [120]	0.00	0.017	0.017	0 [502]	0.00	0.017	0.017		0.017				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Total PM	N	N	1.3 [120]	0.00	0.017	0.017	0 [502]	0.00	0.017	0.017		0.017				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Antimony	N	Y	6.24E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Arsenic	N	Y	8.41E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Beryllium	N	Y	1.43E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Cadmium	N	Y	1.82E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Chromium	N	Y	1.51E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Cobalt	N	Y	9.97E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Pb	N	Y	8.23E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Manganese	N	Y	1.98E-03 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Mercury	N	Y	5.98E-09 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Nickel	N	Y	6.50E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Phosphorus	N	Y	7.34E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Selenium	N	Y	1.24E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Barium	N	N	1.06E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Boron	N	N	1.44E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Copper	N	N	1.82E-03 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Molybdenum	N	N	3.22E-06 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Vanadium	N	N	6.90E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Zinc	N	N	1.48E-04 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Tellurium	N	N	3.16E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
WESTP				0.00 [208]	26 [304]	26 [401]	holes drilled		Fluorides (as F)	N	N	8.52E-05 [120]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP	FS 005	East Waste Rock, Truck Unload - Cat 1/2	NA	0 [207]	0 [307]	0 [401]	tons rock		PM10	N	N	0.0044 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Antimony	N	Y	4.17E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Arsenic	N	Y	5.94E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Cadmium	N	Y	9.49E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Chromium	N	Y	1.26E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Cobalt	N	Y	5.10E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Pb	N	Y	5.24E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Manganese	N	Y	8.74E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Barium	N	N	8.11E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Copper	N	N	2.82E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Zinc	N	N	8.21E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [207]	0 [307]	0 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP	FS 005	West Waste Rock, Truck Unload - Cat 1/2	NA	2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		PM10	N	N	0.0044 [114]	9.40	41.154	41.154	0 [502]	9.40	41.154	41.154		41.154				1.184
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Total PM	N	N	0.0094 [114]	19.87	87.010	87.010	0 [502]	19.87	87.010	87.010		87.010				2.503
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Antimony	N	Y	4.41E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Arsenic	N	Y	4.98E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Beryllium	N	Y	9.39E-09 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Cadmium	N	Y	1.13E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Chromium	N	Y	7.85E-07 [117]	0.00	0.007	0.007	0 [502]	0.00	0.007	0.007		0.007				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Cobalt	N	Y	5.35E-07 [117]	0.00	0.005	0.005	0 [502]	0.00	0.005	0.005		0.005				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Pb	N	Y	4.70E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Manganese	N	Y	1.36E-05 [117]	0.03	0.126	0.126	0 [502]	0.03	0.126	0.126		0.126				0.004
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Nickel	N	Y	2.82E-06 [117]	0.01	0.026	0.026	0 [502]	0.01	0.026	0.026		0.026				0.001
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.01	0.049	0.049	0 [502]	0.01	0.049	0.049		0.049				0.001
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Barium	N	N	5.31E-07 [117]	0.00	0.005	0.005	0 [502]	0.00	0.005	0.005		0.005				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Copper	N	N	3.76E-06 [117]	0.01	0.035	0.035	0 [502]	0.01	0.035	0.035		0.035				0.001
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.005	0.005	0 [502]	0.00	0.005	0.005		0.005				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Zinc	N	N	1.03E-06 [117]	0.00	0.010	0.010	0 [502]	0.00	0.010	0.010		0.010				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
EASTP				2,115 [207]	18,526,917 [307]	18,526,917 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.006	0.006	0 [502]	0.00	0.006	0.006		0.006				0.000
C3WRMH	FS 005	East Waste Rock, Truck Unload - Cat 3	NA	0 [207]	0 [307]	0 [401]	tons rock		PM10	N	N	0.0044 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3WRMH				0 [207]	0 [307]	0 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3WRMH				0 [207]	0 [307]	0 [401]	tons rock		Antimony	N	Y	4.24E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3WRMH				0 [207]	0 [307]	0 [401]	tons rock		Arsenic	N	Y	6.23E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Max (Units/hr)	Note	Max (Units/yr)	Note	Proj Act (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applic. (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE [1] (lb/hr)	Max Unc PTE [1] (tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%)	Note	Max Cont PTE [2] (lb/hr)	Max Cont PTE [2] (tons/yr)	Proj Act Cont Emiss (tons/yr)	Emission Std or Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Note	Max Unc Emiss lb/day	Max Cont Emiss lb/day	g/sec Model Input
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Beryllium	N	Y	1.03E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Cadmium	N	Y	9.67E-09	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Chromium	N	Y	1.27E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Cobalt	N	Y	4.98E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Pb	N	Y	5.33E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Manganese	N	Y	9.32E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Nickel	N	Y	2.82E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Barium	N	N	8.35E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Copper	N	N	6.58E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Zinc	N	N	8.36E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0	[207]	0	[307]	0	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH	FS 005	West Waste Rock, Truck Unload - Cat 3	NA	63	[207]	547,644	[307]	547,644	[401]	tons rock		PM10	N	N	0.0044	[114]	0.28	1.216	1.216	0	[502]	0.28	1.216	1.216		1.216					0.035
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Total PM	N	N	0.0094	[114]	0.59	2.572	2.572	0	[502]	0.59	2.572	2.572		2.572					0.074
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Antimony	N	Y	4.31E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Arsenic	N	Y	5.23E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Beryllium	N	Y	9.58E-09	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Cadmium	N	Y	1.16E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Chromium	N	Y	9.30E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Cobalt	N	Y	5.08E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Pb	N	Y	4.97E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Manganese	N	Y	1.36E-05	[117]	0.00	0.004	0.004	0	[502]	0.00	0.004	0.004		0.004					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Nickel	N	Y	2.82E-06	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Barium	N	N	5.34E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Copper	N	N	6.58E-06	[117]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Zinc	N	N	1.04E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				63	[207]	547,644	[307]	547,644	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH	FS 005	East Lean Ore, Truck Unload - Cat 3	NA	0	[207]	0	[307]	0	[401]	tons rock		PM10	N	N	0.0044	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Total PM	N	N	0.0094	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Antimony	N	Y	4.19E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Arsenic	N	Y	6.37E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Beryllium	N	Y	9.39E-09	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Cadmium	N	Y	1.03E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Chromium	N	Y	1.27E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Cobalt	N	Y	6.40E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Pb	N	Y	5.64E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Manganese	N	Y	8.87E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Nickel	N	Y	3.76E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Barium	N	N	9.03E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Copper	N	N	9.39E-06	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Zinc	N	N	8.55E-07	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH	FS 005	West Lean Ore, Truck Unload - Cat 3	NA	417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		PM10	N	N	0.0044	[114]	1.85	8.108	8.108	0	[502]	1.85	8.108	8.108		8.108					0.233
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Total PM	N	N	0.0094	[114]	3.91	17.143	17.143	0	[502]	3.91	17.143	17.143		17.143					0.493
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Antimony	N	Y	4.33E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Arsenic	N	Y	5.46E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Beryllium	N	Y	9.39E-09	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Cadmium	N	Y	1.14E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Chromium	N	Y	9.61E-07	[117]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Cobalt	N	Y	6.13E-07	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Pb	N	Y	4.95E-08	[117]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Manganese	N	Y	1.33E-05	[117]	0.01	0.024	0.024	0	[502]	0.01	0.024	0.024		0.024					0.001
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Mercury	N	Y	4.32E-11	[118]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Nickel	N	Y	3.76E-06	[117]	0.00	0.007	0.007	0	[502]	0.00	0.007	0.007		0.007					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Phosphorus	N	Y	5.30E-06	[119]	0.00	0.010	0.010	0	[502]	0.00	0.010	0.010		0.010					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Selenium	N	Y	8.98E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Barium	N	N	6.30E-07	[117]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Boron	N	N	1.04E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Copper	N	N	1.03E-05	[117]	0.00	0.019	0.019	0	[502]	0.00	0.019	0.019		0.019					0.001
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Molybdenum	N	N	2.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Vanadium	N	N	4.98E-07	[119]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Zinc	N	N	1.03E-06	[117]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Tellurium	N	N	2.28E-07	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				417	[207]	3,650,319	[307]	3,650,319	[401]	tons rock		Fluorides (as F)	N	N	6.16E-07	[119]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
C4WRMH	FS 005	East Waste Rock, Truck Unload - Cat 4	NA	0	[207]	0	[307]	0	[401]	tons rock		PM10	N	N	0.0044	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				0	[207]	0	[307]	0	[401]	tons rock		Total PM	N	N	0.0094	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				0	[207]	0	[307]	0	[401]	tons rock		Antimony	N	Y	4.33E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				0	[207]	0	[307]	0	[401]	tons rock		Arsenic	N	Y	5.46E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				0	[207]	0	[307]	0	[401]	tons rock		Beryllium	N	Y	9.39E-09	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4WRMH				0	[207]	0	[307]	0	[401]	tons rock		Cadmium	N	Y	1.14E-08	[119]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Actual (Units/yr)	Units	Annual days with precip	Pollutant	PSD Applic (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont Emiss (tons/yr)	Emission Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Max Unc Emiss lb/day	Max Cont Emiss lb/day	g/sec Model Input
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Chromium	N	Y	9.61E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Cobalt	N	Y	6.13E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Pb	N	Y	4.95E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Manganese	N	Y	1.33E-05 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Mercury	N	Y	4.32E-11 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Nickel	N	Y	3.76E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Barium	N	N	6.30E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Copper	N	N	1.03E-05 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Zinc	N	N	1.03E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH	FS 005	West Waste Rock, Truck Unload - Cat 4	NA	13 [207]	110,320 [307]	110,320 [401]	tons rock		PM10	N	N	0.0044 [114]	0.06	0.245	0.245	0 [502]	0.06	0.245	0.245		0.245				0.007
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.12	0.518	0.518	0 [502]	0.12	0.518	0.518		0.518				0.015
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Antimony	N	Y	4.41E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Arsenic	N	Y	4.74E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Beryllium	N	Y	1.61E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Cadmium	N	Y	1.66E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Chromium	N	Y	2.80E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Cobalt	N	Y	7.11E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Pb	N	Y	1.21E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Manganese	N	Y	1.43E-05 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Nickel	N	Y	3.76E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Barium	N	N	2.56E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Copper	N	N	8.45E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Zinc	N	N	2.02E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				13 [207]	110,320 [307]	110,320 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH	FS 005	East Lean Ore, Truck Unload - Cat 4	NA	0 [207]	0 [307]	0 [401]	tons rock		PM10	N	N	0.0044 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Antimony	N	Y	3.99E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Arsenic	N	Y	6.55E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Beryllium	N	Y	1.01E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Cadmium	N	Y	1.11E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Chromium	N	Y	1.27E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Cobalt	N	Y	6.15E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Pb	N	Y	5.42E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Manganese	N	Y	8.31E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Nickel	N	Y	3.76E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Barium	N	N	9.03E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Copper	N	N	1.22E-05 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Zinc	N	N	8.55E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0 [207]	0 [307]	0 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH	FS 005	West Lean Ore, Truck Unload - Cat 4	NA	10 [207]	88,755 [307]	88,755 [401]	tons rock		PM10	N	N	0.0044 [114]	0.05	0.197	0.197	0 [502]	0.05	0.197	0.197		0.197				0.006
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Total PM	N	N	0.0094 [114]	0.10	0.417	0.417	0 [502]	0.10	0.417	0.417		0.417				0.012
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Antimony	N	Y	4.51E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Arsenic	N	Y	6.08E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Beryllium	N	Y	1.03E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Cadmium	N	Y	1.32E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Chromium	N	Y	1.09E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Cobalt	N	Y	7.20E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Pb	N	Y	5.95E-08 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Manganese	N	Y	1.43E-05 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Mercury	N	Y	4.32E-11 [118]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Nickel	N	Y	4.70E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Phosphorus	N	Y	5.30E-06 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Selenium	N	Y	8.98E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Barium	N	N	7.66E-07 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Boron	N	N	1.04E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Copper	N	N	1.32E-05 [117]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001		0.001				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Molybdenum	N	N	2.33E-08 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Vanadium	N	N	4.98E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Zinc	N	N	1.07E-06 [117]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Tellurium	N	N	2.28E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				10 [207]	88,755 [307]	88,755 [401]	tons rock		Fluorides (as F)	N	N	6.16E-07 [119]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP	FS 007	Ore, Truck Load East	NA	0 [209]	0 [308]	0 [401]	tons ore		PM10	N	N	0.0062 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [209]	0 [308]	0 [401]	tons ore		Total PM	N	N	0.0131 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [209]	0 [308]	0 [401]	tons ore		Antimony	N	Y	5.88E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [209]	0 [308]	0 [401]	tons ore		Arsenic	N	Y	9.68E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [209]	0 [308]	0 [401]	tons ore		Beryllium	N	Y	1.31E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [209]	0 [308]	0 [401]	tons ore		Cadmium	N	Y	1.70E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [209]	0 [308]	0 [401]	tons ore		Chromium	N	Y	1.75E-06 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
EASTP				0 [209]	0 [308]	0 [401]	tons ore		Cobalt	N	Y	1.18E-06 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Max (Units/hr)	Note	Proj Actual (Units/yr)	Note	(Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applic (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc Emissions (ton/yr)	Control Eff (%)	Note	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont Emissions (tons/yr)	Emission Std or Oper Limit	Limited Cont PTE (tons/yr)	Max Thruput units/day	Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Pb	N	Y	9.15E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Manganese	N	Y	1.22E-05	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Mercury	N	Y	6.02E-11	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Nickel	N	Y	1.31E-05	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Phosphorus	N	Y	7.81E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Selenium	N	Y	7.24E-08	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Barium	N	N	1.12E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Boron	N	N	1.32E-07	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Copper	N	N	4.32E-05	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Molybdenum	N	N	2.48E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Vanadium	N	N	1.01E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Zinc	N	N	1.15E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Hafnium	N	N	2.39E-08	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Tellurium	N	N	5.57E-07	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0	[209]	0	[308]	0	[401]	tons ore		Fluorides (as F)	N	N	2.34E-06	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP	FS 050	Blast Hole Drilling, Ore East	NA	0.00	[210]	0	[304]	0	[401]	holes drilled		PM10	N	N	1.3	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Total PM	N	N	1.3	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Antimony	N	Y	5.85E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Arsenic	N	Y	9.62E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Beryllium	N	Y	1.30E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Cadmium	N	Y	1.69E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Chromium	N	Y	1.74E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Cobalt	N	Y	1.17E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Pb	N	Y	9.10E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Manganese	N	Y	1.21E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Nickel	N	Y	1.30E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Phosphorus	N	Y	7.76E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Selenium	N	Y	7.20E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Barium	N	N	1.12E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Boron	N	N	1.31E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Copper	N	N	4.29E-03	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Molybdenum	N	N	2.47E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Vanadium	N	N	1.01E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Zinc	N	N	1.14E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Hafnium	N	N	2.38E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Tellurium	N	N	5.54E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
EASTP				0.00	[210]	0	[304]	0	[401]	holes drilled		Fluorides (as F)	N	N	2.33E-04	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP	FS 007	Ore, Truck Load West	NA	1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		PM10	N	N	0.0062	[1144]	8.07	35.326	35.326	0	[502]	8.07	35.326	35.326		35.326					1.016
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Total PM	N	N	0.0131	[1144]	17.05	74.689	74.689	0	[502]	17.05	74.689	74.689		74.689					2.149
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Antimony	N	Y	5.75E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Arsenic	N	Y	9.02E-08	[121]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Beryllium	N	Y	1.31E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Cadmium	N	Y	1.79E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Chromium	N	Y	2.59E-06	[121]	0.00	0.015	0.015	0	[502]	0.00	0.015	0.015		0.015					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Cobalt	N	Y	1.11E-06	[121]	0.00	0.006	0.006	0	[502]	0.00	0.006	0.006		0.006					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Pb	N	Y	1.05E-07	[121]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Manganese	N	Y	1.83E-05	[121]	0.02	0.105	0.105	0	[502]	0.02	0.105	0.105		0.105					0.003
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Mercury	N	Y	6.02E-11	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Nickel	N	Y	1.31E-05	[121]	0.02	0.075	0.075	0	[502]	0.02	0.075	0.075		0.075					0.002
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Phosphorus	N	Y	7.19E-06	[121]	0.01	0.041	0.041	0	[502]	0.01	0.041	0.041		0.041					0.001
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Selenium	N	Y	7.24E-08	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Barium	N	N	1.02E-06	[121]	0.00	0.006	0.006	0	[502]	0.00	0.006	0.006		0.006					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Boron	N	N	1.32E-07	[101]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Copper	N	N	5.23E-05	[121]	0.07	0.299	0.299	0	[502]	0.07	0.299	0.299		0.299					0.009
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Molybdenum	N	N	2.35E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Vanadium	N	N	8.85E-07	[121]	0.00	0.005	0.005	0	[502]	0.00	0.005	0.005		0.005					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Zinc	N	N	1.43E-06	[121]	0.00	0.008	0.008	0	[502]	0.00	0.008	0.008		0.008					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Hafnium	N	N	2.39E-08	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Tellurium	N	N	5.57E-07	[101]	0.00	0.003	0.003	0	[502]	0.00	0.003	0.003		0.003					0.000
WESTP				1,304	[209]	11,422,441	[308]	11,422,441	[401]	tons ore		Fluorides (as F)	N	N	2.34E-06	[101]	0.00	0.013	0.013	0	[502]	0.00	0.013	0.013		0.013					0.000
WESTP	FS 050	Blast Hole Drilling, Ore West	NA	1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		PM10	N	N	1.3	[120]	2.15	9.428	9.428	0	[502]	2.15	9.428	9.428		9.428					0.271
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Total PM	N	N	1.3	[120]	2.15	9.428	9.428	0	[502]	2.15	9.428	9.428		9.428					0.271
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Antimony	N	Y	5.72E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Arsenic	N	Y	8.97E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Beryllium	N	Y	1.30E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Cadmium	N	Y	1.78E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Chromium	N	Y	2.57E-04	[120]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Cobalt	N	Y	1.11E-04	[120]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Pb	N	Y	1.04E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Manganese	N	Y	1.82E-03	[120]	0.00	0.013	0.013	0	[502]	0.00	0.013	0.013		0.013					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Mercury	N	Y	5.98E-09	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Nickel	N	Y	1.30E-03	[120]	0.00	0.009	0.009	0	[502]	0.00	0.009	0.009		0.009					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Phosphorus	N	Y	7.15E-04	[120]	0.00	0.005	0.005	0	[502]	0.00	0.005	0.005		0.005					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Selenium	N	Y	7.20E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Barium	N	N	1.01E-04	[120]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Boron	N	N	1.31E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Copper	N	N	5.20E-03	[120]	0.01	0.038	0.038	0	[502]	0.01	0.038	0.038		0.038					0.001
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Molybdenum	N	N	2.34E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Vanadium	N	N	8.80E-05	[120]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Zinc	N	N	1.42E-04	[120]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Hafnium	N	N	2.38E-06	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Tellurium	N	N	5.54E-05	[120]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
WESTP				1.66	[210]	14,505	[304]	14,505	[401]	holes drilled		Fluorides (as F)	N	N	2.33E-04	[120]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
LPMH	FS 009	East Ore, Truck Unload - Rail Transfer Hopper	NA	0	[211]	0	[309]	0	[401]	tons ore		PM10	N	N	1.60E-05	[122]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Total PM	N	N	4.80E-05	[122]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Antimony	N	Y	2.16E-10	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Arsenic	N	Y	3.55E-10	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Beryllium	N	Y	4.80E-11	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Cadmium	N	Y	6.24E-11	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Proj Act (Units/yr)	Note	(Units/yr)	Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc Emis (ton/yr)	Control Eff (%)	Note	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont Emis (tons/yr)	Emis Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Note	Max Unc Emis lb/day	Max Cont Emis lb/day	g/sec Model Input
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Chromium	N	Y	6.41E-09	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Cobalt	N	Y	4.32E-09	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Pb	N	Y	3.36E-10	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Manganese	N	Y	4.48E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Mercury	N	Y	2.21E-13	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Nickel	N	Y	4.80E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Phosphorus	N	Y	2.87E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Selenium	N	Y	2.66E-10	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Barium	N	N	4.13E-09	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Boron	N	N	4.84E-10	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Copper	N	N	1.58E-07	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Molybdenum	N	N	9.12E-11	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Vanadium	N	N	3.72E-09	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Zinc	N	N	4.22E-09	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Hafnium	N	N	8.78E-11	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Tellurium	N	N	2.05E-09	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Fluorides (as F)	N	N	8.59E-09	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH	FS 009	West Ore, Truck Unload - Rail Transfer Hopper	NA	1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		PM10	N	N	1.60E-05	[122]	0.02	0.093	0.093	0	[502]	0.02	0.093	0.093		0.093					0.003
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Total PM	N	N	4.80E-05	[122]	0.06	0.280	0.280	0	[502]	0.06	0.280	0.280		0.280					0.008
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Antimony	N	Y	2.11E-10	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Arsenic	N	Y	3.31E-10	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Beryllium	N	Y	4.80E-11	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Cadmium	N	Y	6.58E-11	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Chromium	N	Y	9.50E-09	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Cobalt	N	Y	4.08E-09	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Pb	N	Y	3.84E-10	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Manganese	N	Y	6.72E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Mercury	N	Y	2.21E-13	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Nickel	N	Y	4.80E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Phosphorus	N	Y	2.64E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Selenium	N	Y	2.66E-10	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Barium	N	N	3.74E-09	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Boron	N	N	4.84E-10	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Copper	N	N	1.92E-07	[121]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Molybdenum	N	N	8.64E-11	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Vanadium	N	N	3.25E-09	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Zinc	N	N	5.23E-09	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Hafnium	N	N	8.78E-11	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Tellurium	N	N	2.05E-09	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				1,333	[211]	11,680,000	[309]	11,680,000	[401]	tons ore		Fluorides (as F)	N	N	8.59E-09	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH	FS 020	East Ore, Truck Load - Stockpile	NA	0	[212]	0	[310]	0	[401]	tons ore		PM10	N	N	0.0062	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Total PM	N	N	0.0131	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Antimony	N	Y	5.88E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Arsenic	N	Y	9.68E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Beryllium	N	Y	1.31E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Cadmium	N	Y	1.70E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Chromium	N	Y	1.75E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Cobalt	N	Y	1.18E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Pb	N	Y	9.15E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Manganese	N	Y	1.22E-05	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Mercury	N	Y	6.02E-11	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Nickel	N	Y	1.31E-05	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Phosphorus	N	Y	7.81E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Selenium	N	Y	7.24E-08	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Barium	N	N	1.12E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Boron	N	N	1.32E-07	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Copper	N	N	4.32E-05	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Molybdenum	N	N	2.48E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Vanadium	N	N	1.01E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Zinc	N	N	1.15E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Hafnium	N	N	2.39E-08	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Tellurium	N	N	5.57E-07	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				0	[212]	0	[310]	0	[401]	tons ore		Fluorides (as F)	N	N	2.34E-06	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH	FS 020	West Ore, Truck Load - Stockpile	NA	29	[212]	257,559	[310]	257,559	[401]	tons ore		PM10	N	N	0.0062	[114]	0.18	0.797	0.797	0	[502]	0.18	0.797	0.797		0.797					0.023
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Total PM	N	N	0.0131	[114]	0.38	1.684	1.684	0	[502]	0.38	1.684	1.684		1.684					0.048
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Antimony	N	Y	5.75E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Arsenic	N	Y	9.02E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Beryllium	N	Y	1.31E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Cadmium	N	Y	1.79E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Chromium	N	Y	2.59E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Cobalt	N	Y	1.11E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Pb	N	Y	1.05E-07	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Manganese	N	Y	1.83E-05	[121]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Mercury	N	Y	6.02E-11	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Nickel	N	Y	1.31E-05	[121]	0.00	0.002	0.002	0	[502]	0.00	0.002	0.002		0.002					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Phosphorus	N	Y	7.19E-06	[121]	0.00	0.001	0.001	0	[502]	0.00	0.001	0.001		0.001					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Selenium	N	Y	7.24E-08	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Barium	N	N	1.02E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Boron	N	N	1.32E-07	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Copper	N	N	5.23E-05	[121]	0.00	0.007	0.007	0	[502]	0.00	0.007	0.007		0.007					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Molybdenum	N	N	2.35E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Vanadium	N	N	8.85E-07	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Zinc	N	N	1.43E-06	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Hafnium	N	N	2.39E-08	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Tellurium	N	N	5.57E-07	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C4LOMH				29	[212]	257,559	[310]	257,559	[401]	tons ore		Fluorides (as F)	N	N	2.34E-06	[101]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH	FS 010	East Ore, Railcar Load	NA	0	[211]	0	[309]	0	[401]	tons ore		PM10	N	N	0.0011	[123]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Total PM	N	N	0.0030	[123]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Antimony	N	Y	1.35E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
LPMH				0	[211]	0	[309]	0	[401]	tons ore		Arsenic	N	Y	2.22E-08	[121]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Description	APCD ID	Max (Units/hr) Note	Proj. Actual (Units/yr) Note	(Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Appl. (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max Unc PTE (lb/hr)	(tons/yr)	Proj. Act. Unc. Emiss (ton/yr)	Control Eff (%) Note	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont Emiss (tons/yr)	Limited Cont PTE (tons/yr)	Max Thru units/day Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Beryllium	N	Y	3.00E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Cadmium	N	Y	3.90E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Chromium	N	Y	4.01E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Cobalt	N	Y	2.70E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Pb	N	Y	2.10E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Manganese	N	Y	2.80E-06 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Mercury	N	Y	1.38E-11 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Nickel	N	Y	3.00E-06 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Phosphorus	N	Y	1.79E-06 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Selenium	N	Y	1.66E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Barium	N	N	2.58E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Boron	N	N	3.02E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Copper	N	N	9.90E-06 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Molybdenum	N	N	5.70E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Vanadium	N	N	2.33E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Zinc	N	N	2.64E-07 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Hafnium	N	N	5.49E-09 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Tellurium	N	N	1.28E-07 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				0 [211]	0 [309]	0 [401]	tons ore		Fluorides (as F)	N	N	5.37E-07 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH	FS 010	West Ore, Railcar Load	NA	1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		PM10	N	N	0.0011 [123]	1.47	6.424	6.424	0 [502]	1.47	6.424	6.424	6.424				0.185
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Total PM	N	N	0.0030 [123]	4.00	17.520	17.520	0 [502]	4.00	17.520	17.520	17.520				0.504
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Antimony	N	Y	1.32E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Arsenic	N	Y	2.07E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Beryllium	N	Y	3.00E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Cadmium	N	Y	4.11E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Chromium	N	Y	5.94E-07 [121]	0.00	0.003	0.003	0 [502]	0.00	0.003	0.003	0.003				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Cobalt	N	Y	2.55E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Pb	N	Y	2.40E-08 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Manganese	N	Y	4.20E-06 [121]	0.01	0.025	0.025	0 [502]	0.01	0.025	0.025	0.025				0.001
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Mercury	N	Y	1.38E-11 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Nickel	N	Y	3.00E-06 [121]	0.00	0.018	0.018	0 [502]	0.00	0.018	0.018	0.018				0.001
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Phosphorus	N	Y	1.65E-06 [121]	0.00	0.010	0.010	0 [502]	0.00	0.010	0.010	0.010				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Selenium	N	Y	1.66E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Barium	N	N	2.34E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Boron	N	N	3.02E-08 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Copper	N	N	1.20E-05 [121]	0.02	0.070	0.070	0 [502]	0.02	0.070	0.070	0.070				0.002
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Molybdenum	N	N	5.40E-09 [121]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Vanadium	N	N	2.03E-07 [121]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Zinc	N	N	3.27E-07 [121]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002	0.002				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Hafnium	N	N	5.49E-09 [101]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	0.000				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Tellurium	N	N	1.28E-07 [101]	0.00	0.001	0.001	0 [502]	0.00	0.001	0.001	0.001				0.000
LPMH				1,333 [211]	11,680,000 [309]	11,680,000 [401]	tons ore		Fluorides (as F)	N	N	5.37E-07 [101]	0.00	0.003	0.003	0 [502]	0.00	0.003	0.003	0.003				0.000
AABB	FS 011	Mine Haul Roads, Segment AA to BB	NA	1 [213]	11,632 [311]	11,632 [401]	VMT	134	PM10	N	N	6.222 [114]	8.26	22.903	22.903	80 [501]	1.65	4.581	4.581	4.581				0.208
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Total PM	N	N	23.508 [114]	31.21	86.527	86.527	80 [501]	6.24	17.305	17.305	17.305				0.787
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002	0.002				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002	0.002				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.04	0.120	0.120	80 [501]	0.01	0.024	0.024	0.024				0.001
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.01	0.024	0.024	80 [501]	0.00	0.005	0.005	0.005				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.010	0.010	80 [501]	0.00	0.002	0.002	0.002				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.01	0.029	0.029	80 [501]	0.00	0.006	0.006	0.006				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.02	0.068	0.068	80 [501]	0.00	0.014	0.014	0.014				0.001
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000				0.000
AABB				1 [213]	11,632 [311]	11,632 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001	0.001				0.000
AAFF	FS 011	Mine Haul Roads, Segment AA to FF	NA	0 [213]	68 [311]	68 [401]	VMT	134	PM10	N	N	6.222 [114]	0.05	0.134	0.134	80 [501]	0.01	0.027	0.027	0.027				0.001
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.18	0.505	0.505	80 [501]	0.04	0.101	0.101	0.101				0.005
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
AAFF				0 [213]	68 [311]	68 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
CENTP	FS 011	Mine Haul Roads, Segment B to C	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
CENTP				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
CENTP				0 [213]	0 [311]	0 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000
CENTP				0 [213]	0 [311]	0 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Proj Actual (Units/yr)	Note	(Units/yr)	Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%)	Note	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont Emiss (tons/yr)	Emission Std/Op Limit	Limited Cont PTE (tons/yr)	g/sec Model Input
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Pb	N	Y	2.35E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Manganese	N	Y	3.26E-02	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Nickel	N	Y	6.39E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Selenium	N	Y	2.25E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Barium	N	N	2.01E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Boron	N	N	2.61E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Copper	N	N	7.92E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Molybdenum	N	N	5.83E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CENTP				0	[213]	0	[311]	0	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
C3LORD	FS 011	Mine Haul Roads, Segment BB to CC	NA	2	[213]	15,308	[311]	15,308	[401]	VMT	134	PM10	N	N	6.222	[114]	10.87	30.141	30.141	80	[501]	2.17	6.028	6.028		6.028	0.274
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Total PM	N	N	23.508	[114]	41.08	113.869	113.869	80	[501]	8.22	22.774	22.774		22.774	1.035
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Antimony	N	Y	1.09E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Arsenic	N	Y	1.46E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.01	0.015	0.015	80	[501]	0.00	0.003	0.003		0.003	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.00	0.007	0.007	80	[501]	0.00	0.001	0.001		0.001	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Pb	N	Y	2.35E-03	[127]	0.00	0.011	0.011	80	[501]	0.00	0.002	0.002		0.002	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Manganese	N	Y	3.26E-02	[127]	0.06	0.158	0.158	80	[501]	0.01	0.032	0.032		0.032	0.001
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Nickel	N	Y	6.39E-03	[127]	0.01	0.031	0.031	80	[501]	0.00	0.006	0.006		0.006	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Selenium	N	Y	2.25E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Barium	N	N	2.01E-03	[127]	0.00	0.010	0.010	80	[501]	0.00	0.002	0.002		0.002	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Boron	N	N	2.61E-03	[127]	0.00	0.013	0.013	80	[501]	0.00	0.003	0.003		0.003	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Copper	N	N	7.92E-03	[127]	0.01	0.038	0.038	80	[501]	0.00	0.008	0.008		0.008	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Molybdenum	N	N	5.83E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.00	0.006	0.006	80	[501]	0.00	0.001	0.001		0.001	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.03	0.090	0.090	80	[501]	0.01	0.018	0.018		0.018	0.001
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.003	0.003	80	[501]	0.00	0.001	0.001		0.001	0.000
C3LORD				2	[213]	15,308	[311]	15,308	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.00	0.007	0.007	80	[501]	0.00	0.001	0.001		0.001	0.000
CK	FS 011	Mine Haul Roads, Segment C to K	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Antimony	N	Y	1.09E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Arsenic	N	Y	1.46E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Pb	N	Y	2.35E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Manganese	N	Y	3.26E-02	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Nickel	N	Y	6.39E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Selenium	N	Y	2.25E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Barium	N	N	2.01E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Boron	N	N	2.61E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Copper	N	N	7.92E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Molybdenum	N	N	5.83E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
CK				0	[213]	0	[311]	0	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
DV	FS 011	Mine Haul Roads, Segment D to V	NA	3	[213]	27,528	[311]	27,528	[401]	VMT	134	PM10	N	N	6.222	[114]	19.55	54.203	54.203	80	[501]	3.91	10.841	10.841		10.841	0.493
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Total PM	N	N	23.508	[114]	73.87	204.777	204.777	80	[501]	14.77	40.955	40.955		40.955	1.862
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Antimony	N	Y	1.09E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Arsenic	N	Y	1.46E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.01	0.028	0.028	80	[501]	0.00	0.006	0.006		0.006	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.00	0.012	0.012	80	[501]	0.00	0.002	0.002		0.002	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Pb	N	Y	2.35E-03	[127]	0.01	0.020	0.020	80	[501]	0.00	0.004	0.004		0.004	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Manganese	N	Y	3.26E-02	[127]	0.10	0.284	0.284	80	[501]	0.02	0.057	0.057		0.057	0.003
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Nickel	N	Y	6.39E-03	[127]	0.02	0.056	0.056	80	[501]	0.00	0.011	0.011		0.011	0.001
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Selenium	N	Y	2.25E-04	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Barium	N	N	2.01E-03	[127]	0.01	0.017	0.017	80	[501]	0.00	0.003	0.003		0.003	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Boron	N	N	2.61E-03	[127]	0.01	0.023	0.023	80	[501]	0.00	0.005	0.005		0.005	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Copper	N	N	7.92E-03	[127]	0.02	0.069	0.069	80	[501]	0.00	0.014	0.014		0.014	0.001
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Molybdenum	N	N	5.83E-05	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.00	0.011	0.011	80	[501]	0.00	0.002	0.002		0.002	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.06	0.161	0.161	80	[501]	0.01	0.032	0.032		0.032	0.001
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.005	0.005	80	[501]	0.00	0.001	0.001		0.001	0.000
DV				3	[213]	27,528	[311]	27,528	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.00	0.013	0.013	80	[501]	0.00	0.003	0.003		0.003	0.000
ED	FS 011	Mine Haul Roads, Segment E to D	NA	1	[213]	5,710	[311]	5,710	[401]	VMT	134	PM10	N	N	6.222	[114]	4.06	11.243	11.243	80	[501]	0.81	2.249	2.249		2.249	0.102
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Total PM	N	N	23.508	[114]	15.32	42.477	42.477	80	[501]	3.06	8.495	8.495		8.495	0.386
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Antimony	N	Y	1.09E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Arsenic	N	Y	1.46E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.000

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Max (Units/yr)	Note	Proj Act (Units/yr)	Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Note	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont (tons/yr)	Emission Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.00	0.006	0.006	80	[501]	0.00	0.001	0.001		0.001					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Pb	N	Y	2.35E-03	[127]	0.00	0.004	0.004	80	[501]	0.00	0.001	0.001		0.001					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Manganese	N	Y	3.26E-02	[127]	0.02	0.059	0.059	80	[501]	0.00	0.012	0.012		0.012					0.001
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Nickel	N	Y	6.39E-03	[127]	0.00	0.012	0.012	80	[501]	0.00	0.002	0.002		0.002					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Selenium	N	Y	2.25E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Barium	N	N	2.01E-03	[127]	0.00	0.004	0.004	80	[501]	0.00	0.001	0.001		0.001					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Boron	N	N	2.61E-03	[127]	0.00	0.005	0.005	80	[501]	0.00	0.001	0.001		0.001					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Copper	N	N	7.92E-03	[127]	0.01	0.014	0.014	80	[501]	0.00	0.003	0.003		0.003					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Molybdenum	N	N	5.83E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.01	0.033	0.033	80	[501]	0.00	0.007	0.007		0.007					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
ED				1	[213]	5,710	[311]	5,710	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.00	0.003	0.003	80	[501]	0.00	0.001	0.001		0.001					0.000
ET	FS 011	Mine Haul Roads, Segment E to T	NA	1	[213]	11,601	[311]	11,601	[401]	VMT	134	PM10	N	N	6.222	[114]	8.24	22.841	22.841	80	[501]	1.65	4.568	4.568		4.568					0.208
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Total PM	N	N	23.508	[114]	31.13	86.294	86.294	80	[501]	6.23	17.259	17.259		17.259					0.784
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Antimony	N	Y	1.09E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Arsenic	N	Y	1.46E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.00	0.012	0.012	80	[501]	0.00	0.002	0.002		0.002					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.00	0.005	0.005	80	[501]	0.00	0.001	0.001		0.001					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Pb	N	Y	2.35E-03	[127]	0.00	0.009	0.009	80	[501]	0.00	0.002	0.002		0.002					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Manganese	N	Y	3.26E-02	[127]	0.04	0.120	0.120	80	[501]	0.01	0.024	0.024		0.024					0.001
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Nickel	N	Y	6.39E-03	[127]	0.01	0.023	0.023	80	[501]	0.00	0.005	0.005		0.005					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Selenium	N	Y	2.25E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Barium	N	N	2.01E-03	[127]	0.00	0.007	0.007	80	[501]	0.00	0.001	0.001		0.001					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Boron	N	N	2.61E-03	[127]	0.00	0.010	0.010	80	[501]	0.00	0.002	0.002		0.002					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Copper	N	N	7.92E-03	[127]	0.01	0.029	0.029	80	[501]	0.00	0.006	0.006		0.006					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Molybdenum	N	N	5.83E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.00	0.005	0.005	80	[501]	0.00	0.001	0.001		0.001					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.02	0.068	0.068	80	[501]	0.00	0.014	0.014		0.014					0.001
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000					0.000
ET				1	[213]	11,601	[311]	11,601	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.00	0.006	0.006	80	[501]	0.00	0.001	0.001		0.001					0.000
FE	FS 011	Mine Haul Roads, Segment F to E	NA	7	[213]	59,297	[311]	59,297	[401]	VMT	134	PM10	N	N	6.222	[114]	42.12	116.755	116.755	80	[501]	8.42	23.351	23.351		23.351					1.061
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Total PM	N	N	23.508	[114]	159.12	441.094	441.094	80	[501]	31.82	88.219	88.219		88.219					4.010
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Antimony	N	Y	1.09E-04	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Arsenic	N	Y	1.46E-04	[127]	0.00	0.003	0.003	80	[501]	0.00	0.001	0.001		0.001					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.02	0.059	0.059	80	[501]	0.00	0.012	0.012		0.012					0.001
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.01	0.025	0.025	80	[501]	0.00	0.005	0.005		0.005					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Pb	N	Y	2.35E-03	[127]	0.02	0.044	0.044	80	[501]	0.00	0.009	0.009		0.009					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Manganese	N	Y	3.26E-02	[127]	0.22	0.612	0.612	80	[501]	0.04	0.122	0.122		0.122					0.006
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Nickel	N	Y	6.39E-03	[127]	0.04	0.120	0.120	80	[501]	0.01	0.024	0.024		0.024					0.001
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Selenium	N	Y	2.25E-04	[127]	0.00	0.004	0.004	80	[501]	0.00	0.001	0.001		0.001					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Barium	N	N	2.01E-03	[127]	0.01	0.038	0.038	80	[501]	0.00	0.008	0.008		0.008					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Boron	N	N	2.61E-03	[127]	0.02	0.049	0.049	80	[501]	0.00	0.010	0.010		0.010					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Copper	N	N	7.92E-03	[127]	0.05	0.149	0.149	80	[501]	0.01	0.030	0.030		0.030					0.001
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Molybdenum	N	N	5.83E-05	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.01	0.023	0.023	80	[501]	0.00	0.005	0.005		0.005					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.13	0.347	0.347	80	[501]	0.03	0.069	0.069		0.069					0.003
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.011	0.011	80	[501]	0.00	0.002	0.002		0.002					0.000
FE				7	[213]	59,297	[311]	59,297	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.01	0.029	0.029	80	[501]	0.01	0.006	0.006		0.006					0.000
FM	FS 011	Mine Haul Roads, Segment F to M	NA	3	[213]	26,670	[311]	26,670	[401]	VMT	134	PM10	N	N	6.222	[114]	18.94	52.514	52.514	80	[501]	3.79	10.503	10.503		10.503					0.477
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Total PM	N	N	23.508	[114]	71.57	198.395	198.395	80	[501]	14.31	39.679	39.679		39.679					1.804
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Antimony	N	Y	1.09E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Arsenic	N	Y	1.46E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.01	0.027	0.027	80	[501]	0.00	0.005	0.005		0.005					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.00	0.011	0.011	80	[501]	0.00	0.002	0.002		0.002					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Pb	N	Y	2.35E-03	[127]	0.01	0.020	0.020	80	[501]	0.00	0.004	0.004		0.004					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Manganese	N	Y	3.26E-02	[127]	0.10	0.275	0.275	80	[501]	0.02	0.055	0.055		0.055					0.003
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Nickel	N	Y	6.39E-03	[127]	0.02	0.054	0.054	80	[501]	0.00	0.011	0.011		0.011					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Selenium	N	Y	2.25E-04	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Barium	N	N	2.01E-03	[127]	0.01	0.017	0.017	80	[501]	0.00	0.003	0.003		0.003					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Boron	N	N	2.61E-03	[127]	0.01	0.022	0.022	80	[501]	0.00	0.004	0.004		0.004					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Copper	N	N	7.92E-03	[127]	0.02	0.067	0.067	80	[501]	0.00	0.013	0.013		0.013					0.001
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Molybdenum	N	N	5.83E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.00	0.011	0.011	80	[501]	0.00	0.002	0.002		0.002					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.06	0.156	0.156	80	[501]	0.01	0.031	0.031		0.031					0.001
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.005	0.005	80	[501]	0.00	0.001	0.001		0.001					0.000
FM				3	[213]	26,670	[311]	26,670	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.01	0.013	0.013	80	[501]	0.00	0.003	0.003		0.003					0.000
C4WRRD	FS 011	Mine Haul Roads, Segment FF to GG	NA	0	[213]	432	[311]	432	[401]	VMT	134	PM10	N	N	6.222	[114]	0.31	0.851	0.851	80	[501]	0.06	0.170	0.170		0.170					0.008
C4WRRD				0	[213]	432	[311]	432	[401]	VMT	134	Total PM	N	N	23.508	[114]	1.16	3.216	3.216	80	[501]	0.23	0.643	0.643		0.643					0.029
C4WRRD				0	[213]	432	[311]	432	[401]	VMT	134	Antimony	N	Y	1.09E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0	[213]	432	[311]	432	[401]	VMT	134	Arsenic	N	Y	1.46E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0	[213]	432	[311]	432	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0	[213]	432	[311]	432	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0	[213]	432	[311]	432	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
C4WRRD				0	[213]	432	[311]	432	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Max (Units/hr)	Proj Actual (Units/yr)	(Units/yr)	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont (tons/yr)	Limited Cont PTE (tons/yr)	g/sec Model Input
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C4WRRD				0 [213]	432 [311]	432 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
GF	FS 011	Mine Haul Roads, Segment G to F	NA	0 [213]	4,370 [311]	4,370 [401]	VMT	134	PM10	N	N	6.222 [114]	3.10	8.605	8.605	80 [501]	0.62	1.721	1.721	1.721	0.078
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Total PM	N	N	23.508 [114]	11.73	32.509	32.509	80 [501]	2.35	6.502	6.502	6.502	0.296
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.045	0.045	80 [501]	0.00	0.009	0.009	0.009	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002	0.002	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.026	0.026	80 [501]	0.00	0.005	0.005	0.005	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
GF				0 [213]	4,370 [311]	4,370 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
EASTP	FS 011	Mine Haul Roads, Segment J to H	NA	27 [213]	237,815 [311]	237,815 [401]	VMT	134	PM10	N	N	6.222 [114]	168.92	468.255	468.255	80 [501]	33.78	93.651	93.651	93.651	4.257
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Total PM	N	N	23.508 [114]	638.18	1,769.042	1,769.042	80 [501]	127.64	353.808	353.808	353.808	16.082
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002	0.002	0.000
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001	0.001	0.000
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.09	0.238	0.238	80 [501]	0.02	0.048	0.048	0.048	0.002
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.04	0.101	0.101	80 [501]	0.01	0.020	0.020	0.020	0.001
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.06	0.177	0.177	80 [501]	0.01	0.035	0.035	0.035	0.002
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.89	2.456	2.456	80 [501]	0.18	0.491	0.491	0.491	0.022
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.17	0.481	0.481	80 [501]	0.03	0.096	0.096	0.096	0.004
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.01	0.017	0.017	80 [501]	0.00	0.003	0.003	0.003	0.000
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.05	0.151	0.151	80 [501]	0.01	0.030	0.030	0.030	0.001
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.07	0.196	0.196	80 [501]	0.01	0.039	0.039	0.039	0.002
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.22	0.596	0.596	80 [501]	0.04	0.119	0.119	0.119	0.005
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.03	0.094	0.094	80 [501]	0.01	0.019	0.019	0.019	0.001
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.50	1.392	1.392	80 [501]	0.10	0.278	0.278	0.278	0.013
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.02	0.043	0.043	80 [501]	0.00	0.009	0.009	0.009	0.000
EASTP				27 [213]	237,815 [311]	237,815 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.04	0.116	0.116	80 [501]	0.01	0.023	0.023	0.023	0.001
KJ	FS 011	Mine Haul Roads, Segment K to J	NA	5 [213]	43,305 [311]	43,305 [401]	VMT	134	PM10	N	N	6.222 [114]	30.76	85.268	85.268	80 [501]	6.15	17.054	17.054	17.054	0.775
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Total PM	N	N	23.508 [114]	116.21	322.138	322.138	80 [501]	23.24	64.428	64.428	64.428	2.928
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.02	0.043	0.043	80 [501]	0.00	0.009	0.009	0.009	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.01	0.018	0.018	80 [501]	0.00	0.004	0.004	0.004	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.01	0.032	0.032	80 [501]	0.00	0.006	0.006	0.006	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.16	0.447	0.447	80 [501]	0.03	0.089	0.089	0.089	0.004
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.03	0.088	0.088	80 [501]	0.01	0.018	0.018	0.018	0.001
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.01	0.028	0.028	80 [501]	0.00	0.006	0.006	0.006	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.01	0.036	0.036	80 [501]	0.00	0.007	0.007	0.007	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.04	0.109	0.109	80 [501]	0.01	0.022	0.022	0.022	0.001
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.01	0.017	0.017	80 [501]	0.00	0.003	0.003	0.003	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.09	0.254	0.254	80 [501]	0.02	0.051	0.051	0.051	0.002
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002	0.002	0.000
KJ				5 [213]	43,305 [311]	43,305 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.021	0.021	80 [501]	0.00	0.004	0.004	0.004	0.000
KO	FS 011	Mine Haul Roads, Segment K to O	NA	3 [213]	26,931 [311]	26,931 [401]	VMT	134	PM10	N	N	6.222 [114]	19.13	53.026	53.026	80 [501]	3.83	10.605	10.605	10.605	0.482
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Total PM	N	N	23.508 [114]	72.27	200.330	200.330	80 [501]	14.45	40.066	40.066	40.066	1.821
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.01	0.027	0.027	80 [501]	0.00	0.005	0.005	0.005	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.01	0.020	0.020	80 [501]	0.00	0.004	0.004	0.004	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.10	0.278	0.278	80 [501]	0.02	0.056	0.056	0.056	0.003

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj. Act. (Units/yr)	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj. Act. Unc. (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj. Act. Cont. (tons/yr)	Limited Cont. PTE (tons/yr)	g/sec Model Input
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.02	0.054	0.054	80 [501]	0.00	0.011	0.011	0.011	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.01	0.017	0.017	80 [501]	0.00	0.003	0.003	0.003	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.01	0.022	0.022	80 [501]	0.00	0.004	0.004	0.004	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.02	0.068	0.068	80 [501]	0.00	0.014	0.014	0.014	0.001
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.06	0.158	0.158	80 [501]	0.01	0.032	0.032	0.032	0.001
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
KO				3 [213]	26,931 [311]	26,931 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003	0.003	0.000
OBSRRD	FS 011	Mine Haul Roads, Segment KK to G	NA	1 [213]	5,806 [311]	5,806 [401]	VMT	134	PM10	N	N	6.222 [114]	4.12	11.432	11.432	80 [501]	0.82	2.286	2.286	2.286	0.104
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Total PM	N	N	23.508 [114]	15.58	43.188	43.188	80 [501]	3.12	8.638	8.638	8.638	0.393
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001	0.001	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.060	0.060	80 [501]	0.00	0.012	0.012	0.012	0.001
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002	0.002	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.01	0.015	0.015	80 [501]	0.00	0.003	0.003	0.003	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.034	0.034	80 [501]	0.00	0.007	0.007	0.007	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
OBSRRD				1 [213]	5,806 [311]	5,806 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
LLN	FS 011	Mine Haul Roads, Segment LL to N	NA	0 [213]	871 [311]	871 [401]	VMT	134	PM10	N	N	6.222 [114]	0.62	1.714	1.714	80 [501]	0.12	0.343	0.343	0.343	0.016
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Total PM	N	N	23.508 [114]	2.34	6.477	6.477	80 [501]	0.47	1.295	1.295	1.295	0.059
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.00	0.009	0.009	80 [501]	0.00	0.002	0.002	0.002	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
LLN				0 [213]	871 [311]	871 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
MLL	FS 011	Mine Haul Roads, Segment M to LL	NA	3 [213]	28,899 [311]	28,899 [401]	VMT	134	PM10	N	N	6.222 [114]	20.53	56.901	56.901	80 [501]	4.11	11.380	11.380	11.380	0.517
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Total PM	N	N	23.508 [114]	77.55	214.969	214.969	80 [501]	15.51	42.994	42.994	42.994	1.954
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.01	0.029	0.029	80 [501]	0.00	0.006	0.006	0.006	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002	0.002	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.01	0.021	0.021	80 [501]	0.00	0.004	0.004	0.004	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.11	0.298	0.298	80 [501]	0.02	0.060	0.060	0.060	0.003
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.02	0.058	0.058	80 [501]	0.00	0.012	0.012	0.012	0.001
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.01	0.018	0.018	80 [501]	0.00	0.004	0.004	0.004	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.01	0.024	0.024	80 [501]	0.00	0.005	0.005	0.005	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.03	0.072	0.072	80 [501]	0.01	0.014	0.014	0.014	0.001
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.06	0.169	0.169	80 [501]	0.01	0.034	0.034	0.034	0.002
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
MLL				3 [213]	28,899 [311]	28,899 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.01	0.014	0.014	80 [501]	0.00	0.003	0.003	0.003	0.000
NM	FS 011	Mine Haul Roads, Segment N to M	NA	8 [213]	69,032 [311]	69,032 [401]	VMT	134	PM10	N	N	6.222 [114]	49.03	135.924	135.924	80 [501]	9.81	27.185	27.185	27.185	1.236
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Total PM	N	N	23.508 [114]	185.25	513.514	513.514	80 [501]	37.05	102.703	102.703	102.703	4.668
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.02	0.069	0.069	80 [501]	0.00	0.014	0.014	0.014	0.001
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.01	0.029	0.029	80 [501]	0.00	0.006	0.006	0.006	0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.02	0.051	0.051	80 [501]	0.00	0.010	0.010	0.010	0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.26	0.713	0.713	80 [501]	0.05	0.143	0.143	0.143	0.006
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.05	0.140	0.140	80 [501]	0.01	0.028	0.028	0.028	0.001

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	(Units/yr)	(Units/yr)	Units	Annual days with precip.	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE [1] (lb/hr)	(tons/yr)	Proj Act Unc Emis (ton/yr)	Control Eff (%)	Max Cont PTE [2] (lb/hr)	(tons/yr)	Proj Act Cont Emis (tons/yr)	Emis Std/Oper Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Max Unc Emis lb/day	Max Cont Emis lb/day	g/sec Model Input
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001				0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.02	0.044	0.044	80 [501]	0.00	0.009	0.009		0.009				0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.02	0.057	0.057	80 [501]	0.00	0.011	0.011		0.011				0.001
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.06	0.173	0.173	80 [501]	0.01	0.035	0.035		0.035				0.002
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.01	0.027	0.027	80 [501]	0.00	0.005	0.005		0.005				0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.15	0.404	0.404	80 [501]	0.03	0.081	0.081		0.081				0.004
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002		0.002				0.000
NM				8 [213]	69,032 [311]	69,032 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.01	0.034	0.034	80 [501]	0.00	0.007	0.007		0.007				0.000
ON	FS 011	Mine Haul Roads, Segment O to N	NA	5 [213]	41,380 [311]	41,380 [401]	VMT	134	PM10	N	N	6.222 [114]	29.39	81.477	81.477	80 [501]	5.88	16.295	16.295		16.295				0.741
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Total PM	N	N	23.508 [114]	111.04	307.814	307.814	80 [501]	22.21	61.563	61.563		61.563				2.798
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.01	0.041	0.041	80 [501]	0.00	0.008	0.008		0.008				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.01	0.018	0.018	80 [501]	0.00	0.004	0.004		0.004				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.01	0.031	0.031	80 [501]	0.00	0.006	0.006		0.006				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.15	0.427	0.427	80 [501]	0.03	0.085	0.085		0.085				0.004
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.03	0.084	0.084	80 [501]	0.01	0.017	0.017		0.017				0.001
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.01	0.026	0.026	80 [501]	0.00	0.005	0.005		0.005				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.01	0.034	0.034	80 [501]	0.00	0.007	0.007		0.007				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.04	0.104	0.104	80 [501]	0.01	0.021	0.021		0.021				0.001
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.01	0.016	0.016	80 [501]	0.00	0.003	0.003		0.003				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.09	0.242	0.242	80 [501]	0.02	0.048	0.048		0.048				0.002
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001				0.000
ON				5 [213]	41,380 [311]	41,380 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.01	0.020	0.020	80 [501]	0.00	0.004	0.004		0.004				0.000
OOO	FS 011	Mine Haul Roads, Segment O to OO	NA	0 [213]	491 [311]	491 [401]	VMT	134	PM10	N	N	6.222 [114]	0.35	0.966	0.966	80 [501]	0.07	0.193	0.193		0.193				0.009
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Total PM	N	N	23.508 [114]	1.32	3.651	3.651	80 [501]	0.26	0.730	0.730		0.730				0.033
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OOO				0 [213]	491 [311]	491 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP	FS 011	Mine Haul Roads, Segment O to P	NA	1 [213]	4,889 [311]	4,889 [401]	VMT	134	PM10	N	N	6.222 [114]	3.47	9.626	9.626	80 [501]	0.69	1.925	1.925		1.925				0.088
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Total PM	N	N	23.508 [114]	13.12	36.368	36.368	80 [501]	2.62	7.274	7.274		7.274				0.331
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.050	0.050	80 [501]	0.00	0.010	0.010		0.010				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.010	0.010	80 [501]	0.00	0.002	0.002		0.002				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.012	0.012	80 [501]	0.00	0.002	0.002		0.002				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.029	0.029	80 [501]	0.00	0.006	0.006		0.006				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
OP				1 [213]	4,889 [311]	4,889 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD	FS 011	Mine Haul Roads, Segment OO to EE	NA	0 [213]	964 [311]	964 [401]	VMT	134	PM10	N	N	6.222 [114]	0.68	1.897	1.897	80 [501]	0.14	0.379	0.379		0.379				0.017
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Total PM	N	N	23.508 [114]	2.59	7.168	7.168	80 [501]	0.52	1.434	1.434		1.434				0.065
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.00	0.010	0.010	80 [501]	0.00	0.002	0.002		0.002				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr) Note	Proj. Actual (Units/yr) Note	(Units/yr) Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE (lb/hr)	(tons/yr)	Proj. Act. Unc. Emis. (ton/yr)	Control Eff. (%) Note	Max. Cont. PTE (lb/hr)	(tons/yr)	Proj. Act. Cont. Emis. (tons/yr)	Emis Std/Op Limit	Lim. Cont. PTE (tons/yr)	Max Throughput units/day Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001		0.001				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
C4LORD				0 [213]	964 [311]	964 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ	FS 011	Mine Haul Roads, Segment P to Q	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ	FS 011	Mine Haul Roads, Segment P to Z	NA	1 [213]	5,025 [311]	5,025 [401]	VMT	134	PM10	N	N	6.222 [114]	3.57	9.894	9.894	80 [501]	0.71	1.979	1.979		1.979				0.090
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Total PM	N	N	23.508 [114]	13.48	37.379	37.379	80 [501]	2.70	7.476	7.476		7.476				0.340
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.052	0.052	80 [501]	0.00	0.010	0.010		0.010				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.010	0.010	80 [501]	0.00	0.002	0.002		0.002				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003		0.003				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.029	0.029	80 [501]	0.00	0.006	0.006		0.006				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
PZ				1 [213]	5,025 [311]	5,025 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP	FS 011	Mine Haul Roads, Segment S to HH	NA	9 [213]	74,564 [311]	74,564 [401]	VMT	134	PM10	N	N	6.222 [114]	52.96	146.815	146.815	80 [501]	10.59	29.363	29.363		29.363				1.335
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Total PM	N	N	23.508 [114]	200.09	554.659	554.659	80 [501]	40.02	110.932	110.932		110.932				5.042
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.03	0.075	0.075	80 [501]	0.01	0.015	0.015		0.015				0.001
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.01	0.032	0.032	80 [501]	0.00	0.006	0.006		0.006				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.02	0.055	0.055	80 [501]	0.00	0.011	0.011		0.011				0.001
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.28	0.770	0.770	80 [501]	0.06	0.154	0.154		0.154				0.007
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.05	0.151	0.151	80 [501]	0.01	0.030	0.030		0.030				0.001
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.02	0.047	0.047	80 [501]	0.00	0.009	0.009		0.009				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.02	0.062	0.062	80 [501]	0.00	0.012	0.012		0.012				0.001
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.07	0.187	0.187	80 [501]	0.01	0.037	0.037		0.037				0.002
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.01	0.029	0.029	80 [501]	0.00	0.006	0.006		0.006				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.16	0.437	0.437	80 [501]	0.03	0.087	0.087		0.087				0.004
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.013	0.013	80 [501]	0.00	0.003	0.003		0.003				0.000
WESTP				9 [213]	74,564 [311]	74,564 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.01	0.036	0.036	80 [501]	0.01	0.007	0.007		0.007				0.000
WESTP	FS 011	Mine Haul Roads, Segment S to II	NA	4 [213]	36,862 [311]	36,862 [401]	VMT	134	PM10	N	N	6.222 [114]	26.18	72.580	72.580	80 [501]	5.24	14.516	14.516		14.516				0.660
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Total PM	N	N	23.508 [114]	98.92	274.204	274.204	80 [501]	19.78	54.841	54.841		54.841				2.493
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.01	0.037	0.037	80 [501]	0.00	0.007	0.007		0.007				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.01	0.016	0.016	80 [501]	0.00	0.003	0.003		0.003				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.01	0.027	0.027	80 [501]	0.00	0.005	0.005		0.005				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.14	0.381	0.381	80 [501]	0.03	0.076	0.076		0.076				0.003
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.03	0.075	0.075	80 [501]	0.01	0.015	0.015		0.015				0.001
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.01	0.023	0.023	80 [501]	0.00	0.005	0.005		0.005				0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.01	0.030	0.030	80 [501]	0.00	0.006	0.006		0.006				0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Max (Units/yr)	Proj Act (Units/yr)	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%)	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont Emiss (tons/yr)	Limited Cont PTE (tons/yr)	g/sec Model Input
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.03	0.092	0.092	80 [501]	0.01	0.018	0.018	0.018	0.001
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.01	0.015	0.015	80 [501]	0.00	0.003	0.003	0.003	0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.08	0.216	0.216	80 [501]	0.02	0.043	0.043	0.043	0.002
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001	0.000
WESTP				4 [213]	36,862 [311]	36,862 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.01	0.018	0.018	80 [501]	0.00	0.004	0.004	0.004	0.000
WESTP	FS 011	Mine Haul Roads, Segment T to S	NA	48 [213]	418,759 [311]	418,759 [401]	VMT	134	PM10	N	N	6.222 [114]	297.45	824.533	824.533	80 [501]	59.49	164.907	164.907	164.907	7.496
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Total PM	N	N	23.508 [114]	1,123.75	3,115.041	3,115.041	80 [501]	224.75	623.008	623.008	623.008	28.318
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.01	0.014	0.014	80 [501]	0.00	0.003	0.003	0.003	0.000
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.01	0.019	0.019	80 [501]	0.00	0.004	0.004	0.004	0.000
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.15	0.419	0.419	80 [501]	0.03	0.084	0.084	0.084	0.004
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.06	0.178	0.178	80 [501]	0.01	0.036	0.036	0.036	0.002
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.11	0.311	0.311	80 [501]	0.02	0.062	0.062	0.062	0.003
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	1.56	4.324	4.324	80 [501]	0.31	0.865	0.865	0.865	0.039
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.31	0.847	0.847	80 [501]	0.06	0.169	0.169	0.169	0.008
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.01	0.030	0.030	80 [501]	0.00	0.006	0.006	0.006	0.000
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.10	0.266	0.266	80 [501]	0.02	0.053	0.053	0.053	0.002
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.12	0.346	0.346	80 [501]	0.02	0.069	0.069	0.069	0.003
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.38	1.050	1.050	80 [501]	0.08	0.210	0.210	0.210	0.010
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.008	0.008	80 [501]	0.00	0.002	0.002	0.002	0.000
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.06	0.165	0.165	80 [501]	0.01	0.033	0.033	0.033	0.002
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.88	2.452	2.452	80 [501]	0.18	0.490	0.490	0.490	0.022
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.03	0.076	0.076	80 [501]	0.01	0.015	0.015	0.015	0.001
WESTP				48 [213]	418,759 [311]	418,759 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.07	0.204	0.204	80 [501]	0.01	0.041	0.041	0.041	0.002
C3WRRD	FS 011	Mine Haul Roads, Segment W to Y	NA	0 [213]	2,609 [311]	2,609 [401]	VMT	134	PM10	N	N	6.222 [114]	1.85	5.136	5.136	80 [501]	0.37	1.027	1.027	1.027	0.047
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Total PM	N	N	23.508 [114]	7.00	19.404	19.404	80 [501]	1.40	3.881	3.881	3.881	0.176
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.01	0.027	0.027	80 [501]	0.00	0.005	0.005	0.005	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.015	0.015	80 [501]	0.00	0.003	0.003	0.003	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
C3WRRD				0 [213]	2,609 [311]	2,609 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA	FS 011	Mine Haul Roads, Segment Z to AA	NA	1 [213]	5,389 [311]	5,389 [401]	VMT	134	PM10	N	N	6.222 [114]	3.83	10.611	10.611	80 [501]	0.77	2.122	2.122	2.122	0.096
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Total PM	N	N	23.508 [114]	14.46	40.090	40.090	80 [501]	2.89	8.018	8.018	8.018	0.364
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.005	0.005	80 [501]	0.00	0.001	0.001	0.001	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.02	0.056	0.056	80 [501]	0.00	0.011	0.011	0.011	0.001
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.011	0.011	80 [501]	0.00	0.002	0.002	0.002	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.004	0.004	80 [501]	0.00	0.001	0.001	0.001	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.014	0.014	80 [501]	0.00	0.003	0.003	0.003	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Vanadium	N	N	1.25E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Zinc	N	N	1.85E-02 [127]	0.01	0.032	0.032	80 [501]	0.00	0.006	0.006	0.006	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Tellurium	N	N	5.71E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ZAA				1 [213]	5,389 [311]	5,389 [401]	VMT	134	Fluorides (as F)	N	N	1.54E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
ZW	FS 011	Mine Haul Roads, Segment Z to W	NA	0 [213]	2,964 [311]	2,964 [401]	VMT	134	PM10	N	N	6.222 [114]	2.11	5.836	5.836	80 [501]	0.42	1.167	1.167	1.167	0.053
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Total PM	N	N	23.508 [114]	7.95	22.047	22.047	80 [501]	1.59	4.409	4.409	4.409	0.200
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Antimony	N	Y	1.09E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Arsenic	N	Y	1.46E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Beryllium	N	Y	2.35E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Cadmium	N	Y	7.97E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Chromium	N	Y	3.16E-03 [127]	0.00	0.003	0.003	80 [501]	0.00	0.001	0.001	0.001	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Cobalt	N	Y	1.35E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Pb	N	Y	2.35E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Manganese	N	Y	3.26E-02 [127]	0.01	0.031	0.031	80 [501]	0.00	0.006	0.006	0.006	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Nickel	N	Y	6.39E-03 [127]	0.00	0.006	0.006	80 [501]	0.00	0.001	0.001	0.001	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Selenium	N	Y	2.25E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Barium	N	N	2.01E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Boron	N	N	2.61E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000	0.000	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Copper	N	N	7.92E-03 [127]	0.00	0.007	0.007	80 [501]	0.00	0.001	0.001	0.001	0.000
ZW				0 [213]	2,964 [311]	2,964 [401]	VMT	134	Molybdenum	N	N	5.83E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000	0.000	0.000

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	Throughput Maximum (Units/yr)	Note	Throughput Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max Cont. Emissions lb/day	g/sec Model Input
ZW				0	[213]	2,964	[311]	2,964	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
ZW				0	[213]	2,964	[311]	2,964	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.01	0.017	0.017	80	[501]	0.00	0.003	0.003		0.003					0.000
ZW				0	[213]	2,964	[311]	2,964	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
ZW				0	[213]	2,964	[311]	2,964	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
VMM	7	Mine Haul Roads, Segment V to MM	NA	2	[213]	18,163	[311]	18,163	[401]	VMT	134	PM10	N	N	6.222	[114]	12.90	35.763	35.763	80	[501]	2.58	7.153	7.153		7.153					0.325
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Total PM	N	N	23.508	[114]	48.74	135.109	135.109	80	[501]	9.75	27.022	27.022		27.022					1.228
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Antimony	N	Y	1.09E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Arsenic	N	Y	1.46E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.01	0.018	0.018	80	[501]	0.00	0.004	0.004		0.004					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.00	0.008	0.008	80	[501]	0.00	0.002	0.002		0.002					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Pb	N	Y	2.35E-03	[127]	0.00	0.013	0.013	80	[501]	0.00	0.003	0.003		0.003					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Manganese	N	Y	3.26E-02	[127]	0.07	0.188	0.188	80	[501]	0.01	0.038	0.038		0.038					0.002
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Nickel	N	Y	6.39E-03	[127]	0.01	0.037	0.037	80	[501]	0.00	0.007	0.007		0.007					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Selenium	N	Y	2.25E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Barium	N	N	2.01E-03	[127]	0.00	0.012	0.012	80	[501]	0.00	0.002	0.002		0.002					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Boron	N	N	2.61E-03	[127]	0.01	0.015	0.015	80	[501]	0.00	0.003	0.003		0.003					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Copper	N	N	7.92E-03	[127]	0.02	0.046	0.046	80	[501]	0.00	0.009	0.009		0.009					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Molybdenum	N	N	5.83E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.00	0.007	0.007	80	[501]	0.00	0.001	0.001		0.001					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.04	0.106	0.106	80	[501]	0.01	0.021	0.021		0.021					0.001
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.003	0.003	80	[501]	0.00	0.001	0.001		0.001					0.000
VMM				2	[213]	18,163	[311]	18,163	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.00	0.009	0.009	80	[501]	0.00	0.002	0.002		0.002					0.000
VNN		Mine Haul Roads, Segment V to NN	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Antimony	N	Y	1.09E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Arsenic	N	Y	1.46E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Beryllium	N	Y	2.35E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Cadmium	N	Y	7.97E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Chromium	N	Y	3.16E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Cobalt	N	Y	1.35E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Pb	N	Y	2.35E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Manganese	N	Y	3.26E-02	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Nickel	N	Y	6.39E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Selenium	N	Y	2.25E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Barium	N	N	2.01E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Boron	N	N	2.61E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Copper	N	N	7.92E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Molybdenum	N	N	5.83E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Vanadium	N	N	1.25E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Zinc	N	N	1.85E-02	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Tellurium	N	N	5.71E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Fluorides (as F)	N	N	1.54E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN	FS 011	Unpaved Roads, Mine (Light Trucks)	NA	18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	PM10	N	N	0.7183	[114]	13.11	36.336	36.336	80	[501]	2.62	7.267	7.267		7.267					0.330
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Total PM	N	N	2.7135	[114]	49.52	137.276	137.276	80	[501]	9.90	27.455	27.455		27.455					1.248
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Antimony	N	Y	1.26E-05	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Arsenic	N	Y	1.68E-05	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Beryllium	N	Y	2.71E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Cadmium	N	Y	9.20E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Chromium	N	Y	3.65E-04	[127]	0.01	0.018	0.018	80	[501]	0.00	0.004	0.004		0.004					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Cobalt	N	Y	1.55E-04	[127]	0.00	0.008	0.008	80	[501]	0.00	0.002	0.002		0.002					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Pb	N	Y	2.71E-04	[127]	0.00	0.014	0.014	80	[501]	0.00	0.003	0.003		0.003					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Manganese	N	Y	3.77E-03	[127]	0.07	0.191	0.191	80	[501]	0.01	0.038	0.038		0.038					0.002
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Nickel	N	Y	7.38E-04	[127]	0.01	0.037	0.037	80	[501]	0.00	0.007	0.007		0.007					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Selenium	N	Y	2.60E-05	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Barium	N	N	2.32E-04	[127]	0.00	0.012	0.012	80	[501]	0.00	0.002	0.002		0.002					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Boron	N	N	3.01E-04	[127]	0.01	0.015	0.015	80	[501]	0.00	0.003	0.003		0.003					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Copper	N	N	9.14E-04	[127]	0.02	0.046	0.046	80	[501]	0.00	0.009	0.009		0.009					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Molybdenum	N	N	6.73E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Vanadium	N	N	1.44E-04	[127]	0.00	0.007	0.007	80	[501]	0.00	0.001	0.001		0.001					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Zinc	N	N	2.14E-03	[127]	0.04	0.108	0.108	80	[501]	0.01	0.022	0.022		0.022					0.001
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Tellurium	N	N	6.59E-05	[127]	0.00	0.003	0.003	80	[501]	0.00	0.001	0.001		0.001					0.000
FS 011MN				18.25	[214]	159,870	[312]	159,870	[401]	VMT	134	Fluorides (as F)	N	N	1.78E-04	[127]	0.00	0.009	0.009	80	[501]	0.00	0.002	0.002		0.002					0.000
FS 011MN		Unpaved Roads, Mine (tanker truck)	NA	1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	PM10	N	N	1.399	[114]	2.10	5.817	5.817	80	[501]	0.42	1.163	1.163		1.163					0.053
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Total PM	N	N	5.286	[114]	7.93	21.977	21.977	80	[501]	1.59	4.395	4.395		4.395					0.200
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Antimony	N	Y	2.45E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Arsenic	N	Y	3.28E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Beryllium	N	Y	5.29E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Cadmium	N	Y	1.79E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Chromium	N	Y	7.11E-04	[127]	0.00	0.003	0.003	80	[501]	0.00	0.001	0.001		0.001					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Cobalt	N	Y	3.03E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Pb	N	Y	5.28E-04	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Manganese	N	Y	7.34E-03	[127]	0.01	0.031	0.031	80	[501]	0.00	0.006	0.006		0.006					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Nickel	N	Y	1.44E-03	[127]	0.00	0.006	0.006	80	[501]	0.00	0.001	0.001		0.001					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Selenium	N	Y	5.06E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Barium	N	N	4.51E-04	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Boron	N	N	5.87E-04	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Copper	N	N	1.78E-03	[127]	0.00	0.007	0.007	80	[501]	0.00	0.001	0.001		0.001					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Molybdenum	N	N	1.31E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Vanadium	N	N	2.81E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Zinc	N	N	4.16E-03	[127]	0.01	0.017	0.017	80	[501]	0.00	0.003	0.003		0.003					0.000

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	Throughput Maximum (Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled Potential to Emit [1] (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	Max. Controlled Potential to Emit [2] (tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Tellurium	N	N	1.28E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 011MN				1.50	[215]	13,140	[312]	13,140	[401]	VMT	134	Fluorides (as F)	N	N	3.47E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000					0.000
FS012A	FS 012	Unpaved Roads, Dunka Rd. A (Haul Trucks)	NA	0.73	[216]	255	[313]	255	[401]	VMT	134	PM10	N	N	0.905	[114]	0.66	0.073	0.073	80	[501]	0.13	0.015	0.015		0.015	0.729	[601]	0.660	0.132	0.001
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Total PM	N	N	3.631	[114]	2.65	0.293	0.293	80	[501]	0.53	0.059	0.059		0.059	0.729	[601]	2.646	0.529	0.003
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Antimony	N	Y	1.68E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Arsenic	N	Y	2.25E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Beryllium	N	Y	3.63E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Cadmium	N	Y	1.23E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Chromium	N	Y	4.88E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Cobalt	N	Y	2.08E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Pb	N	Y	3.63E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Manganese	N	Y	5.04E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.004	0.001	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Nickel	N	Y	9.88E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.001	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Selenium	N	Y	3.47E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Barium	N	N	3.10E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Boron	N	N	4.03E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Copper	N	N	1.22E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.001	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Molybdenum	N	N	9.00E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Vanadium	N	N	1.93E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Zinc	N	N	2.86E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.002	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Tellurium	N	N	8.82E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A				0.73	[216]	255	[313]	255	[401]	VMT	134	Fluorides (as F)	N	N	2.38E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.729	[601]	0.000	0.000	0.000
FS012A		Unpaved Roads, Dunka Rd. A (Light Trucks)	NA	12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	PM10	N	N	0.905	[114]	10.94	3.447	3.447	80	[501]	2.19	0.689	0.689		0.689	32.970	[602]	29.847	5.969	0.031
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Total PM	N	N	3.631	[114]	43.90	13.827	13.827	80	[501]	8.78	2.765	2.765		2.765	32.970	[602]	119.717	23.943	0.126
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Antimony	N	Y	1.68E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.001	0.000	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Arsenic	N	Y	2.25E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.001	0.000	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Beryllium	N	Y	3.63E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.000	0.000	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Cadmium	N	Y	1.23E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.000	0.000	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Chromium	N	Y	4.88E-04	[127]	0.01	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.016	0.003	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Cobalt	N	Y	2.08E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.007	0.001	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Pb	N	Y	3.63E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.012	0.002	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Manganese	N	Y	5.04E-03	[127]	0.06	0.019	0.019	80	[501]	0.01	0.004	0.004		0.004	32.970	[602]	0.166	0.033	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.000	0.000	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Nickel	N	Y	9.88E-04	[127]	0.01	0.004	0.004	80	[501]	0.00	0.001	0.001		0.001	32.970	[602]	0.033	0.007	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.000	0.000	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Selenium	N	Y	3.47E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.001	0.000	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Barium	N	N	3.10E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.010	0.002	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Boron	N	N	4.03E-04	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.013	0.003	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Copper	N	N	1.22E-03	[127]	0.01	0.005	0.005	80	[501]	0.00	0.001	0.001		0.001	32.970	[602]	0.040	0.008	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Molybdenum	N	N	9.00E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.000	0.000	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Vanadium	N	N	1.93E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.006	0.001	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Zinc	N	N	2.86E-03	[127]	0.03	0.011	0.011	80	[501]	0.01	0.002	0.002		0.002	32.970	[602]	0.094	0.019	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Tellurium	N	N	8.82E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.003	0.001	0.000
FS012A				12.09	[217]	12,034	[314]	12,034	[401]	VMT	134	Fluorides (as F)	N	N	2.38E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	32.970	[602]	0.008	0.002	0.000
FS012A		Unpaved Roads, Dunka Rd. A (Fuel Tanker)	NA	0.37	[218]	808	[315]	808	[401]	VMT	134	PM10	N	N	0.905	[114]	0.33	0.231	0.231	80	[501]	0.07	0.046	0.046		0.046	2.213	[603]	2.003	0.401	0.002
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Total PM	N	N	3.631	[114]	1.34	0.928	0.928	80	[501]	0.27	0.186	0.186		0.186	2.213	[603]	8.035	1.607	0.008
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Antimony	N	Y	1.68E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Arsenic	N	Y	2.25E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Beryllium	N	Y	3.63E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Cadmium	N	Y	1.23E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Chromium	N	Y	4.88E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.001	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Cobalt	N	Y	2.08E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Pb	N	Y	3.63E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.001	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Manganese	N	Y	5.04E-03	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.011	0.002	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Nickel	N	Y	9.88E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.002	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Selenium	N	Y	3.47E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Barium	N	N	3.10E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.001	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Boron	N	N	4.03E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.001	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Copper	N	N	1.22E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.003	0.001	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Molybdenum	N	N	9.00E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Vanadium	N	N	1.93E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Zinc	N	N	2.86E-03	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.006	0.001	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Tellurium	N	N	8.82E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.000	0.000	0.000
FS012A				0.37	[218]	808	[315]	808	[401]	VMT	134	Fluorides (as F)	N	N	2.38E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	2.213	[603]	0.001	0.000	0.000
FS012B	FS 012	Unpaved Roads, Dunka Rd. B (Haul Trucks)	NA	3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	PM10	N	N	0.966	[114]	3.75	0.416	0.416	80	[501]	0.75	0.083	0.083		0.083	3.881	[601]	3.750	0.750	0.004
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Total PM	N	N	3.876	[114]	15.04	1.668	1.668	80	[501]	3.01	0.334	0.334		0.334	3.881	[601]	15.043	3.009	0.016
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Antimony	N	Y	1.79E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.000	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Arsenic	N	Y	2.40E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.000	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Beryllium	N	Y	3.88E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.000	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Cadmium	N	Y	1.31E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.000	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Chromium	N	Y	5.21E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.002	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Cobalt	N	Y	2.22E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.001	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Pb	N	Y	3.87E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.002	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Manganese	N	Y	5.38E-03	[127]	0.02	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.021	0.004	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.000	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Nickel	N	Y	1.05E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.004	0.001	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.000	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Selenium	N	Y	3.71E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.000	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Barium	N	N	3.31E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.001	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Boron	N	N	4.30E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.002	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Copper	N	N	1.31E-03	[127]	0.01	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.005	0.001	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Molybdenum	N	N	9.61E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.000	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Vanadium	N	N	2.06E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.001	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Zinc	N	N	3.05E-03	[127]	0.01	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.012	0.002	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Tellurium	N	N	9.42E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.001	0.000	0.000
FS012B				3.88	[216]	1,360	[313]	1,360	[401]	VMT	134	Fluorides (as F)	N	N	2.54E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	3.881	[601]	0.001	0.000	0.000

Stack ID	ID	Emission Unit Description	APCD ID	Max (Units/hr) Note	Max (Units/yr) Note	Proj. Actual (Units/yr) Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE (lb/hr)	Max. Unc. PTE (tons/yr)	Proj. Act. Unc. (ton/yr)	Control Eff. (%) Note	Max. Cont. PTE (lb/hr)	Max. Cont. PTE (tons/yr)	Proj. Act. Cont. (tons/yr)	Emission Std/Op Limit	Limited Cont. PTE (tons/yr)	Max. Throughput units/day Note	Max. Unc. Emis lb/day	Max. Cont. Emis lb/day	g/sec Model Input
FS012B		Unpaved Roads, Dunka Rd. B (Light Trucks)	NA	64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	PM10	N	N	0.966 [114]	61.87	19.488	19.488	80 [501]	12.37	3.898	3.898		3.898	174.589 [602]	168.725	33.745	0.177
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Total PM	N	`	3.876 [114]	248.14	78.164	78.164	80 [501]	49.63	15.633	15.633		15.633	174.589 [602]	676.747	135.349	0.711
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.003	0.001	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.004	0.001	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Beryllium	N	Y	3.88E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.001	0.000	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.002	0.000	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.03	0.011	0.011	80 [501]	0.01	0.002	0.002		0.002	174.589 [602]	0.091	0.018	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	174.589 [602]	0.039	0.008	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.02	0.008	0.008	80 [501]	0.00	0.002	0.002		0.002	174.589 [602]	0.068	0.014	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.34	0.109	0.109	80 [501]	0.07	0.022	0.022		0.022	174.589 [602]	0.939	0.188	0.001
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.000	0.000	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.07	0.021	0.021	80 [501]	0.01	0.004	0.004		0.004	174.589 [602]	0.184	0.037	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.000	0.000	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.006	0.001	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.02	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001	174.589 [602]	0.058	0.012	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.03	0.009	0.009	80 [501]	0.01	0.002	0.002		0.002	174.589 [602]	0.075	0.015	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.08	0.026	0.026	80 [501]	0.02	0.005	0.005		0.005	174.589 [602]	0.228	0.046	0.001
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.002	0.000	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	174.589 [602]	0.036	0.007	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.20	0.062	0.062	80 [501]	0.04	0.012	0.012		0.012	174.589 [602]	0.533	0.107	0.001
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	174.589 [602]	0.016	0.003	0.000
FS012B				64.02 [217]	63,725 [314]	63,725 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.02	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001	174.589 [602]	0.044	0.009	0.000
FS012B		Unpaved Roads, Dunka Rd. B (Fuel Tanker)	NA	1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	PM10	N	N	0.966 [114]	1.88	1.300	1.300	80 [501]	0.38	0.260	0.260		0.260	11.643 [603]	11.252	2.250	0.012
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Total PM	N	N	3.876 [114]	7.52	5.213	5.213	80 [501]	1.50	1.043	1.043		1.043	11.643 [603]	45.131	9.026	0.047
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Beryllium	N	Y	3.88E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.006	0.001	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.003	0.001	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.01	0.007	0.007	80 [501]	0.00	0.001	0.001		0.001	11.643 [603]	0.063	0.013	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.012	0.002	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.004	0.001	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.005	0.001	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.015	0.003	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.000	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.002	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	11.643 [603]	0.036	0.007	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.001	0.000	0.000
FS012B				1.94 [218]	4,250 [315]	4,250 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.643 [603]	0.001	0.000	0.000
FS012B		Unpaved Roads, Dunka Rd. B (WWTF Trucks)	NA	3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	PM10	N	N	0.966 [114]	3.75	0.742	0.742	80 [501]	0.75	0.148	0.148		0.148	11.639 [604]	11.248	2.250	0.012
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Total PM	N	N	3.876 [114]	15.04	2.974	2.974	80 [501]	3.01	0.595	0.595		0.595	11.639 [604]	45.116	9.023	0.047
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Beryllium	N	Y	3.88E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.006	0.001	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.003	0.001	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.005	0.001	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.02	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	11.639 [604]	0.063	0.013	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.012	0.002	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.004	0.001	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.005	0.001	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.01	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.015	0.003	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.000	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.002	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.036	0.007	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.001	0.000	0.000
FS012B				3.88 [219]	2,425 [316]	2,425 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	11.639 [604]	0.003	0.001	0.000
FS012B3	FS 012	Unpaved Roads, Dunka Rd. B3 (Haul Trucks)	NA	2.33 [216]	816 [313]	816 [401]	VMT	134	PM10	N	N	0.966 [114]	2.25	0.249	0.249	80 [501]	0.45	0.050	0.050		0.050	2.328 [601]	2.249	0.450	0.002
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Total PM	N	N	3.874 [114]	9.02	1.000	1.000	80 [501]	1.80	0.200	0.200		0.200	2.328 [601]	9.022	1.804	0.009
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Beryllium	N	Y	3.87E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.001	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.001	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.001	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.01	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.013	0.003	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.002	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.001	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.003	0.001	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.01	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.007	0.001	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3				2.33 [216]	816 [313]	816 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.328 [601]	0.000	0.000	0.000
FS012B3		Unpaved Roads, Dunka Rd. B3 (Light Trucks)	NA	38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	PM10	N	N	0.966 [114]	37.17	11.708	11.708	80 [501]	7.43	2.342	2.342		2.342	104.940 [602]	101.370	20.274	0.106
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Total PM	N	N	3.874 [114]	149.08	46.961	46.961	80 [501]	29.82	9.392	9.392		9.392	104.940 [602]	406.589	81.318	0.427

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. Pot. to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Unc. Emissions (ton/yr)	Control Eff. (%) Note	Max. Cont. Pot. to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Cont. Emissions (tons/yr)	Emission Std or Op. Limit	Limited Cont. Pot. to Emit (tons/yr)	Max Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	104.940 [602]	0.002		0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	104.940 [602]	0.003	0.001	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Beryllium	N	Y	3.87E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	104.940 [602]	0.000	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	104.940 [602]	0.001	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.02	0.006	0.006	80 [501]	0.00	0.001	0.001		0.001	104.940 [602]	0.055	0.011	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.01	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001	104.940 [602]	0.023	0.005	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.01	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001	104.940 [602]	0.041	0.008	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.21	0.065	0.065	80 [501]	0.04	0.013	0.013		0.013	104.940 [602]	0.564	0.113	0.001
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	104.940 [602]	0.000	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.04	0.013	0.013	80 [501]	0.01	0.003	0.003		0.003	104.940 [602]	0.111	0.022	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	104.940 [602]	0.000	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	104.940 [602]	0.004	0.001	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	104.940 [602]	0.035	0.007	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.02	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001	104.940 [602]	0.045	0.009	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.05	0.016	0.016	80 [501]	0.01	0.003	0.003		0.003	104.940 [602]	0.137	0.027	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	104.940 [602]	0.001	0.000	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	104.940 [602]	0.022	0.004	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.12	0.037	0.037	80 [501]	0.02	0.007	0.007		0.007	104.940 [602]	0.320	0.064	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	104.940 [602]	0.010	0.002	0.000
FS012B3				38.48 [217]	38,303 [314]	38,303 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.01	0.003	0.003	80 [501]	0.00	0.001	0.001		0.001	104.940 [602]	0.027	0.005	0.000
FS012B3		Unpaved Roads, Dunka Rd. B3 (Fuel Tanker)	NA	1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	PM10	N	N	0.966 [114]	1.12	0.779	0.779	80 [501]	0.22	0.156	0.156		0.156	6.979 [603]	6.742	1.348	0.007
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Total PM	N	N	3.874 [114]	4.51	3.123	3.123	80 [501]	0.90	0.625	0.625		0.625	6.979 [603]	27.040	5.408	0.028
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Beryllium	N	Y	3.87E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.004	0.001	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.002	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.003	0.001	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	6.979 [603]	0.038	0.008	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.007	0.001	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.002	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.003	0.001	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.009	0.002	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.000	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.001	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.021	0.004	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.001	0.000	0.000
FS012B3				1.16 [218]	2,547 [315]	2,547 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.979 [603]	0.002	0.000	0.000
FS012B3		Unpaved Roads, Dunka Rd. B3 (WWTF Trucks)	NA	2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	PM10	N	N	0.966 [114]	2.25	0.446	0.446	80 [501]	0.45	0.089	0.089		0.089	6.996 [604]	6.758	1.352	0.007
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Total PM	N	N	3.874 [114]	9.04	1.787	1.787	80 [501]	1.81	0.357	0.357		0.357	6.996 [604]	27.106	5.421	0.028
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Antimony	N	Y	1.79E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Arsenic	N	Y	2.40E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Beryllium	N	Y	3.87E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Cadmium	N	Y	1.31E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Chromium	N	Y	5.21E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.004	0.001	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Cobalt	N	Y	2.22E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.002	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Pb	N	Y	3.87E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.003	0.001	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Manganese	N	Y	5.38E-03 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.038	0.008	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Nickel	N	Y	1.05E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.007	0.001	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Selenium	N	Y	3.71E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Barium	N	N	3.31E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.002	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Boron	N	N	4.30E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.003	0.001	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Copper	N	N	1.31E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.009	0.002	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Molybdenum	N	N	9.61E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.000	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Vanadium	N	N	2.06E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.001	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Zinc	N	N	3.05E-03 [127]	0.01	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.021	0.004	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Tellurium	N	N	9.42E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.001	0.000	0.000
FS012B3				2.33 [219]	1,458 [316]	1,458 [401]	VMT	134	Fluorides (as F)	N	N	2.54E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	6.996 [604]	0.002	0.000	0.000
OP	FS 012	Unpaved Roads, Mine Roads (Haul Trucks)	NA	0.27 [220]	95 [317]	95 [401]	VMT	134	PM10	N	N	0.905 [114]	0.25	0.027	0.027	80 [501]	0.05	0.005	0.005		0.005	0.272 [605]	0.247	0.049	0.000
OP		O to P		0.27 [220]	95 [317]	95 [401]	VMT	134	Total PM	N	N	3.631 [114]	0.99	0.110	0.110	80 [501]	0.20	0.022	0.022		0.022	0.272 [605]	0.989	0.198	0.001
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Antimony	N	Y	1.68E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Arsenic	N	Y	2.25E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Beryllium	N	Y	3.63E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Cadmium	N	Y	1.23E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Chromium	N	Y	4.88E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Cobalt	N	Y	2.08E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Pb	N	Y	3.63E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Manganese	N	Y	5.04E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.001	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Nickel	N	Y	9.88E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Selenium	N	Y	3.47E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Barium	N	N	3.10E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Boron	N	N	4.03E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Copper	N	N	1.22E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Molybdenum	N	N	9.00E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Vanadium	N	N	1.93E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Zinc	N	N	2.86E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.001	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Tellurium	N	N	8.82E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP				0.27 [220]	95 [317]	95 [401]	VMT	134	Fluorides (as F)	N	N	2.38E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.272 [605]	0.000	0.000	0.000
OP		Unpaved Roads, Mine Roads (Light Trucks)	NA	4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	PM10	N	N	0.905 [114]	4.07	1.282	1.282	80 [501]	0.81	0.256	0.256		0.256	12.258 [605]	11.097	2.219	0.012
OP		O to P		4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Total PM	N	N	3.631 [114]	16.32	5.141	5.141	80 [501]	3.26	1.028	1.028		1.028	12.258 [605]	44.509	8.902	0.047
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Antimony	N	Y	1.68E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.000	0.000	0.000
OP				4.49 [220]	4,474 [317]	4,474 [401]	VMT	134	Arsenic	N	Y	2.25E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	12.258 [605]	0.000	0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Proj Actual (Units/yr)	Note	(Units/yr)	Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc (ton/yr)	Control Eff (%)	Note	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont (tons/yr)	Emission Std/Op Limit	Limited Cont PTE (tons/yr)	Max Throughput (units/day)	Note	Max Unc (lb/day)	Max Cont (lb/day)	g/sec Model Input
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Beryllium	N	Y	3.63E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.000	0.000	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Cadmium	N	Y	1.23E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.000	0.000	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Chromium	N	Y	4.88E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.006	0.001	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Cobalt	N	Y	2.08E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.003	0.001	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Pb	N	Y	3.63E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.004	0.001	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Manganese	N	Y	5.04E-03	[127]	0.02	0.007	0.007	80	[501]	0.00	0.001	0.001		0.001	12.258	[605]	0.062	0.012	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.000	0.000	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Nickel	N	Y	9.88E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.012	0.002	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.000	0.000	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Selenium	N	Y	3.47E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.000	0.000	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Barium	N	N	3.10E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.004	0.001	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Boron	N	N	4.03E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.005	0.001	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Copper	N	N	1.22E-03	[127]	0.01	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.015	0.003	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Molybdenum	N	N	9.00E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.000	0.000	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Vanadium	N	N	1.93E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.002	0.000	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Zinc	N	N	2.86E-03	[127]	0.01	0.004	0.004	80	[501]	0.00	0.001	0.001		0.001	12.258	[605]	0.035	0.007	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Tellurium	N	N	8.82E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.001	0.000	0.000
OP				4.49	[220]	4,474	[317]	4,474	[401]	VMT	134	Fluorides (as F)	N	N	2.38E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	12.258	[605]	0.003	0.001	0.000
OP		Unpaved Roads, Mine Roads (Fuel Tanker) O to P	NA	0.14	[220]	298	[317]	298	[401]	VMT	134	PM10	N	N	0.905	[114]	0.12	0.085	0.085	80	[501]	0.02	0.017	0.017		0.017	0.817	[605]	0.740	0.148	0.001
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Total PM	N	N	3.631	[114]	0.49	0.343	0.343	80	[501]	0.10	0.069	0.069		0.069	0.817	[605]	2.967	0.593	0.003
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Antimony	N	Y	1.68E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Arsenic	N	Y	2.25E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Beryllium	N	Y	3.63E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Cadmium	N	Y	1.23E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Chromium	N	Y	4.88E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Cobalt	N	Y	2.08E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Pb	N	Y	3.63E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Manganese	N	Y	5.04E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.004	0.001	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Nickel	N	Y	9.88E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.001	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Selenium	N	Y	3.47E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Barium	N	N	3.10E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Boron	N	N	4.03E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Copper	N	N	1.22E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.001	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Molybdenum	N	N	9.00E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Vanadium	N	N	1.93E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Zinc	N	N	2.86E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.002	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Tellurium	N	N	8.82E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
OP				0.14	[220]	298	[317]	298	[401]	VMT	134	Fluorides (as F)	N	N	2.38E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.817	[605]	0.000	0.000	0.000
ON	FS 012	Unpaved Roads, Mine Roads (Haul Trucks) O to N	NA	0.43	[220]	150	[317]	150	[401]	VMT	134	PM10	N	N	0.905	[114]	0.39	0.043	0.043	80	[501]	0.08	0.009	0.009		0.009	0.428	[605]	0.388	0.078	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Total PM	N	N	3.631	[114]	1.56	0.172	0.172	80	[501]	0.31	0.034	0.034		0.034	0.428	[605]	1.556	0.311	0.002
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Antimony	N	Y	1.68E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Arsenic	N	Y	2.25E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Beryllium	N	Y	3.63E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Cadmium	N	Y	1.23E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Chromium	N	Y	4.88E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Cobalt	N	Y	2.08E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Pb	N	Y	3.63E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Manganese	N	Y	5.04E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.002	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Nickel	N	Y	9.88E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Selenium	N	Y	3.47E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Barium	N	N	3.10E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Boron	N	N	4.03E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Copper	N	N	1.22E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.001	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Molybdenum	N	N	9.00E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Vanadium	N	N	1.93E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Zinc	N	N	2.86E-03	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.001	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Tellurium	N	N	8.82E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON				0.43	[220]	150	[317]	150	[401]	VMT	134	Fluorides (as F)	N	N	2.38E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	0.428	[605]	0.000	0.000	0.000
ON		Unpaved Roads, Mine Roads (Light Trucks) O to N	NA	7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	PM10	N	N	0.905	[114]	6.40	2.016	2.016	80	[501]	1.28	0.403	0.403		0.403	19.278	[605]	17.452	3.490	0.018
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Total PM	N	N	3.631	[114]	25.67	8.085	8.085	80	[501]	5.13	1.617	1.617		1.617	19.278	[605]	69.999	14.000	0.073
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Antimony	N	Y	1.68E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.000	0.000	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Arsenic	N	Y	2.25E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.000	0.000	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Beryllium	N	Y	3.63E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.000	0.000	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Cadmium	N	Y	1.23E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.000	0.000	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Chromium	N	Y	4.88E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.009	0.002	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Cobalt	N	Y	2.08E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.004	0.001	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Pb	N	Y	3.63E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.007	0.001	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Manganese	N	Y	5.04E-03	[127]	0.04	0.011	0.011	80	[501]	0.01	0.002	0.002		0.002	19.278	[605]	0.097	0.019	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.000	0.000	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Nickel	N	Y	9.88E-04	[127]	0.01	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.019	0.004	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.000	0.000	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Selenium	N	Y	3.47E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.001	0.000	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Barium	N	N	3.10E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.006	0.001	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Boron	N	N	4.03E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.008	0.002	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Copper	N	N	1.22E-03	[127]	0.01	0.003	0.003	80	[501]	0.00	0.001	0.001		0.001	19.278	[605]	0.024	0.005	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Molybdenum	N	N	9.00E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.000	0.000	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Vanadium	N	N	1.93E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.004	0.001	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Zinc	N	N	2.86E-03	[127]	0.02	0.006	0.006	80	[501]	0.00	0.001	0.001		0.001	19.278	[605]	0.055	0.011	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Tellurium	N	N	8.82E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	19.278	[605]	0.002	0.000	0.000
ON				7.07	[220]	7,036	[317]	7,036	[401]	VMT	134	Fluorides (as F)	N	N	2.38E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.001	19.278	[605]	0.005	0.001	0.000
ON		Unpaved Roads, Mine Roads (Fuel Tanker) O to N	NA	0.21	[220]	469	[317]	469	[401]	VMT	134	PM10	N	N	0.905	[114]	0.19	0.134	0.134	80	[501]	0.04	0.027	0.027		0.027	1.285	[605]	1.163	0.233	0.001
ON				0.21	[220]	469	[317]	469	[401]	VMT	134	Total PM	N	N	3.631	[114]	0.78	0.539	0.539	80	[501]	0.16	0.108	0.108		0.108	1.285	[605]	4.667	0.933	0.005
ON				0.21	[220]	469	[317]	469	[401]	VMT	134	Antimony	N	Y	1.68E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	1.285	[605]	0.000	0.000	0.000
ON				0.21	[220]	469	[317]	469	[401]	VMT	134	Arsenic	N	Y	2.25E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	1.285	[605]	0.000	0.000	0.000
ON				0.21	[220]	469	[317]	469	[401]	VMT	134	Beryllium	N	Y	3.63E-06	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	1.285	[605]	0.000	0.000	0.000
ON				0.21	[220]	469	[317]	469	[401]	VMT	134	Cadmium	N	Y	1.23E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	1.285	[605]	0.000	0.000	0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Stack ID	ID	Description	APCD ID	Max Throughput (Units/hr) Note	Projected Actual (Units/yr) Note	(Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applic. (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc Emis (ton/yr)	Control Eff (%) Note	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont Emis (tons/yr)	Emission Std or Oper Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day Note	Max Unc Emis lb/day	Max Cont Emis lb/day	g/sec Model Input
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Chromium	N	Y	4.88E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.001	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Cobalt	N	Y	2.08E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Pb	N	Y	3.63E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.001	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Manganese	N	Y	5.04E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.006	0.001	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Nickel	N	Y	9.88E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.001	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Selenium	N	Y	3.47E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Barium	N	N	3.10E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Boron	N	N	4.03E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.001	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Copper	N	N	1.22E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.002	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Molybdenum	N	N	9.00E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Vanadium	N	N	1.93E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Zinc	N	N	2.86E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.004	0.001	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Tellurium	N	N	8.82E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
ON				0.21 [220]	469 [317]	469 [401]	VMT	134	Fluorides (as F)	N	N	2.38E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	1.285 [605]	0.000	0.000	0.000
LLN	FS 012	Unpaved Roads, Mine Roads (Haul Trucks) LL to N	NA	0.81 [220]	284 [317]	284 [401]	VMT	134	PM10	N	N	0.905 [114]	0.73	0.081	0.081	80 [501]	0.15	0.016	0.016		0.016	0.811 [605]	0.735	0.147	0.001
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Total PM	N	N	3.631 [114]	2.95	0.327	0.327	80 [501]	0.59	0.065	0.065		0.065	0.811 [605]	2.946	0.589	0.003
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Antimony	N	Y	1.68E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Arsenic	N	Y	2.25E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Beryllium	N	Y	3.63E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Cadmium	N	Y	1.23E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Chromium	N	Y	4.88E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Cobalt	N	Y	2.08E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Pb	N	Y	3.63E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Manganese	N	Y	5.04E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.004	0.001	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Nickel	N	Y	9.88E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.001	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Selenium	N	Y	3.47E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Barium	N	N	3.10E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Boron	N	N	4.03E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Copper	N	N	1.22E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.001	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Molybdenum	N	N	9.00E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Vanadium	N	N	1.93E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Zinc	N	N	2.86E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.002	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Tellurium	N	N	8.82E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN				0.81 [220]	284 [317]	284 [401]	VMT	134	Fluorides (as F)	N	N	2.38E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	0.811 [605]	0.000	0.000	0.000
LLN		Unpaved Roads, Mine Roads (Light Trucks) LL to N	NA	13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	PM10	N	N	0.905 [114]	12.12	3.818	3.818	80 [501]	2.42	0.764	0.764		0.764	36.513 [605]	33.055	6.611	0.035
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Total PM	N	N	3.631 [114]	48.61	15.313	15.313	80 [501]	9.72	3.063	3.063		3.063	36.513 [605]	132.580	26.516	0.139
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Antimony	N	Y	1.68E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.001	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Arsenic	N	Y	2.25E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.001	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Beryllium	N	Y	3.63E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Cadmium	N	Y	1.23E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Chromium	N	Y	4.88E-04 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.018	0.004	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Cobalt	N	Y	2.08E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.008	0.002	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Pb	N	Y	3.63E-04 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.013	0.003	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Manganese	N	Y	5.04E-03 [127]	0.07	0.021	0.021	80 [501]	0.01	0.004	0.004		0.004	36.513 [605]	0.184	0.037	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Nickel	N	Y	9.88E-04 [127]	0.01	0.004	0.004	80 [501]	0.00	0.001	0.001		0.001	36.513 [605]	0.036	0.007	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Selenium	N	Y	3.47E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.001	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Barium	N	N	3.10E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.011	0.002	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Boron	N	N	4.03E-04 [127]	0.01	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.015	0.003	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Copper	N	N	1.22E-03 [127]	0.02	0.005	0.005	80 [501]	0.00	0.001	0.001		0.001	36.513 [605]	0.045	0.009	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Molybdenum	N	N	9.00E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.000	0.000	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Vanadium	N	N	1.93E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.007	0.001	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Zinc	N	N	2.86E-03 [127]	0.04	0.012	0.012	80 [501]	0.01	0.002	0.002		0.002	36.513 [605]	0.104	0.021	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Tellurium	N	N	8.82E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.003	0.001	0.000
LLN				13.39 [220]	13,327 [317]	13,327 [401]	VMT	134	Fluorides (as F)	N	N	2.38E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	36.513 [605]	0.009	0.002	0.000
LLN		Unpaved Roads, Mine Roads (Fuel Tanker) LL to N	NA	0.41 [220]	888 [317]	888 [401]	VMT	134	PM10	N	N	0.905 [114]	0.37	0.255	0.255	80 [501]	0.07	0.051	0.051		0.051	2.434 [605]	2.204	0.441	0.002
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Total PM	N	N	3.631 [114]	1.47	1.021	1.021	80 [501]	0.29	0.204	0.204		0.204	2.434 [605]	8.839	1.768	0.009
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Antimony	N	Y	1.68E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Arsenic	N	Y	2.25E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Beryllium	N	Y	3.63E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Cadmium	N	Y	1.23E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Chromium	N	Y	4.88E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.001	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Cobalt	N	Y	2.08E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Pb	N	Y	3.63E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.001	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Manganese	N	Y	5.04E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.012	0.002	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Mercury	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Nickel	N	Y	9.88E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.002	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Phosphorus	N	Y	0.00E+00 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Selenium	N	Y	3.47E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Barium	N	N	3.10E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.001	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Boron	N	N	4.03E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.001	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Copper	N	N	1.22E-03 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.003	0.001	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Molybdenum	N	N	9.00E-06 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Vanadium	N	N	1.93E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Zinc	N	N	2.86E-03 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.007	0.001	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Tellurium	N	N	8.82E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
LLN				0.41 [220]	888 [317]	888 [401]	VMT	134	Fluorides (as F)	N	N	2.38E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	2.434 [605]	0.000	0.000	0.000
RFCRD	FS 049	Fueling Facility Circle (Fuel Tankers, Haul Trucks)	NA	1.12 [221]	2,686 [318]	2,686 [401]	VMT	134	PM10	N	N	4.332 [114]	4.83	3.682	3.682	80 [501]	0.97	0.736	0.736		0.736	7.359 [606]	31.879	6.376	0.033
RFCRD				1.12 [221]	2,686 [318]	2,686 [401]	VMT	134	Total PM	N	N	17.376 [114]	19.37	14.768	14.768	80 [501]	3.87	2.954	2.954		2.954	7.359 [606]	127.865	25.573	0.134
RFCRD				1.12 [221]	2,686 [318]	2,686 [401]	VMT	134	Antimony	N	Y	8.04E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	7.359 [606]	0.001	0.000	0.000
RFCRD				1.12 [221]	2,686 [318]	2,686 [401]	VMT	134	Arsenic	N	Y	1.08E-04 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	7.359 [606]	0.001	0.000	0.000
RFCRD				1.12 [221]	2,686 [318]	2,686 [401]	VMT	134	Beryllium	N	Y	1.74E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	7.359 [606]	0.000	0.000	0.000
RFCRD				1.12 [221]	2,686 [318]	2,686 [401]	VMT	134	Cadmium	N	Y	5.89E-05 [127]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000	7.359 [606]	0.000	0.000	0.000
RFCRD				1.12 [221]	2,686 [318]	2,686 [401]	VMT	134	Chromium	N	Y	2.34E-03 [127]	0.00	0.002	0.002	80 [501]	0.00	0.000	0.000		0.000	7.359 [606]	0.017	0.003	0.000
RFCRD				1.12 [221]	2,686 [318]	2,686 [401]	VMT	134	Cobalt	N	Y	9.96E-04 [127]	0.00	0.001	0.001	80 [501]	0.00	0.000	0.000		0.000	7.359 [606]	0.007	0.001	0.000

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	Projected Actual (Units/yr)	Note	(Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max Cont. Emissions lb/day	g/sec Model Input
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Pb	N	Y	1.74E-03	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.013	0.003	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Manganese	N	Y	2.41E-02	[127]	0.03	0.021	0.021	80	[501]	0.01	0.004	0.004		0.004	7.359	[606]	0.178	0.036	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.000	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Nickel	N	Y	4.73E-03	[127]	0.01	0.004	0.004	80	[501]	0.00	0.001	0.001		0.001	7.359	[606]	0.035	0.007	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.000	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Selenium	N	Y	1.66E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.001	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Barium	N	N	1.48E-03	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.011	0.002	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Boron	N	N	1.93E-03	[127]	0.00	0.002	0.002	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.014	0.003	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Copper	N	N	5.86E-03	[127]	0.01	0.005	0.005	80	[501]	0.00	0.001	0.001		0.001	7.359	[606]	0.043	0.009	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Molybdenum	N	N	4.31E-05	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.000	0.000	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Vanadium	N	N	9.22E-04	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.007	0.001	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Zinc	N	N	1.37E-02	[127]	0.02	0.012	0.012	80	[501]	0.00	0.002	0.002		0.002	7.359	[606]	0.101	0.020	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Tellurium	N	N	4.22E-04	[127]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.003	0.001	0.000
RFCRD				1.12	[221]	2,686	[318]	2,686	[401]	VMT	134	Fluorides (as F)	N	N	1.14E-03	[127]	0.00	0.001	0.001	80	[501]	0.00	0.000	0.000		0.000	7.359	[606]	0.008	0.002	0.000
WEC12	FS 013	Cat 1 & 2/Overburden Stockpile Wind Erosion	NA	NA	[222]	465	[319]	465	[401]	acres	0	PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC12				NA	[222]	465	[319]	465	[401]	acres	0	Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC3WR	FS 022	Cat 3 Waste Rock Stockpile Wind Erosion	NA	NA	[222]	72	[319]	72	[401]	acres	0	PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC3WR				NA	[222]	72	[319]	72	[401]	acres	0	Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC3LO	FS 040	Cat 3 Lean Ore East Stockpile	NA	NA	[222]	157	[319]	157	[401]	acres	0	PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC3LO				NA	[222]	157	[319]	157	[401]	acres	0	Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC4WR	FS 041	Cat 4 Waste Rock Stockpile	NA	NA	[222]	63	[319]	63	[401]	acres	0	PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC4WR				NA	[222]	63	[319]	63	[401]	acres	0	Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC4LO	FS 042	Cat 4 Lean Ore/Surge Stockpile	NA	NA	[222]	55	[319]	55	[401]	acres	0	PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEC4LO				NA	[222]	55	[319]	55	[401]	acres	0	Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEOBSG	FS 043	Overburden Storage Pile Wind Erosion	NA	NA	[222]	62	[319]	62	[401]	acres	0	PM10	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000
WEOBSG				NA	[222]	62	[319]	62	[401]	acres	0	Total PM	N	N	0	[124]	NA	0.000	0.000	0	[502]	NA	0.000	0.000		0.000					0.000

Stockpile Liner Construction Emissions

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum	Note	Projected Actual	Note	Units/yr	Note	Units	Annual days	Pollutant	PSD	HAP?	Emission Factor	Note	Max Unc lb/hr	tons/yr	Proj Act	CE %	Note	Max Cont lb/hr	tons/yr	Proj Act Cont	Std	Limited	Max Throughput				g/sec
C12MH	FS 017	Surface Overburden, Truck Load - Cat 1/2	NA	0.0	[223]	0	[320]	0	[401]	Tons surface		PM10	N	N	0.0002	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Total PM	N	N	0.0004	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Antimony	N	Y	1.85E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Arsenic	N	Y	2.47E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Beryllium	N	Y	3.99E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Cadmium	N	Y	1.35E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Chromium	N	Y	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Cobalt	N	Y	3.19E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Pb	N	Y	3.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Manganese	N	Y	4.27E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Mercury	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Nickel	N	Y	2.63E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Phosphorus	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Selenium	N	Y	3.82E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Barium	N	N	3.41E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Boron	N	N	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Copper	N	N	1.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Molybdenum	N	N	9.89E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Vanadium	N	N	2.12E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Zinc	N	N	3.14E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Tellurium	N	N	9.69E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C12MH				0.0	[223]	0	[320]	0	[401]	Tons surface		Fluorides (as F)	N	N	2.62E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH		Surface Overburden, Truck Load - Cat 3	NA	0.0	[223]	0	[320]	0	[401]	Tons surface		PM10	N	N	0.0002	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Total PM	N	N	0.0004	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Antimony	N	Y	1.85E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Arsenic	N	Y	2.47E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Beryllium	N	Y	3.99E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Cadmium	N	Y	1.35E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Chromium	N	Y	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Cobalt	N	Y	3.19E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Pb	N	Y	3.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Manganese	N	Y	4.27E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Mercury	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Nickel	N	Y	2.63E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Phosphorus	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Selenium	N	Y	3.82E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Barium	N	N	3.41E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Boron	N	N	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Copper	N	N	1.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Molybdenum	N	N	9.89E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Vanadium	N	N	2.12E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	72	[320]	0	[401]	Tons surface		Zinc	N	N	3.14E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Tellurium	N	N	9.69E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3WRMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Fluorides (as F)	N	N	2.62E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH		Surface Overburden, Truck Load - Cat 3 LO	NA	0.0	[223]	0	[320]	0	[401]	Tons surface		PM10	N	N	0.0002	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Total PM	N	N	0.0004	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Antimony	N	Y	1.85E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Arsenic	N	Y	2.47E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Beryllium	N	Y	3.99E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Cadmium	N	Y	1.35E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Chromium	N	Y	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Cobalt	N	Y	3.19E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Pb	N	Y	3.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Manganese	N	Y	4.27E-07	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Mercury	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Nickel	N	Y	2.63E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Phosphorus	N	Y	0.00E+00	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Selenium	N	Y	3.82E-09	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Barium	N	N	3.41E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Boron	N	N	4.43E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Copper	N	N	1.99E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Molybdenum	N	N	9.89E-10	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
C3LOMH				0.0	[223]	0	[320]	0	[401]	Tons surface		Vanadium	N	N	2.12E-08	[115]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Max (Units/hr) Note	Throughput Max (Units/yr) Note	Throughput Proj Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Unc. PTE (lb/hr)	Max. Unc. PTE (tons/yr)	Proj. Act. Unc. Emissions (ton/yr)	Control Efficiency (%) Note	Max. Cont. PTE (lb/hr)	Max. Cont. PTE (tons/yr)	Proj. Act. Cont. Emissions (tons/yr)	Emission Std or Operational Limit	Limited Cont. PTE (tons/yr)	Max Throughput units/day Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
C3LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C3LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH		Surface Overburden, Truck Load - Cat 4	NA	0.0 [223]	0 [320]	0 [401]	Tons surface		PM10	N	N	0.0002 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Total PM	N	N	0.0004 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4WRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH		Surface Overburden, Truck Load - Cat 4 LO	NA	0.0 [223]	0 [320]	0 [401]	Tons surface		PM10	N	N	0.0002 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Total PM	N	N	0.0004 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
C4LOMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH	FS 045	Surface Overburden, Truck Unload, storage pile	NA	0.0 [223]	0 [320]	0 [401]	Tons surface		PM10	N	N	0.0002 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Total PM	N	N	0.0004 [114]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				0.0 [223]	0 [320]	0 [401]	Tons surface		Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH	FS 046	Surface Overburden, Screening	NA	301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		PM10	Y	N	0.0002 [116]	0.22	0.669	0.669	0 [502]	0.22	0.669	0.669	GP 001	0.669				0.028
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Total PM	Y	N	0.0022 [116]	0.66	1.989	1.989	0 [502]	0.66	1.989	1.989	GP 001					0.084
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Antimony	Y	Y	1.02E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Arsenic	Y	Y	1.36E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Beryllium	Y	Y	2.20E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Cadmium	Y	Y	7.46E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Chromium	Y	Y	2.44E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Cobalt	Y	Y	1.76E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Pb	Y	Y	2.20E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Manganese	Y	Y	2.36E-06 [115]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Mercury	Y	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Nickel	Y	Y	1.45E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Phosphorus	Y	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Selenium	Y	Y	2.10E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Barium	Y	N	1.88E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Boron	Y	N	2.44E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Copper	Y	N	1.10E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Molybdenum	Y	N	5.46E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Vanadium	Y	N	1.17E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Zinc	Y	N	1.73E-06 [115]	0.00	0.002	0.002	0 [502]	0.00	0.002	0.002		0.002				0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Tellurium	Y	N	5.35E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000				0.000

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Emission Unit Description	APCD ID	Max Throughput (Units/hr) [Note]	Projected Actual (Units/yr) [Note]	(Units/yr) [Note]	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) [Note]	Max Unc PTE (lb/hr)	Max Unc PTE (tons/yr)	Proj Act Unc Emiss (ton/yr)	Control Eff (%) [Note]	Max Cont PTE (lb/hr)	Max Cont PTE (tons/yr)	Proj Act Cont Emiss (tons/yr)	Emission Std or Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Note	Max Unc Emiss lb/day	Max Cont Emiss lb/day	g/sec Model Input
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Fluorides (as F)	Y	N	1.44E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH	FS 047	Surface Overburden, Screen Discharge	NA	301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		PM10	Y	N	0.0002 [114]	0.06	0.171	0.171	0 [502]	0.06	0.171	0.171	GP 001						0.007
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Total PM	Y	N	0.0004 [114]	0.12	0.361	0.361	0 [502]	0.12	0.361	0.361	GP 001						0.015
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Antimony	Y	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Arsenic	Y	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Beryllium	Y	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Cadmium	Y	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Chromium	Y	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Cobalt	Y	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Pb	Y	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Manganese	Y	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Mercury	Y	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Nickel	Y	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Phosphorus	Y	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Selenium	Y	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Barium	Y	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Boron	Y	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Copper	Y	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Molybdenum	Y	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Vanadium	Y	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Zinc	Y	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Tellurium	Y	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Fluorides (as F)	Y	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH	FS 048	Surface Overburden, Truck Reload	NA	301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		PM10	N	N	0.0002 [114]	0.06	0.171	0.171	0 [502]	0.06	0.171	0.171		0.171					0.007
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Total PM	N	N	0.0004 [114]	0.12	0.361	0.361	0 [502]	0.12	0.361	0.361		0.361					0.015
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSRMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	tons surface		Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH	FS 018	Surface Overburden, Truck Unload - Stockpile	NA	301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		PM10	N	N	0.0002 [114]	0.06	0.171	0.171	0 [502]	0.06	0.171	0.171		0.171					0.007
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Total PM	N	N	0.0004 [114]	0.12	0.361	0.361	0 [502]	0.12	0.361	0.361		0.361					0.015
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Antimony	N	Y	1.85E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Arsenic	N	Y	2.47E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Beryllium	N	Y	3.99E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Cadmium	N	Y	1.35E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Chromium	N	Y	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Cobalt	N	Y	3.19E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Pb	N	Y	3.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Manganese	N	Y	4.27E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Mercury	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Nickel	N	Y	2.63E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Phosphorus	N	Y	0.00E+00 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Selenium	N	Y	3.82E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Barium	N	N	3.41E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Boron	N	N	4.43E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Copper	N	N	1.99E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Molybdenum	N	N	9.89E-10 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Vanadium	N	N	2.12E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Zinc	N	N	3.14E-07 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Tellurium	N	N	9.69E-09 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
OBSKMH				301.4 [206]	1,808,100.0 [306]	1,808,100 [401]	Tons surface		Fluorides (as F)	N	N	2.62E-08 [115]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup	FS 021	Overburden Haul - storage pile - Cat 1/2	NA	[224]	[321]	0 [401]	VMT	134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup				[224]	[321]	0 [401]	VMT	134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup		Overburden Haul - storage pile - Cat 3		[224]	[321]	0 [401]	VMT	134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup				[224]	[321]	0 [401]	VMT	134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup		Overburden Haul - storage pile - Cat 3 LO		[224]	[321]	0 [401]	VMT	134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup				[224]	[321]	0 [401]	VMT	134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup		Overburden Haul - storage pile - Cat 4		[224]	[321]	0 [401]	VMT	134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup				[224]	[321]	0 [401]	VMT	134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup		Overburden Haul - storage pile Cat 4 LO		[224]	[321]	0 [401]	VMT	134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup				[224]	[321]	0 [401]	VMT	134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup		Overburden Haul - stockpile		[224]	[321]	0 [401]	VMT	134	PM10	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Dup				[224]	[321]	0 [401]	VMT	134	Total PM	N	N	0.000 [125]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000							0.000
Contractor Crushing Operations (for road construction, etc.)																										
OBSRMH	FS 023	Primary Crushing	NA	300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		PM10	Y	N	0.00054 [126]	0.16	0.270	0.270	0 [503]	0.16	0.270	0.270	10% opacity	GP 001					0.020
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Total PM	Y	N	0.0012 [126]	0.36	0.600	0.600	0 [503]	0.36	0.600	0.600	(NSPS)	GP 001					0.045
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Antimony	Y	Y	5.56E-09 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000							0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Arsenic	Y	Y	7.44E-09 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000							0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Beryllium	Y	Y	1.20E-09 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000							0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cadmium	Y	Y	4.07E-09 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000							0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Chromium	Y	Y	1.61E-07 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000							0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Cobalt	Y	Y	6.88E-08 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000							0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Pb	Y	Y	1.20E-07 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000							0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Manganese	Y	Y	1.67E-06 [127]	0.00	0.001	0.001	0 [503]	0.00	0.001	0.001		0.001					0.000

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	Throughput Maximum (Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max Cont. Emissions lb/day	g/sec Model Input
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	Y	Y	3.26E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	Y	Y	1.15E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	1.02E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	1.33E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	4.04E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	2.98E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	6.37E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	9.44E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	2.92E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	7.87E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH		Screening	NA	300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	Y	N	0.00074	[128]	0.22	0.370	0.370	0	[503]	0.22	0.370	0.370	10% opacity	GP 001					0.028
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	Y	N	0.0022	[128]	0.66	1.100	1.100	0	[503]	0.66	1.100	1.100	(NSPS)	GP 001					0.083
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	Y	Y	1.02E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	Y	Y	1.36E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	Y	Y	2.20E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	Y	Y	7.46E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	Y	Y	2.96E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	Y	Y	1.26E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	Y	Y	2.20E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	Y	Y	3.05E-06	[127]	0.00	0.002	0.002	0	[503]	0.00	0.002	0.002		0.002					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	Y	Y	5.98E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	Y	Y	2.10E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	1.88E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	2.44E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	7.41E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	5.46E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	1.17E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	1.73E-06	[127]	0.00	0.001	0.001	0	[503]	0.00	0.001	0.001		0.001					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	5.35E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	1.44E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH		To Product Conveyor	NA	300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	Y	N	4.60E-05	[129]	0.01	0.023	0.023	0	[503]	0.01	0.023	0.023	10% opacity	GP 001					0.002
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	Y	N	0.00014	[129]	0.04	0.070	0.070	0	[503]	0.04	0.070	0.070	(NSPS)	GP 001					0.005
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	Y	Y	6.48E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	Y	Y	8.68E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	Y	Y	1.40E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	Y	Y	4.75E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	Y	Y	1.88E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	Y	Y	8.02E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	Y	Y	1.40E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	Y	Y	1.94E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	Y	Y	3.81E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	Y	Y	1.34E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	1.20E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	1.55E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	4.72E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	3.47E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	7.43E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	1.10E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	3.40E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	9.18E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH		Conveyor to Secondary Crushing (2 transfers)	NA	300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	Y	N	9.20E-05	[129]	0.03	0.046	0.046	0	[503]	0.03	0.046	0.046	10% opacity	GP 001					0.003
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	Y	N	2.80E-04	[129]	0.08	0.140	0.140	0	[503]	0.08	0.140	0.140	(NSPS)	GP 001					0.011
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	Y	Y	1.30E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	Y	Y	1.74E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	Y	Y	2.80E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	Y	Y	9.49E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	Y	Y	3.77E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	Y	Y	1.60E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	Y	Y	2.80E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	Y	Y	3.89E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	Y	Y	7.62E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	Y	Y	2.68E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	2.39E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	3.11E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	9.44E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	6.94E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	1.49E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	2.20E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	6.80E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	1.84E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH		Secondary Crushing	NA	300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	Y	N	0.00054	[126]	0.16	0.270	0.270	0	[503]	0.16	0.270	0.270	10% opacity	GP 001					0.020
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	Y	N	0.0012	[126]	0.36	0.600	0.600	0	[503]	0.36	0.600	0.600	(NSPS)	GP 001					0.045
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	Y	Y	5.56E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	Y	Y	7.44E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	Y	Y	1.20E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	Y	Y	4.07E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	Y	Y	1.61E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	Y	Y	6.88E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	Y	Y	1.20E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	Y	Y	1.67E-06	[127]	0.00	0.001	0.001	0	[503]	0.00	0.001	0.001		0.001					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	Y	Y	3.26E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000

PolyMet - Hoyt Lakes, Minnesota
Table 2: Calculation of Potential Emissions at Mine Site - Year 16 - In Pit Disposal

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Proj Actual (Units/yr)	Note	(Units/yr)	Note	Units	Annual days with precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc Emissions (ton/yr)	Control Eff (%)	Note	Max Cont PTE (lb/hr)	(tons/yr)	Proj Act Cont Emissions (tons/yr)	Emission Std or Op Limit	Limited Cont PTE (tons/yr)	Max Throughput units/day	Note	Max Unc lb/day	Max Cont lb/day	g/sec Model Input
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	Y	Y	1.15E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	1.02E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	1.33E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	4.04E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	2.98E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	6.37E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	9.44E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	2.92E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	7.87E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH		Screening	NA	300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	Y	N	0.00074	[128]	0.22	0.370	0.370	0	[503]	0.22	0.370	0.370	10% opacity	GP 001					0.028
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	Y	N	0.0022	[128]	0.66	1.100	1.100	0	[503]	0.66	1.100	1.100	(NSPS)	GP 001					0.083
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	Y	Y	1.02E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	Y	Y	1.36E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	Y	Y	2.20E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	Y	Y	7.46E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	Y	Y	2.96E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	Y	Y	1.26E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	Y	Y	2.20E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	Y	Y	3.05E-06	[127]	0.00	0.002	0.002	0	[503]	0.00	0.002	0.002		0.002					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	Y	Y	5.98E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	Y	Y	2.10E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	1.88E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	2.44E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	7.41E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	5.46E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	1.17E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	1.73E-06	[127]	0.00	0.001	0.001	0	[503]	0.00	0.001	0.001		0.001					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	5.35E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	1.44E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH		Return Conveyor (2 transfers)	NA	300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	Y	N	9.20E-05	[129]	0.03	0.046	0.046	0	[503]	0.03	0.046	0.046	10% opacity	GP 001					0.003
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	Y	N	2.80E-04	[129]	0.08	0.140	0.140	0	[503]	0.08	0.140	0.140	(NSPS)	GP 001					0.011
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	Y	Y	1.30E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	Y	Y	1.74E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	Y	Y	2.80E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	Y	Y	9.49E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	Y	Y	3.77E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	Y	Y	1.60E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	Y	Y	2.80E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	Y	Y	3.89E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	Y	Y	7.62E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	Y	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	Y	Y	2.68E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	Y	N	2.39E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	Y	N	3.11E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	Y	N	9.44E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	Y	N	6.94E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	Y	N	1.49E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	Y	N	2.20E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	Y	N	6.80E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	Y	N	1.84E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH		Product to Stock Pile	NA	300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	N	N	4.60E-05	[129]	0.01	0.023	0.023	0	[503]	0.01	0.023	0.023		0.023					0.002
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	N	N	0.00014	[129]	0.04	0.070	0.070	0	[503]	0.04	0.070	0.070		0.070					0.005
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	N	Y	6.48E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	N	Y	8.68E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	N	Y	1.40E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	N	Y	4.75E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	N	Y	1.88E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	N	Y	8.02E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	N	Y	1.40E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	N	Y	1.94E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	N	Y	3.81E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	N	Y	1.34E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Barium	N	N	1.20E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Boron	N	N	1.55E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Copper	N	N	4.72E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Molybdenum	N	N	3.47E-10	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Vanadium	N	N	7.43E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Zinc	N	N	1.10E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Tellurium	N	N	3.40E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Fluorides (as F)	N	N	9.18E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH		Truck Loading	NA	300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		PM10	N	N	0.0044	[114]	1.33	2.221	2.221	0	[503]	1.33	2.221	2.221		2.221					0.168
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Total PM	N	N	0.0094	[114]	2.82	4.696	4.696	0	[503]	2.82	4.696	4.696		4.696					0.355
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Antimony	N	Y	4.35E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Arsenic	N	Y	5.82E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Beryllium	N	Y	9.39E-09	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cadmium	N	Y	3.18E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Chromium	N	Y	1.26E-06	[127]	0.00	0.001	0.001	0	[503]	0.00	0.001	0.001		0.001					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Cobalt	N	Y	5.38E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Pb	N	Y	9.38E-07	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Manganese	N	Y	1.30E-05	[127]	0.00	0.007	0.007	0	[503]	0.00	0.007	0.007		0.007					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Mercury	N	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Nickel	N	Y	2.55E-06	[127]	0.00	0.001	0.001	0	[503]	0.00	0.001	0.001		0.001					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Phosphorus	N	Y	0.00E+00	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000
OBSRMH				300.00	[225]	1,000,000	[322]	1,000,000	[401]	tons		Selenium	N	Y	8.98E-08	[127]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000					0.000

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled Potential to Emit [1] (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	Max. Controlled Potential to Emit [2] (tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Max. Unc. Emissions lb/day Note	Max. Cont. Emissions lb/day	g/sec Model Input
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Barium	N	N	8.02E-07 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Boron	N	N	1.04E-06 [127]	0.00	0.001	0.001	0 [503]	0.00	0.001	0.001		0.001				0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Copper	N	N	3.17E-06 [127]	0.00	0.002	0.002	0 [503]	0.00	0.002	0.002		0.002				0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Molybdenum	N	N	2.33E-08 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Vanadium	N	N	4.98E-07 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Zinc	N	N	7.39E-06 [127]	0.00	0.004	0.004	0 [503]	0.00	0.004	0.004		0.004				0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Tellurium	N	N	2.28E-07 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
OBSRMH				300.00 [225]	1,000,000 [322]	1,000,000 [401]	tons		Fluorides (as F)	N	N	6.16E-07 [127]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000				0.000
NA	GP 001	All PM/PM10 Point Sources	[3]	NA	NA	NA	NA		PM10	Y	N	NA	NA	NA			NA	NA	See above	See above	240				NA
NA				NA	NA	NA	NA		Total PM	Y	N	NA	NA	NA			NA	NA	See above	See above	240				NA

Totals for PSD Applicability (i.e. PSD Point Sources)

	Pollutant	Max. Unc. PTE (lb/hr)	(tons/yr)	Proj. Act. Unc. (ton/yr)	Max. Cont. PTE (lb/hr)	(tons/yr)	Proj. Act. Cont. (tons/yr)	Limited Cont. PTE (tons/yr)
Criteria Pollutant Totals	PM10	2.99	3.47	3.33	2.99	3.47	3.33	240.00
	SO2	2.65	0.67	0.67	2.65	0.67	0.67	0.67
	H2SO4/SO3	0.07	0.02	0.02	0.07	0.02	0.02	0.02
	Total PM	5.24	8.33	8.19	5.24	8.33	8.19	240.00
	NOx	24.27	10.94	8.36	24.27	10.94	8.36	10.94
	VOC	1.96	0.81	0.65	1.96	0.81	0.65	0.81
	Carbon Monoxide	5.65	4.22	2.73	5.65	4.22	2.73	4.22
	Pb	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Toxic Air Pollutant Totals [7]	Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CS2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fluorides (as F)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mine Site Totals (Point and Fugitive Sources)

	Pollutant	Max. Unc. PTE (lb/hr)	(tons/yr)	Proj. Act. Unc. (ton/yr)	Max. Cont. PTE (lb/hr)	(tons/yr)	Proj. Act. Cont. (tons/yr)	Limited Cont. PTE (tons/yr)
Criteria Pollutant Totals [4]	PM10	1055.13	2594.99	2594.76	243.91	650.74	650.52	887.16
	SO2	7.10	1.78	0.90	7.10	1.78	0.90	1.78
	H2SO4/SO3	0.17	0.04	0.02	0.17	0.04	0.02	0.04
	Total PM	3950.25	9531.06	9530.77	856.51	2176.45	2176.15	2407.92
	NOx	50.67	17.54	9.73	50.67	17.54	9.73	17.54
	VOC	2.67	0.99	0.69	2.67	0.99	0.69	0.99
	Carbon Monoxide	11.70	5.74	3.05	11.70	5.74	3.05	5.74
	Pb	0.39	0.92	0.92	0.08	0.19	0.19	0.19
Toxic Air Pollutant Totals [5]	Antimony	0.02	0.04	0.04	0.00	0.01	0.01	0.01
	Arsenic	0.02	0.06	0.06	0.01	0.01	0.01	0.01
	Beryllium	0.00	0.01	0.01	0.00	0.00	0.00	0.00
	Cadmium	0.01	0.03	0.03	0.00	0.01	0.01	0.01
	Chromium	0.53	1.28	1.28	0.11	0.29	0.29	0.29
	Cobalt	0.23	0.55	0.55	0.05	0.13	0.13	0.13
	Manganese	5.48	13.24	13.24	1.19	3.03	3.03	3.03
	Mercury	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Nickel	1.09	2.68	2.68	0.25	0.68	0.68	0.68
	Phosphorus	0.04	0.18	0.18	0.04	0.18	0.18	0.18
	Selenium	0.04	0.09	0.09	0.01	0.02	0.02	0.02
	Barium	0.34	0.81	0.81	0.07	0.18	0.18	0.18
	Boron	0.43	1.03	1.03	0.09	0.21	0.21	0.21
	Copper	1.43	3.63	3.63	0.38	1.15	1.15	1.15
	Molybdenum	0.01	0.02	0.02	0.00	0.01	0.01	0.01
	Vanadium	0.21	0.51	0.51	0.05	0.12	0.12	0.12
	Zinc	3.06	7.28	7.28	0.62	1.49	1.49	1.49
	Tellurium	0.10	0.23	0.23	0.02	0.05	0.05	0.05
	Hafnium	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	POM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2-Methylnaphthalene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3-Methylchloranthrene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	7,12-Dimethylbenz(a)anthracene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Acenaphthene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Acenaphthylene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Anthracene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzo(a)anthracene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzo(a)pyrene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzo(b)fluoranthene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzo(g,h,i)perylene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzo(k)fluoranthene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Chrysene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Dibenzo(a,h)anthracene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fluoranthene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fluorene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Indeno(1,2,3-cd)pyrene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Phenanthrene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pyrene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Benzene	0.01	0.00	0.00	0.01	0.00	0.00	0.00
	Dichlorobenzene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Formaldehyde	0.01	0.00	0.00	0.01	0.00	0.00	0.00
	Hexane	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Toluene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Naphthalene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Xylene	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MIBC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	HF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	HCl	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	H2S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CS2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Crystalline Silica	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fluorides (as F)	0.26	0.64	0.64	0.06	0.15	0.15	0.15
	Acetaldehyde	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Acrolein	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Propylene	0.01	0.00	0.00	0.01	0.00	0.00	0.00

Stack ID	Emission Unit ID	Description	APCD ID	Throughput Maximum (Units/hr)	Note	Projected Actual (Units/yr)	Note	(Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max Cont. Emissions lb/day	g/sec Model Input
												Hexchrome					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												PGME					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												1,3-Butadiene					0.00	0.00	0.00			0.00	0.00	0.00		0.00					
												Total HAP					7.91	19.10	19.09			1.79	4.56	4.56		4.56					
Greenhouse Gas Totals												CO2					3268.58	5500.07	2764.22			3268.58	5500.07	2764.22		5500.07					
												N2O					0.08	0.36	0.18			0.08	0.36	0.18		0.36					
												CH4					0.02	0.08	0.04			0.02	0.08	0.04		0.08					

Emission Rates for Model Input - If daily calculations are blank, g/sec is based on hourly emission rate

Notes:
1.30   2.79
3.55

General References:
[1] Max. Uncontrolled Emissions (lb/hr) = EF (lb/unit) x Max. Hourly Throughput (units/hr).
    Max. Uncontrolled Emissions (tons/yr) = EF (lb/unit) x Max. Annual Throughput (units/yr) / 2,000 (lb/ton).
[2] Max. Controlled Emissions (lb/hr) = Max. Uncontrolled Emissions (lb/hr) x (1-Control Eff./100).
    Max. Controlled Emissions (tons/yr) = Max. Uncontrolled Emissions (tons/yr) x (1-Control Eff./100).
[3] Control devices are listed with the individual emission limits
[4] Lead is both a criteria pollutant and a toxic air pollutant, as well as a HAP.
[5] Pollutants evaluated included HAPs as well as other toxic compounds that may be evaluated in the AERA.
[6] These speciated compounds are HAPs because they are POM. HAP emissions are calculated with the total POM emission factor, which only included compounds measured above the detection limit in AP-42. The speciated compound data will be used as inputs to the AERA.
[7] CS2 is not a PSD pollutant, but the CS2 total, along with the H2S total are used to calculate TRS which is a PSD pollutant.

Emission Factor References:
[101] For metals for which block model data was not available, emissions are based on ore composition data obtained from various sources. Details are provided below:

Metal	Conc.	Source
Mercury	4.6 PPB	Rod mill feed analyses from 2000 pilot study
Selenium	5.54 PPM	Whole rock data set
Boron	10.08 PPM	Geology data set
Hafnium	1.83 PPM	Whole rock data set
Tellurium	42.63 PPM	Whole rock data set
Fluorides	178.95 PPM	Whole rock data set

Emission factors are calculated by converting the PPB, PPM or percent value to a weight fraction and multiplying this value times the PM emission factor.
All fluorine in the ore assumed to be in a form that would be measured as total fluoride by EPA Method 13A or 13B.
[102] Annual emissions calculated utilizing EPA Tanks Program version 4.09b using meteorological data for Duluth, MN. Tanks were assume to be horizontal cylindrical shape. Tank dimensions estimated from information available on commercially available 12000 gallon tanks (L = 32 ft, D = 8 ft.).
    Tanks assumed to be painted white. The tanks were also assumed to be vented at atmospheric pressure (i.e. no breather vents with vacuum and pressure settings). Hourly emissions are annual emissions divided by 8760 hours per year.
[103] Emission factors taken from AP-42 Table 3.3.-1, Diesel Fuel. VOC assumed equal to total organic compounds (TOC).
[104] Emission factor for SO2 taken from AP-42 Table 3.4-1. The fuel oil sulfur content based emission factor from this AP-42 section is expected to be more accurate for all engine sizes. Fuel oil sulfur content assumed to be 0.5% for worst case of purchasing used generator not subject to NSPS.
[105] Emission factor for H2SO4 calculated from data presented in "The Sulfur Speciation of Diesel Emissions from a Non-road Generator" by Zifei Liu, Mingming Lu, Tim C. Keener, and Fuyan Liang. Figure 5 presents sulfur conversion to SO4[2-], which is indicated elsewhere in the paper to be at least 90% H2SO4.
    From the figure, for the highest sulfur fuel (0.22%) at the highest load, the percent conversion is about 1.67%. The H2SO4 emission factor was calculated by %S / 100 * 7.13 lb/gallon * 98 lb/lb-mole H2SO4 / 32 lb/lb-mole S * 1.67/100 mole H2SO4/Mole S * / 140000 Btu/gallon * 10^6 MMBtu/Btu =
    0.026 * %S lb/MMBtu. This makes the emission calculations conservative since the SO2 factor assumes 100% conversion to SO2.
[106] Emission factors taken from AP-42 Table 3.3-2. For compounds measured below the detection limit, an emission factor based on 1/2 the detection limit was used. Total POM calculated as the sum of the emission factors for PAHs found above the detection limit.
[107] Emission factors taken from AP-42 Table 3.4-1 for Diesel Fuel. Maximum sulfur content of fuel assumed to be 0.5%. VOC assumed equivalent to non-methane total organics.
[108] Emission factor taken from AP-42 Table 3.4-2 for total PM10, including filterable and condensable particulate.
[109] Emission factor for H2SO4 calculated from data presented in "The Sulfur Speciation of Diesel Emissions from a Non-road Generator" by Zifei Liu, Mingming Lu, Tim C. Keener, and Fuyan Liang. Figure 5 presents sulfur conversion to SO4[2-], which is indicated elsewhere in the paper to be at least 90% H2SO4.
    From the figure, for the highest sulfur fuel (0.22%) at the highest load, the percent conversion is about 1.67%. The H2SO4 emission factor was calculated by %S / 100 * 7.13 lb/gallon * 98 lb/lb-mole H2SO4 / 32 lb/lb-mole S * 1.67/100 mole H2SO4/Mole S * / 140000 Btu/gallon * 10^6 MMBtu/Btu =
    0.026 * %S lb/MMBtu. This makes the emission calculations conservative since the SO2 factor assumes 100% conversion to SO2.
[110] Emission factors taken from AP-42 Table 3.4-3.
[111] Emission factors taken from AP-42 Table 3.4-4. A total POM emission factor was calculated as the sum of the emission factors for the compounds detected.
[112] Compound not detected per data in AP-42 Table 3.4-4. Emission factor based on 1/2 the detection limit.
[113] Emission factors taken from Table 1.5-1 of AP-42 for propane fired commercial boilers (0.3 to 10 MMBtu/hr). PM10 assumed equal to PM based on footnote d. Maximum sulfur concentration 0.2 gr/100 cf per Title V permit application for LTVSMC.
[114] See "Table 3: Calculation of Emission Factors for Fugitive Sources".
[115] Speciated emissions from overburden handling calculated by using available data on overburden composition.

Metal	Conc. (ppm)	Source	
Cadmium	3.39	Schmidt Paper	
Chromium	111	Rainy Lobe Till Data	
Copper	50	Rainy Lobe Till Data	
Nickel	66	Rainy Lobe Till Data	
Zinc	787	MPCA Lead Survey	
Lead	99.9	MPCA Lead Survey	
Manganese	1071	MPCA Lead Survey	
Arsenic	6.2	Category 1 Waste Rock	Concentration, where available, taken from worst case of
Barium	85.4	Category 1 Waste Rock	data for Rainy Lobe Till from Table 2 of Concentrations
Beryllium	1	Category 1 Waste Rock	of Six Trace Metals in Some Major Minnesota Soil
Antimony	4.63	Category 1 Waste Rock	Series by F.J. Pierce, R.H. Dowdy, and D.F. Grigal, data
Selenium	9.564	Waste Rock Data	for Minnesota soils parent material from The Content
Boron	111	Category 1/2 Waste Rock	and Distribution of Cd, Cr, Cu, Ni, Pb, and Zn in 16
Molybdenum	2.48	Category 1/2 Waste Rock	selected Minnesota Soil Series by F.J. Pierce and
Vanadium	53.07	Category 1/2 Waste Rock	unpublished data from the 1989 MPCA statewide soil
Tellurium	24.3	Category 1/2 Waste Rock	lead survey. When data for an element was not provided
Fluorides	65.56	Category 1/2 Waste Rock	in these sources, waste rock data was used.
Cobalt	8	Category 1/2 Waste Rock	

Particulate emissions assumed to have same composition as overburden
[116] Emission factor taken from 11.19.2-2 Emission Factors for Crushed Stone Processing Operations (lb/ton), Screening (controlled). The use of water sprays is not planned for this emission unit, but the natural moisture content of the material, 12.7% per
    Appendix B of RS49, make the use of the controlled emission factor more appropriate. Footnote "b" to Table 11.19.2-1 indicates that the range of moisture content for facilities with wet suppression systems is 0.55 to 2.88 percent.
    The same footnote also notes that direct spraying is not needed for each source, except for crushers.
[117] Trace mineral emissions based on waste rock composition developed from block models by PolyMet for each category of waste rock or lean ore. The average concentration for each year was determined. The maximum value for the 20 year mine life is used in the calculations.
    Particulate emissions are assumed to have the same metal content as the waste rock.
[118] Mercury composition of waste rock assume to be the same as that for the ore as described above. Particulate emissions assumed to contain same fraction of ore as waste rock.
[119] For metals not tracked in the block model, trace mineral emissions are based on waste rock composition data from the geology and whole rock data sets. Particulate emissions are assumed to have the same composition as the waste rock analyzed.
    All values taken from geology data accept selenium, tellurium, and fluorine which were taken from whole rock data. All fluorine in the waste rock was assumed to be in a form that would be measured as total fluorides by EPA methods 13A or 13B.
[120] Emission factor in lb TSP emitted per blast hole drilled taken from AP-42 Table 11.9-4. Speciated metals emissions based on composition data for each type of rock as described in the truck loading emission calculations.
[121] Trace mineral emission factors based on ore composition data developed by PolyMet from block models. An average composition for each pit for each year was determined. The highest value from each pit for the first five years is used in the calculations.
    Particulate emissions assumed to have same composition as the ore.
[122] Emission factor for PM10 taken from 11.19.2-2 Emission Factors for Crushed Stone Processing Operations (lb/ton), Truck Unloading - Fragmented Stone. PM estimated to be 3 x PM10 value based on relationship between PM and PM10 for other operations in Table 11.19.2-2.
[123] Emission factor taken from 11.19.2-2 Emission Factors for Crushed Stone Processing Operations (lb/ton), Conveyor Transfer Point.
[124] The potential for wind erosion from the stockpiles was evaluated by utilizing the procedure in AP-42 Section 13.2.5 and no wind erosion emissions were predicted to occur. The data used for the calculation included interpolated fastest mile data based on
    the 1974 Hibbing Airport meteorological data, and the following assumptions of a flat pile shape, daily pile disturbance and a threshold friction velocity (u*t) of 1.33 m/s (scoria).
[125] Emissions included under individual mine road segments above.
[126] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Tertiary Crushing (controlled). Emission factors are not given for primary and secondary crushing,
    but footnote n indicates that the tertiary crushing factors can be used as an upper bound.

Stack ID	Emission Unit		APCD ID	Throughput					Annual days with precipitation	Pollutant	PSD Applicability	HAP?	Emission Factor		Max. Uncontrolled Potential to Emit [1]		Proj. Act. Uncontrolled Emissions	Control Efficiency		Max. Controlled Potential to Emit [2]		Proj. Act. Controlled Emissions	Emission Std or Operational Limit	Limited Controlled Potential to Emit	Maximum Throughput		Max. Unc. Emissions	Max. Cont. Emissions	g/sec
	ID	Description		Maximum		Projected Actual		Units																						Model Input
				(Units/hr)	Note	(Units/yr)	Note	(Units/yr)	Note			(Y/N)	(Y/N)	(lb/Unit)	Note	(lb/hr)	(tons/yr)	(ton/yr)	(%)	Note	(lb/hr)	(tons/yr)	(tons/yr)		(tons/yr)	units/day	Note	lb/day	lb/day	

[127] Speciated emissions from construction rock processing and from use as road surface material calculated based on worst case expected composition. Overburden or Category 1 waste rock may be used for construction purposes, so data for both of these materials were considered.

Metal	Conc. (ppm)	Source	
Cadmium	3.39	Schmidt Paper	
Chromium	134.5	Category 1 Waste Rock	
Copper	337	Category 1 Waste Rock	
Nickel	272	Category 1 Waste Rock	
Zinc	787	MPCA Lead Survey	
Lead	99.9	MPCA Lead Survey	
Manganese	1388.2	Category 1 Waste Rock	
Arsenic	6.2	Category 1 Waste Rock	
Barium	85.4	Category 1 Waste Rock	Concentration, where available, taken from worst case of
Beryllium	1	Category 1 Waste Rock	data for Category 1 Waste Rock, Rainy Lobe Till from
Antimony	4.63	Category 1 Waste Rock	Table 2 of Concentrations of Six Trace Metals in Some
Selenium	9.564	Category 1/2 Waste Rock Data	Major Minnesota Soil Series by F.J. Pierce, R.H. Dowdy,
Boron	111	Category 1/2 Waste Rock Data	and D.F. Grigal, data for Minnesota soils parent material
Molybdenum	2.48	Category 1/2 Waste Rock Data	from The Content and Distribution of Cd, Cr, Cu, Ni, Pb,
Vanadium	53.07	Category 1/2 Waste Rock Data	and Zn in 16 selected Minnesota Soil Series by F.J.
Tellurium	24.3	Category 1/2 Waste Rock Data	Pierce and data from the 1989 MPCA statewide soil
Fluorides	65.56	Category 1/2 Waste Rock Data	lead survey. When data for an element was not provided
Cobalt	57.3	Category 1/2 Waste Rock Data	in these sources, Category 1/2 waste rock data was used.

Particulate emissions assumed to have same composition as worst case construction rock composition
[128] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Screening (controlled).
[129] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Conveyor Transfer Point (controlled). Where the emission unit consist of a transfer to and from the conveyor, the emission factor is multiplied by 2.

Maximum Hourly Throughput References:
[201] Throughput estimate based on Barr assumption that three 7,500 gallons tankers per day would deliver diesel fuel to the mine. Assumed a maximum of one and a half tankers would go to each tank. Average hourly throughput is: 7,500 gallons/tanker * 1.5 tankers/day / 24 hours/day = 468.75 gallons/hr.
[202] Based on preliminary design of waste water treatment facility by Barr, critical power demand is about 500 kW. It was assumed that a Caterpillar Standby 500 ekW would be installed. Based on literature available on the manufacturer's website, the fuel consumption at maximum load is 37.4 gallons/hr.
   This is converted to MMBtu/hr by 37.4 gal/hr * 140,000 Btu/gallon / 10^6 Btu/MMBtu = 5.236 MMBtu/hr.
[203] A portable generator will be used to provide temporary power to move large electric powered mining vehicles (e.g. excavators and drills). The generator will only provide power while the equipment is moved from one location with available electrical power to another. It was estimated that a 1100 hp engine would provide sufficient power for this operation.
   For emission factors expressed as lb/MMBtu, the hp rating was converted to MMBtu based on the Brake Specific Fuel Consumption of 7000 Btu/hp-hr from AP-42 Table 3.4-1 footnote e.
[204] Based on preliminary design of waste water treatment facility by Barr, heating demand can be supplied by propane space heaters with a maximum hourly heat input of 8.3 MMBtu/hr. This can be converted to Mgal propane/hr by: 8.3 MMBtu/hr / 91.5 MMBtu/Mgal = 0.0907 MGal/hr.
   A conservative estimate of annual emissions was made by assuming 50% utilization for the heaters. In actual operation, electric heaters are expected to supply a substantial portion of the heat demand.
[205] Per spreadsheet provided by PolyMet, no overburden will be stripped in year 16 of mine development.
[206] The maximum hourly overburden screening rate is based on the capacity of equipment available for hire from local contractors. The split between overburden from pit development and
   removed for stockpile foundation and liner system construction is based on the ratio of each source of overburden to the total in the peak year for overburden stripping (year 0). It was assumed that stockpiled overburden may be screened in years where the stripping rate does not equal the maximum projected demand for screened overburden, as is the case for year 16.
[207] Year 16 represents the highest VMT from hauling ore, waste rock, and overburden combined for the 20 year mine life and for the in pit disposal phase of mine operation. Much of the emission from mining operations are due to haul road dust generation, so Year 16 is representative of worst case operation during the in pit disposal phase of mine operation.
   The annual quantity of each category of waste rock and lean ore mined in the east and west pits in Year 16 was taken from data in RS67. The hourly rate was assumed to be the annual rate divided by 8760 hours per year.
   Hourly rates of the various categories would be expected to fluctuate during the year, but this should be representative of the total rock mined. Waste rock and lean ore are mined, loaded into trucks, transported to the appropriate stockpile, and then dumped.
[208] Total number of holes calculated based on explosive use data for waste rock blasting. 6412 holes will be required for 21,800,000 tons of waste rock, resulting in a blast hole for every 3399.9 tons of waste rock.
   For each type of waste rock in each pit, the number of holes is calculated by dividing the tons mined by 3399.9.
[209] As discussed above, Year 16 is representative or worst case mine operation under the in pit disposal scenario. The total ore mined in Year 16 was obtained from the mine schedule as 11,422,441. The split between ore mined in the East and West pits in Year 16 was obtained from data used to produce RS18. All ore will be from the west pit at this time.
   The split in the composition spreadsheet was scaled to match the total ore in the mine schedule, which is the most accurate data. The hourly mining rate is assumed to be the annual rate divided by 8760.
[210] Total number of holes calculated based on explosive use data for ore blasting. 14,857 holes will be required for 11,700,000 tons of ore, resulting in a blast hole for every 787.5 tons of ore.
   For the ore in each pit, the number of holes is calculated by dividing the tons mined by 787.5.
[211] The quantity of ore deliver to the Rail Transfer Hopper and loaded into railcars will be equal to the processing rate at the plant or 32,000 ton/day / 24 hr/day = 1333.3 ton/hr. Ore will be taken from the stockpile to supplement the ore mined in Year 16. Since all ore is mined in the West Pit in the in pit disposal phase of mining, it was assumed that the ore from the stockpile was also from the West Pit.
[212] The difference between the Process Plant capacity of 32,000 tpd and the quantity mined in Year 16 will be made up with stockpiled ore. It was assumed that the stockpiled ore would be 100% from the West Pit, because this is the area mined in this phase of the operation. The quantity needed from the stockpile = 32,000 tpd * 365 day/hr - 11,422,441 tons mined year 16 = 257,559 tons
   The hourly throughput was estimated from annual throughput by assuming 8760 hour/yr operation.
[213] Haul distances for ore, waste rock, lean ore and overburden were determined by assigning a letter to each intersection or termination for the haul roads. The distance between each point assigned a letter was determined from aerial photographs. The route for each haul was determined.
   The worst case year for hauling under in pit disposal scenario was determined by calculating the total haul distance for each category of material for each year of mine operation under this scenario and calculating the total VMT based on 240 ton trucks.
   Because emission is directly proportional to the total VMT, the year with the highest VMT value is the worst case. This was found to be year 16.
   The emission for each segment were calculated by summing the trips for the hauling of each category of material, multiplying by the length of the segment, and multiplying by 2 to account for round trips. Hourly VMT assumed to be annual VMT divided by 8760 hours/year.
[214] A rough estimate of light truck traffic at the mine was made by scaling down VMT for light trucks at the Cliffs Erie mine by the ratio of the production levels. VMT for Cliffs Erie = 57.02 VMT/hr * 32000 tpd PolyMet/100000 tpd Cliffs Erie = 18.25 VMT/hr.
[215] We have assumed a tanker truck with a capacity of 1,500 gallons would be utilized to refuel the tracked vehicles and would travel 12 miles/shift or 1.5 miles/hr.
[216] The one way travel distance, on roads on PolyMet controlled land, from the haul roads at the mine to the Area 1 shops where the haul road maintenance will be performed was estimated from aerial photographs with a result of 3.9609 miles.
   Note: the heavy equipment will be diverted to a route through former mining areas to avoid mixing with light truck traffic. Based on information obtained from PolyMet, 8 trucks would be used for mine hauling and 2 for construction purposes, for a total of 10 trucks.
   Based on Barr's knowledge of mining operations, we assumed that maintenance would
   be required on each truck every 250 hours. The maintenance interval in days, assuming worst case 24 hr/day continuous operation is 250/24 = 10.42 days. Trips per day are then 1/10.42 trips/truck/day * 10 trucks = 0.96 trips/day. A conservative worst case hourly VMT was estimated as having 2 trucks make
   a one way trip in the hour or 3.9609 miles/trip * 2 trips/hr = 7.92 VMT/hr max. VMT assigned to Road segments A, B, B2, B3, J and J2 based on percent of trips on each segment. Values are A: 9.2% , B: 49.0%, B2: 4.0%, B3: 29.4%, J: 2.2%, J2: 6.0%. Only segments A, B, and B3 are at the Mine Site.
[217] Estimates of light truck traffic on the portions the Dunka Rd where PolyMet will control the surrounding land were made based on information in the 43-101 document, the DFS executive summary, Summary Description of Proposed Mining Operations (2004) and communications with PolyMet.
   Personnel traveling to the mine site and Area 2 are assumed to be as follows: 149 mine operations staff (mine), 18 mine technical services (12 mine, 6 area 2), 25 railroad operations (Area 2), 3 mine management (area 2), 3 EHS etc. (plant to mine).
   The above staff are assigned to shifts as shown in the table below. The road segments traveled are also included:

Category	Location	1st shift	2nd Shift	3rd Shift	Road Segments Traveled
Mine Ops	Mine	64	43	42	A, B, B2, C, D, H
Mine Tech Serv	Mine	4		4	A, B, B2, C, D, H
Mine Tech Serv	Area 2	4	2	0	D, H
Mine Manage.	Area 2	3	0	0	D, H
RR Ops	Area 2	13	9	3	D, H
EHS	PP to mine	3	0		A, B, B2, C, D, E, F
Total		91	58	49	

Road S	Distance (miles)	Max Hourly Trips	Max Daily Trips	Hourly VMT	Annual VMT	Daily VMT
A	0.366	33	90	12.09	12034.15	32.97
B	1.940	33	90	64.02	63725.13	174.59
B2	0.160	33	90	5.27	5250.60	14.39
B3	1.166	33	90	38.48	38303.10	104.94
C	1.928	33	90	63.62	63326.89	173.50
D	0.148	171	456	25.24	24566.69	67.31
E	0.722	3	6	2.17	1580.93	4.33
F	0.370	3	6	1.11	810.25	2.22
H	0.114	146	390	16.62	16208.90	44.41

   The distance for each road segment was estimated from an aerial photograph. It was assumed that the mine operations personnel would travel to Area 2 in personal vehicles and then be shuttled in 6 passenger vans to the mine site. All other personal were assumed to drive a vehicle all the way to their
   destination. Maximum hourly emissions will occur at shift changes where the vehicles transporting both shifts are on the road during the same hour. To be conservative it was assumed that all travel would occur between the eight hour shifts although at least some railroad personnel will be
   working 12 hour shifts and other personnel may travel at other times. The maximum daily and hourly trips are shown in the table above as well as the hourly and annual miles. Only segments A, B, and B3 are located at the Mine Site.
   The emissions from the other segments are calculated in the Plant Site emission calculation spreadsheet.
[218] Based on Barr's knowledge of mining operations, we have assumed that three 7,500 gallon fuel tankers per day would be needed. Only one trip per hour would likely be completed. The distance from the public road south of the plant to the mine site on roads on land controlled by
   PolyMet was estimated as 5.674 miles from aerial photographs. VMT assigned to road segments A, B, B2, C, and H based on the percent of the trip occurring on each segment. The values are: A: 6.5%, B: 34.2%, B2: 2.8, B3: 20.5%, C: 34.0, and H: 2.0%. Only segments A, B, and B3 are at the Mine Site.
   The emission calculations for the remaining segments are included in the Plant Site emission calculation spreadsheet.
[219] Maximum throughput for waste water treatment facility estimated as 5,000 tpy lime and 10,000 tpy sludge out. Lime will be transported from Plant Site in 40 ton over the road trucks with 24 ton payload. Similar trucks will haul sludge back to Plant Site.
   Assume different trucks used as worst case. Annual trips = (5000 ton + 10000 ton) /24 ton/truck = 625 trips/yr. Assume 5 day per week, 52 week per year trucking schedule: 625 / (5 * 52) = 2.4 truck per day, round up to 3 trucks per day. Assume maximum hourly rate is one round trip.
   Length of Segment B = 1.94, B3 = 1.166 miles. Segment B Example: Max hourly VMT = 1.94 (miles/trip) * 2 (trip/round trip) = 3.89 VMT/hr. Maximum daily VMT = 3 round trips * 2 (trips/round trip) * 1.94 miles/trip = 11.64 VMT.
[220] Haul truck, light truck and fuel tanker traffic assumed to start and end by the Rail Transfer Hopper at the mine site. This will necessitate travel over three of mine road segments, O to P (0.1362 miles), O to N (0.2142 miles), and LL to N (0.4057).
   The number of trips is calculated in the same manner as described above for the Dunka Road Segment A. VMTs are calculated as the number of trips per hour times the distance for each segment.
[221] The fueling facility circle is 0.223 miles long. The maximum traffic in an hour was assumed to be one tanker and 1/3 of the truck fleet or 4 haul trucks. Maximum hourly VMT is then 5 trips * 0.223 miles/trip = 1.115 VMT/hr.
[222] Wind erosion emission are calculated by utilizing an entire year's meteorological data and daily fastest wind speed. Short term (< 24 hour) emission rates are not readily calculated by this procedure and the hourly "throughput" is not really a relevant concept.
[223] Hourly rates calculated from annual rates by assuming 8400 hours/year of overburden stripping.
[224] VMTs for hauling the overburden removed from under the stockpiles were calculated in the same manner as for the other hauling activities. The number of trips was calculated based on 240 ton payload trucks and the total VMT is the number of trips times the haul distance from each
   stockpile to the overburden storage pile and the distance from the overburden storage pile to the overburden stockpile. The VMTs were added to the totals for the other hauling activities on each segment to determine total VMT per segment above.
[225] Screened till and other rock approved for construction purposes may be crushed to produce construction rock. It was assumed that a product with a maximum size of one to two inches would be desired. It was also assumed that this could be achieved with two crushing stages (primary and secondary).

Stack ID	Emission Unit		APCD ID	Throughput				Annual days with precipitation	Pollutant	PSD Applicability	HAP?	Emission Factor		Max. Uncontrolled Potential to Emit [1]		Proj. Act. Uncontrolled Emissions	Control Efficiency		Max. Controlled Potential to Emit [2]		Proj. Act. Controlled Emissions	Emission Std or Operational Limit	Limited Controlled Potential to Emit	Maximum Throughput		Max. Unc. Emissions	Max. Cont. Emissions	g/sec Model Input
	ID	Description		Maximum		Projected Actual	Units																						
				(Units/hr)	Note	(Units/yr)	Note	(Units/yr)	Note	precipitation			(Y/N)	(Y/N)	(lb/Unit)	Note	(lb/hr)	(tons/yr)	(ton/yr)	(%)	Note	(lb/hr)	(tons/yr)	(tons/yr)	Limit	(tons/yr)	units/day	Note	lb/day	lb/day	

A typical crushing circuit with two screens was also assumed. Maximum hourly throughput based on the high end of the equipment available for hire on a contract basis in the project area.

Maximum Annual Throughput References:

[301] Annual throughput estimated based on Barr assumption that three 7,500 gallon tankers would deliver diesel fuel to the mine each day. Assumed a maximum of one and a half trucks would be loaded in each tank each day.
Annual usage is then: 7,500 gallons/tanker * 1.5 tankers/tank/day * 365 days/year = 4106250 gallons/tank/yr.

[302] As recommended by EPA guidance, annual fuel usage for calculating potential emissions for the emergency generator is based on 500 hours per year of operation.

[303] Use of this equipment has an inherent restraint as with emergency generators. The generator is intended to provide temporary power for relocating large electrical mining vehicles, an inherently infrequent activity. As allowed for emergency generators, potential emissions were calculated based on 500 hours per year of operation.

[304] Maximum annual fuel usage = maximum hourly fuel usage * 8760 hours per year.

[305] Per spreadsheet provided by PolyMet no overburden will be stripped at the mine pits during year 16 of mine operation.

[306] The annual overburden screening rate is based on the maximum estimated demand for screened overburden for construction purposes. The split of screened overburden from pit development and that from stockpile foundation and liner system construction is based on the ratio of each type of overburden to the total during the peak stripping year (year 0).
It was assumed that stockpiled overburden may be screened in years where the stripping rate does not equal the maximum projected demand for screened overburden, as is the case for year 16.

[307] Year 16 represents the highest VMT from hauling ore, waste rock, and overburden combined for the 20 year mine life and for the in pit disposal phase of mine operation. Much of the emission from mining operations are due to haul road dust generation, so Year 16 is representative of worst case operation during the in pit disposal phase of mine operation.
The annual quantity of each category of waste rock and lean ore are mined in the east and west pits in Year 16 was taken from data in RS67.
Waste rock and lean ore are mined, loaded into trucks, transported to the appropriate stockpile, and then dumped.

[308] As discussed above, Year 16 is representative or worst case mine operation under the in pit disposal scenario. The total ore mined in Year 16 was obtained from the mine schedule as 11,422,441. The split between ore mined in the East and West pits in Year 16 was obtained from data used to produce RS18. All ore will be from the west pit at this time.
The split in the composition spreadsheet was scaled to match the total ore in the mine schedule, which is the most accurate data.

[309] The quantity of ore deliver to the Rail Transfer Hopper and loaded into railcars will be equal to the processing rate at the plant or 32,000 ton/day. Ore will be taken from the stockpile to supplement the ore mined in Year 16. Since all ore is mined in the West Pit in the in pit disposal phase of mining, it was assumed that the ore from the stockpile was also from the West Pit.

[310] The difference between the Process Plant capacity of 32,000 tpd and the quantity mined in Year 16 will be made up with stockpiled ore. It was assumed that the stockpiled ore would be 100% from the West Pit, because this is the area mined in this phase of the operation. The quantity needed from the stockpile = 32,000 tpd * 365 day/hr - 11,422,441 tons mined year 16 = 257,559 tons

[311] Haul distances for ore, waste rock, lean ore and overburden were determined by assigning a letter to each intersection or termination for the haul roads. The distance between each point assigned a letter was determined from aerial photographs. The route for each haul was determined.
The worst case year for hauling under the the in pit disposal scenario was determined by calculating the total haul distance for each category of material for each of the years in the projected mine life when in pit disposal is utilized, assuming 240 ton trucks, and calculating the total VMT.
Because emission are directly proportional to the total VMT, the year with the highest VMT value is the worst case. This was found to be year 16.
The emission for each segment were calculated by summing the trips for the hauling of each category of material, multiplying by the length of the segment, and multiplying by 2 to account for round trips.

[312] Annual VMT calculated by multiplying hourly VMT by 8760 hours per year.

[313] The one way travel distance, on roads on land controlled by PolyMet, from the mine roads to the Area 1 shops where the haul truck maintenance will be performed was estimated from aerial photographs with a result of 3.9609 miles. Note: the heavy equipment will be diverted to a route through former mining areas to avoid mixing with light truck traffic. Based on information obtained from PolyMet, 8 trucks will be used for mine hauling and 2 trucks for construction and other purposes for a total of 10.
Based on Barr's knowledge of mining operations, we assumed that maintenance would be required on each truck every 250 hours. The maintenance interval in days, assuming worst case 24 hr/day continuous operation is 250/24 = 10.42 days.
Trips per day are then 1/10.42 trips/truck/day * 10 trucks = 0.9597 trips/day. The annual VMT is then: 3.9609 miles per trip * 2 trips/round trip * 0.9597 trips/day * 365 days/yr = 2774.9 VMT/yr. VMT assigned to Road segments A, B, B2, B3, J, and J2 based on percent of trip on each segment.
Values are A: 9.2% , B: 49.0%, B2: 4.0%, B3: 29.4%, J: 2.2%, J2: 6.0%. Only segments A, B, and B3 are located at the mine site. The emissions from the remaining segments are calculated in the processing plan emission calculation spreadsheet.

[314] See note 217 above.

[315] Based on Barr's knowledge of mining operations, we have assumed that three 7,500 gallon fuel tankers would be needed per day. The total annual VMT is then: 6 trips/day * 5.674 miles/trip (1 way) * 365 days/yr = 12,426.1 VMT/yr.
VMT assigned to road segments A, B, B2, C, and H based on the percent of the trip occurring on each segment. The values are: A: 6.5%, B: 34.2%, B2: 2.8, B3: 20.5%, C: 34.0, and H: 2.0%. Only segments A, B, and B3 are at the Mine Site.
The emissions from the remaining segments are calculated in the processing plant emission calculation spreadsheet.

[316] Total annual truck trips = (5000 ton lime + 10000 ton sludge) / 24 ton/truck = 625 trips/yr. Length of segment B = 1.94 miles, B3= 1.166 miles. Segment B Example: Total VMT = 625 trips/yr * 1.94 miles/trip * 2 trips/round trip = 2425 VMT/yr.

[317] Haul truck, light truck and fuel tanker traffic assumed to start and end by the Rail Transfer Hopper at the mine site. This will necessitate travel over three of mine road segments, O to P (0.1362 miles), O to N (0.2142 miles), and LL to N (0.4057).
The number of trips was calculated in the same manner as described above for the Dunka Road Segment A. VMTs are calculated as the number of trips per year times the distance for each segment.

[318] Maximum daily VMT on fueling facility circle = (10 trucks * 3 fuelings per day + 3 tankers) * 0.223 miles/loop = 7.359 VMT/day * 365 days/year = 2686.0 VMT/yr.

[319] Stockpile erodable surface assumed equivalent to stockpile footprint at Year 20. Stockpile footprint obtained from stockpile design prepared by Barr.

[320] Quantities of underlying soils/till below each stockpile requiring excavation estimated based on stockpile foundation/liner footprint estimates calculated by Barr. Stockpile foundation/liner footprints were determined for years 1, 5, 10, 15, and 20 and the footprint was assumed to increase
uniformly over the period between calculated values (years 2-4, 5-9, etc.). The quantity of overburden removed was estimated based on an average depth of 12.7 feet obtained from PolyMet. An in-situ density of 1.871 ston/yd^3 was used to calculated tons of overburden stripped.
This value was calculated from data used to develop the Mine Plan (RS18). The quantity of overburden stripped in years 15-20 was used in the calculation. This is equal to zero for all of the stockpiles.
It was assumed that all soils/till would be hauled to the overburden storage pile and unloaded. A portion of the overburden would be screened, and all overburden would be reloaded into trucks and transported to the overburden portion of the Category 1/2-Overburden stockpile.
The determination of the quantity screened is described in the footnote for this operation.

[321] VMTs for hauling the overburden removed from under the stockpiles were calculated in the same manner as for the other hauling activities. The number of trips was calculated based on 240 ton payload trucks and the total VMT is the number of trips times the haul distance from each
stockpile to the overburden storage pile and the distance from the overburden storage pile to the overburden stockpile. The VMTs were added to the totals for the other hauling activities on each segment to determine total VMT per segment above.

[322] The annual throughput for the portable crushing plant is based on the demand for crushed rock at the Mine Site with a safety factor.

Projected Actual Throughput References

[401] Projected actual emissions are equivalent to potential emissions.

[402] Actual operation estimated as two hours per week or 104 hours per year.

[403] Projected actual emissions based on 50% utilization, a conservative assumption for heating systems.

Control Efficiency References:

[501] Level 3A control measures, consistent with agreement reached by the IMA-MPCA Fugitive Emissions Workgroup as described in the November 18, 1998 "Taconite Industry Haul Truck Unpaved Road Fugitive Particulate Emission Factor and Control Efficiency" were observed at the Cliffs Erie facility;
control practices are expected to be similar at the PolyMet facilities. The referenced document allows 80% for Level 3A control measures.

[502] Either no Air Pollution Control Devices (APCDs) are used in this process or the APCD does not control this pollutant. Therefore, Control Efficiency is 0.

[503] Controlled emission factors (with wet suppression) were used for all sources except truck loading. The material in the stockpile may be wet due to residual moisture from the wet suppression, depending on how long the material remains in the pile.
If this is the case, then the emissions may be overestimated. Adjustment to the material moisture content can be made to reflect this phenomenon.

Maximum Daily Throughput References

[601] The one way travel distance, on roads on PolyMet controlled land, from the haul roads at the mine to the Area 1 shops where the haul truck maintenance will be performed was estimated from aerial photographs with a result of 3.9609 miles.
Note: the heavy equipment will be diverted to a route through former mining areas to avoid mixing with light truck traffic. Based on information obtained from PolyMet, 8 trucks would be used for mine hauling and 2 for construction purposes, for a total of 10 trucks.
Based on Barr's knowledge of mining operations, we assumed that maintenance would
be required on each truck every 250 hours. The maintenance interval in days, assuming worst case 24 hr/day continuous operation is 250/24 = 10.42 days. Trips per day are then 1/10.42 trips/truck/day * 10 trucks = 0.9597 trips/day. The daily VMT was estimated as having 2 trucks make
a one way trip (or one truck make a round trip) 3.9609 miles/trip * 2 trips/hr = 7.92 VMT/day. VMT assigned to Road segments A, B, B2, B3, J and J2 based on percent of trip on each segment. Values are A: 9.2% , B: 49.0%, B2: 4.0%, B3: 29.4%, J: 2.2%, J2: 6.0%. Only segments A, B, and B3 are located at the Mine Site.
Emissions from the remaining segments are calculated in the Plant Site calculation spreadsheet.

[602] Daily VMT for light trucks are derived in note 216 above.

[603] Based on Barr's knowledge of mining operations, we have assumed that three 7,500 gallon fuel tankers would be needed per day. The total daily VMT is then: 6 trips/day * 5.674 miles/trip (1 way) = 34.04 VMT/day.
VMT assigned to road segments A, B, B2, B3, C, and H based on the percent of the trip occurring on each segment. The values are: A: 6.5%, B: 34.2%, B2: 2.8, B3: 20.5%, C: 34.0, and H: 2.0%. Only segments A, B, and B3 are located at the Mine Site.
The emissions from the remaining segments are calculated in the Plant Site emission calculation spreadsheet.

[604] Maximum throughput for waste water treatment facility estimated as 5,000 tpy lime in and 10,000 tpy sludge out. Lime will be transported from Plant Site in 40 ton over the road trucks with 24 ton payload. Similar trucks will haul sludge back to Plant Site.
Assume different trucks used as worst case. Annual trips = (5000 ton + 10000 ton) /24 ton/truck = 625 trips/yr. Assume 5 day per week, 52 week per year trucking schedule: 625 / (5 * 52) = 2.4 truck per day, round up to 3 trucks per day.
Maximum VMT for each time period calculated by multiplying the number of trips 2 for round trips and times the appropriate segment length. Length of segment B = 1.94 miles, B3 = 1.166 miles.

[605] Haul truck, light truck and fuel tanker traffic assumed to start and end by the Rail Transfer Hopper at the mine site. This will necessitate travel over three of mine road segments, O to P (0.1362 miles), O to N (0.2142 miles), and LL to N (0.4057).
The number of trips was calculated in the same manner as described above for the Dunka Road Segment A. VMTs are calculated as the number of trips per day times the distance for each segment.

[606] Maximum daily VMT on fueling facility circle = (10 trucks * 3 fuelings per day + 3 tankers) * 0.223 miles/loop = 7.359 VMT/day

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Table 3: Calculation of Emission Factors for Fugitive Sources at Mine Site

Stack ID	Emission Unit ID	Emission Unit Description	Pollutant	Input Parameters k [2]	U [3] (mph)	M [4] (%)	s [6] (%)	a	b	W [7] (tons)	Emission Factor (lb/Unit)	Note
Fugitive	FS 001, 029,	Surface Overburden, Truck Load	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	017, 048	Surface Overburden, Truck Load	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 002, 014,	Surface Overburden, Truck Unload	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	045, 018	Surface Overburden, Truck Unload	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 039, 047	Surface Overburden, Screen Discharge	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	FS 039, 047	Surface Overburden, Screen Discharge	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 004	Waste Rock, Truck Load	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS 004	Waste Rock, Truck Load	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 005	Waste Rock, Truck Unload	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS 005	Waste Rock, Truck Unload	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 007	Ore, Truck Load	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 007	Ore, Truck Load	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS 009, 020	Ore, Truck Unload	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 009, 020	Ore, Truck Unload	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS 010	Ore, Railcar Load	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 010	Ore, Railcar Load	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS023	Crushed rock to truck	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS023	Crushed rock to truck	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 011	Unpaved Roads, Mine										
	& FS 021 [8]	Unpaved Roads, Mine (Haul Trucks - Avg.)	PM10	1.5			5.8	0.9	0.45	303.15	6.2224	[5]
		Unpaved Roads, Mine (Haul Trucks - Avg.)	PM	4.9			5.8	0.7	0.45	303.15	23.5077	[5]
		Unpaved Roads, Mine (Light Trucks)	PM10	1.5			5.8	0.9	0.45	2.5	0.7183	[5]
		Unpaved Roads, Mine (Light Trucks)	PM	4.9			5.8	0.7	0.45	2.5	2.7135	[5]
		Unpaved Roads, Mine (Fuel Truck)	PM10	1.5			5.8	0.9	0.45	11	1.3991	[5]
		Unpaved Roads, Mine (Fuel Truck)	PM	4.9			5.8	0.7	0.45	11	5.2856	[5]
Fugitive	FS 012	Unpaved Roads, Dunka Rd.										
		Unpaved Roads, Dunka Rd. (segment A)	PM10	1.5			4.3	0.9	0.45	7.61	0.9053	[5]
		Unpaved Roads, Dunka Rd. (segment A)	PM	4.9			4.3	0.7	0.45	7.61	3.6310	[5]
		Unpaved Roads, Dunka Rd. (segment B)	PM10	1.5			4.3	0.9	0.45	8.80	0.9664	[5]
		Unpaved Roads, Dunka Rd. (segment B)	PM	4.9			4.3	0.7	0.45	8.80	3.8762	[5]
		Unpaved Roads, Dunka Rd. (segment B3)	PM10	1.5			4.3	0.9	0.45	8.79	0.9660	[5]
		Unpaved Roads, Dunka Rd. (segment B3)	PM	4.9			4.3	0.7	0.45	8.79	3.8745	[5]
Fugitive	FS 021	Unpaved Roads, Fueling Facility Circle	PM10	1.5			4.3	0.9	0.45	246.7	4.3320	[5]
		Unpaved Roads, Fueling Facility Circle	PM	4.9			4.3	0.7	0.45	246.7	17.3756	[5]

Stack ID	Emission Unit		Pollutant	Input Parameters							Emission Factor	
	ID	Description		k [2]	U [3]	M [4]	s [6]	a	b	W [7]	Factor	
					(mph)	(%)	(%)			(tons)	(lb/Unit)	Note

Notes:

[1] EF = k x 0.0032 x (U/5)^1.3 / (M/2)^1.4 lb/ton

Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Page 13.2.4-3.

[2] k = particle size multiplier (dimensionless).

     0.35 for PM10 for equation in [1].   0.74 for PM for equation in [1]

     1.50 for PM10 for equation in [5].   4.9 for PM for equation in [5]

[3] U = mean wind speed (mph).

     9.3 mph. Source: "Climates of the States", Vol. II, Water Information Center, 1974 for International Falls, MN.

[4] M = moisture content (%).

     12.7 % for surface overburden based on data from "Phase I Geotechnical Field Investigation", Golder Associates, August 2006

     1.33 % for waste rock from whole rock data for waste rock zone

     1.05 % for ore from whole rock data for ore zone

[5] EF = k x (s/12)^a x (W/3)^b lb/VMT

Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Pages 13.2.2-4 and 13.2.2-5.

Precipitation is accounted for in emission calculation spreadsheet. Emission factors are multiplied by (1-p/365) for annual emission calculations; where p = days with precipitation.

Note: the equation for roads at industrial sites is being used for the Dunka Rd. because the road will not generally be accessible to the public.

[6] s = silt content (%)

     5.8 % for taconite mine haul road from AP-42 Table 13.2.2-1

     4.3 % for taconite mine service road from AP-42 Table 13.2.2-1

[7] W = mean vehicle weight (tons).

     425.30 tons for loaded 240 ton trucks hauling surface overburden, waste rock, and ore in mine

     181.00 tons for empty 240 ton trucks used for hauling surface overburden, waste rock, and ore in mine.

     303.15 tons mean weight for haul trucks

     2.5 tons for all light trucks (supervisor vehicles, passenger vans, etc.)

     11 tons for mine fuel tanker based on information received from a fuel vendor

     40 tons for loaded tanker delivering fuel to mine based on information from a fuel vendor

     13.2 tons for empty tanker leaving mine site

     26.6 tons for mean tanker weight

     40 tons for loaded WWTF truck

     16 tons for empty WWTF truck

     28 tons mean weight for WWTF truck

     180 tons for loaded 100 ton haul truck used for miscellaneous purposes

     81.5 tons for empty 100 ton haul truck used for miscellaneous purposes

     130.75 tons for mean weight for 100 ton haul truck

     See Table 4 for Mean weight calculation for Dunka Road segments with multiple vehicle types and refueling circle

PolyMet - Hoyt Lakes, Minnesota
Table 4: Mean Vehicle Weight Calculations

Note: Calculations based on 24-hour VMT because this will be the limiting case
for modeling compliance with PM10 standards. 24-hr VMT may not be
directly scaled from hourly VMT.

Segment B

Segment Length		1.94			
ID	Activity	B VMT	Mean Wt.	Fraction total VMT	Contribution to Avg. Weight
FS 012B	Empty Haul Trucks	3.88	181	0.019	3.482
FS 012B	Light Trucks	174.59	2.5	0.865	2.163
FS 012B	Tanker	11.64	26.6	0.058	1.535
FS 012B	WWTF Trucks	11.64	28	0.058	1.615
	Total	201.75		1.000	8.795

Segment A

Segment Length		0.37			
ID	Activity	A VMT	Mean Wt.	Fraction total VMT	Contribution to Avg. Weight
FS 012A	Empty Haul Trucks	0.73	181	0.020	3.672
FS 012A	Light Trucks	32.97	2.5	0.918	2.295
FS 012A	Tanker	2.21	26.6	0.062	1.639
	Total	35.91		1	7.607

Fueling Facility Circle

Segment Length		0.22			
ID	Activity	RFC VMT	Mean Wt.	Fraction total VMT	Contribution to Avg. Weight
RFCRD	Fuel Tanker	0.67	26.6	0.091	2.418
RFCRD	Haul Trucks (240 t)	5.35	303.15	0.727	220.473
RFCRD	Haul Trucks (100 t)	1.34	130.75	0.182	23.773
	Total	7.36250		1.000	246.664

Segment B3

Segment Length		1.17			
ID	Activity	B3 VMT	Mean Wt.	Fraction total VMT	Contribution to Avg. Weight
FS 012B3	Empty Haul Trucks	2.33	181	0.019	3.476
FS 012B3	Light Trucks	104.94	2.5	0.866	2.164
FS 012B3	Tanker	6.98	26.6	0.058	1.531
FS 012B3	WWTF Trucks	7.00	28	0.058	1.616
	Total	121.24		1.000	8.787

PolyMet - Hoyt Lakes, Minnesota
Table 5 - Worst Case Year Calculations for Years 0 to 1

		Year 1	Year 0				Year 1			
East Pit		Haul Distance (miles)	Total Mined (tons)	Split	Trips [1]	VMT	Total Mined (tons)	Split	Trips [1]	VMT
Overburden	East	1.94	1112416	0	0	0	0	0	0	0
	West	1.95		1112416	4635.067	9017.312		0	0	0
Cat 1/2 WR	East	2.78	18203	0	0	0	689203	206760.9	861.5038	2391.652
	West	2.78		18203	75.84583	211.1617		482442.1	2010.175	5596.511
Cat 3 WR	East	1.48	0	0	0	0	31111	9333.3	38.88875	57.41271
	West	2.27		0	0	0		21777.7	90.74042	205.5929
Cat 3 LO	East	1.83	0	0	0	0	30790	9237	38.4875	70.42921
	West	2.47		0	0	0		21553	89.80417	221.9422
Cat 4 WR	East	1.36	74559	0	0	0	8208	2462.4	10.26	13.93261
	West	2.00		74559	310.6625	621.1485		5745.6	23.94	47.8664
Cat 4 LO	East	1.24	0	0	0	0	0	0	0	0
	West	1.85		0	0	0		0	0	0
East Ore to Loadout	East	1.36	0	0	0	0	2892503	318175.3	1325.731	1801.286
	West	1.96		0	0	0		2574328	10726.37	21046.43
East Ore to Stockpile	East	1.24	9940	0	0	0	0	0	0	0
	West	1.85		9940	41.41667	76.47964		0	0	0
West Pit										
Overburden	East	0.00	4211197	0	0	0	0	0	0	0
	West	1.42		4211197	17546.65	24890.99		0	0	0
Cat 1/2 WR	East	0.00	0	0	0	0	5498117	0	0	0
	West	3.02		0	0	0		5498117	22908.82	69169.02
Cat 3 WR	East	0.00	0	0	0	0	183548	0	0	0
	West	2.84		0	0	0		183548	764.7833	2170.657
Cat 3 LO	East	0.00	0	0	0	0	1574271	0	0	0
	West	2.81		0	0	0		1574271	6559.463	18427.37
Cat 4 WR	East	0.00	0	0	0	0	0	0	0	0
	West	2.34		0	0	0		0	0	0
Cat 4 LO	East	0.00	0	0	0	0	0	0	0	0
	West	2.18		0	0	0		0	0	0
West Ore to Loadout	East	0.00	0	0	0	0	3576190	0	0	0
	West	1.41		0	0	0		3576190	14900.79	20973.99
West Ore to Stockpile	East	0.00	68394	0	0	0	0	0	0	0
	West	2.18		68394	284.975	622.5193		0	0	0
Overburden to Stockpile	E/W	2.83		5323613	22181.72	62734.78		0	0	0
Total VMT					45076.34	98174.39			60349.75	142194.1

[1] Assuming 240 ton trucks for all hauling

PolyMet - Hoyt Lakes, Minnesota
Table 6 - Worst Case Year Calculations for Years 2 to 6

		Year 5	Year 2				Year 3				Year 4				Year 5				Year 6			
East Pit		Haul Distance (miles)	Total Mined (tons)	Split	Trips [1]	VMT	Total Mined (tons)	Split	Trips [1]	VMT	Total Mined (tons)	Split	Trips [1]	VMT	Total Mined (tons)	Split	Trips [1]	VMT	Total Mined (tons)	Split	Trips [1]	VMT
Overburden	East	2.36	797425	797425	3322.6	7857.8	988597	988597	4119.2	9741.6	0	0	0.0	0.0	0	0	0.0	0.0	885501	442750.5	1844.8	4362.9
	West	1.94		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		442750.5	1844.8	3587.9
Cat 1/2 WR	East	2.74	3027563	3027563	12614.8	34619.2	5971280	5971280	24880.3	68279.6	10896140	10896140	45400.6	124593.6	17810559	17810559	74210.7	203657.7	9721524	9721524	40506.4	111162.3
	West	2.32		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
Cat 3 WR	East	1.90	52010	52010	216.7	412.7	63174	63174	263.2	501.3	381835	381835	1591.0	3029.8	297352	297352	1239.0	2359.4	299926	299926	1249.7	2379.9
	West	2.27		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
Cat 3 LO	East	2.30	168121	168121	700.5	1613.5	901385	901385	3755.8	8651.1	556061	556061	2316.9	5336.8	590092	590092	2458.7	5663.4	647105	647105	2696.3	6210.6
	West	2.52		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
Cat 4 WR	East	2.03	252209	252209	1050.9	2133.0	1254741	1254741	5228.1	10611.6	900144	900144	3750.6	7612.7	1173278	1173278	4888.7	9922.7	1372422	1372422	5718.4	11606.9
	West	2.24		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
Cat 4 LO	East	1.67	9005	9005	37.5	62.7	0	0	0.0	0.0	0	0	0.0	0.0	17660	0	0.0	0.0	72366	72366	301.5	503.9
	West	1.85		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
East Ore to Loadout	East	1.79	4343977	4343977	18099.9	32339.9	2539734.96	2539735	10582.2	18907.7	5217620	5217620	21740.1	38843.9	4838691.7	4838692	20161.2	36022.9	3394291.15	3394291	14142.9	25269.7
	West	1.96		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
East Ore to Stockpile	East	1.67	94540	94540.41	393.9	658.3	483759.04	483759	2015.7	3368.6	0	0	0.0	0.0	419041.32	419041.3	1746.0	2917.9	267295.851	267295.9	1113.7	1861.3
	West	1.85		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
West Pit																						
Overburden	East	1.10	0	0	0.0	0.0	0	0	0.0	0.0	3906941	3906941	16278.9	17832.8	0	0	0.0	0.0	4611792	2305896	9607.9	10525.0
	West	2.36		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		2305896	9607.9	22720.5
Cat 1/2 WR	East	1.86	13475590	0	0.0	0.0	7744203	0	0.0	0.0	3739924	52358.94	218.2	404.7	4965667	4916010	20483.4	37999.0	7476761	5233733	21807.2	40454.9
	West	3.51		13475590	56148.3	196827.4		7744203	32267.5	113113.5		3687565	15364.9	53861.4		49656.67	206.9	725.3		2243028	9346.0	32762.2
Cat 3 WR	East	2.52	173159	0	0.0	0.0	534720	0	0.0	0.0	472426	6613.964	27.6	69.3	264527	261881.7	1091.2	2744.7	327328	229129.6	954.7	2401.4
	West	3.78		173159	721.5	2730.6		534720	2228.0	8432.2		465812	1940.9	7345.6		2645.27	11.0	41.7		98198.4	409.2	1548.5
Cat 3 LO	East	2.53	1625435	0	0.0	0.0	1228109	0	0.0	0.0	1145773	16040.82	66.8	169.2	480111	475309.9	1980.5	5014.2	700661	490462.7	2043.6	5174.0
	West	3.80		1625435	6772.6	25743.8		1228109	5117.1	19450.9		1129732	4707.2	17892.8		4801.11	20.0	76.0		210198.3	875.8	3329.1
Cat 4 WR	East	2.26	0	0	0.0	0.0	0	0	0.0	0.0	125320	1754.48	7.3	16.5	0	0	0.0	0.0	26377	18463.9	76.9	173.7
	West	3.53		0	0.0	0.0		0	0.0	0.0		123565.5	514.9	1816.1		0	0.0	0.0		7913.1	33.0	116.5
Cat 4 LO	East	1.86	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	53367	52833.33	220.1	409.8	52489	36742.3	153.1	285.0
	West	3.13		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		533.67	2.2	7.0		15746.7	65.6	205.4
West Ore to Loadout	East	1.08	7336459	0	0.0	0.0	9138827.04	0	0.0	0.0	5251886	120793.4	503.3	545.9	6841482.6	6831220	28463.4	30873.1	8285184.86	32795.5	35572.0	
	West	2.35		7336459	30568.6	71957.7		9138827	38078.4	89635.8		5131093	21379.6	50327.0		10262.22	42.8	100.7		414259.2	1726.1	4063.2
West Ore to Stockpile	East	1.86	159667	0	0.0	0.0	1740728.96	0	0.0	0.0	0	0	0.0	0.0	592487.41	591598.7	2465.0	4588.7	652447.136	619824.8	2582.6	4807.7
	West	3.13		159667.5	665.3	2082.9		1740729	7253.0	22708.3		0	0.0	0.0		888.7311	3.7	11.6		32622.36	135.9	425.6
Overburden to Stockpile	E/W	2.76		797425	3322.6	9173.7		988597	4119.2	11372.9		3906941	16278.9	44945.9		0	0.0	0.0		5497293	22905.4	63241.4
Total VMT					134635.8	388213.2			139907.7	384775.2			152087.5	374644.1			159694.4	343135.8			184544.9	394751.2

[1] Assuming 240 ton trucks for all hauling

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Table 7 - Worst Case Year Calculations for Years 7 to 10

East Pit		Year 10 Haul Distance (miles)	Year 7 Total Mined (tons)	Split	Trips [1]	VMT	Year 8 Total Mined (tons)	Split	Trips [1]	VMT	Year 9 Total Mined (tons)	Split	Trips [1]	VMT	Year 10 Total Mined (tons)	Split	Trips [1]	VMT
Overburden	East	2.97	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	3336933	3336933	13903.9	41332.5
	West	0.00			0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
Cat 1/2 WR	East	3.35	6071309	6071309	25297.1	84826.8	13827438	13827438	57614.3	193193.5	10099096	10099096	42079.6	141102.0	8319762	8319762	34665.7	116241.6
	West	0.00			0.0	0.0			0.0	0.0			0.0	0.0		0	0.0	0.0
Cat 3 WR	East	2.21	173696	173696	723.7	1602.4	516407	516407	2151.7	4763.9	462633	462633	1927.6	4267.8	102290	102290	426.2	943.6
	West	0.00			0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
Cat 3 LO	East	2.65	466384	466384	1943.3	5157.8	511171	511171	2129.9	5653.1	490270	490270	2042.8	5421.9	273383	273383	1139.1	3023.4
	West	0.00			0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
Cat 4 WR	East	2.34	578971	578971	2412.4	5635.7	479489	479489	1997.9	4667.4	581364	581364	2422.4	5659.0	384780	384780	1603.3	3745.5
	West	0.00			0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
Cat 4 LO	East	2.28	70147	70147	292.3	665.9	99203	99203	413.3	941.7	81107	81107	337.9	769.9	116358	116358	484.8	1104.5
	West	0.00			0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
East Ore to Loadout	East	2.39	7291879.99	7291880	30382.8	72723.2	6081312	6081312	25338.8	60650.0	4679582	4679582	19498.3	46670.3	6710105.72	6710106	27958.8	66921.0
	West	0.00			0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
East Ore to Stockpile	East	2.28	654807.009	654807	2728.4	6215.8	0	0	0.0	0.0	0	0	0.0	0.0	1345243.28	1345243	5605.2	12769.8
	West	0.00			0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
West Pit																		
Overburden	East	1.90	91026	45513	189.6	360.5	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0
	West	2.62		45513	189.6	497.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
Cat 1/2 WR	East	2.66	4835998	2543735	10598.9	28213.5	14304124	7152062	29800.3	79326.3	5381845	2690923	11212.2	29846.1	10668324	5334162	22225.7	59163.2
	West	3.38		2292263	9551.1	32296.5		7152062	29800.3	100767.8		2690923	11212.2	37913.3		5334162	22225.7	75154.8
Cat 3 WR	East	3.33	295840	155611.8	648.4	2156.2	226665	113332.5	472.2	1570.4	141609	70804.5	295.0	981.1	329009	164504.5	685.4	2279.5
	West	4.05		140228.2	584.3	2363.5		113332.5	472.2	1910.2		70804.5	295.0	1193.4		164504.5	685.4	2772.6
Cat 3 LO	East	3.38	822060	432403.6	1801.7	6095.3	1984690	992345	4134.8	13988.5	603538	301769	1257.4	4253.9	1495926	747963	3116.5	10543.6
	West	4.10		389656.4	1623.6	6660.9		992345	4134.8	16963.5		301769	1257.4	5158.6		747963	3116.5	12786.0
Cat 4 WR	East	3.07	58885	30973.51	129.1	395.6	18534	9267	38.6	118.4	0	0	0.0	0.0	79946	39973	166.6	510.5
	West	3.78		27911.49	116.3	440.1		9267	38.6	146.1		0	0.0	0.0		39973	166.6	630.4
Cat 4 LO	East	2.67	70653	37163.48	154.8	413.0	61630	30815	128.4	342.5	44013	22006.5	91.7	244.6	61940	30970	129.0	344.2
	West	3.39		33489.52	139.5	472.6		30815	128.4	434.9		22006.5	91.7	310.6		30970	129.0	437.1
West Ore to Loadout	East	1.89	1730647.74	1448552	6035.6	11409.4	3797367	1898684	7911.2	14954.8	6400169	3200085	13333.7	25205.2	4963065.65	2481533	10339.7	19545.6
	West	2.61		282095.6	1175.4	3067.6		1898684	7911.2	20647.0		3200085	13333.7	34798.9		2481533	10339.7	26985.1
West Ore to Stockpile	East	2.67	155411.262	130079.2	542.0	1445.7	0	0	0.0	0.0	0	0	0.0	0.0	994996.354	497498.2	2072.9	5529.3
	West	3.39		25332.04	105.6	357.5		0	0.0	0.0		0	0.0	0.0		497498.2	2072.9	7020.8
Overburden to Stockpile	E/W	2.59		91026	379.3	980.8	0		0.0	0.0		0	0.0	0.0		3336933	13903.9	35955.2
Total VMT					97744.8	274453.4			174616.8	521039.7			120688.4	343796.5			177162.5	505739.8

[1] Assuming 240 ton trucks for all hauling

PolyMet - Hoyt Lakes, Minnesota
Table 8 - Worst Case Year Calculations for Years 11 to 15

East Pit		Year 15 Haul Distance (miles)	Year 11 Total Mined (tons)	Split	Trips [1]	VMT	Pit Disposal Haul Distance (miles)	Year 12 Total Mined (tons)	Split	Trips [1]	VMT	Year 13 Total Mined (tons)	Split	Trips [1]	VMT	Year 14 Total Mined (tons)	Split	Trips [1]	VMT	Year 15 Total Mined (tons)	Split	Trips [1]	VMT
Overburden	East	3.07	15204	0	0.0	0.0	3.07	0	0	0.0	0.0		0	0.0	0.0		0	0.0	0.0	0	0	0.0	0.0
	Central	2.71		15204	63.4	171.9	2.71	0	0	0.0	0.0		0	0.0	0.0		0	0.0	0.0	0	0	0.0	0.0
Cat 1/2 WR	East	4.37	1468655	1468655	6119.4	26716.7	4.37	0	0	0.0	0.0		0	0.0	0.0		0	0.0	0.0	0	0	0.0	0.0
	Central	4.01	1778877	1778877	7412.0	29722.4	3.28	9405984	9405984	39191.6	128686.5	5840089	5840089	24333.7	79900.3	4239447	4239447	17664.4	58001.3	0	0	0.0	0.0
Cat 3 WR	East	2.48	215547	215547	898.1	2223.5	2.48	0	0	0.0	0.0		0	0.0	0.0		0	0.0	0.0	0	0	0.0	0.0
	Central	2.61	101803	101803	424.2	1105.8	2.61	543860	543860	2266.1	5907.7	334297	334297	1392.9	3631.3	292493	292493	1218.7	3177.2	0	0	0.0	0.0
Cat 3 LO	East	3.00	93999	93999	391.7	1174.0	3.00	10357	10357	43.2	129.4		0	0.0	0.0		0	0.0	0.0	0	0	0.0	0.0
	Central	3.13	133914	133914	558.0	1745.8	3.13	1320836	1320836	5503.5	17219.2	1036891	1036891	4320.4	13517.5	639835	639835	2666.0	8341.3	0	0	0.0	0.0
Cat 4 WR	East	2.54	592447	592447	2468.5	6261.1	2.54	15988	15988	66.6	169.0		0	0.0	0.0		0	0.0	0.0	0	0	0.0	0.0
	Central	2.67	16552	16552	69.0	184.0	2.67	130166	130166	542.4	1446.8	81468	81468	339.5	905.5	17895	17895	74.6	198.9	0	0	0.0	0.0
Cat 4 LO	East	2.50	89716	89716	373.8	934.0	2.50	54009	54009	225.0	562.3	26844	26844	111.9	279.5		0	0.0	0.0	0	0	0.0	0.0
	Central	2.14	78693	78693	327.9	702.5	2.14	62575	62575	260.7	558.6	7945	7945	33.1	70.9	62473	62473	260.3	557.7	0	0	0.0	0.0
East Ore to Loadout	East	2.61	3313541	3313541	13806.4	36090.2	2.61	0	0	0.0	0.0		0	0.0	0.0		0	0.0	0.0	0	0	0.0	0.0
	Central	2.26	1641457	1641457	6839.4	15444.4	2.26	4925781.96	4925782	20524.1	46346.4	5488132.92	5488133	22867.2	51637.5	5036706	5036706	20986.3	47390.0	0	0	0.0	0.0
East Ore to Stockpile	East	2.50	0	0	0.0	0.0	2.50	0	0	0.0	0.0		0	0.0	0.0		0	0.0	0.0	0	0	0.0	0.0
	Central	2.14	0	0	0.0	0.0	2.14	445845.041	445845	1857.7	3980.3	356524.077	356524.1	1485.5	3182.9		0	0.0	0.0	0	0	0.0	0.0
West Pit																							
Overburden	East	1.86	0	0	0.0	0.0	1.86	0	9	0.0	0.1	2317105	1158553	4827.3	8956.1	1638469	819234.5	3413.5	6333.0	0	0	0.0	0.0
	West	2.22			0.0	0.0	2.22			0.0	0.0		1158553	4827.3	10712.9		819234.5	3413.5	7575.3		0	0.0	0.0
Cat 1/2 WR	East	2.77	7831181	3915591	16315.0	45196.8	4.11	11413972	5706986	23779.1	97760.1	10237231	5118616	21327.6	87681.3	10047184	5023592	20931.6	86053.6	22878678	11439339	47663.9	195954.6
	West	3.13		3915591	16315.0	51134.1	4.48		5706986	23779.1	106413.8		5118616	21327.6	95442.9		5023592	20931.6	93671.0		11439339	47663.9	213300.5
Cat 3 WR	East	3.32	386044	193022	804.3	2671.0	3.32	699706	349853	1457.7	4841.4	693169	346584.5	1444.1	4795.9	626947	313473.5	1306.1	4337.7	860386	430193	1792.5	5952.8
	West	3.68		193022	804.3	2963.6	3.68		349853	1457.7	5371.6		346584.5	1444.1	5321.4		313473.5	1306.1	4813.1		430193	1792.5	6605.2
Cat 3 LO	East	3.46	1023630	511815	2132.6	7379.2	3.46	1871260	935630	3898.5	13489.6	1825017	912508.5	3802.1	13156.2	1691002	845501	3522.9	12190.1	4775347	2387674	9948.6	34424.6
	West	3.82		511815	2132.6	8155.2	3.82		935630	3898.5	14908.3		912508.5	3802.1	14539.9		845501	3522.9	13472.2		2387674	9948.6	38045.1
Cat 4 WR	East	3.00	44879	22439.5	93.5	280.4	3.00	42374	21187	88.3	264.8	16692	8346	34.8	104.3	8346	4173	17.4	52.1	77016	38508	160.5	481.2
	West	3.36		22439.5	93.5	314.4	3.36		21187	88.3	296.9		8346	34.8	116.9		4173	17.4	58.5		38508	160.5	539.6
Cat 4 LO	East	2.62	78693	39346.5	163.9	429.8	2.62	70561	35280.5	147.0	385.4	52449	26224.5	109.3	286.4	26059	13029.5	54.3	142.3	34564	17282	72.0	188.8
	West	2.99		39346.5	163.9	489.4	2.99		35280.5	147.0	438.8		26224.5	109.3	326.2		13029.5	54.3	162.1		17282	72.0	215.0
West Ore to Loadout	East	1.84	6165756	3082878	12845.3	23693.3	1.84	5653998.25	2826999	11779.2	21726.8	6196250.66	3098125	12908.9	23810.5	6235025	3117513	12989.6	23959.5	6857189	3428595	14285.8	26350.3
	West	2.21		3082878	12845.3	28368.0	2.21		2826999	11779.2	26013.4		3098125	12908.9	28508.3		3117513	12989.6	28686.7		3428595	14285.8	31549.2
West Ore to Stockpile	East	2.62	0	0	0.0	0.0	2.62	511757.748	255878.9	1066.2	2794.8	402525.336	201262.7	838.6	2198.3	0	0	0.0	0.0	0	0	0.0	0.0
	West	2.99		0	0.0	0.0	2.99		255878.9	1066.2	3182.8		201262.7	838.6	2503.5		0	0.0	0.0		0	0.0	0.0
Overburden to Stockpile	E/W	2.66		15204	63.4	168.3	2.66		9	0.0	0.1	2317105	9654.6	25645.0	1638469	6827.0	18134.1		0.0	0.0				
Total VMT				104524.1	293719.7			154912.7	502894.4			155123.9	477231.4			134168.1	417307.7			147846.6	553606.8		

[1] Assuming 240 ton trucks for all hauling

PolyMet - Hoyt Lakes, Minnesota
Table 9 - Worst Case Year Calculations for Years 16 to 20

West Pit		Year 20	Year 16				Year 17				Year 18				Year 19				Year 20			
		Haul Distance (miles)	Total Mined (tons)	Split	Trips [1]	VMT	Total Mined (tons)	Split	Trips [1]	VMT	Total Mined (tons)	Split	Trips [1]	VMT	Total Mined (tons)	Split	Trips [1]	VMT	Total Mined (tons)	Split	Trips [1]	VMT
Overburden	East	2.62	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0
	West	2.36		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0		0	0.0	0.0
Cat 1/2 WR	East	4.88	18526917	9263459	38597.7	188324.8	14580631	7290316	30376.3	148211.1	17036139	8518070	35492.0	173171.2	13620063	6810032	28375.1	138447.0	13625514	6812757	28386.5	138502.4
	West	4.62		9263459	38597.7	178156.4		7290316	30376.3	140208.6		8518070	35492.0	163820.9		6810032	28375.1	130971.7		6812757	28386.5	131024.1
Cat 3 WR	East	4.38	547644	273822	1140.9	4998.5	715639	357819.5	1490.9	6531.8	931031	465515.5	1939.6	8497.2	886215	443107.5	1846.3	8088.7	1591732	795866	3316.1	14528.1
	West	4.12		273822	1140.9	4697.9		357819.5	1490.9	6139.0		465515.5	1939.6	7986.7		443107.5	1846.3	7602.3		795866	3316.1	13654.5
Cat 3 LO	East	4.22	3650319	1825160	7604.8	32074.2	1491121	745560.5	3106.5	13102.0	1903476	951738	3965.6	16725.3	1605809	802904.5	3345.4	14109.8	2101973	1050987	4379.1	18469.4
	West	3.95		1825160	7604.8	30070.8		745560.5	3106.5	12283.6		951738	3965.6	15680.5		802904.5	3345.4	13228.4		1050987	4379.1	17315.7
Cat 4 WR	East	3.88	110320	55160	229.8	890.9	59945	29972.5	124.9	484.1	58422	29211	121.7	471.8	59243	29621.5	123.4	478.4	191726	95863	399.4	1548.2
	West	3.61		55160	229.8	830.3		29972.5	124.9	451.2		29211	121.7	439.7		29621.5	123.4	445.9		95863	399.4	1443.0
Cat 4 LO	East	3.39	88755	44377.5	184.9	626.4	168404	84202	350.8	1188.6	52919	26459.5	110.2	373.5	8723	4361.5	18.2	61.6	106190	53095	221.2	749.5
	West	3.12		44377.5	184.9	577.7		84202	350.8	1096.2		26459.5	110.2	344.5		4361.5	18.2	56.8		53095	221.2	691.2
West Ore to Loadout	East	2.61	11422441	5711221	23796.8	62155.5	11684834.5	5842417	24343.4	63583.3	11660624	5830312	24293.0	63451.6	11676804.5	5838402	24326.7	63539.6	7286269	3643135	15179.7	39648.4
	West	2.35		5711221	23796.8	55886.3		5842417	24343.4	57170.1		5830312	24293.0	57051.7		5838402	24326.7	57130.8		3643135	15179.7	35649.4
West Ore to Stockpile	East	3.39	0	0	0.0	0.0	3978482.52	1989241	8288.5	28080.5	0	0	0.0	0.0	117947.52	58973.76	245.7	832.5	0	0	0.0	0.0
	West	3.12		0	0.0	0.0		1989241	8288.5	25896.9		0	0.0	0.0		58973.76	245.7	767.7		0	0.0	0.0
Overburden to Stockpile	E/W	2.65	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0
Total VMT					143110.0	559289.7			136162.7	504426.9			131844.2	508015.0			116561.7	435761.1			103764.2	413223.9

[1] Assuming 240 ton trucks for all hauling

PolyMet - Hoyt Lakes, Minnesota
Table 10 - Annual VMT Calculations Year 8 (Stockpile Disposal)

East Pit		Trips	Trips by Segment													
			AA to BB	AA to FF	BB to CC	D to K	D to U	E to D	E to T	F to E	F to M	FF to GG	G to F	I to H	J to I	J to W
Overburden	East	0				0.0	0.0		0.0				0.0	0.0	0.0	
	West	0														
Cat 1/2 WR	East	57614.3				57614.3	57614.3							57614.3	57614.3	
	West	0														
Cat 3 WR	East	2151.7												2151.7	2151.7	2151.7
	West	0														
Cat 3 LO	East	2129.9	2129.9		2129.9									2129.9	2129.9	2129.9
	West	0														
Cat 4 WR	East	1997.9		1997.9								1997.9		1997.9	1997.9	1997.9
	West	0														
Cat 4 LO	East	413.3												413.3	413.3	
	West	0														
East Ore to Loadout	East	25338.8												25338.8	25338.8	
	West	0														
East Ore to Stockpile	East	0												0.0	0.0	
	West	0														
West Pit																
Overburden	East	0														
	West	0														
Cat 1/2 WR	East	29800.3					29800.3	29800.3	29800.3							
	West	29800.3					29800.3	29800.3	29800.3							
Cat 3 WR	East	472.2							472.2	472.2	472.2					
	West	472.2							472.2	472.2	472.2					
Cat 3 LO	East	4134.8	4134.8		4134.8				4134.8	4134.8	4134.8					
	West	4134.8	4134.8		4134.8				4134.8	4134.8	4134.8					
Cat 4 WR	East	38.6		38.6					38.6	38.6	38.6	38.6				
	West	38.6		38.6					38.6	38.6	38.6	38.6				
Cat 4 LO	East	128.4							128.4	128.4	128.4					
	West	128.4							128.4	128.4	128.4					
West Ore to Loadout	East	7911.2							7911.2	7911.2	7911.2					
	West	7911.2							7911.2	7911.2	7911.2					
West Ore to Stockpile	East	0														
	West	0														
Overburden to Stockpile	E/W	4966.3					4966.3	4966.3		4966.3			4966.3			
Ore from Stockpile	E/W	7505.5														
Overburden from Stockpile Construction																
Cat 1/2 to Storage		3135.7					3135.7	3135.7		3135.7			3135.7			
Cat 3 WR to Storage		678.6									678.6		678.6			
Cat 3 LO to Storage		1084.2	1084.2		1084.2						1084.2		1084.2			
Cat 4 WR to Storage		745.7		745.7							745.7	745.7	745.7			
Cat 4 LO to Storage		0										0.0	0.0			
Overburden to Stockpile		7533.8					7533.8	7533.8		7533.8			7533.8			
Total (trips/year)			11483.6	2820.7	11483.6	57614.3	132850.6	75236.2	84970.9	41006.1	27878.8	2820.7	18144.2	89645.9	89645.9	6279.4
Miles/segment			0.3867	0.0739	0.3854	0.5858	0.0396	0.1902	0.0555	0.1905	0.0932	0.3803	0.1748	1.3199	0.0358	0.1631
VMT/year			8882.4	416.7	8852.0	67500.4	10517.3	28612.6	9430.5	15625.8	5195.6	2145.5	6343.6	236644.8	6417.8	2048.0

PolyMet - Hoyt Lakes, Minnesota
Table 10 - Annual VMT Calculations Year 8 (Stockpile Disposal)

East Pit		Trips	\<Trips by Segment\> JJ to L	K to J	K to O	KK to G	L to LL	LL to N	M to L	N to M	O to N	O to OO	O to P	OO to EE	P to Q	P to Z
Overburden	East	0		0.0		0.0										
	West	0														
Cat 1/2 WR	East	57614.3		57614.3												
	West	0														
Cat 3 WR	East	2151.7														
	West	0														
Cat 3 LO	East	2129.9														
	West	0														
Cat 4 WR	East	1997.9														
	West	0														
Cat 4 LO	East	413.3		413.3	413.3								413.3			413.3
	West	0														
East Ore to Loadout	East	25338.8		25338.8	25338.8			25338.8			25338.8					
	West	0														
East Ore to Stockpile	East	0		0.0	0.0								0.0			0.0
	West	0														
West Pit																
Overburden	East	0														
	West	0														
Cat 1/2 WR	East	29800.3														
	West	29800.3														
Cat 3 WR	East	472.2								472.2	472.2		472.2			472.2
	West	472.2								472.2	472.2		472.2			472.2
Cat 3 LO	East	4134.8								4134.8	4134.8		4134.8			4134.8
	West	4134.8								4134.8	4134.8		4134.8			4134.8
Cat 4 WR	East	38.6								38.6	38.6		38.6			38.6
	West	38.6								38.6	38.6		38.6			38.6
Cat 4 LO	East	128.4								128.4	128.4	128.4		128.4		
	West	128.4								128.4	128.4	128.4		128.4		
West Ore to Loadout	East	7911.2					7911.2		7911.2							
	West	7911.2					7911.2		7911.2							
West Ore to Stockpile	East	0														
	West	0														
Overburden to Stockpile	E/W	4966.3				4966.3										
Ore from Stockpile	E/W	7505.5						7505.5			7505.5	7505.5		7505.5		
Overburden from Stockpile Construction																
Cat 1/2 to Storage		3135.7				3135.7										
Cat 3 WR to Storage		678.6				678.6				678.6	678.6		678.6			678.6
Cat 3 LO to Storage		1084.2				1084.2				1084.2	1084.2		1084.2			1084.2
Cat 4 WR to Storage		745.7				745.7				745.7	745.7		745.7			745.7
Cat 4 LO to Storage		0				0.0				0.0	0.0	0.0		0.0		
Overburden to Stockpile		7533.8				7533.8										
Total (trips/year)			0.0	83366.5	25752.1	18144.2	15822.4	32844.3	15822.4	12056.4	44900.7	8175.6	11799.6	8175.6	0.0	11799.6
Miles/segment			0.3559	0.2436	0.1744	0.2322	0.1400	0.4057	0.1631	0.3614	0.2142	0.1701	0.1362	0.3345	0.3737	0.1400
VMT/year			0.0	40609.6	8984.0	8426.0	4429.1	26648.7	5160.2	8713.5	19235.9	2781.0	3213.6	5469.0	0.0	3303.0

PolyMet - Hoyt Lakes, Minnesota
Table 10 - Annual VMT Calculations Year 8 (Stockpile Disposal)

East Pit		Trips	S to HH	S to II	T to S	U to V	W to X	X to Y	Z to AA	Z to W	V to MM	V to NN
						Trips by Segment						
Overburden	East	0										
	West	0										
Cat 1/2 WR	East	57614.3				57614.3						57614.3
	West	0										
Cat 3 WR	East	2151.7					2151.7	2151.7				
	West	0										
Cat 3 LO	East	2129.9							2129.9	2129.9		
	West	0										
Cat 4 WR	East	1997.9							1997.9	1997.9		
	West	0										
Cat 4 LO	East	413.3										
	West	0										
East Ore to Loadout	East	25338.8										
	West	0										
East Ore to Stockpile	East	0										
	West	0										
West Pit												
Overburden	East	0										
	West	0										
Cat 1/2 WR	East	29800.3	29800.3		29800.3	29800.3						29800.3
	West	29800.3		29800.3	29800.3	29800.3						29800.3
Cat 3 WR	East	472.2	472.2		472.2		472.2	472.2		472.2		
	West	472.2		472.2	472.2		472.2	472.2		472.2		
Cat 3 LO	East	4134.8	4134.8		4134.8				4134.8			
	West	4134.8		4134.8	4134.8				4134.8			
Cat 4 WR	East	38.6	38.6		38.6				38.6			
	West	38.6		38.6	38.6				38.6			
Cat 4 LO	East	128.4	128.4		128.4							
	West	128.4		128.4	128.4							
West Ore to Loadout	East	7911.2	7911.2		7911.2							
	West	7911.2		7911.2	7911.2							
West Ore to Stockpile	East	0										
	West	0										
Overburden to Stockpile	E/W	4966.3				4966.3					4966.3	
Ore from Stockpile	E/W	7505.5										
Overburden from Stockpile Construction												
Cat 1/2 to Storage		3135.7				3135.7					3135.7	
Cat 3 WR to Storage		678.6					678.6	678.6		678.6		
Cat 3 LO to Storage		1084.2							1084.2			
Cat 4 WR to Storage		745.7							745.7			
Cat 4 LO to Storage		0										
Overburden to Stockpile		7533.8				7533.8					7533.8	
Total (trips/year)			42485.4	42485.4	84970.9	132850.6	3774.7	3774.7	14304.4	5750.8	15635.7	117214.8
Miles/segment			0.7273	1.4468	0.5208	0.6669	0.4570	0.2383	0.1720	0.1913	1.0919	0.4617
VMT/year			61797.0	122934.2	88511.3	177184.4	3450.1	1798.7	4919.8	2200.1	34143.9	108246.1

PolyMet - Hoyt Lakes, Minnesota
Table 11 - Annual VMT Calculations - Year 16 (In Pit Disposal)

East Pit		Trips	AA to BB	AA to FF	B TO C	BB to CC	C TO K	D TO V	E to D	E to T	F to E	F to M	FF to GG	G to F	J to H	K to J	K to O	KK to G	LL to N
																			Trips by Segment
Overburden	East																		
	Central																		
Cat 1/2 WR	East																		
	Central																		
Cat 3 WR	East																		
	Central																		
Cat 3 LO	East																		
	Central																		
Cat 4 WR	East																		
	Central																		
Cat 4 LO	East																		
	Central																		
East Ore to Loadout	East																		
	Central																		
East Ore to Stockpile	East																		
	Central																		
West Pit																			
Overburden	East	0.0																	
	West	0.0																	
Cat 1/2 WR	East	38597.7								38597.7	38597.7	38597.7			38597.7	38597.7	38597.7		
	West	38597.7								38597.7	38597.7	38597.7			38597.7	38597.7	38597.7		
Cat 3 WR	East	1140.9								1140.9	1140.9	1140.9							
	West	1140.9								1140.9	1140.9	1140.9							
Cat 3 LO	East	7604.8	7604.8			7604.8				7604.8	7604.8	7604.8							
	West	7604.8	7604.8			7604.8				7604.8	7604.8	7604.8							
Cat 4 WR	East	229.8		229.8						229.8	229.8	229.8	229.8						
	West	229.8		229.8						229.8	229.8	229.8	229.8						
Cat 4 LO	East	184.9								184.9	184.9	184.9							
	West	184.9								184.9	184.9	184.9							
West Ore to Loadout	East	23796.8								23796.8	23796.8	23796.8							
	West	23796.8								23796.8	23796.8	23796.8							
West Ore to Stockpile	East	0.0																	
	West	0.0																	
Overburden to Stockpile	E/W	4966.3						4966.3	4966.3		4966.3			4966.3				4966.3	
Ore from Stockpile	E/W	1073.2																	1073.2
Overburden from Stockpile Construction																			
Cat 1/2 to Storage		0.0						0.0	0.0		0.0			0.0				0.0	
Cat 3 WR to Storage		0.0									0.0			0.0				0.0	
Cat 3 LO to Storage		0.0	0.0			0.0					0.0			0.0				0.0	
Cat 4 WR to Storage		0.0		0.0							0.0		0.0	0.0				0.0	
Cat 4 LO to Storage		0.0									0.0			0.0				0.0	
Overburden to Stockpile		7533.8						7533.8	7533.8		7533.8			7533.8				7533.8	
Total (trips/year)			15209.7	459.7	0.0	15209.7	0.0	12500.0	12500.0	143110.0	155610.0	143110.0	459.7	12500.0	77195.5	77195.5	77195.5	12500.0	1073.2
Miles/segment			0.3824	0.0739	1.2059	0.5032	0.2580	1.1011	0.2284	0.0405	0.1905	0.0932	0.4703	0.1748	1.5403	0.2805	0.1744	0.2322	0.4057
VMT/year			11631.9	67.9	0.0	15307.6	0.0	27528.4	5710.2	11600.6	59296.8	26670.5	432.3	4370.3	237814.7	43305.5	26930.7	5805.8	870.7

PolyMet - Hoyt Lakes, Minnesota
Table 11 - Annual VMT Calculations - Year 16 (In Pit Disposal)

East Pit		Trips	M to LL	N to M	O to N	O to OO	O to P	OO to EE	P to Q	P to Z	S to HH	S to II	T to S	W to Y	Z to AA	Z to W	V to MM	V to NN
Overburden	East																	
	Central																	
Cat 1/2 WR	East																	
	Central																	
Cat 3 WR	East																	
	Central																	
Cat 3 LO	East																	
	Central																	
Cat 4 WR	East																	
	Central																	
Cat 4 LO	East																	
	Central																	
East Ore to Loadout	East																	
	Central																	
East Ore to Stockpile	East																	
	Central																	
West Pit																		
Overburden	East	0.0																
	West	0.0																
Cat 1/2 WR	East	38597.7		38597.7	38597.7						38597.7		38597.7					
	West	38597.7		38597.7	38597.7							38597.7	38597.7					
Cat 3 WR	East	1140.9		1140.9	1140.9		1140.9			1140.9	1140.9		1140.9	1140.9		1140.9		
	West	1140.9		1140.9	1140.9		1140.9			1140.9		1140.9	1140.9	1140.9		1140.9		
Cat 3 LO	East	7604.8		7604.8	7604.8		7604.8			7604.8	7604.8		7604.8		7604.8			
	West	7604.8		7604.8	7604.8		7604.8			7604.8		7604.8	7604.8		7604.8			
Cat 4 WR	East	229.8		229.8	229.8		229.8			229.8	229.8		229.8		229.8			
	West	229.8		229.8	229.8		229.8			229.8		229.8	229.8		229.8			
Cat 4 LO	East	184.9		184.9	184.9	184.9		184.9			184.9		184.9					
	West	184.9		184.9	184.9	184.9		184.9				184.9	184.9					
West Ore to Loadout	East	23796.8	23796.8								23796.8		23796.8					
	West	23796.8	23796.8									23796.8	23796.8					
West Ore to Stockpile	East	0.0																
	West	0.0																
Overburden to Stockpile	E/W	4966.3															4966.3	
Ore from Stockpile	E/W	1073.2			1073.2	1073.2		1073.2										
Overburden from Stockpile Construction																		
Cat 1/2 to Storage		0.0																0.0
Cat 3 WR to Storage		0.0		0.0	0.0		0.0			0.0					0.0	0.0		
Cat 3 LO to Storage		0.0		0.0	0.0		0.0			0.0					0.0			
Cat 4 WR to Storage		0.0		0.0	0.0		0.0			0.0					0.0			
Cat 4 LO to Storage		0.0		0.0	0.0	0.0		0.0										
Overburden to Stockpile		7533.8															7533.8	
Total (trips/year)			47593.5	95516.5	96589.6	1443.0	17951.2	1443.0	0.0	17951.2	71555.0	71555.0	143110.0	2281.9	15669.3	2281.9	12500.0	0.0
Miles/segment			0.3036	0.3614	0.2142	0.1701	0.1362	0.3339	0.3741	0.1400	0.5210	0.2576	1.4631	0.5716	0.1720	0.6494	0.7265	0.1822
VMT/year			28898.6	69032.4	41379.9	490.8	4889.0	963.6	0.0	5025.0	74563.6	36861.7	418759.3	2608.6	5389.3	2963.8	18162.9	0.0

PolyMet - Hoyt Lakes, Minnesota
Table 12 - Stockpile Overburden Excavation Calculations

Stockpile Footprint (ft^2)

Stockpile	Year 1	Year 5	Year 10	Year 15	Year 20
Cat 1/2/Overburden [2]	4807195	15734197	20009875	20229614	20229614
Cat 3	257712	1115804	2041076	3135871	3135871
Cat 3 Lean Ore	1540736	2778949	4257310	6830486	6830486
Cat 4	194780	1742306	2759033	2759033	2759033
Cat 4 Lean Ore	2375441	2375441	2375441	2375441	2375441
Overburden Storage	2688974	2688974	2688974	2688974	0

Average Depth of Overburden	12.7	feet

Stockpile Footprint Change (ft^2)

Stockpile	Year 1	Year 5	Year 10	Year 15	Year 20
Cat 1/2/Overburden	4807195	10927002	4275678	219739	0
Cat 3	257712	858092	925272	1094795	0
Cat 3 Lean Ore	1540736	1238213	1478361	2573176	0
Cat 4	194780	1547526	1016727	0	0
Cat 4 Lean Ore	2375441	0	0	0	0
Overburden Storage	26889784	0	0	0	-2688974

Estimated Overburden Stripped (yd^3)

Stockpile	Year 1	Year 5	Year 10	Year 15	Year 20
Cat 1/2/Overburden	2261162	5139738	2011152	103359	0
Cat 3	121220	403621	435221	514959	0
Cat 3 Lean Ore	724717	582419	695377	1210346	0
Cat 4	91619	727910	478238	0	0
Cat 4 Lean Ore	1117337	0	0	0	0
Overburden Storage [1]	NA	NA	NA	NA	NA

Overburden Density (in situ)	1.871	ston/yd^3

Estimated Overburden Stripped (tons)

Stockpile	Year 1	Year 5	Year 10	Year 15	Year 20
Cat 1/2/Overburden	4230634	9616450	3762866	193384	0
Cat 3	226803	755175	814298	963489	0
Cat 3 Lean Ore	1355945	1089705	1301051	2264557	0
Cat 4	171419	1361920	894784	0	0
Cat 4 Lean Ore	2090538	0	0	0	0
Overburden Storage [1]	NA	NA	NA	NA	NA

Estimated Annual Stripping Rate (tons)

Stockpile	Year 1	Years 2-4	Years 5-9	Years 10-14	Years 15-20
Cat 1/2/Overburden	4230634	2404112	752573	38677	0
Cat 3	226803	188794	162860	192698	0
Cat 3 Lean Ore	1355945	272426	260210	452911	0
Cat 4	171419	340480	178957	0	0
Cat 4 Lean Ore	2090538	0	0	0	0
Overburden Storage [1]	NA	NA	NA	NA	NA
Total	8075338	3205813	1354600	684286	0
Max	8075338				

[1] Overburden storage pile does not require a liner, so overburden will not be stripped
   beneath it.
[2] Footprint represents liner area. Liner will not fully extend under overburden portion
   of stockpile. Where a liner will not be present, overburden will not be stripped.

Figures

NorthMet Mine Boundary

N

Meters

1,000   0   1,000
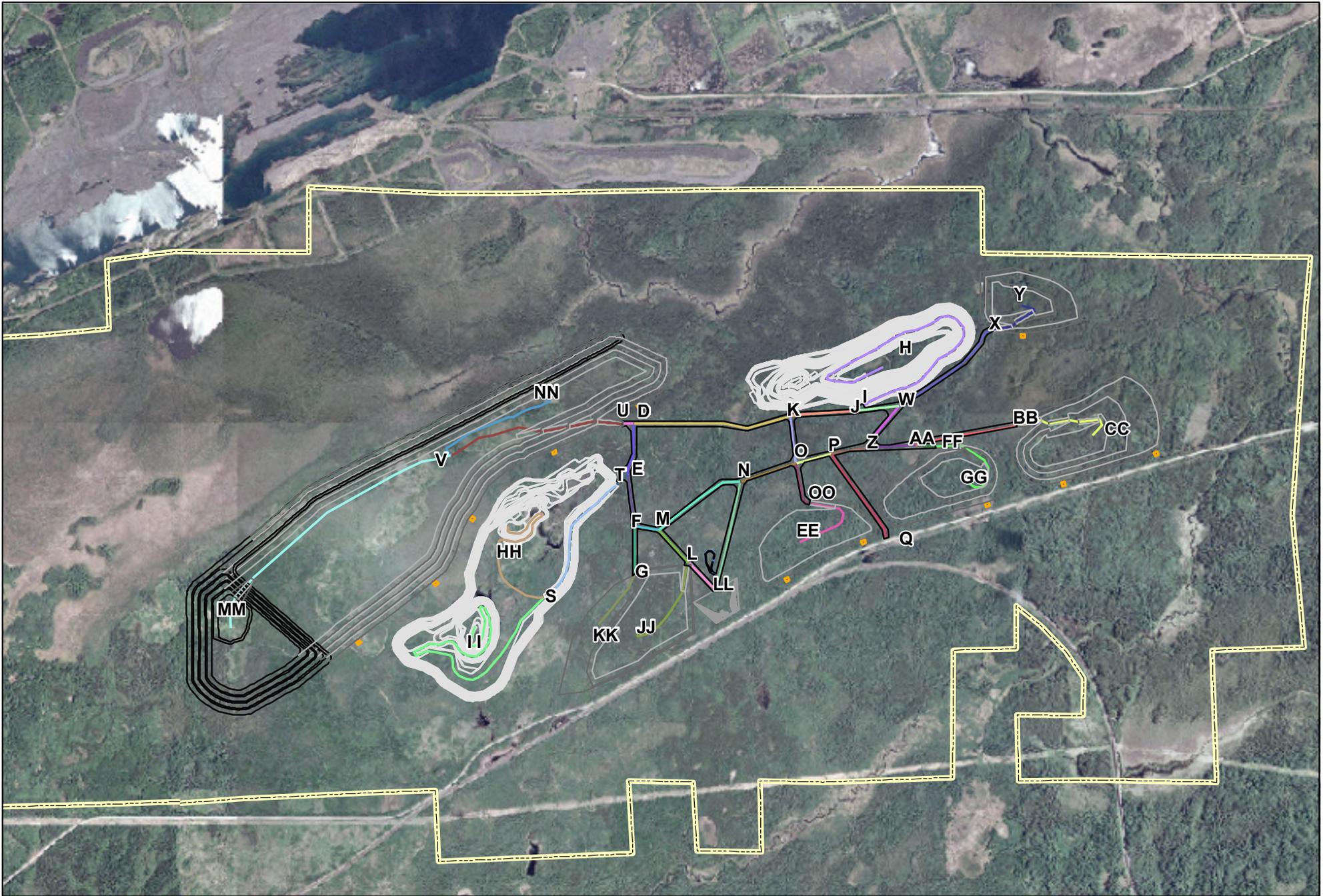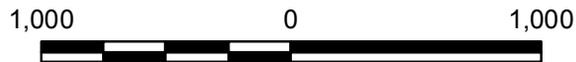
Figure 1

Year 10 Mining Haul Road Segments
PolyMet Mining, Inc.
Hoyt Lakes, MN

------- NorthMet Mine Boundary

N

Meters

1,000   0   1,000
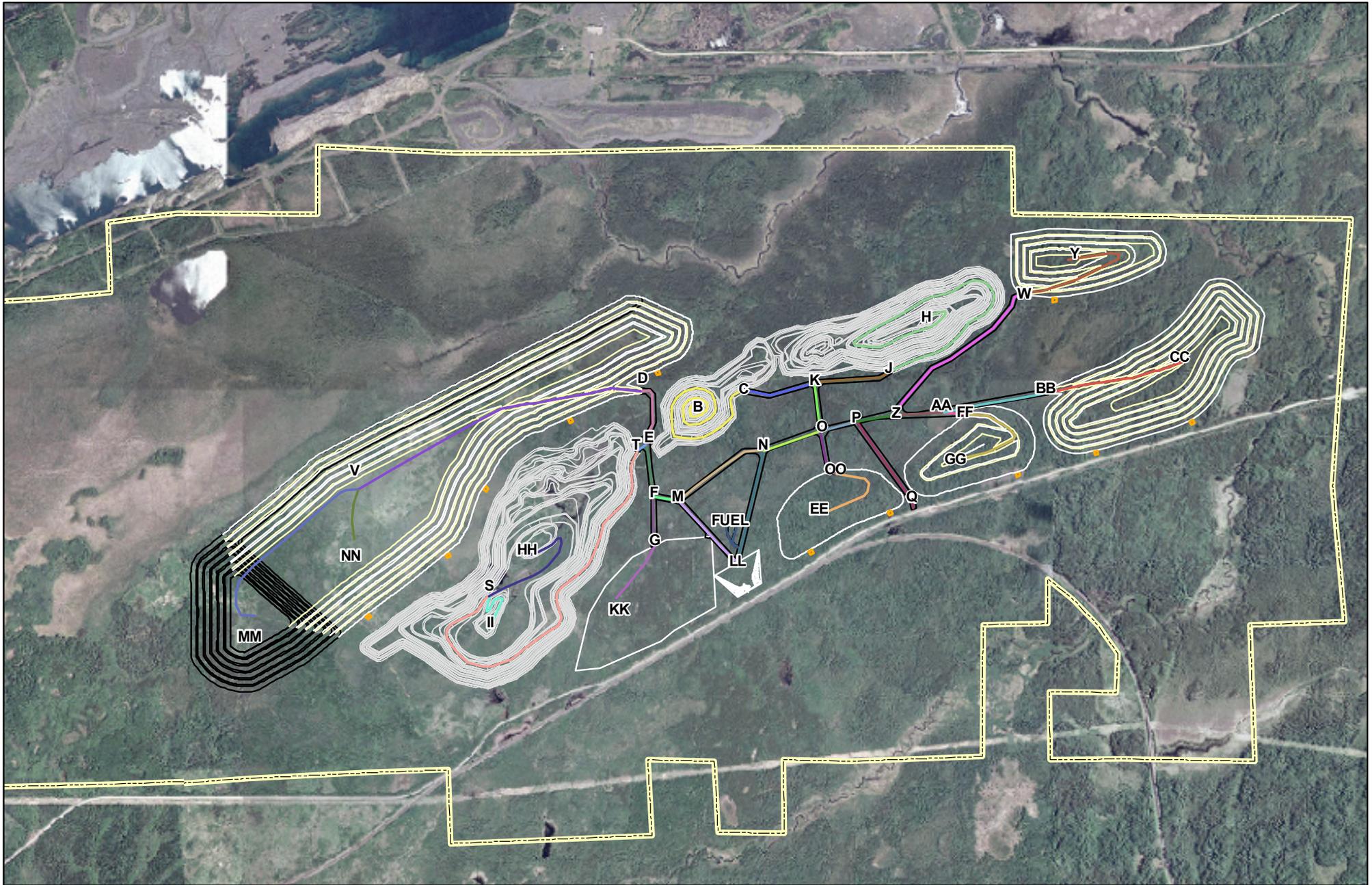
Figure 2

Year 20 Mining Haul Road Segments
PolyMet Mining, Inc.
Hoyt Lakes, MN
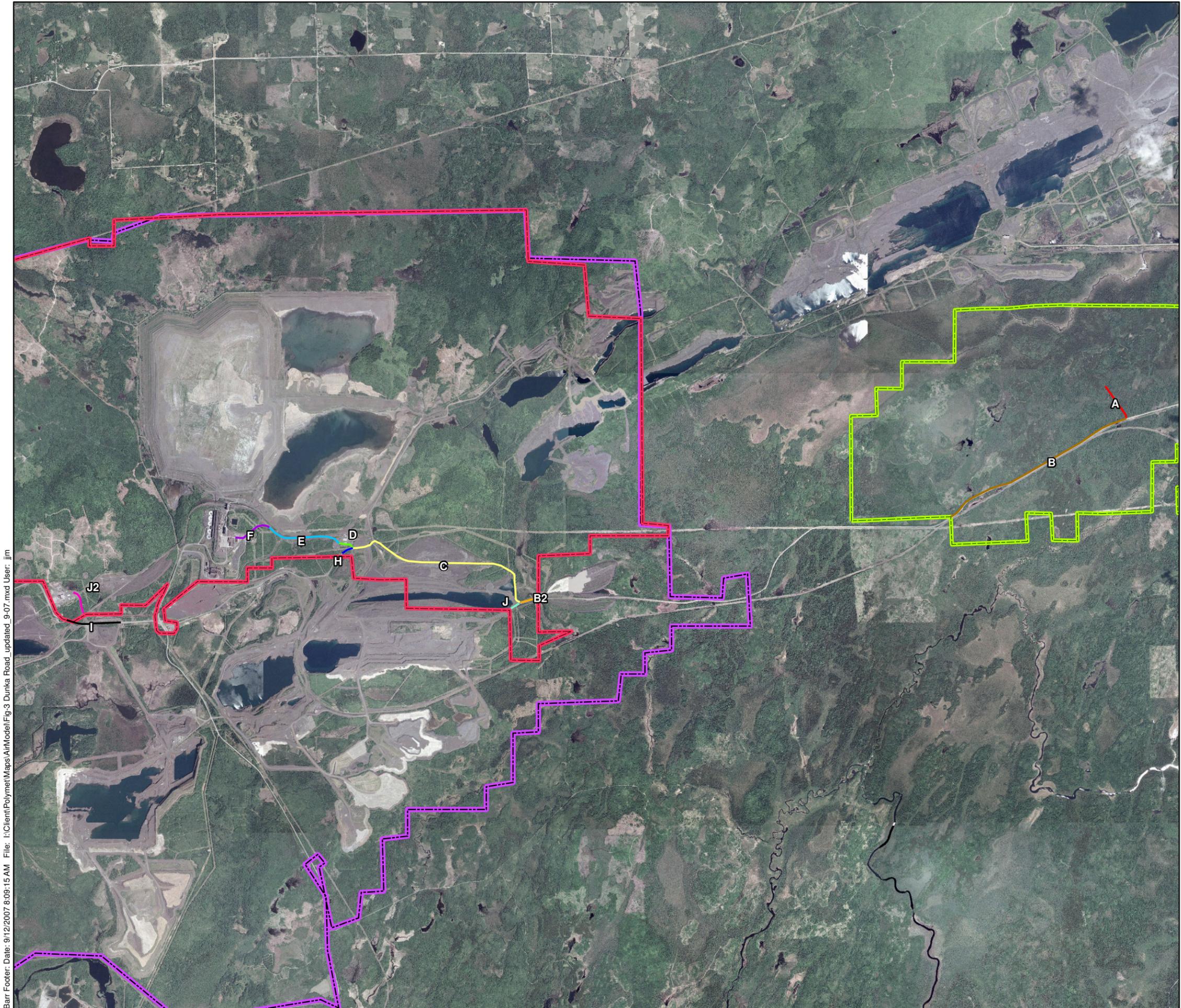
UNPAVED ROAD SEGMENTS

— A

— B

— B2

— C

— D

— E

— F

— H

— I

— J

— J2

– · – Mine Boundary

– · – Cumulative Impacts Boundary

— Projected Polymet Land Ownership

N

Meters

1,000   0   1,000   2,000
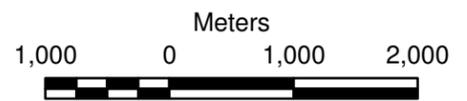
Figure 3

Dunka Road Segment Locations
PolyMet
Hoyt Lakes, MN

Comparison of Emission Levels for NorthMet Project Stationary Sources to Major Source Levels for PSD and HAPs (RS57C)

PolyMet Mining Inc.

November 2008

BARR

RS 57C – Company Finalizes Emission Calculations (supplemental)

Comparison of Emission Levels for NorthMet Project Stationary Sources to Major Source Levels for PSD and HAPs (RS57C)

Table of Contents

List of Tables

1.0 Introduction

PolyMet Mining Inc (PolyMet) submitted updated emission calculations for the NorthMet Project Mine Site and Plant Site as required by the Environmental Impact Statement (EIS) scoping decision in February of 2007. These calculations were submitted as two reports, RS57A and RS57B.

Changes were made to the proposed project that affected the Mine Site and Plant Site emission calculations after February of 2007, including an option for producing and shipping dried flotation concentrate, modifications to the Tailings Basin design to address water quality related issues, relocation of the overburden stockpile at the mine site, proposed use of 240 ton mine haul trucks and a change to the proposed permitting strategy for the project (see the July 2007 Supplemental Project Description for additional information on changes to the project).

As noted above, the original emission calculation submittal for the EIS was contained in two separate reports. These two reports were updated and submitted as one report along with this additional Section, RS57C in September of 2007.

At the request of the Minnesota Pollution Control Agency (MPCA), the emission calculation spreadsheets for the Plant Site and Mine Site from the September 2007 combined report were reformatted and submitted in December of 2007. Further refinements to the emission calculations have been made since then as the criteria pollutant and toxic pollutant (AERA) modeling has been completed for the project and additional comments have been received from MPCA. The reformatted spreadsheets include additional information, including a separate calculation of total emissions for the PSD point sources. This has made some of the tables included in the previous version of RS57C redundant and they are not included in this updated version.

Due to the changes that have occurred in the emission calculation spreadsheet, the Minnesota Department of Natural Resources (MDNR), the Responsible Governmental Unit (RGU) for the NorthMet Project EIS, has requested that an updated version of the complete RS57 report be submitted. This updated report is intended to aid those reviewing the complete Preliminary Draft EIS (PDEIS) by providing the latest version of all relevant emission calculations in a single report.

This report reflects the current emission calculations as of the preparation of the complete PDEIS. Further changes may occur prior to the Draft EIS being put on public notice as a result of comments from the reviewers of the PDEIS. After the completion of the review of the PDEIS, PolyMet will

discuss with MDNR whether or not an additional update is needed prior to the Draft EIS public notice period.

The purpose of RS57C is to demonstrate how emissions will be kept below the major source level for Prevention of Significant Deterioration (PSD) purposes and to discuss the facility status with respect to the National Emission Standards for Hazardous Air Pollutants (NESHAPS) from 40 CFR Part 63. The Part 63 NESHAPs are commonly referred to as the Maximum Achievable Control Technology (MACT) standards.

The Plant Site and Mine Site will be permitted as a single stationary source. As discussed below, PolyMet intends to operate the combined NorthMet facilities as a synthetic minor source for PSD and MACT standard purposes. This will allow for a more streamlined permitting process while ensuring that emission sources at the facility will utilize suitable pollution control techniques to keep emissions to a low level.

This report is organized into two main sections. Section 2 discusses combined point source emissions for the Plant Site and Mine Site and compares emission levels to the major source threshold for PSD purposes. Section 3 discusses Hazardous Air Pollutant (HAP) emissions for the project and discusses the applicability of MACT standards.

References are made in this document to several other reports that have been prepared as part of the EIS process or for other purposes related to the NorthMet Project. The report identification numbers, along with the report titles are listed below:

- RS57A – Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Plant Site (Draft-03, November 2008)

- RS57B – Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Mine Site (Draft-03, November 2008)

- RS58B - Emission Control Technology Review for NorthMet Project Mine Site (Draft-02, September 2007)

PolyMet intends to propose emission limits and compliance demonstration methods to maintain emission below major source level for PSD purposes in the air emission permit application. The sections below provide supporting information that this is feasible in practice. Specific compliance demonstration practices, including stack testing, control equipment monitoring, monthly calculations, and recordkeeping will be agreed upon through the permitting process. This section includes a proposed general framework for the permit limits and compliance demonstration.

2.1 Applicable Major Source Threshold

The proposed location for the project is in attainment with all state and federal ambient air quality standards, so the PSD regulations (40 CFR 52.21) apply for all New Source Review (NSR) pollutants. Per 40 CFR 52.21(b)(1)(i), for sources in categories not listed in 40 CFR 52.21(b)(1)(i)(a), the applicable major source level is 250 tons per year (tpy). The NorthMet project is not in any of the listed source categories, thus the applicable major source level is 250 tpy.

2.2 Sources Included in PSD Applicability Evaluation

The first step in demonstrating that emissions will be below the major source level is to determine which sources are included in the determination of the applicability of the PSD regulations. Per 40 CFR 52.21(b)(1)(iii), fugitive emissions are not included in the determination of the applicability of the PSD regulations unless the source is in one of the categories listed in this section of the regulation. This list is similar to the one referenced above except that there is an additional category for sources subject to regulations under Section 111 or 112 of the Clean Air Act as of August 7, 1980. The Section 111 standards are known as the New Source Performance Standards (NSPS) and the Section 112 standards are the NESHAPs (the NESHAPs in 1980 would be the standards under Part 61, not the Part 63 MACT standards referenced in the introduction). The proposed project will not be subject to any Part 61 NESHAPs or any NSPS promulgated as of August 7, 1980. Therefore, fugitive emissions are not counted when determining PSD applicability for the project.

"Fugitive emissions" is defined in 40 CFR 52.21(b)(20) as shown below:

> *Fugitive emissions* means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

The important distinction is that emissions that are not routed through a stack or vent, but could reasonably be passed through one are not considered fugitive emissions. Sources that are directly vented to a stack or vent are automatically not fugitive.

After a review of EPA guidance on this topic, a reasonably conservative determination was made as to which sources are not fugitive sources and therefore must be included in the determination of the applicability of PSD regulations. Table 1 lists the different types of sources associated with the project and the proposed classification as fugitive or point source along with the rationale where appropriate. There is also one source listed in the table that has been determined to be a mobile source.

2.3 Comparison of Potential Emissions to PSD Major Source Level

In order to determine which pollutants are the most significant concern with respect to determining the status for the project relative to PSD regulations, potential and controlled potential emissions for all of the point sources associated with the project have been compared to the PSD major source level of 250 tpy. Potential emissions are calculated with the assumption that the source operates at full capacity for 8760 hours per year. Controlled potential emissions are calculated in the same manner, but accounting for the pollution control equipment and techniques proposed for the project. The emissions for all PSD pollutants are shown in Table 2.

As shown in Table 2, potential point source emissions are below the major source level for all pollutants except for sulfuric acid mist, total particulate matter and particulate matter less than 10 microns (PM_{10}). When the proposed pollution control equipment is considered, sulfuric acid mist emissions are reduced well below the major source level. Therefore, a permit requirement to operate pollution control equipment at all times when the associated emission sources are operating will be sufficient to make the source minor for sulfuric acid mist. Appropriate performance testing and continuous or periodic monitoring will be proposed in the air emission permit application to verify control equipment performance.

Additional emission limitations will be necessary to limit total particulate and PM_{10} emissions below the major source level. PolyMet intends to propose facility wide emission limits for PM and PM_{10} to limit emissions below the major source level for these pollutants. The limits will be expressed as a 12-month rolling sum. Each month, total particulate and PM_{10} emission will be calculated and the calculated monthly emissions will be summed with the emissions for the preceding 11 months to demonstrate on a monthly basis that emissions are below the major source level. Stack test results,

pollution control equipment specifications, emission factors, and other methods will be used to calculate emissions as agreed upon between PolyMet and the MPCA through the permitting process. Monthly records will be kept of emission source operating hours, throughput rates, and other parameters needed for the calculations.

PolyMet has also agreed to an average primary crusher feed limit of 32,000 tons per day. This will help ensure that the facility as permitted will be a synthetic minor source for PSD purposes.

2.4 Projected Actual Emissions

In order to support the contention that it is practical to limit emissions from the NorthMet project to below the major source level for total particulate matter and PM_{10}, and therefore allow the facility to be permitted as PSD minor source, actual emissions have been estimated for the project point sources. The actual emission estimate is based on reasonable estimates of facility operation. Table 3 identifies the assumptions used to estimate actual emissions where they are different from potential emissions. Some conservative assumptions are still employed in the estimates as noted. Sources not listed in the table were assumed to have emissions equivalent to potential emissions.

The projected actual emissions are conservative in that they include mutually exclusive operations. This includes the truck and rail haul options for limestone delivery and the hydrometallurgical plant and production of dried flotation concentrate that will be loaded into railcars for shipping. Full operation of the hydrometallurgical plant would be the worst case. It is possible that the concentrate processing equipment and the hydrometallurgical plant may each operate at roughly half capacity, but the total average ore feed rate for the project will remain at 32,000 tons per day (tpd), so the two alternative processes cannot both operate at full capacity.

Table 4 presents the projected actual emissions for the Plant Site and Mine Site and the project totals with the above assumptions. The estimated total particulate emissions are 193.1 tpy and estimated PM_{10} emissions are 178.3 tpy. Both of these are well under the PSD major source level of 250 tpy. The estimated actual emissions are conservative as noted above. The detailed calculations for the Plant Site are presented in the RS57A section of this report; the calculations for the Mine Site are presented in the RS57B section. The point source emissions do not change over the life of the project. In other words, separate calculations for the proposed project stockpile disposal phase (Years 1 through 11) and in-pit disposal phase (Years 12 through 20) at the Mine Site are not needed.

3.0 MACT Standard Applicability

MACT standard applicability, both case by case and standards for source categories, is generally based on HAP emissions for a facility as compared to the major source level for HAPs. However, there are some standards that apply to area (non-major) sources. This section discusses the applicability of standards that only apply to major sources of HAPs. Any area source standards that apply to equipment included as part of the NorthMet project will be addressed in the air permit application.

The Plant Site and Mine Site emission calculations section of this report (RS57A and 57B respectively) include emission calculations for HAPs. However, totals for the entire project are not given and no comparisons to the major source level are made. Therefore, HAP emissions are discussed further in this section along with an analysis of the applicability of MACT standards. Note: the potential and controlled potential emissions below include both the hydrometallurgical plant and concentrate drying and shipping operating scenarios. Both operations will not run at full capacity simultaneously in practice. The projected actual emissions also conservatively assume that all equipment is run simultaneously.

3.1 HAP Emissions from the NorthMet Project

Per 40 CFR Part 63 and EPA guidance, fugitive emissions are included in the calculation of HAP emissions to determine the major source status of a facility with respect to HAPs. Therefore, all sources are included in the assessment of HAP emissions. Two types of calculations must be performed to determine if a facility is a major source of HAPs: 1) Total HAPs which is the sum of all HAPs emitted and 2) maximum emissions of a single HAP.

Total HAP emission levels are summarized in Table 7. These data were taken from Table 1 of RS57A and Tables 1 and 2 of RS57B.

The worst case emissions for a single HAP are for nickel. Emissions at the Mine Site are higher for manganese, but total project emissions are highest for nickel. Table 8 shows nickel emissions for the project.

3.2 Applicability of MACT Standards

The major source level for total HAPs is 25 tpy and the major source level for individual HAPs is 10 tpy. As shown in the Tables 7 and 8, potential emissions are above these levels, but when the proposed emission control techniques are considered, emissions are below the major source level for total and individual HAPs. Projected actual emissions are further below the major source level. The actual emission calculations conservatively include all equipment as noted above. This indicates that a permit condition requiring utilization of the proposed pollution control techniques, along with appropriate performance testing and periodic and/or continuous monitoring will be sufficient to limit the facility below the major source level for HAPs. The details of these requirements will be agreed upon during the permitting process.

The majority of MACT standards only apply at major sources, including the case by case MACT provisions that implement Section 112(g) of the Clean Air Act Amendments of 1990 and other potentially applicable standards (e.g. Boiler MACT). None of the standards that only apply at major sources will be applicable to the NorthMet project.

There are some MACT standards that also apply to area sources (i.e. sources with emissions below the major source level). EPA has recently promulgated several area source standards, some of which will apply to equipment proposed for this project. However, the area source standards do not typically have the detailed compliance requirements associated with major source standards.

In Summary, major source MACT standards, including case by case MACT, will not apply to this project, but the air emission permit will need to include operating, monitoring and recordkeeping requirements to make the facility a minor source of HAPs. The air permit will also address any applicable area source MACT standards.

Tables

Table 1 Fugitive and Point Sources for the NorthMet Project

Source Type	Fugitive or Point Source	Rationale
Sources directly vented to a stack – including Crushing Plant sources, Autoclaves, Hydrometallurgical Plant Tanks, boiler, heaters, generators, outdoor tanks, etc.	Point	Not fugitive by definition
Sources vented to general building air – including space heaters, indoor material handling sources not directly vented, indoor tanks without external vents, etc.	Point	Indirectly vented to building vents, therefore could be considered point sources.
Outdoor conveyor transfer points, except conveyors to stockpiles	Point	Similar sources are routed to stacks at other facilities
Conveyors to stockpiles	Fugitive	Stockpiles too large to be enclosed in a practicable manner
Limestone reclaim pocket dump and reclaim feeder to conveyor transfer	Point	Fairly contained area. Might be feasible to enclose and route to stack.
Limestone truck haul option additional sources	Point	May be feasible to enclose truck unloading area and route to a stack.
Liquid SO_2 Unloading	Point	May be feasible to enclose and route to stack or vent
Paved and unpaved roads	Fugitive	Roads cannot be enclosed and routed to a stack or vent in a reasonable manner.
Tailings Basin	Fugitive	Area too large to be enclosed and route to a stack or vent
Stock Pile Wind Erosion	Fugitive	Stockpiles too large to enclose in a practical manner.
Outdoor screens and screen discharge (overburden screening)	Point	Similar sources routed to stack at other operations.
Portable Crushing Circuit	Point	Similar sources routed to stack at other facilities

Table 1 Fugitive and Point Sources for the NorthMet Project

Source Type	Fugitive or Point Source	Rationale
Truck loading and unloading at pits and stockpiles	Fugitive	Location moves based on mining area and active area of stockpile, so it is not practical to enclose and vent to a stack
Truck loading at Mine Site screens and portable crushing area	Fugitive	Given truck size, not practical to enclose and route to stack
Truck Unloading at Rail Transfer Hopper	Fugitive	Large open bin with 240 ton trucks needing safe, unobstructed access
Railcar loading at Rail Transfer Hopper	Fugitive	Unobstructed view and access required for safe operation. See RS58B for details.
Blast Hole Drilling	Fugitive	Location moves based on active mining area.
Concentrate Drying, handling and railcar loading	Point	Routed to stacks or vents
Generator to Move Electrical Equipment	Mobile Sources	Designed to be moved; not a stationary source.

Table 2 Comparison of Point Source Emissions to PSD Major Source Level

Pollutant	Potential Emissions (tpy)	Controlled Potential Emissions (tpy)	PSD Major Source Level (tpy)
PM10	19521.07	304.67	250
Sulfur Dioxide	171.40	28.79	250
Sulfuric Acid Mist	1013.11	11.57	250
Total Particulate	19977.28	400.76	250
Nitrogen Oxides	152.83	152.83	250
VOC	205.91	117.43	250
Carbon Monoxide	167.12	167.12	250
Lead	13.01	0.13	250
Hydrogen Sulfide	13.63	4.09	250
Carbon Disulfide	3.75	3.75	250
Reduced Sulfur Compounds	17.38	7.84	250
Fluorides (as F)	4.14	0.04	250

Table 3 Assumptions Used for Estimating Actual Point Source Emissions

Source(s)	Assumptions for Estimating Actual Emissions	Basis for Assumption
High Pressure Boiler	6% utilization	Boiler only operates at autoclave startup
Oxygen Plant Adsorber Regeneration Heater	16 hour per day operation	Plant design has heater operating 2 out of 3 cycles
Process Plant Space Heating	40% Utilization	Based on historic heating demand at LTVSMC with a safety factor
Plant Site Backup Generators	240 hour per year operation	Only used during testing and power failure
Fire Pumps	64 hours per year operation	Only operated for testing or for fire fighting
Zinc Pots	10% Utilization	Estimate based on the fact that equipment is only used during crusher maintenance
Area 1 and Area 2 Space Heaters	50% utilization	Based on estimated heating demand
Crushing Plant	Assumed only equipment needed to process 32,000 tpd will operate 8760 hours per year (e.g. 1 course crushing line, 3 fine crushing lines).	Average ore throughput will be 32,000 tpd. Still conservative, because some of the needed equipment in the crushing plant will not run 8760 hours per year
Autoclaves	Operate7884 hours per year	Autoclaves operating at design capacity for 90% of the time corresponds to average ore feed rate of 32,000 tpd.
Electrowinning and Hydrometallurgical process tanks	Operate 7884 hours per year	90% operation at design capacity equivalent to 32,000 tpd ore feed.
Limestone processing and handling sources	252,209 tons per year limestone processed	Equivalent to process demand; conservative because both delivery methods included
Remaining Process consumables handling sources	Calculation based on average process demand or estimated usage without safety factor	Represents predicted actual process operation.
WWTF Space Heaters	50% Utilization	Conservative estimate of heating demand

Table 4 Projected Actual Point Source Emissions

Pollutant	Projected Actual Emissions – Plant Site (tpy)	Projected Actual Emissions – Mine Site (tpy)	Projected Actual Emissions – Total (tpy)
PM10	174.98	3.33	178.32
Sulfur Dioxide	17.62	0.67	18.28
Sulfuric Acid Mist	10.24	0.02	10.25
Total Particulate	184.88	8.19	193.07
Nitrogen Oxides	39.93	8.36	48.29
VOC	101.23	0.65	101.88
Carbon Monoxide	100.65	2.73	103.38
Lead	0.11	0.00	0.11
Hydrogen Sulfide	3.68	0.00	3.68
Carbon Disulfide	3.32	0.00	3.32
Reduced Sulfur Compounds	6.99	0.00	6.99
Fluorides (as F)	0.03	0.00	0.03

Table 5 Total HAP Emissions for the NorthMet Project

Project Area	Potential Total HAP Emissions (tpy)	Controlled Potential HAP Emissions (tpy)	Projected Actual HAP Emissions (tpy)
Plant Site	748.8	14.5	12.0
Mine Site (Year 8)[1]	18.7	4.6	4.6
Mine Site (Year 16)[2]	19.1	4.6	4.6
Project Total[3]	767.9	19.0	16.6

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[1] Emissions for worst case for proposed action (Year 8)
[2] Emissions for worst case for reasonable alternative RA1 (Year 16)
[3] Total HAP emissions for the project are equivalent to Plant Site emissions plus the greater of the Year 8 or Year 16 Mine Site emissions.

Table 6 Total Worst Case Single HAP Emissions for the NorthMet Project (Nickel)

Project Area	Potential Single HAP Emissions (tpy)	Controlled Potential Single HAP Emissions (tpy)	Projected Actual Single HAP Emissions (tpy)
Plant Site	564.1	5.4	4.8
Mine Site (Year 8)[4]	2.6	0.7	0.7
Mine Site (Year 16)[5]	2.7	0.7	0.7
Project Total[6]	566.7	6.1	5.5

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[4] Worst case emissions for proposed action (Year 8).

[5] Worst case emissions for reasonable alternative RA1 (Year 16)

[6] Nickel emissions for the project are equivalent to Plant Site emissions plus the greater of the Year 8 or Year 16 Mine Site emissions.

Mobile Source Emission Calculations for the NorthMet Project (RS57D)

PolyMet Mining Inc.

November 2008

BARR

RS 57D – Company Finalizes Emission Calculations (mobile sources)

Mobile Source Emission Calculations for the NorthMet Project (RS57D)
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1.0 Introduction

PolyMet Mining Inc (PolyMet) submitted updated emission calculations for the NorthMet Project Mine Site and Plant Site as required by the Environmental Impact Statement (EIS) scoping decision in February of 2007. These calculations were submitted as two reports, RS57A and RS57B.

As noted above, the original emission calculation submittal for the EIS was contained in two separate reports. These two reports were updated and submitted as one report along with this additional Section, RS57C in September of 2007.

At the request of the Minnesota Pollution Control Agency (MPCA), the emission calculation spreadsheets for the Plant Site and Mine Site from the September 2007 combined report were reformatted and submitted in December of 2007.

Due to the changes that have occurred in the emission calculation, the Minnesota Department of Natural Resources (MDNR), the Responsible Governmental Unit (RGU) for the NorthMet Project EIS, has requested that an updated version of the complete RS57 report be submitted. This updated report is intended to aid those reviewing the complete Preliminary Draft EIS (PDEIS) by providing the latest version of all relevant emission calculations in a single report. Because the emissions from mining vehicles and locomotives have been considered in air dispersion modeling, the calculations for these sources are included in this new report section identified as RS57D. The title of the overall report has been modified to reflect this addition.

The purpose of RS57D is to provide information on the calculations for criteria and toxic air pollutant emissions from mine vehicles and locomotives for the NorthMet project. At the request of MPCA, MDNR and their contractors, and the Federal Land Managers (FLMs) for the nearby Class I areas, criteria pollutant emissions have been calculated for the mine vehicle and locomotive exhaust, and these emissions have been included in the Class II modeling for the Mine Site and the Class I modeling which combines the Mine Site and Plant Site. The mine vehicle and locomotive emissions were also included in the Air Emission Risk Assessment (AERA) for the Mine Site. The calculation of toxic pollutant emissions is also addressed in this report.

This report reflects the current emission calculations as of the preparation of the complete PDEIS. Further changes may occur prior to the Draft EIS being put on public notice as a result of comments from the reviewers of the PDEIS. After the completion of the review of the PDEIS, PolyMet will

discuss with MDNR whether or not an additional update is needed prior to the Draft EIS public notice period.

References are made in this document to several other reports that have been prepared as part of the EIS process or for other purposes related to the NorthMet Project. The report identification numbers, where applicable, along with the report titles are listed below:

- RS38B – Air Emissions Risk Analysis (AERA) – Mine Site (Draft-01, March 2007; Addendum 01, October 2007)

- RS57A – Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Plant Site (Draft-02, September 2007)

- RS57B - Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Mine Site (Draft-02, September 2007)

- RS57C – Comparison of Emission Levels for NorthMet Project Stationary Sources to Major Source Levels for PSD and HAPs (Draft-01, September 2007)

- Class II Air Dispersion Modeling Report for the NorthMet Project Mine Site (Draft-01, January 2008)

- Class I Area Air Dispersion Modeling Report for the NorthMet Project (Draft-01, February 2008; Addendum-01 February 2008)

The mine vehicles included in the emission calculations consist of all of the large, non-road vehicles that will be involved in mining activities at the NorthMet Mine site. These vehicles include: primary production excavators, secondary production excavators, haul trucks, tracked dozers, wheeled dozers, graders, water/sand/miscellaneous use trucks, wheel loaders, blast hole drills, backhoes with hammers (secondary breakage), and integrated tool carriers. The primary production excavators and one of the two blast hole drills will be electric powered, so there are no emissions from these vehicles.

This report includes two versions of the criteria pollutant emission calculations for the mine vehicles. The first is the version that was used as an input in the Mine Site Class II modeling (submitted January 2008) and the initial Class I modeling (submitted February 2008). The modeling for the Mine Site AERA (submitted January 2008) uses the same fuel usage data as the first set of criteria pollutant calculations. The initial criteria pollutant calculations are presented in Section 2.1.

The Mine vehicle calculations were refined in July of 2008 to reflect updated information on available vehicles and pollution control technology and refined fuel usage estimates. The Class I modeling was rerun with the new emission estimates. Mine vehicle emissions of criteria pollutant only have a small impact on Class II modeling, so the Class II modeling was not redone with the refined calculations.

Most toxic pollutant emission rates are only dependent on fuel usage, including the risk drivers with the exception of NO_x as NO_2, Therefore, because the fuel usage is lower in the refined calculations and NO_2 is only a risk driver for acute affects, the AERA submitted for the Mine Site is likely conservative for chronic affects. NO_x emissions did increase by about 80% in the refined calculations. However, the modeled, summed inhalation health risk is 0.2 and the NO_2 hazard quotient is 0.1. Given this information, an 80% increase in NO_x emissions would still result in a summed risk of less than the Minnesota Department of Health (MDH) guideline of 1.0.

2.1 Initial Mine Vehicle Calculations

Calculations were performed for criteria pollutants and toxic air pollutants as part of the initial mine vehicle calculations. The criteria pollutant calculations were used as an input to the Mine Site AERA (RS38B) and the initial Class I modeling (February 2008).

2.1.1 Criteria Pollutant Calculations

The initial mine vehicle emission calculations for criteria pollutants are presented in Table 1.

Fuel usage for each year of mine operation was estimated by Wardrop, a mining consultant working on the project, in November of 2007. Based on this estimate, fuel usage would peak during year 10 of operation, so the initial emission calculations were based on the year 10 data. The annual fuel usage in liters provided by Wardrop was converted to gallons per day with an assumption of 360 days per year of mine operation. The fuel usage calculations are shown in Table 4.

For each type of vehicle, the applicable non-road engine standard for the current model year was determined based on engine size. In general, the largest engines are subject to Tier 2 standards and the smaller engines are subject to Tier 3 standards. PM and NO_x emissions were calculated based on the applicable current model year standard. The standards were converted to lb/gallon fuel burned by using a Break Specific Fuel Consumption (BSFC) factor from the EPA publication *Exhaust Emissions Factors for Non-road Engine Modeling -- Compression Ignition* (Beardsley and Lindhjem, 1998) and a fuel oil density from AP-42 Table 3.4-1 footnote a.

Sulfur dioxide emissions were calculated with an emission factor from *Exhaust Emission Factors for Non-road Engine Modeling -- Compression Ignition* (Beardsley and Lindhjem, 1998). This emission factor is a function of the BSFC, hydrocarbon emission factor, and the fuel sulfur content. A fuel sulfur content of 500 ppm was used in the uncontrolled emission calculations to reflect the standard that will be in effect when the mine commences operation. It may be possible to obtain fuel oil with higher sulfur contents from small refiners that have an exemption, but PolyMet has agreed to not pursue this option.

At the time the initial calculations were completed, PolyMet intended to equip the 240 ton haul trucks with selective catalytic reduction (SCR) to control NO_x emissions. The haul trucks represented 75% of the total mine vehicle NO_x emissions, so equipping them with SCR would result in a significant reduction in NO_x emissions from the mine vehicles. Based on information obtained from a major supplier of engines for mining equipment at that time, PolyMet believed that SCR would reduce NO_x emissions by 90% below the Tier 2 standard. PolyMet was also informed by the manufacturer that if SCR was installed, the haul trucks will have to use ultra low sulfur diesel fuel (15 ppm), which will result in a reduction in SO_2 emission of 97%, below the applicable standard. The initial criteria pollutant calculations assume the installation of SCR and the use of 15 ppm sulfur fuel for the 240-ton haul trucks.

2.1.2 Toxic Pollutant Calculations

The same fuel usage data was used for the toxic air pollutant calculations as for the initial criteria pollutant calculations. The toxic air pollutant calculations for the mine vehicles are presented in Table 5.

As noted above, at the time the initial calculations were performed, it was understood that the use of SCR on the haul trucks would require the use of ultra low sulfur diesel fuel (15 ppm), which would result in a reduction in SO_2 emission of 97%. This emission reduction, however, was not applied to the sulfuric acid emissions.

Sulfuric acid emissions were determined using an emission factor, based on data in *The Sulfur Speciation of Diesel Emissions from a Non-road Generator* (Liu, *et al.* 2005), and is a function of the sulfur content and heating value of the fuel. The fuel sulfur content was assumed to be 500 ppm. A fuel sulfur content of 500 ppm was used in the uncontrolled emission calculations to reflect the standard that will be in effect when the mine commences operation.

Specific emission factors for heavy duty diesel non-road vehicles are not available for most air toxics. However, wherever possible an appropriate emission factor was used from a similar source. VOC and PAH emission factors are from the AP-42 sections for diesel industrial engines (AP-42, Section 3.3) and large stationary diesel engines (AP-42, Section 3.4), depending on the vehicle engine size. These emission factors are based on the heat input to the engines (lb/MMBtu). Emission factors for metals are the AP-42 factors for distillate oil fired stationary turbines (AP-42, Section 3.1). Although a turbine and vehicle engine are different, it was assumed that diesel metal emissions are from the metal content of the fuel and not affected by the type of combustion device used and therefore could be applied to different engine types. The emission factors expressed in lb/MMBtu were converted to lb/gallon fuel with a diesel fuel heating value of 0.139 MMBtu/gallon from AP-42 Section 3.1.

Emission factors for dioxins/furans are from a USEPA document entitled "Health Assessment Document for Diesel Engine Exhaust" (USEPA, 2002). The emission factors are expressed in terms of toxicity equivalents per kilometer driven (toxicity equivalence quotient, TEQ or "I-TEQ") (USEPA 2002). Emission factors developed from a number of studies, including studies conducted in other countries (Germany, Sweden, New Zealand and Norway) are presented (USEPA 2002). The emission factor used for the mine vehicles is the average of all latest (1996-1998) US studies that included heavy duty vehicles presented in the report. With few exceptions, these studies had the

highest emission factors. The TEQ-based emission factors used in the calculations are taken directly from the USEPA (2002) document and reflect the methodology used in deriving the TEQ at that time by the original authors. No adjustments have been made to the TEQ-based emission factors obtained from the USEPA (2002) document on diesel engine exhaust to account for any subsequent changes in TEQ methodology or improvements in diesel fuel formulations. Emission factors were converted to a lb/gallon fuel basis using the mileage factor cited in the EPA report (USEPA, 2002).

2.2 Refined Calculations

As noted above, PolyMet originally proposed installing SCR on the mine haul trucks to achieve a reduction of 90% below the Tier 2 standard for NO_x. This proposal was based on an inquiry to an engine manufacturer as to the applicability of SCR technology to the engine typically used for haul trucks. The engine manufacturer responded that SCR had been applied to those engines and a 90% reduction achieved. Based on that response, PolyMet proceeded with emissions modeling assuming that haul trucks would have SCR and that NO_x emissions would be reduced by 90%.

More recently, PolyMet has had discussions with the manufacturers of the specific trucks expected to be purchased for the project. Those discussions have revealed that the SCR application previously referenced by the engine manufacturer was on a stationary engine and that SCR has not been implemented on mine haul trucks. PolyMet discussed the application of SCR to haul trucks with the haul truck manufacturer and there are significant technical challenges – current SCR units are large and are difficult to fit on the truck body near the engine. In addition the SCR units would be subjected to shock loads far in excess of those of a stationary unit. Furthermore, haul trucks engines can experience sudden changes in load that can make injection of the appropriate amount of urea or ammonia problematic; too high an injection rate can result in "ammonia slip" and the associated environmental and safety concerns. For these reasons, PolyMet does not believe that it is reasonable to commit to equipping the haul trucks with SCR and modeling the associated NO_x reduction.

The mine haul truck of the appropriate size that is manufactured by the preferred vendor does not meet the Tier 2 standards. A family emission limit has been established based on banking and trading provisions in the non-road engine emission regulations. PolyMet only anticipates using these trucks for at most the first five years of mine operation.

PolyMet's mining consultant, Wardrop, has refined fuel usage estimates for the vehicle fleet. The calculations in Table 6 use the worst case refined fuel consumption from Wardrop for the first five years of mine operation. This is because during later years, fuel consumption may be higher, but the

haul trucks will, at a minimum, meet Tier 2 standards. The haul trucks comprise a significant portion of the overall emissions, so the use of the Tier 1 trucks in the first five years of operation is the worst case for mine vehicle emissions.

The PM and NO_x emission factors in Table 6 for the mine vehicles are based on the appropriate emission standards except where the equipment manufacturer has suggested a different value. The use of catalyzed converters and diesel particulate filters has been proposed as recommended by the manufacturer. The particulate reduction information was provided by the manufacturer. SO_2 emission calculations use the same emission factor as for the initial calculations.

The calculations use load factors which are calculated as the percent of total available power that is used on average in an operating hour based on fuel usage data. Fuel usage was converted to power by using a Break Specific Fuel Consumption (BSFC) factor from the EPA publication *Exhaust Emissions Factors for Non-road Engine Modeling -- Compression Ignition* (Beardsley and Lindhjem, 1998) and a fuel oil density from AP-42 Table 3.4-1 footnote a. Annual operation was assumed to be 8640 hours per year (360 days) in the calculations.

It should be noted that the emission calculations in Table 6 assume that seven large haul trucks will be used. Calculations described elsewhere in this report assume that eight will be used. Because the vehicle emission calculations are based on total estimated fuel usage for all of the trucks, the emission rate is independent of the actual number of trucks in service at the Mine Site.

Additional Class I modeling has been performed with the refined emission calculations and the results submitted to MDNR. The results are not significantly different from the results submitted in February of 2008. The Class II modeling was not redone because the NO_x results were only 7% of the PSD increment and 14% of the National Ambient Air Quality Standards (NAAQS). As noted above, NOx emission increased by about 80% in the refined calculations, but this is not expected to cause any increment or NAAQS issues.

The initial emission calculations for the locomotives assumed that conventional locomotives would be used and distributed power would be used for the trains hauling ore. Distributed power would consist of locomotives with a single large engine being located at the front and back of the train. Calculations with this configuration are discussed in Section 3.1.

Since the original calculations were completed, PolyMet has decided to pursue the use of gen-set locomotives. Under this configuration, 16 car trains will be pulled by a single locomotive with three smaller engines. This configuration results in better fuel efficiency. In addition, the engines in the gen-set locomotives meet the non-road engine Tier 3 standards, so there is a reduction in emissions per horsepower-hour as well. The calculations for this configuration are discussed in Section 3.2. The toxic pollutant calculations were not repeated with the gen-set locomotives, but because fuel usage is lower, the Mine Site AERA includes a conservative assessment of impacts from locomotives. The overall chronic impacts are also expected be conservative. Due to the overall increase in NO_x emissions, there would be expected to be an increase in acute affects, but the summed risk is still expected to be well below the MDH guideline of 1.0 as discussed in Section 2.0.

3.1 Conventional Locomotives

Calculations for criteria pollutants and air toxics were completed for the conventional locomotives. The criteria pollutant emissions were used in the Class II modeling and the February 2008 Class I Modeling. The toxic pollutant emissions were used in the Mine Site AERA (RS38B).

3.1.1 Criteria Pollutant

Two types of locomotive operation have been identified for the NorthMet project: 1) locomotives used to haul ore from the Mine Site to the Plant Site and 2) a switching locomotive used to move railcars around the Plant Site. Either four larger or six smaller locomotives would be used for ore hauling with conventional locomotives. A single locomotive with an expected maximum rating of 2000 horsepower would be used in the switchyard. Emission calculations for the conventional locomotives are presented in Table 2.

If the larger, conventional locomotives are used for ore hauling, each of two trains would be powered by two 3000 horsepower locomotives. The other option would be to have three trains each powered by two smaller locomotives. Fuel usage was estimated by Krech Ojard and Associates for the two train option. An adjustment factor for the smaller locomotives was applied based on the additional

work that would be performed. This was done by calculating the total weight moved per day for the two options. The end result is that fuel usage is expected to be 0.7% higher for the smaller locomotives. The higher projected fuel usage for the smaller locomotives was used in the emission calculations. The fuel usage was converted to the total daily power requirement by using the same BSFC factor and fuel density cited above. These calculations are shown in Table 3.

PolyMet provided additional data to support the fuel usage assumed for the shorter train option in June of 2008. Based on the use of gen-set locomotives and 16 car trains, the fuel usage for the shorter trains would be a total of 1,177 gallons per day. This is lower than the 1,221 gallons per day estimated using the total weight moved to adjust the fuel usage for the longer trains. This provides added evidence that the estimated fuel usage for the shorter train option is reasonable. Additional information on the fuel usage estimate for the gen-set locomotives is provided in Section 3.2.

For the switching locomotive, the average hourly power requirement was estimated from information on the power requirements during daily operation obtained from PolyMet. Table 3 shows these calculations as well.

Emission factors for NO_x and PM were obtained from the EPA publication *Emission Factors for Locomotives*. Line-haul factors were used for the ore hauling and switch factors were used for the switching locomotive based on their intended use. Note: the Class II modeling for the Mine Site used the switch emission factors for the ore hauling, which results in higher emission levels, primarily for NO_x. NO_x emissions were well below the ambient air quality standards with the higher emission factor.

Sulfur dioxide emissions were calculated with the same emission factor as described above for the mine vehicles. The fuel oil sulfur content used in the calculations was 500 ppm for the same reasons described above.

3.1.2 Toxic Pollutants

The toxic pollutant calculations are based on the same fuel usage and locomotive power data as the criteria pollutant calculations. Emission calculations for the locomotives are presented in Table 7.

Emission factors for VOCs and PAHs were obtained from a California Air Resources Board publication *Diesel Fuel Effects on Locomotive Exhaust Emissions* (Fritz, 2000). The highest emission factor for any heavy duty engine using on-highway diesel fuel was used for both the line-haul emissions and the switching locomotive emissions.

Similar to the mine vehicle calculations, the AP-42 emissions factors for a distillate oil fired turbine were used to calculate metal emissions from the locomotives. It was assumed that the metal emissions are solely due to the metal content of the fuel and not a function of the combustion device. The emission factors were converted to a lb/hp-hr basis by using the BSFC, fuel density, and diesel fuel heat values referenced above.

3.2 Gen-Set Locomotives

PolyMet currently intends to use gen-set locomotives for both ore hauling and switchyard applications. PolyMet has estimated the fuel usage for the ore haul locomotives based on the following assumptions:

- Each train comprises one gen-set locomotive pulling sixteen (16) 100-ton capacity Difco side dump ore cars.
- Fuel consumption rates for loaded haul and empty return were determined by National Railway from a computer simulation over the actual PolyMet haul profile.
- National Railway also provided an estimate of typical fuel burn rate for the gen-set loco under idling conditions which includes idling under the rail transfer hopper and at the primary crusher dump pocket.
- PolyMet developed an estimate for the time required to load and dump a train based on LTVSMC actual loading and dumping time performance with an additional, assumed delay time component.
- Loaded and empty return travel times were based on the National Railway haulage simulation.
- PolyMet prepared a manual simulation of rail haulage operations over a 24 hour period and assumed
  - 3 trains in operation per shift
  - 3 shifts per day were simulated
  - 10 minutes were allowed at the beginning and end of each shift for crew changes, equipment inspection and refuelling. (This amounts to 20 minutes per shift of shift change time per train)
  - Because the simulation assumes 3 trains operating full time three shifts per day the total simulated amount of ore delivered to the primary crusher would be 33,600 tpd although the planned production rate is only 32,000 tpd. This confirms that the

system would have spare capacity for limited "catch up" of production lost due to unscheduled delays.

- o   Waiting delays were simulated by assuming a minimum of 5 minutes for one train to clear the loading pocket or the primary crusher before the next train could get into position to load or dump.
- o   Unscheduled delays were not included.
- o   PolyMet's manual simulation was performed in time increments of 5 minutes.

The fuel usage calculations are shown in Table 8. A separate calculation was performed for each of the three shifts (D/S = day shift, A/S = afternoon shift, N/S = night shift).

The fuel usage data for the ore haul locomotives were converted to a load factor as shown in Table 9. The load factor represents the fraction of the total available locomotive power that is used on average during an operating day.

In order to estimate fuel usage and load factor for the switching locomotive, it was assumed that fuel usage would be equivalent to the high value for the three ore haul locomotives. These calculations are also shown in Tables 8 and 9.

The load factors are used in the refined emission calculations for the vehicle fleet presented in Table 5.

The NO_x emission factors in Table 5 for the locomotives are based on input from a potential supplier of locomotives for the project. The particulate matter emission factor is based on the Tier 3 emission standard for non-road engines. Sulfur dioxide emissions were calculated with an emission factor from *Exhaust Emission Factors for Non-road Engine Modeling -- Compression Ignition* (Beardsley and Lindhjem, 1998). This emission factor is a function of the BSFC, hydrocarbon emission factor, and the fuel sulfur content. A fuel sulfur content of 500 ppm was used in the uncontrolled emission calculations to reflect the standard that will be in effect when the mine commences operation.

4.0 References

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Tables

PolyMet - Hoyt Lakes, Minnesota
Table 1: Criteria Pollutant Emissions from Mine Vehicle Exhaust - Initial Calculations

Manufacturer	Model	Engine	Description	Engine Power (hp)	Hourly	Daily	Annual	Pollutant	g/hp-hr	lb/gal	Note	Model Year	lb/hr	lb/day	tpy	CE [4]	lb/hr	lb/day	tpy
									Current Model Year Standards				Current Model Year				Controlled Emissions		
Komatsu	PC5500E		Primary production excavator	1875	0.0	0.0	0	NOx	0	0	Electric	2006	0.00	0.00	0.00	0	0.00	0.00	0.00
								PM	0	0	Electric	2006	0.00	0.00	0.00	0	0.00	0.00	0.00
		Electric Motor						SO2	0	0	Electric	NA	0.00	0.00	0.00	0	0.00	0.00	0.00
Caterpillar	994		Secondary production excavator	1577	9.97 (gp)	239.2	86125	NOx	4.8	0.204725	Tier 2	2006	2.04	48.98	8.82	0	2.04	48.98	8.82
		Cat 3516 HD EUI						PM	0.15	0.006398	Tier 2	2006	0.06	1.53	0.28	0	0.06	1.53	0.28
								SO2	0.162	0.006909	500 ppm	NA	0.07	1.65	0.30	0	0.07	1.65	0.30
Komatsu	830E		240 ton haul truck	2500	277.22 (gp)	6653.2	2395145	NOx	4.8	0.204725	Tier 2	2006	56.75	1362.07	245.17	90	5.68	136.21	24.52
		Komatsu SDA16V160						PM	0.15	0.006398	Tier 2	2006	1.77	42.56	7.66	0	1.77	42.56	7.66
								SO2	0.162	0.006909	500 ppm	NA	1.92	45.97	8.27	97	0.06	1.38	0.25
Caterpillar	D10R	Cat 3412E	Tracked dozer	646	27.88 (gp)	669.2	240925	NOx	2.98	0.1271	Tier 3	2006	3.54	85.06	15.31	0	3.54	85.06	15.31
								PM	0.15	0.006398	Tier 3	2006	0.18	4.28	0.77	0	0.18	4.28	0.77
								SO2	0.162	0.006909	500 ppm	NA	0.19	4.62	0.83	0	0.19	4.62	0.83
Caterpillar	834G	Cat 3456	Wheel Dozer	481	6.87 (fw)	164.9	59371	NOx	2.98	0.1271	Tier 3	2006	0.87	20.96	3.77	0	0.87	20.96	3.77
								PM	0.15	0.006398	Tier 3	2006	0.04	1.06	0.19	0	0.04	1.06	0.19
								SO2	0.162	0.006909	500 ppm	NA	0.05	1.14	0.21	0	0.05	1.14	0.21
Caterpillar	16H	Cat 3406	Grader	275	8.61 (fw)	206.6	74391	NOx	2.98	0.1271	Tier 3	2006	1.09	26.26	4.73	0	1.09	26.26	4.73
								PM	0.15	0.006398	Tier 3	2006	0.06	1.32	0.24	0	0.06	1.32	0.24
								SO2	0.162	0.006909	500 ppm	NA	0.06	1.43	0.26	0	0.06	1.43	0.26
Caterpillar	777D	3408 B	Water Truck + Trucks for Construction and Miscellaneous	938	8.33 (htfw)	200.0	71992	NOx	4.8	0.204725	Tier 2	2006	1.71	40.94	7.37	0	1.71	40.94	7.37
								PM	0.15	0.006398	Tier 2	2006	0.05	1.28	0.23	0	0.05	1.28	0.23
								SO2	0.162	0.006909	500 ppm	NA	0.06	1.38	0.25	0	0.06	1.38	0.25
Caterpillar	992G	3508 B	Wheel Loader (construction, site rehab and misc.)	800	7.40 (fw)	177.6	63930	NOx	4.8	0.204725	Tier 2	2006	1.51	36.36	6.54	0	1.51	36.36	6.54
								PM	0.15	0.006398	Tier 2	2006	0.05	1.14	0.20	0	0.05	1.14	0.20
								SO2	0.162	0.006909	500 ppm	NA	0.05	1.23	0.22	0	0.05	1.23	0.22
Atlas Copco	Pit Viper 351	Cummins QSK45 or Cat 3512	Blast Hole Drill	1500 - 1650	22.19	532.6	191745	NOx	4.8	0.204725	Tier 2	2006	4.54	109.04	19.63	0	4.54	109.04	19.63
								PM	0.15	0.006398	Tier 2	2006	0.14	3.41	0.61	0	0.14	3.41	0.61
								SO2	0.162	0.006909	500 ppm	NA	0.15	3.68	0.66	0	0.15	3.68	0.66
Caterpillar	446D	3114 DIT	Backhoe w/ hammer	110	0.49 (gp)	11.8	4241	NOx	2.98	0.1271	Tier 3	2006	0.06	1.50	0.27	0	0.06	1.50	0.27
								PM	0.15	0.006398	Tier 3	2006	0.00	0.08	0.01	0	0.00	0.08	0.01
								SO2	0.162	0.006909	500 ppm	NA	0.00	0.08	0.01	0	0.00	0.08	0.01
Caterpillar	IT62H	C7 ACERT Tier 3	Integrated Tool Carrier	230	0.80 (gp)	19.3	6942	NOx	2.98	0.1271	Tier 3	2006	0.10	2.45	0.44	0	0.10	2.45	0.44
								PM	0.15	0.006398	Tier 3	2006	0.01	0.12	0.02	0	0.01	0.12	0.02
								SO2	0.162	0.006909	500 ppm	NA	0.01	0.13	0.02	0	0.01	0.13	0.02
			Totals		369.77	8874.47	3194808	NOx					72.23	1733.62	312.05		21.16	507.76	91.40
								PM					2.37	56.78	10.22		2.37	56.78	10.22
								SO2					2.55	61.32	11.04		0.70	16.73	3.01

Notes:
[1] Other vehicles of similar size and function may be used
[2] Based on worst case annual fuel usage for 20 year mine life as calculated by Wardrop.
[3] Emission factors for PM and NOx based on standard for current model year for non-road vehicle with an appropriate engine size.

SO2 emission factor based on calculation below:

$$SO_2 = (BSFC \times 453.6 \times (1 - 0.022) - HC) \times 0.0005 \times 2$$
$$= 0.005$$

where

SO_2 is in g/hp-hr

BSFC is the in-use adjusted fuel consumption in lb/hp-hr

453.6 is the conversion factor from pounds to grams

1 - 0.022 is an adjustment for sulfur converted to direct PM

HC is the in-use adjusted hydrocarbon emissions in g/hp-hr (HC emission factor from AP-42 Table 3.4-1 converted to g/hp-hr)

0.0005 is maximum expected sulfur weight fraction in nonroad diesel fuel per Don Hunter of PolyMet

2 is the grams of SO_2 formed from a gram of sulfur

assume

BSFC   0.367 lb/hp-hr

(SO2 factor from EPA Report No. NR-009A *'Exhaust Emission Factors for Nonroad Engine Modeling -- Compression Ignition'* revised 6/15/1998, pp. 9-10; BSFC from Table 1)

[4] NOx control efficiency based on information on SCR obtained from potential equipment provider (Cummins).

SO2 reduction based on the fact that ultra low sulfur diesel (15 ppm) must be used with SCR system (0.162 g/hp-hr @ 500 ppm, 0.00487 g/hp-hr @ 15 ppm; (1-0.00487/0.162) * 100 = 97%)

PolyMet - Hoyt Lakes, Minnesota
Table 2: Criteria Pollutant Emissions from Conventional Locomotives

Manufacturer	Model	Engine	Description	Engine Power (hp)	Number	Average Total Power — Hourly	Daily	Annual	Pollutant	Emission Factors [1] g/hp-hr	lb/hp-hr	Note	Emissions lb/hr	lb/day	tpy
TBD	TBD		Switching Locomotive	2000	1	482.85	11588.4	4229766	NOx	7.3	0.0161	Tier 2	7.77	186.50	34.04
									PM	0.21	0.0005	Tier 2	0.22	5.37	0.98
		TBD							SO2	0.162	0.0004	500 ppm	0.17	4.14	0.76
TBD	TBD			3000	4 or 6	983.81	23611.5	8618213	NOx	5.0	0.0110	Tier 2	10.84	260.27	47.50
			Main Line Ore Haulage						PM	0.17	0.0004	Tier 2	0.37	8.85	1.62
		TBD	Locomotives						SO2	0.162	0.0004	500 ppm	0.35	8.43	1.54
			Totals			1466.7	35199.9	12847979	NOx				18.62	446.78	81.54
									PM				0.59	14.21	2.59
									SO2				0.52	12.57	2.29

Notes:

[1] NOx and PM emission factors taken from "Emission Factors for Locomotives"; EPA420-F-97-051; U.S. EPA Office of Mobile Sources; December 1997.

Emission factors for Tier 2 engines used based on PolyMet's willingness to commit to using locomotives that meet Tier 2 standards. Line-Haul factors used for ore haul locomotives;

switch factors used for the switching locomotive based on the nature of their intended use.

SO2 emission factor based on calculation below:

$$SO2 = (BSFC \times 453.6 \times (1 - 0.022) - HC) \times 0.0005 \times 2$$

$$= 0.162$$

where

SO_2 is in g/hp-hr

BSFC is the in-use adjusted fuel consumption in lb/hp-hr

453.6 is the conversion factor from pounds to grams

1 - 0.022 is an adjustment for sulfur converted to direct PM

HC is the in-use adjusted hydrocarbon emissions in g/hp-hr (average value for Tier 2 switch and line-haul locomotives used)

0.0005 is maximum expected sulfur weight fraction in nonroad diesel fuel per Don Hunter of PolyMet

2 is the grams of SO_2 formed from a gram of sulfur

assume

BSFC   0.367 lb/hp-hr

(SO2 factor from EPA Report No. NR-009A *'Exhaust Emission Factors for Nonroad Engine*

Modeling -- Compression Ignition' revised 6/15/1998, pp. 9-10; BSFC from Table 1)

PolyMet, Inc.
Table 3: Estimated Locomotive Daily Power

Switching Locomotive Analysis [1]

Train Power		2,000	hp/hr

Assume Trains operate only 12 hours a day.		50%	of the day
Loaded car haulage	(100% pwr)	33%	of the shift time
Moving Empty Cars	(40% pwr)	33%	of the shift time
Train is operated at low idle	(5% pwr)	33%	of the shift time
Daily average power use, hp-hr		**482.85**	hp/hr (avg. over 24 hrs)

Fuel Use	25 gph

Ore Haul Locomotive Analysis

Daily Estimae Fuel Usage per Locomotive [2]	303	gallons/day
Number of locomotives in analysis	4	
Total Fuel Usage - 4 locomotive option	1212	gallons/day
Work Adjustment for 6 Locomotive Option	1.007	
Estimate Maximum Daily Fuel Usage	1220.5	gallons/day
Brake Specific Fuel Consumption [3]	0.367	lb/hp-hr
Fuel Density [4]	7.1	lb/gallon
Total Daily Power (hp-hr)	**23612**	hp-hr

[1] Data used for switching locomotive power estimate from e-mail dated August 16, 2007 from Don Hunter of PolyMet
[2] As estimated by Krech Ojard and Associates and relayed in May 10, 2007 e-mail.
[3] From "Exhaust Emissions Factors for Nonroad Engine Modeling -- Compression Ignition"; report No. NR-009A; revised June 15, 1998;
Megan Beardsley and Chris Lindhjem U.S. EPA Office of Mobile Sources, Assessment Modeling Division
[4] From AP-42 Table 3.4-1, footnote a.

PolyMet, Inc.
Table 4: Mine Vehicle Fuel Usage Data from Wardrop (Year 10 of Mine Opeation)

Equipment	l/year	gallon/yr	gallon/day
Pit Viper 351	725835	191745.28	532.63
Cat 994	326020	86125.36	239.24
240 ton truck	9066612	2395145.03	6653.18
Track Dozer	912000	240924.86	669.24
Grader	281600	74390.84	206.64
Rubber tire dozer	224745	59371.34	164.92
Transfer Loader	242000	63929.62	177.58
Backhoe w/ hammer	16053	4240.75	11.78
Water/Sand truck 777	272520	71992.15	199.98
Integrated Tool Carrier	26280	6942.44	19.28
Total	**12093665**	**3194807.67**	**8874.47**

PolyMet - Hoyt Lakes, Minnesota
Table 5: Air Toxic Pollutant Emissions from Mine Vehicle Exhaust

Manufacturer	Model	Engine	Description	Engine Power (hp)	Hourly	Daily	Annual	Pollutant	Factor	units	lb/gal	Reference	Note	CE [3]	Uncontrolled lb/hr	Uncontrolled lb/day	Uncontrolled tpy	Uncontrolled g/sec	Controlled lb/hr	Controlled lb/day	Controlled tpy	Controlled g/sec
Komatsu	PC5500E	Electric Motor	Primary production excavator	1875	0.00	0.0	0	NOx	0	g/hp-hr	0.0000	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								N2O	0	lb/gal	0.0000	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Benzene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Toluene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Xylene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Propylene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Formaldehyde	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Acetaldehyde	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Acrolein	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Naphthalene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Acenaphthylene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Acenaphthene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Fluorene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Phenanthrene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Anthracene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Fluoranthene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Pyrene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Benzo(a)anthracene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Chrysene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Benzo(b)fluoranthene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Benzo(k)fluoranthene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Benzo(a)pyrene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Indeno(1,2,3-cd)pyrene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Dibenzo(a,h)anthracene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Benzo(g,h,i)perylene	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Arsenic	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Beryllium	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Cadmium	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Chromium	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Pb	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Manganese	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Mercury	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Nickel	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Selenium	0	lb/MMbtu	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								H2SO4/SO3	0	lb/gal	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								PCDD/PCDF TEQ	0	pg/km	0.00E+00	[19]	electric	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Caterpillar	994	Cat 3516 HD EUI	Secondary production excavator	1577	9.97	239.2	86125	NOx	4.8	g/hp-hr	0.2047	[10]	Tier 2	0	2.04	48.98	8.82	0.26	2.04	48.98	8.82	0.26
								N2O	0.0E+00	lb/gal	0.0000	[12]	Tier 2	0	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
								Benzene	7.76E-04	lb/MMbtu	1.08E-04	[14]	Tier 2	0	1.08E-03	2.58E-02	4.64E-03	0.00	1.08E-03	2.58E-02	4.64E-03	1.35E-04
								Toluene	2.81E-04	lb/MMbtu	3.91E-05	[14]	Tier 2	0	3.89E-04	9.34E-03	1.68E-03	0.00	3.89E-04	9.34E-03	1.68E-03	4.91E-05
								Xylene	1.93E-04	lb/MMbtu	2.68E-05	[14]	Tier 2	0	2.67E-04	6.42E-03	1.16E-03	0.00	2.67E-04	6.42E-03	1.16E-03	3.37E-05
								Propylene	2.79E-03	lb/MMbtu	3.88E-04	[14]	Tier 2	0	3.87E-03	9.28E-02	1.67E-02	0.00	3.87E-03	9.28E-02	1.67E-02	4.87E-04
								Formaldehyde	7.89E-05	lb/MMbtu	1.10E-05	[14]	Tier 2	0	1.09E-04	2.62E-03	4.72E-04	0.00	1.09E-04	2.62E-03	4.72E-04	1.38E-05
								Acetaldehyde	2.52E-05	lb/MMbtu	3.50E-06	[14]	Tier 2	0	3.49E-05	8.38E-04	1.51E-04	0.00	3.49E-05	8.38E-04	1.51E-04	4.40E-06
								Acrolein	7.88E-06	lb/MMbtu	1.10E-06	[14]	Tier 2	0	1.09E-05	2.62E-04	4.72E-05	0.00	1.09E-05	2.62E-04	4.72E-05	1.38E-06
								Naphthalene	1.30E-04	lb/MMbtu	1.81E-05	[15]	Tier 2	0	1.80E-04	4.32E-03	7.78E-04	0.00	1.80E-04	4.32E-03	7.78E-04	2.27E-05
								Acenaphthylene	9.23E-06	lb/MMbtu	1.28E-06	[15]	Tier 2	0	1.28E-05	3.07E-04	5.52E-05	0.00	1.28E-05	3.07E-04	5.52E-05	1.61E-06
								Acenaphthene	4.68E-06	lb/MMbtu	6.51E-07	[15]	Tier 2	0	6.48E-06	1.56E-04	2.80E-05	0.00	6.48E-06	1.56E-04	2.80E-05	8.17E-07
								Fluorene	1.28E-05	lb/MMbtu	1.78E-06	[15]	Tier 2	0	1.77E-05	4.26E-04	7.66E-05	0.00	1.77E-05	4.26E-04	7.66E-05	2.23E-06
								Phenanthrene	4.08E-05	lb/MMbtu	5.67E-06	[15]	Tier 2	0	5.65E-05	1.36E-03	2.44E-04	0.00	5.65E-05	1.36E-03	2.44E-04	7.12E-06
								Anthracene	1.23E-06	lb/MMbtu	1.71E-07	[15]	Tier 2	0	1.70E-06	4.09E-05	7.36E-06	0.00	1.70E-06	4.09E-05	7.36E-06	2.15E-07
								Fluoranthene	4.03E-06	lb/MMbtu	5.60E-07	[15]	Tier 2	0	5.58E-06	1.34E-04	2.41E-05	0.00	5.58E-06	1.34E-04	2.41E-05	7.04E-07
								Pyrene	3.71E-06	lb/MMbtu	5.16E-07	[15]	Tier 2	0	5.14E-06	1.23E-04	2.22E-05	0.00	5.14E-06	1.23E-04	2.22E-05	6.48E-07
								Benzo(a)anthracene	6.22E-07	lb/MMbtu	8.65E-08	[15]	Tier 2	0	8.62E-07	2.07E-05	3.72E-06	0.00	8.62E-07	2.07E-05	3.72E-06	1.09E-07
								Chrysene	1.53E-06	lb/MMbtu	2.13E-07	[15]	Tier 2	0	2.12E-06	5.09E-05	9.16E-06	0.00	2.12E-06	5.09E-05	9.16E-06	2.67E-07
								Benzo(b)fluoranthene	1.11E-06	lb/MMbtu	1.54E-07	[15]	Tier 2	0	1.54E-06	3.69E-05	6.64E-06	0.00	1.54E-06	3.69E-05	6.64E-06	1.94E-07
								Benzo(k)fluoranthene	2.18E-07	lb/MMbtu	3.03E-08	[15]	Tier 2	0	3.02E-07	7.25E-06	1.30E-06	0.00	3.02E-07	7.25E-06	1.30E-06	3.81E-08
								Benzo(a)pyrene	2.57E-07	lb/MMbtu	3.57E-08	[15]	Tier 2	0	3.56E-07	8.55E-06	1.54E-06	0.00	3.56E-07	8.55E-06	1.54E-06	4.49E-08
								Indeno(1,2,3-cd)pyrene	4.14E-07	lb/MMbtu	5.75E-08	[15]	Tier 2	0	5.74E-07	1.38E-05	2.48E-06	0.00	5.74E-07	1.38E-05	2.48E-06	7.23E-08
								Dibenzo(a,h)anthracene	3.46E-07	lb/MMbtu	4.81E-08	[15]	Tier 2	0	4.79E-07	1.15E-05	2.07E-06	0.00	4.79E-07	1.15E-05	2.07E-06	6.04E-08
								Benzo(g,h,i)perylene	5.56E-07	lb/MMbtu	7.73E-08	[15]	Tier 2	0	7.70E-07	1.85E-05	3.33E-06	0.00	7.70E-07	1.85E-05	3.33E-06	9.71E-08
								Arsenic	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 2	0	1.52E-05	3.66E-04	6.58E-05	0.00	1.52E-05	3.66E-04	6.58E-05	1.92E-06
								Beryllium	3.1E-07	lb/MMbtu	4.31E-08	[16]	Tier 2	0	4.30E-07	1.03E-05	1.86E-06	0.00	4.30E-07	1.03E-05	1.86E-06	5.41E-08
								Cadmium	4.8E-06	lb/MMbtu	6.67E-07	[16]	Tier 2	0	6.65E-06	1.60E-04	2.87E-05	0.00	6.65E-06	1.60E-04	2.87E-05	8.38E-07

PolyMet - Hoyt Lakes, Minnesota
Table 5: Air Toxic Pollutant Emissions from Mine Vehicle Exhaust

Manufacturer	Model	Engine	Description	Engine Power (hp)	Hourly	Daily	Annual	Pollutant	Factor	units	lb/gal	Reference	Note	CE [3]	Unc. lb/hr	Unc. lb/day	Unc. tpy	Unc. g/sec	Ctrl. lb/hr	Ctrl. lb/day	Ctrl. tpy	Ctrl. g/sec
								Chromium	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 2	0	1.52E-05	3.66E-04	6.58E-05	0.00	1.52E-05	3.66E-04	6.58E-05	1.92E-06
								Pb	1.4E-05	lb/MMbtu	1.95E-06	[16]	Tier 2	0	1.94E-05	4.66E-04	8.38E-05	0.00	1.94E-05	4.66E-04	8.38E-05	2.44E-06
								Manganese	7.9E-04	lb/MMbtu	1.10E-04	[16]	Tier 2	0	1.09E-03	2.63E-02	4.73E-03	0.00	1.09E-03	2.63E-02	4.73E-03	1.38E-04
								Mercury	1.2E-06	lb/MMbtu	1.67E-07	[16]	Tier 2	0	1.66E-06	3.99E-05	7.18E-06	0.00	1.66E-06	3.99E-05	7.18E-06	2.09E-07
								Nickel	4.6E-06	lb/MMbtu	6.39E-07	[16]	Tier 2	0	6.37E-06	1.53E-04	2.75E-05	0.00	6.37E-06	1.53E-04	2.75E-05	8.03E-07
								Selenium	2.5E-05	lb/MMbtu	3.48E-06	[16]	Tier 2	0	3.46E-05	8.31E-04	1.50E-04	0.00	3.46E-05	8.31E-04	1.50E-04	4.36E-06
								H2SO4/SO3	1.8E-05	lb/gal	1.82E-05	[17]	500 ppm	0	1.81E-04	4.35E-03	7.84E-04	0.00	1.81E-04	4.35E-03	7.84E-04	2.29E-05
								PCDD/PCDF TEQ	288	pg/km	1.32E-11	[18]	Tier 2	0	1.32E-10	3.16E-09	5.69E-10	0.00	1.32E-10	3.16E-09	5.69E-10	1.66E-11
Komatsu	830E	Komatsu SDA16V160	240 ton haul truck	2500	277.22	6653.2	2395145	NOx	4.8	g/hp-hr	0.2047	[10]	Tier 2	90%	56.75	1362.07	245.17	7.15	5.68	136.21	24.52	0.72
								N2O	0.0E+00	lb/gal	0.0000	[12]	Tier 2	0	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
								Benzene	7.76E-04	lb/MMbtu	1.08E-04	[14]	Tier 2	0	2.99E-02	7.18E-01	1.29E-01	0.00	2.99E-02	7.18E-01	1.29E-01	3.77E-03
								Toluene	2.81E-04	lb/MMbtu	3.91E-05	[14]	Tier 2	0	1.08E-02	2.60E-01	4.68E-02	0.00	1.08E-02	2.60E-01	4.68E-02	1.36E-03
								Xylene	1.93E-04	lb/MMbtu	2.68E-05	[14]	Tier 2	0	7.44E-03	1.78E-01	3.21E-02	0.00	7.44E-03	1.78E-01	3.21E-02	9.37E-04
								Propylene	2.79E-03	lb/MMbtu	3.88E-04	[14]	Tier 2	0	1.08E-01	2.58E+00	4.64E-01	0.01	1.08E-01	2.58E+00	4.64E-01	1.35E-02
								Formaldehyde	7.89E-05	lb/MMbtu	1.10E-05	[14]	Tier 2	0	3.04E-03	7.30E-02	1.31E-02	0.00	3.04E-03	7.30E-02	1.31E-02	3.83E-04
								Acetaldehyde	2.52E-05	lb/MMbtu	3.50E-06	[14]	Tier 2	0	9.71E-04	2.33E-02	4.19E-03	0.00	9.71E-04	2.33E-02	4.19E-03	1.22E-04
								Acrolein	7.88E-06	lb/MMbtu	1.10E-06	[14]	Tier 2	0	3.04E-04	7.29E-03	1.31E-03	0.00	3.04E-04	7.29E-03	1.31E-03	3.83E-05
								Naphthalene	1.30E-04	lb/MMbtu	1.81E-05	[15]	Tier 2	0	5.01E-03	1.20E-01	2.16E-02	0.00	5.01E-03	1.20E-01	2.16E-02	6.31E-04
								Acenaphthylene	9.23E-06	lb/MMbtu	1.28E-06	[15]	Tier 2	0	3.56E-04	8.54E-03	1.54E-03	0.00	3.56E-04	8.54E-03	1.54E-03	4.48E-05
								Acenaphthene	4.68E-06	lb/MMbtu	6.51E-07	[15]	Tier 2	0	1.80E-04	4.33E-03	7.79E-04	0.00	1.80E-04	4.33E-03	7.79E-04	2.27E-05
								Fluorene	1.28E-05	lb/MMbtu	1.78E-06	[15]	Tier 2	0	4.93E-04	1.18E-02	2.13E-03	0.00	4.93E-04	1.18E-02	2.13E-03	6.21E-05
								Phenanthrene	4.08E-05	lb/MMbtu	5.67E-06	[15]	Tier 2	0	1.57E-03	3.77E-02	6.79E-03	0.00	1.57E-03	3.77E-02	6.79E-03	1.98E-04
								Anthracene	1.23E-06	lb/MMbtu	1.71E-07	[15]	Tier 2	0	4.74E-05	1.14E-03	2.05E-04	0.00	4.74E-05	1.14E-03	2.05E-04	5.97E-06
								Fluoranthene	4.03E-06	lb/MMbtu	5.60E-07	[15]	Tier 2	0	1.55E-04	3.73E-03	6.71E-04	0.00	1.55E-04	3.73E-03	6.71E-04	1.96E-05
								Pyrene	3.71E-06	lb/MMbtu	5.16E-07	[15]	Tier 2	0	1.43E-04	3.43E-03	6.18E-04	0.00	1.43E-04	3.43E-03	6.18E-04	1.80E-05
								Benzo(a)anthracene	6.22E-07	lb/MMbtu	8.65E-08	[15]	Tier 2	0	2.40E-05	5.75E-04	1.04E-04	0.00	2.40E-05	5.75E-04	1.04E-04	3.02E-06
								Chrysene	1.53E-06	lb/MMbtu	2.13E-07	[15]	Tier 2	0	5.90E-05	1.41E-03	2.55E-04	0.00	5.90E-05	1.41E-03	2.55E-04	7.43E-06
								Benzo(b)fluoranthene	1.11E-06	lb/MMbtu	1.54E-07	[15]	Tier 2	0	4.28E-05	1.03E-03	1.85E-04	0.00	4.28E-05	1.03E-03	1.85E-04	5.39E-06
								Benzo(k)fluoranthene	2.18E-07	lb/MMbtu	3.03E-08	[15]	Tier 2	0	8.40E-06	2.02E-04	3.63E-05	0.00	8.40E-06	2.02E-04	3.63E-05	1.06E-06
								Benzo(a)pyrene	2.57E-07	lb/MMbtu	3.57E-08	[15]	Tier 2	0	9.90E-06	2.38E-04	4.28E-05	0.00	9.90E-06	2.38E-04	4.28E-05	1.25E-06
								Indeno(1,2,3-cd)pyrene	4.14E-07	lb/MMbtu	5.75E-08	[15]	Tier 2	0	1.60E-05	3.83E-04	6.89E-05	0.00	1.60E-05	3.83E-04	6.89E-05	2.01E-06
								Dibenzo(a,h)anthracene	3.46E-07	lb/MMbtu	4.81E-08	[15]	Tier 2	0	1.33E-05	3.20E-04	5.76E-05	0.00	1.33E-05	3.20E-04	5.76E-05	1.68E-06
								Benzo(g,h,i)perylene	5.56E-07	lb/MMbtu	7.73E-08	[15]	Tier 2	0	2.14E-05	5.14E-04	9.26E-05	0.00	2.14E-05	5.14E-04	9.26E-05	2.70E-06
								Arsenic	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 2	0	4.24E-04	1.02E-02	1.83E-03	0.00	4.24E-04	1.02E-02	1.83E-03	5.34E-05
								Beryllium	3.1E-07	lb/MMbtu	4.31E-08	[16]	Tier 2	0	1.19E-05	2.87E-04	5.16E-05	0.00	1.19E-05	2.87E-04	5.16E-05	1.51E-06
								Cadmium	4.8E-06	lb/MMbtu	6.67E-07	[16]	Tier 2	0	1.85E-04	4.44E-03	7.99E-04	0.00	1.85E-04	4.44E-03	7.99E-04	2.33E-05
								Chromium	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 2	0	4.24E-04	1.02E-02	1.83E-03	0.00	4.24E-04	1.02E-02	1.83E-03	5.34E-05
								Pb	1.4E-05	lb/MMbtu	1.95E-06	[16]	Tier 2	0	5.39E-04	1.29E-02	2.33E-03	0.00	5.39E-04	1.29E-02	2.33E-03	6.80E-05
								Manganese	7.9E-04	lb/MMbtu	1.10E-04	[16]	Tier 2	0	3.04E-02	7.31E-01	1.32E-01	0.00	3.04E-02	7.31E-01	1.32E-01	3.84E-03
								Mercury	1.2E-06	lb/MMbtu	1.67E-07	[16]	Tier 2	0	4.62E-05	1.11E-03	2.00E-04	0.00	4.62E-05	1.11E-03	2.00E-04	5.83E-06
								Nickel	4.6E-06	lb/MMbtu	6.39E-07	[16]	Tier 2	0	1.77E-04	4.25E-03	7.66E-04	0.00	1.77E-04	4.25E-03	7.66E-04	2.23E-05
								Selenium	2.5E-05	lb/MMbtu	3.48E-06	[16]	Tier 2	0	9.63E-04	2.31E-02	4.16E-03	0.00	9.63E-04	2.31E-02	4.16E-03	1.21E-04
								H2SO4/SO3	1.8E-05	lb/gal	1.82E-05	[17]	500 ppm	0	5.05E-03	1.21E-01	2.18E-02	0.00	5.05E-03	1.21E-01	2.18E-02	6.36E-04
								PCDD/PCDF TEQ	288	pg/km	1.32E-11	[18]	Tier 2	0	3.66E-09	8.79E-08	1.58E-08	0.00	3.66E-09	8.79E-08	1.58E-08	4.62E-10
Caterpillar	D10R	Cat 3412E	Tracked dozer	646	27.88	669.2	240925	NOx	2.98	g/hp-hr	0.1271	[10]	Tier 3	0	3.54	85.06	15.31	0.45	3.54	85.06	15.31	0.45
								N2O	0.0E+00	lb/gal	0.0000	[12]	Tier 3	0	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
								Benzene	7.76E-04	lb/MMbtu	1.08E-04	[14]	Tier 3	0	3.01E-03	7.22E-02	1.30E-02	0.00	3.01E-03	7.22E-02	1.30E-02	3.79E-04
								Toluene	2.81E-04	lb/MMbtu	3.91E-05	[14]	Tier 3	0	1.09E-03	2.61E-02	4.71E-03	0.00	1.09E-03	2.61E-02	4.71E-03	1.37E-04
								Xylene	1.93E-04	lb/MMbtu	2.68E-05	[14]	Tier 3	0	7.48E-04	1.80E-02	3.23E-03	0.00	7.48E-04	1.80E-02	3.23E-03	9.43E-05
								Propylene	2.79E-03	lb/MMbtu	3.88E-04	[14]	Tier 3	0	1.08E-02	2.60E-01	4.67E-02	0.00	1.08E-02	2.60E-01	4.67E-02	1.36E-03
								Formaldehyde	7.89E-05	lb/MMbtu	1.10E-05	[14]	Tier 3	0	3.06E-04	7.34E-03	1.32E-03	0.00	3.06E-04	7.34E-03	1.32E-03	3.85E-05
								Acetaldehyde	2.52E-05	lb/MMbtu	3.50E-06	[14]	Tier 3	0	9.77E-05	2.34E-03	4.22E-04	0.00	9.77E-05	2.34E-03	4.22E-04	1.23E-05
								Acrolein	7.88E-06	lb/MMbtu	1.10E-06	[14]	Tier 3	0	3.05E-05	7.33E-04	1.32E-04	0.00	3.05E-05	7.33E-04	1.32E-04	3.85E-06
								Naphthalene	1.30E-04	lb/MMbtu	1.81E-05	[15]	Tier 3	0	5.04E-04	1.21E-02	2.18E-03	0.00	5.04E-04	1.21E-02	2.18E-03	6.35E-05
								Acenaphthylene	9.23E-06	lb/MMbtu	1.28E-06	[15]	Tier 3	0	3.58E-05	8.59E-04	1.55E-04	0.00	3.58E-05	8.59E-04	1.55E-04	4.51E-06
								Acenaphthene	4.68E-06	lb/MMbtu	6.51E-07	[15]	Tier 3	0	1.81E-05	4.35E-04	7.84E-05	0.00	1.81E-05	4.35E-04	7.84E-05	2.29E-06
								Fluorene	1.28E-05	lb/MMbtu	1.78E-06	[15]	Tier 3	0	4.96E-05	1.19E-03	2.14E-04	0.00	4.96E-05	1.19E-03	2.14E-04	6.25E-06
								Phenanthrene	4.08E-05	lb/MMbtu	5.67E-06	[15]	Tier 3	0	1.58E-04	3.80E-03	6.83E-04	0.00	1.58E-04	3.80E-03	6.83E-04	1.99E-05
								Anthracene	1.23E-06	lb/MMbtu	1.71E-07	[15]	Tier 3	0	4.77E-06	1.14E-04	2.06E-05	0.00	4.77E-06	1.14E-04	2.06E-05	6.01E-07
								Fluoranthene	4.03E-06	lb/MMbtu	5.60E-07	[15]	Tier 3	0	1.56E-05	3.75E-04	6.75E-05	0.00	1.56E-05	3.75E-04	6.75E-05	1.97E-06
								Pyrene	3.71E-06	lb/MMbtu	5.16E-07	[15]	Tier 3	0	1.44E-05	3.45E-04	6.21E-05	0.00	1.44E-05	3.45E-04	6.21E-05	1.81E-06
								Benzo(a)anthracene	6.22E-07	lb/MMbtu	8.65E-08	[15]	Tier 3	0	2.41E-06	5.79E-05	1.04E-05	0.00	2.41E-06	5.79E-05	1.04E-05	3.04E-07
								Chrysene	1.53E-06	lb/MMbtu	2.13E-07	[15]	Tier 3	0	5.93E-06	1.42E-04	2.56E-05	0.00	5.93E-06	1.42E-04	2.56E-05	7.47E-07
								Benzo(b)fluoranthene	1.11E-06	lb/MMbtu	1.54E-07	[15]	Tier 3	0	4.30E-06	1.03E-04	1.86E-05	0.00	4.30E-06	1.03E-04	1.86E-05	5.42E-07

PolyMet - Hoyt Lakes, Minnesota
Table 5: Air Toxic Pollutant Emissions from Mine Vehicle Exhaust

Manufacturer	Model	Engine	Description	Engine Power (hp)	Hourly	Daily	Annual	Pollutant	Factor	units	lb/gal	Reference	Note	CE [3]	lb/hr (Uncontrolled)	lb/day	tpy	g/sec	lb/hr (Controlled)	lb/day	tpy	g/sec
								Benzo(k)fluoranthene	2.18E-07	lb/MMbtu	3.03E-08	[15]	Tier 3	0	8.45E-07	2.03E-05	3.65E-06	0.00	8.45E-07	2.03E-05	3.65E-06	1.06E-07
								Benzo(a)pyrene	2.57E-07	lb/MMbtu	3.57E-08	[15]	Tier 3	0	9.96E-07	2.39E-05	4.30E-06	0.00	9.96E-07	2.39E-05	4.30E-06	1.26E-07
								Indeno(1,2,3-cd)pyrene	4.14E-07	lb/MMbtu	5.75E-08	[15]	Tier 3	0	1.60E-06	3.85E-05	6.93E-06	0.00	1.60E-06	3.85E-05	6.93E-06	2.02E-07
								Dibenzo(a,h)anthracene	3.46E-07	lb/MMbtu	4.81E-08	[15]	Tier 3	0	1.34E-06	3.22E-05	5.79E-06	0.00	1.34E-06	3.22E-05	5.79E-06	1.69E-07
								Benzo(g,h,i)perylene	5.56E-07	lb/MMbtu	7.73E-08	[15]	Tier 3	0	2.16E-06	5.17E-05	9.31E-06	0.00	2.16E-06	5.17E-05	9.31E-06	2.72E-07
								Arsenic	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 3	0	4.26E-05	1.02E-03	1.84E-04	0.00	4.26E-05	1.02E-03	1.84E-04	5.37E-06
								Beryllium	3.1E-07	lb/MMbtu	4.31E-08	[16]	Tier 3	0	1.20E-06	2.88E-05	5.19E-06	0.00	1.20E-06	2.88E-05	5.19E-06	1.51E-07
								Cadmium	4.8E-06	lb/MMbtu	6.67E-07	[16]	Tier 3	0	1.86E-06	4.47E-04	8.04E-05	0.00	1.86E-06	4.47E-04	8.04E-05	2.34E-06
								Chromium	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 3	0	4.26E-05	1.02E-03	1.84E-04	0.00	4.26E-05	1.02E-03	1.84E-04	5.37E-06
								Pb	1.4E-05	lb/MMbtu	1.95E-06	[16]	Tier 3	0	5.43E-05	1.30E-03	2.34E-04	0.00	5.43E-05	1.30E-03	2.34E-04	6.84E-06
								Manganese	7.9E-04	lb/MMbtu	1.10E-04	[16]	Tier 3	0	3.06E-03	7.35E-02	1.32E-02	0.00	3.06E-03	7.35E-02	1.32E-02	3.86E-04
								Mercury	1.2E-06	lb/MMbtu	1.67E-07	[16]	Tier 3	0	4.65E-06	1.12E-04	2.01E-05	0.00	4.65E-06	1.12E-04	2.01E-05	5.86E-07
								Nickel	4.6E-06	lb/MMbtu	6.39E-07	[16]	Tier 3	0	1.78E-05	4.28E-04	7.70E-05	0.00	1.78E-05	4.28E-04	7.70E-05	2.25E-06
								Selenium	2.5E-05	lb/MMbtu	3.48E-06	[16]	Tier 3	0	9.69E-05	2.33E-03	4.19E-04	0.00	9.69E-05	2.33E-03	4.19E-04	1.22E-05
								H2SO4/SO3	1.8E-05	lb/gal	1.82E-05	[17]	500 ppm	0	5.08E-04	1.22E-02	2.19E-03	0.00	5.08E-04	1.22E-02	2.19E-03	6.39E-05
								PCDD/PCDF TEQ	288	pg/km	1.32E-11	[18]	Tier 3	0	3.69E-10	8.85E-09	1.59E-09	0.00	3.69E-10	8.85E-09	1.59E-09	4.64E-11
Caterpillar	834G	Cat 3456	Wheel Dozer	481	6.87	164.9	59371	NOx	2.98	g/hp-hr	0.1271	[10]	Tier 3	0	0.87	20.96	3.77	0.11	0.87	20.96	3.77	0.11
								N2O	0.0E+00	lb/gal	0.0000	[12]	Tier 3	0	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
								Benzene	9.33E-04	lb/MMbtu	1.30E-04	[13]	Tier 3	0	8.91E-04	2.14E-02	3.85E-03	0.00	8.91E-04	2.14E-02	3.85E-03	1.12E-04
								Toluene	4.09E-04	lb/MMbtu	5.69E-05	[13]	Tier 3	0	3.91E-04	9.38E-03	1.69E-03	0.00	3.91E-04	9.38E-03	1.69E-03	4.92E-05
								Xylene	2.85E-04	lb/MMbtu	3.96E-05	[13]	Tier 3	0	2.72E-04	6.53E-03	1.18E-03	0.00	2.72E-04	6.53E-03	1.18E-03	3.43E-05
								Propylene	2.58E-03	lb/MMbtu	3.59E-04	[13]	Tier 3	0	2.46E-03	5.91E-02	1.06E-02	0.00	2.46E-03	5.91E-02	1.06E-02	3.11E-04
								1,3-Butadiene	3.91E-05	lb/MMbtu	5.43E-06	[13]	Tier 3	0	3.73E-05	8.96E-04	1.61E-04	0.00	3.73E-05	8.96E-04	1.61E-04	4.71E-06
								Formaldehyde	1.18E-03	lb/MMbtu	1.64E-04	[13]	Tier 3	0	1.13E-03	2.71E-02	4.87E-03	0.00	1.13E-03	2.71E-02	4.87E-03	1.42E-04
								Acetaldehyde	7.67E-04	lb/MMbtu	1.07E-04	[13]	Tier 3	0	7.33E-04	1.76E-02	3.16E-03	0.00	7.33E-04	1.76E-02	3.16E-03	9.23E-05
								Acrolein	9.25E-05	lb/MMbtu	1.29E-05	[13]	Tier 3	0	8.84E-05	2.12E-03	3.82E-04	0.00	8.84E-05	2.12E-03	3.82E-04	1.11E-05
								Naphthalene	8.48E-05	lb/MMbtu	1.18E-05	[13]	Tier 3	0	8.10E-05	1.94E-03	3.50E-04	0.00	8.10E-05	1.94E-03	3.50E-04	1.02E-05
								Acenaphthylene	5.06E-06	lb/MMbtu	7.03E-07	[13]	Tier 3	0	4.83E-06	1.16E-04	2.09E-05	0.00	4.83E-06	1.16E-04	2.09E-05	6.09E-07
								Acenaphthene	1.42E-06	lb/MMbtu	1.97E-07	[13]	Tier 3	0	1.36E-06	3.26E-05	5.86E-06	0.00	1.36E-06	3.26E-05	5.86E-06	1.71E-07
								Fluorene	2.92E-05	lb/MMbtu	4.06E-06	[13]	Tier 3	0	2.79E-05	6.69E-04	1.20E-04	0.00	2.79E-05	6.69E-04	1.20E-04	3.51E-06
								Phenanthrene	2.94E-05	lb/MMbtu	4.09E-06	[13]	Tier 3	0	2.81E-05	6.74E-04	1.21E-04	0.00	2.81E-05	6.74E-04	1.21E-04	3.54E-06
								Anthracene	1.87E-06	lb/MMbtu	2.60E-07	[13]	Tier 3	0	1.79E-06	4.29E-05	7.72E-06	0.00	1.79E-06	4.29E-05	7.72E-06	2.25E-07
								Fluoranthene	7.61E-06	lb/MMbtu	1.06E-06	[13]	Tier 3	0	7.27E-06	1.74E-04	3.14E-05	0.00	7.27E-06	1.74E-04	3.14E-05	9.16E-07
								Pyrene	4.78E-06	lb/MMbtu	6.64E-07	[13]	Tier 3	0	4.57E-06	1.10E-04	1.97E-05	0.00	4.57E-06	1.10E-04	1.97E-05	5.75E-07
								Benzo(a)anthracene	1.68E-06	lb/MMbtu	2.34E-07	[13]	Tier 3	0	1.60E-06	3.85E-05	6.93E-06	0.00	1.60E-06	3.85E-05	6.93E-06	2.02E-07
								Chrysene	3.53E-07	lb/MMbtu	4.91E-08	[13]	Tier 3	0	3.37E-07	8.09E-06	1.46E-06	0.00	3.37E-07	8.09E-06	1.46E-06	4.25E-08
								Benzo(b)fluoranthene	9.91E-08	lb/MMbtu	1.38E-08	[13]	Tier 3	0	9.47E-08	2.27E-06	4.09E-07	0.00	9.47E-08	2.27E-06	4.09E-07	1.19E-08
								Benzo(k)fluoranthene	1.55E-07	lb/MMbtu	2.15E-08	[13]	Tier 3	0	1.48E-07	3.55E-06	6.40E-07	0.00	1.48E-07	3.55E-06	6.40E-07	1.87E-08
								Benzo(a)pyrene	1.88E-07	lb/MMbtu	2.61E-08	[13]	Tier 3	0	1.80E-07	4.31E-06	7.76E-07	0.00	1.80E-07	4.31E-06	7.76E-07	2.26E-08
								Indeno(1,2,3-cd)pyrene	3.75E-07	lb/MMbtu	5.21E-08	[13]	Tier 3	0	3.58E-07	8.60E-06	1.55E-06	0.00	3.58E-07	8.60E-06	1.55E-06	4.51E-08
								Dibenzo(a,h)anthracene	5.83E-07	lb/MMbtu	8.10E-08	[13]	Tier 3	0	5.57E-07	1.34E-05	2.41E-06	0.00	5.57E-07	1.34E-05	2.41E-06	7.02E-08
								Benzo(g,h,i)perylene	4.89E-07	lb/MMbtu	6.80E-08	[13]	Tier 3	0	4.67E-07	1.12E-05	2.02E-06	0.00	4.67E-07	1.12E-05	2.02E-06	5.89E-08
								Arsenic	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 3	0	1.05E-05	2.52E-04	4.54E-05	0.00	1.05E-05	2.52E-04	4.54E-05	1.32E-06
								Beryllium	3.1E-07	lb/MMbtu	4.31E-08	[16]	Tier 3	0	2.96E-07	7.11E-06	1.28E-06	0.00	2.96E-07	7.11E-06	1.28E-06	3.73E-08
								Cadmium	4.8E-06	lb/MMbtu	6.67E-07	[16]	Tier 3	0	4.58E-06	1.10E-04	1.98E-05	0.00	4.58E-06	1.10E-04	1.98E-05	5.78E-07
								Chromium	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 3	0	1.05E-05	2.52E-04	4.54E-05	0.00	1.05E-05	2.52E-04	4.54E-05	1.32E-06
								Pb	1.4E-05	lb/MMbtu	1.95E-06	[16]	Tier 3	0	1.34E-05	3.21E-04	5.78E-05	0.00	1.34E-05	3.21E-04	5.78E-05	1.68E-06
								Manganese	7.9E-04	lb/MMbtu	1.10E-04	[16]	Tier 3	0	7.55E-04	1.81E-02	3.26E-03	0.00	7.55E-04	1.81E-02	3.26E-03	9.51E-05
								Mercury	1.2E-06	lb/MMbtu	1.67E-07	[16]	Tier 3	0	1.15E-06	2.75E-05	4.95E-06	0.00	1.15E-06	2.75E-05	4.95E-06	1.44E-07
								Nickel	4.6E-06	lb/MMbtu	6.39E-07	[16]	Tier 3	0	4.39E-06	1.05E-04	1.90E-05	0.00	4.39E-06	1.05E-04	1.90E-05	5.54E-07
								Selenium	2.5E-05	lb/MMbtu	3.48E-06	[16]	Tier 3	0	2.39E-05	5.73E-04	1.03E-04	0.00	2.39E-05	5.73E-04	1.03E-04	3.01E-06
								H2SO4/SO3	1.8E-05	lb/gal	1.82E-05	[17]	500 ppm	0	1.25E-04	3.00E-03	5.40E-04	0.00	1.25E-04	3.00E-03	5.40E-04	1.58E-05
								PCDD/PCDF TEQ	288	pg/km	1.32E-11	[18]	Tier 3	0	9.08E-11	2.18E-09	3.92E-10	0.00	9.08E-11	2.18E-09	3.92E-10	1.14E-11
Caterpillar	16H	Cat 3406	Grader	275	8.61	206.6	74391	NOx	2.98	g/hp-hr	0.1271	[10]	Tier 3	0	1.09	26.26	4.73	0.14	1.09	26.26	4.73	0.14
								N2O	0.0E+00	lb/gal	0.0000	[12]	Tier 3	0	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
								Benzene	9.33E-04	lb/MMbtu	1.30E-04	[13]	Tier 3	0	1.12E-03	2.68E-02	4.82E-03	0.00	1.12E-03	2.68E-02	4.82E-03	1.41E-04
								Toluene	4.09E-04	lb/MMbtu	5.69E-05	[13]	Tier 3	0	4.89E-04	1.17E-02	2.11E-03	0.00	4.89E-04	1.17E-02	2.11E-03	6.17E-05
								Xylene	2.85E-04	lb/MMbtu	3.96E-05	[13]	Tier 3	0	3.41E-04	8.19E-03	1.47E-03	0.00	3.41E-04	8.19E-03	1.47E-03	4.30E-05
								Propylene	2.58E-03	lb/MMbtu	3.59E-04	[13]	Tier 3	0	3.09E-03	7.41E-02	1.33E-02	0.00	3.09E-03	7.41E-02	1.33E-02	3.89E-04
								1,3-Butadiene	3.91E-05	lb/MMbtu	5.43E-06	[13]	Tier 3	0	4.68E-05	1.12E-03	2.02E-04	0.00	4.68E-05	1.12E-03	2.02E-04	5.90E-06
								Formaldehyde	1.18E-03	lb/MMbtu	1.64E-04	[13]	Tier 3	0	1.41E-03	3.39E-02	6.10E-03	0.00	1.41E-03	3.39E-02	6.10E-03	1.78E-04
								Acetaldehyde	7.67E-04	lb/MMbtu	1.07E-04	[13]	Tier 3	0	9.18E-04	2.20E-02	3.97E-03	0.00	9.18E-04	2.20E-02	3.97E-03	1.16E-04
								Acrolein	9.25E-05	lb/MMbtu	1.29E-05	[13]	Tier 3	0	1.11E-04	2.66E-03	4.78E-04	0.00	1.11E-04	2.66E-03	4.78E-04	1.39E-05
								Naphthalene	8.48E-05	lb/MMbtu	1.18E-05	[13]	Tier 3	0	1.01E-04	2.44E-03	4.38E-04	0.00	1.01E-04	2.44E-03	4.38E-04	1.28E-05

PolyMet - Hoyt Lakes, Minnesota
Table 5: Air Toxic Pollutant Emissions from Mine Vehicle Exhaust

Current Proposed Vehicle Fleet [1]					Fuel Usage (total, gal) [2]				Emission Factors						Emissions Uncontrolled				Emissions Controlled			
Manufacturer	Model	Engine	Description	Engine Power (hp)	Hourly	Daily	Annual	Pollutant	Factor	units	lb/gal	Reference	Note	CE [3]	lb/hr	lb/day	tpy	g/sec	lb/hr	lb/day	tpy	g/sec
								Acenaphthylene	5.06E-06	lb/MMbtu	7.03E-07	[13]	Tier 3	0	6.06E-06	1.45E-04	2.62E-05	0.00	6.06E-06	1.45E-04	2.62E-05	7.63E-07
								Acenaphthene	1.42E-06	lb/MMbtu	1.97E-07	[13]	Tier 3	0	1.70E-06	4.08E-05	7.34E-06	0.00	1.70E-06	4.08E-05	7.34E-06	2.14E-07
								Fluorene	2.92E-05	lb/MMbtu	4.06E-06	[13]	Tier 3	0	3.49E-05	8.39E-04	1.51E-04	0.00	3.49E-05	8.39E-04	1.51E-04	4.40E-06
								Phenanthrene	2.94E-05	lb/MMbtu	4.09E-06	[13]	Tier 3	0	3.52E-05	8.44E-04	1.52E-04	0.00	3.52E-05	8.44E-04	1.52E-04	4.43E-06
								Anthracene	1.87E-06	lb/MMbtu	2.60E-07	[13]	Tier 3	0	2.24E-06	5.37E-05	9.67E-06	0.00	2.24E-06	5.37E-05	9.67E-06	2.82E-07
								Fluoranthene	7.61E-06	lb/MMbtu	1.06E-06	[13]	Tier 3	0	9.11E-06	2.19E-04	3.93E-05	0.00	9.11E-06	2.19E-04	3.93E-05	1.15E-06
								Pyrene	4.78E-06	lb/MMbtu	6.64E-07	[13]	Tier 3	0	5.72E-06	1.37E-04	2.47E-05	0.00	5.72E-06	1.37E-04	2.47E-05	7.21E-07
								Benzo(a)anthracene	1.68E-06	lb/MMbtu	2.34E-07	[13]	Tier 3	0	2.01E-06	4.83E-05	8.69E-06	0.00	2.01E-06	4.83E-05	8.69E-06	2.53E-07
								Chrysene	3.53E-07	lb/MMbtu	4.91E-08	[13]	Tier 3	0	4.22E-07	1.01E-05	1.83E-06	0.00	4.22E-07	1.01E-05	1.83E-06	5.32E-08
								Benzo(b)fluoranthene	9.91E-08	lb/MMbtu	1.38E-08	[13]	Tier 3	0	1.19E-07	2.85E-06	5.12E-07	0.00	1.19E-07	2.85E-06	5.12E-07	1.49E-08
								Benzo(k)fluoranthene	1.55E-07	lb/MMbtu	2.15E-08	[13]	Tier 3	0	1.86E-07	4.45E-06	8.01E-07	0.00	1.86E-07	4.45E-06	8.01E-07	2.34E-08
								Benzo(a)pyrene	1.88E-07	lb/MMbtu	2.61E-08	[13]	Tier 3	0	2.25E-07	5.40E-06	9.72E-07	0.00	2.25E-07	5.40E-06	9.72E-07	2.83E-08
								Indeno(1,2,3-cd)pyrene	3.75E-07	lb/MMbtu	5.21E-08	[13]	Tier 3	0	4.49E-07	1.08E-05	1.94E-06	0.00	4.49E-07	1.08E-05	1.94E-06	5.65E-08
								Dibenzo(a,h)anthracene	5.83E-07	lb/MMbtu	8.10E-08	[13]	Tier 3	0	6.98E-07	1.67E-05	3.01E-06	0.00	6.98E-07	1.67E-05	3.01E-06	8.79E-08
								Benzo(g,h,i)perylene	4.89E-07	lb/MMbtu	6.80E-08	[13]	Tier 3	0	5.85E-07	1.40E-05	2.53E-06	0.00	5.85E-07	1.40E-05	2.53E-06	7.37E-08
								Arsenic	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 3	0	1.32E-05	3.16E-04	5.69E-05	0.00	1.32E-05	3.16E-04	5.69E-05	1.66E-06
								Beryllium	3.1E-07	lb/MMbtu	4.31E-08	[16]	Tier 3	0	3.71E-07	8.90E-06	1.60E-06	0.00	3.71E-07	8.90E-06	1.60E-06	4.67E-08
								Cadmium	4.8E-06	lb/MMbtu	6.67E-07	[16]	Tier 3	0	5.74E-06	1.38E-04	2.48E-05	0.00	5.74E-06	1.38E-04	2.48E-05	7.24E-07
								Chromium	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 3	0	1.32E-05	3.16E-04	5.69E-05	0.00	1.32E-05	3.16E-04	5.69E-05	1.66E-06
								Pb	1.4E-05	lb/MMbtu	1.95E-06	[16]	Tier 3	0	1.68E-05	4.02E-04	7.24E-05	0.00	1.68E-05	4.02E-04	7.24E-05	2.11E-06
								Manganese	7.9E-04	lb/MMbtu	1.10E-04	[16]	Tier 3	0	9.45E-04	2.27E-02	4.08E-03	0.00	9.45E-04	2.27E-02	4.08E-03	1.19E-04
								Mercury	1.2E-06	lb/MMbtu	1.67E-07	[16]	Tier 3	0	1.44E-06	3.45E-05	6.20E-06	0.00	1.44E-06	3.45E-05	6.20E-06	1.81E-07
								Nickel	4.6E-06	lb/MMbtu	6.39E-07	[16]	Tier 3	0	5.51E-06	1.32E-04	2.38E-05	0.00	5.51E-06	1.32E-04	2.38E-05	6.94E-07
								Selenium	2.5E-05	lb/MMbtu	3.48E-06	[16]	Tier 3	0	2.99E-05	7.18E-04	1.29E-04	0.00	2.99E-05	7.18E-04	1.29E-04	3.77E-06
								H2SO4/SO3	1.8E-05	lb/gal	1.82E-05	[17]	500 ppm	0	1.57E-04	3.76E-03	6.77E-04	0.00	1.57E-04	3.76E-03	6.77E-04	1.97E-05
								PCDD/PCDF TEQ	288	pg/km	1.32E-11	[18]	Tier 3	0	1.14E-10	2.73E-09	4.92E-10	0.00	1.14E-10	2.73E-09	4.92E-10	1.43E-11
Caterpillar	777D	3408 B	Water Truck + Trucks for Constructio	938	8.33	200.0	71992	NOx	4.8	g/hp-hr	0.2047	[10]	Tier 2	0	1.71	40.94	7.37	0.21	1.71	40.94	7.37	0.21
								N2O	0.0E+00	lb/gal	0.0000	[12]	Tier 2	0	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
								Benzene	7.76E-04	lb/MMbtu	1.08E-04	[14]	Tier 2	0	8.99E-04	2.16E-02	3.88E-03	0.00	8.99E-04	2.16E-02	3.88E-03	1.13E-04
								Toluene	2.81E-04	lb/MMbtu	3.91E-05	[14]	Tier 2	0	3.25E-04	7.81E-03	1.41E-03	0.00	3.25E-04	7.81E-03	1.41E-03	4.10E-05
								Xylene	1.93E-04	lb/MMbtu	2.68E-05	[14]	Tier 2	0	2.24E-04	5.36E-03	9.66E-04	0.00	2.24E-04	5.36E-03	9.66E-04	2.82E-05
								Propylene	2.79E-03	lb/MMbtu	3.88E-04	[14]	Tier 2	0	3.23E-03	7.76E-02	1.40E-02	0.00	3.23E-03	7.76E-02	1.40E-02	4.07E-04
								Formaldehyde	7.89E-05	lb/MMbtu	1.10E-05	[14]	Tier 2	0	9.14E-05	2.19E-03	3.95E-04	0.00	9.14E-05	2.19E-03	3.95E-04	1.15E-05
								Acetaldehyde	2.52E-05	lb/MMbtu	3.50E-06	[14]	Tier 2	0	2.92E-05	7.00E-04	1.26E-04	0.00	2.92E-05	7.00E-04	1.26E-04	3.68E-06
								Acrolein	7.88E-06	lb/MMbtu	1.10E-06	[14]	Tier 2	0	9.13E-06	2.19E-04	3.94E-05	0.00	9.13E-06	2.19E-04	3.94E-05	1.15E-06
								Naphthalene	1.30E-04	lb/MMbtu	1.81E-05	[15]	Tier 2	0	1.51E-04	3.61E-03	6.50E-04	0.00	1.51E-04	3.61E-03	6.50E-04	1.90E-05
								Acenaphthylene	9.23E-06	lb/MMbtu	1.28E-06	[15]	Tier 2	0	1.07E-05	2.57E-04	4.62E-05	0.00	1.07E-05	2.57E-04	4.62E-05	1.35E-06
								Acenaphthene	4.68E-06	lb/MMbtu	6.51E-07	[15]	Tier 2	0	5.42E-06	1.30E-04	2.34E-05	0.00	5.42E-06	1.30E-04	2.34E-05	6.83E-07
								Fluorene	1.28E-05	lb/MMbtu	1.78E-06	[15]	Tier 2	0	1.48E-05	3.56E-04	6.40E-05	0.00	1.48E-05	3.56E-04	6.40E-05	1.87E-06
								Phenanthrene	4.08E-05	lb/MMbtu	5.67E-06	[15]	Tier 2	0	4.73E-05	1.13E-03	2.04E-04	0.00	4.73E-05	1.13E-03	2.04E-04	5.95E-06
								Anthracene	1.23E-06	lb/MMbtu	1.71E-07	[15]	Tier 2	0	1.42E-06	3.42E-05	6.15E-06	0.00	1.42E-06	3.42E-05	6.15E-06	1.79E-07
								Fluoranthene	4.03E-06	lb/MMbtu	5.60E-07	[15]	Tier 2	0	4.67E-06	1.12E-04	2.02E-05	0.00	4.67E-06	1.12E-04	2.02E-05	5.88E-07
								Pyrene	3.71E-06	lb/MMbtu	5.16E-07	[15]	Tier 2	0	4.30E-06	1.03E-04	1.86E-05	0.00	4.30E-06	1.03E-04	1.86E-05	5.41E-07
								Benzo(a)anthracene	6.22E-07	lb/MMbtu	8.65E-08	[15]	Tier 2	0	7.20E-07	1.73E-05	3.11E-06	0.00	7.20E-07	1.73E-05	3.11E-06	9.08E-08
								Chrysene	1.53E-06	lb/MMbtu	2.13E-07	[15]	Tier 2	0	1.77E-06	4.25E-05	7.66E-06	0.00	1.77E-06	4.25E-05	7.66E-06	2.23E-07
								Benzo(b)fluoranthene	1.11E-06	lb/MMbtu	1.54E-07	[15]	Tier 2	0	1.29E-06	3.09E-05	5.55E-06	0.00	1.29E-06	3.09E-05	5.55E-06	1.62E-07
								Benzo(k)fluoranthene	2.18E-07	lb/MMbtu	3.03E-08	[15]	Tier 2	0	2.52E-07	6.06E-06	1.09E-06	0.00	2.52E-07	6.06E-06	1.09E-06	3.18E-08
								Benzo(a)pyrene	2.57E-07	lb/MMbtu	3.57E-08	[15]	Tier 2	0	2.98E-07	7.14E-06	1.29E-06	0.00	2.98E-07	7.14E-06	1.29E-06	3.75E-08
								Indeno(1,2,3-cd)pyrene	4.14E-07	lb/MMbtu	5.75E-08	[15]	Tier 2	0	4.79E-07	1.15E-05	2.07E-06	0.00	4.79E-07	1.15E-05	2.07E-06	6.04E-08
								Dibenzo(a,h)anthracene	3.46E-07	lb/MMbtu	4.81E-08	[15]	Tier 2	0	4.01E-07	9.62E-06	1.73E-06	0.00	4.01E-07	9.62E-06	1.73E-06	5.05E-08
								Benzo(g,h,i)perylene	5.56E-07	lb/MMbtu	7.73E-08	[15]	Tier 2	0	6.44E-07	1.55E-05	2.78E-06	0.00	6.44E-07	1.55E-05	2.78E-06	8.11E-08
								Arsenic	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 2	0	1.27E-05	3.06E-04	5.50E-05	0.00	1.27E-05	3.06E-04	5.50E-05	1.61E-06
								Beryllium	3.1E-07	lb/MMbtu	4.31E-08	[16]	Tier 2	0	3.59E-07	8.62E-06	1.55E-06	0.00	3.59E-07	8.62E-06	1.55E-06	4.52E-08
								Cadmium	4.8E-06	lb/MMbtu	6.67E-07	[16]	Tier 2	0	5.56E-06	1.33E-04	2.40E-05	0.00	5.56E-06	1.33E-04	2.40E-05	7.00E-07
								Chromium	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 2	0	1.27E-05	3.06E-04	5.50E-05	0.00	1.27E-05	3.06E-04	5.50E-05	1.61E-06
								Pb	1.4E-05	lb/MMbtu	1.95E-06	[16]	Tier 2	0	1.62E-05	3.89E-04	7.00E-05	0.00	1.62E-05	3.89E-04	7.00E-05	2.04E-06
								Manganese	7.9E-04	lb/MMbtu	1.10E-04	[16]	Tier 2	0	9.15E-04	2.20E-02	3.95E-03	0.00	9.15E-04	2.20E-02	3.95E-03	1.15E-04
								Mercury	1.2E-06	lb/MMbtu	1.67E-07	[16]	Tier 2	0	1.39E-06	3.34E-05	6.00E-06	0.00	1.39E-06	3.34E-05	6.00E-06	1.75E-07
								Nickel	4.6E-06	lb/MMbtu	6.39E-07	[16]	Tier 2	0	5.33E-06	1.28E-04	2.30E-05	0.00	5.33E-06	1.28E-04	2.30E-05	6.71E-07
								Selenium	2.5E-05	lb/MMbtu	3.48E-06	[16]	Tier 2	0	2.90E-05	6.95E-04	1.25E-04	0.00	2.90E-05	6.95E-04	1.25E-04	3.65E-06
								H2SO4/SO3	1.8E-05	lb/gal	1.82E-05	[17]	500 ppm	0	1.52E-04	3.64E-03	6.55E-04	0.00	1.52E-04	3.64E-03	6.55E-04	1.91E-05
								PCDD/PCDF TEQ	288	pg/km	1.32E-11	[18]	Tier 2	0	1.10E-10	2.64E-09	4.76E-10	0.00	1.10E-10	2.64E-09	4.76E-10	1.39E-11
Caterpillar	992G	3508 B	Wheel Loader (construction, site rehab and misc.)	800	7.40	177.6	63930	NOx	4.8	g/hp-hr	0.2047	[10]	Tier 2	0	1.51	36.36	6.54	0.19	1.51	36.36	6.54	0.19

PolyMet - Hoyt Lakes, Minnesota
Table 5: Air Toxic Pollutant Emissions from Mine Vehicle Exhaust

Manufacturer	Model	Engine	Description	Engine Power (hp)	Hourly	Daily	Annual	Pollutant	Factor	units	lb/gal	Reference	Note	CE [3]	Uncontrolled lb/hr	lb/day	tpy	g/sec	Controlled lb/hr	lb/day	tpy	g/sec
								N2O	0.0E+00	lb/gal	0.0000	[12]	Tier 2	0	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
								Benzene	7.76E-04	lb/MMbtu	1.08E-04	[14]	Tier 2	0	7.98E-04	1.92E-02	3.45E-03	0.00	7.98E-04	1.92E-02	3.45E-03	1.01E-04
								Toluene	2.81E-04	lb/MMbtu	3.91E-05	[14]	Tier 2	0	2.89E-04	6.94E-03	1.25E-03	0.00	2.89E-04	6.94E-03	1.25E-03	3.64E-05
								Xylene	1.93E-04	lb/MMbtu	2.68E-05	[14]	Tier 2	0	1.99E-04	4.76E-03	8.58E-04	0.00	1.99E-04	4.76E-03	8.58E-04	2.50E-05
								Propylene	2.79E-03	lb/MMbtu	3.88E-04	[14]	Tier 2	0	2.87E-03	6.89E-02	1.24E-02	0.00	2.87E-03	6.89E-02	1.24E-02	3.62E-04
								Formaldehyde	7.89E-05	lb/MMbtu	1.10E-05	[14]	Tier 2	0	8.11E-05	1.95E-03	3.51E-04	0.00	8.11E-05	1.95E-03	3.51E-04	1.02E-05
								Acetaldehyde	2.52E-05	lb/MMbtu	3.50E-06	[14]	Tier 2	0	2.59E-05	6.22E-04	1.12E-04	0.00	2.59E-05	6.22E-04	1.12E-04	3.27E-06
								Acrolein	7.88E-06	lb/MMbtu	1.10E-06	[14]	Tier 2	0	8.10E-06	1.95E-04	3.50E-05	0.00	8.10E-06	1.95E-04	3.50E-05	1.02E-06
								Naphthalene	1.30E-04	lb/MMbtu	1.81E-05	[15]	Tier 2	0	1.34E-04	3.21E-03	5.78E-04	0.00	1.34E-04	3.21E-03	5.78E-04	1.68E-05
								Acenaphthylene	9.23E-06	lb/MMbtu	1.28E-06	[15]	Tier 2	0	9.49E-06	2.28E-04	4.10E-05	0.00	9.49E-06	2.28E-04	4.10E-05	1.20E-06
								Acenaphthene	4.68E-06	lb/MMbtu	6.51E-07	[15]	Tier 2	0	4.81E-06	1.16E-04	2.08E-05	0.00	4.81E-06	1.16E-04	2.08E-05	6.06E-07
								Fluorene	1.28E-05	lb/MMbtu	1.78E-06	[15]	Tier 2	0	1.32E-05	3.16E-04	5.69E-05	0.00	1.32E-05	3.16E-04	5.69E-05	1.66E-06
								Phenanthrene	4.08E-05	lb/MMbtu	5.67E-06	[15]	Tier 2	0	4.20E-05	1.01E-03	1.81E-04	0.00	4.20E-05	1.01E-03	1.81E-04	5.29E-06
								Anthracene	1.23E-06	lb/MMbtu	1.71E-07	[15]	Tier 2	0	1.27E-06	3.04E-05	5.47E-06	0.00	1.27E-06	3.04E-05	5.47E-06	1.59E-07
								Fluoranthene	4.03E-06	lb/MMbtu	5.60E-07	[15]	Tier 2	0	4.14E-06	9.95E-05	1.79E-05	0.00	4.14E-06	9.95E-05	1.79E-05	5.22E-07
								Pyrene	3.71E-06	lb/MMbtu	5.16E-07	[15]	Tier 2	0	3.82E-06	9.16E-05	1.65E-05	0.00	3.82E-06	9.16E-05	1.65E-05	4.81E-07
								Benzo(a)anthracene	6.22E-07	lb/MMbtu	8.65E-08	[15]	Tier 2	0	6.40E-07	1.54E-05	2.76E-06	0.00	6.40E-07	1.54E-05	2.76E-06	8.06E-08
								Chrysene	1.53E-06	lb/MMbtu	2.13E-07	[15]	Tier 2	0	1.57E-06	3.78E-05	6.80E-06	0.00	1.57E-06	3.78E-05	6.80E-06	1.98E-07
								Benzo(b)fluoranthene	1.11E-06	lb/MMbtu	1.54E-07	[15]	Tier 2	0	1.14E-06	2.74E-05	4.93E-06	0.00	1.14E-06	2.74E-05	4.93E-06	1.44E-07
								Benzo(k)fluoranthene	2.18E-07	lb/MMbtu	3.03E-08	[15]	Tier 2	0	2.24E-07	5.38E-06	9.69E-07	0.00	2.24E-07	5.38E-06	9.69E-07	2.83E-08
								Benzo(a)pyrene	2.57E-07	lb/MMbtu	3.57E-08	[15]	Tier 2	0	2.64E-07	6.34E-06	1.14E-06	0.00	2.64E-07	6.34E-06	1.14E-06	3.33E-08
								Indeno(1,2,3-cd)pyrene	4.14E-07	lb/MMbtu	5.75E-08	[15]	Tier 2	0	4.26E-07	1.02E-05	1.84E-06	0.00	4.26E-07	1.02E-05	1.84E-06	5.37E-08
								Dibenzo(a,h)anthracene	3.46E-07	lb/MMbtu	4.81E-08	[15]	Tier 2	0	3.56E-07	8.54E-06	1.54E-06	0.00	3.56E-07	8.54E-06	1.54E-06	4.48E-08
								Benzo(g,h,i)perylene	5.56E-07	lb/MMbtu	7.73E-08	[15]	Tier 2	0	5.72E-07	1.37E-05	2.47E-06	0.00	5.72E-07	1.37E-05	2.47E-06	7.21E-08
								Arsenic	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 2	0	1.13E-05	2.72E-04	4.89E-05	0.00	1.13E-05	2.72E-04	4.89E-05	1.43E-06
								Beryllium	3.1E-07	lb/MMbtu	4.31E-08	[16]	Tier 2	0	3.19E-07	7.65E-06	1.38E-06	0.00	3.19E-07	7.65E-06	1.38E-06	4.02E-08
								Cadmium	4.8E-06	lb/MMbtu	6.67E-07	[16]	Tier 2	0	4.94E-06	1.18E-04	2.13E-05	0.00	4.94E-06	1.18E-04	2.13E-05	6.22E-07
								Chromium	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 2	0	1.13E-05	2.72E-04	4.89E-05	0.00	1.13E-05	2.72E-04	4.89E-05	1.43E-06
								Pb	1.4E-05	lb/MMbtu	1.95E-06	[16]	Tier 2	0	1.44E-05	3.46E-04	6.22E-05	0.00	1.44E-05	3.46E-04	6.22E-05	1.81E-06
								Manganese	7.9E-04	lb/MMbtu	1.10E-04	[16]	Tier 2	0	8.13E-04	1.95E-02	3.51E-03	0.00	8.13E-04	1.95E-02	3.51E-03	1.02E-04
								Mercury	1.2E-06	lb/MMbtu	1.67E-07	[16]	Tier 2	0	1.23E-06	2.96E-05	5.33E-06	0.00	1.23E-06	2.96E-05	5.33E-06	1.56E-07
								Nickel	4.6E-06	lb/MMbtu	6.39E-07	[16]	Tier 2	0	4.73E-06	1.14E-04	2.04E-05	0.00	4.73E-06	1.14E-04	2.04E-05	5.96E-07
								Selenium	2.5E-05	lb/MMbtu	3.48E-06	[16]	Tier 2	0	2.57E-05	6.17E-04	1.11E-04	0.00	2.57E-05	6.17E-04	1.11E-04	3.24E-06
								H2SO4/SO3	1.8E-05	lb/gal	1.82E-05	[17]	500 ppm	0	1.35E-04	3.23E-03	5.82E-04	0.00	1.35E-04	3.23E-03	5.82E-04	1.70E-05
								PCDD/PCDF TEQ	288	pg/km	1.32E-11	[18]	Tier 2	0	9.78E-11	2.35E-09	4.22E-10	0.00	9.78E-11	2.35E-09	4.22E-10	1.23E-11
Atlas Copco	Pit Viper 351	Cummins QSK45 or Cat 3512	Blast Hole Drill	1500 - 1650	22.19	532.6	191745	NOx	4.8	g/hp-hr	0.2047	[10]	Tier 2	0	4.54	109.04	19.63	0.57	4.54	109.04	19.63	0.57
								N2O	0.0E+00	lb/gal	0.0000	[12]	Tier 2	0	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
								Benzene	7.76E-04	lb/MMbtu	1.08E-04	[14]	Tier 2	0	2.39E-03	5.75E-02	1.03E-02	0.00	2.39E-03	5.75E-02	1.03E-02	3.02E-04
								Toluene	2.81E-04	lb/MMbtu	3.91E-05	[14]	Tier 2	0	8.67E-04	2.08E-02	3.74E-03	0.00	8.67E-04	2.08E-02	3.74E-03	1.09E-04
								Xylene	1.93E-04	lb/MMbtu	2.68E-05	[14]	Tier 2	0	5.95E-04	1.43E-02	2.57E-03	0.00	5.95E-04	1.43E-02	2.57E-03	7.50E-05
								Propylene	2.79E-03	lb/MMbtu	3.88E-04	[14]	Tier 2	0	8.61E-03	2.07E-01	3.72E-02	0.00	8.61E-03	2.07E-01	3.72E-02	1.08E-03
								Formaldehyde	7.89E-05	lb/MMbtu	1.10E-05	[14]	Tier 2	0	2.43E-04	5.84E-03	1.05E-03	0.00	2.43E-04	5.84E-03	1.05E-03	3.07E-05
								Acetaldehyde	2.52E-05	lb/MMbtu	3.50E-06	[14]	Tier 2	0	7.77E-05	1.87E-03	3.36E-04	0.00	7.77E-05	1.87E-03	3.36E-04	9.79E-06
								Acrolein	7.88E-06	lb/MMbtu	1.10E-06	[14]	Tier 2	0	2.43E-05	5.83E-04	1.05E-04	0.00	2.43E-05	5.83E-04	1.05E-04	3.06E-06
								Naphthalene	1.30E-04	lb/MMbtu	1.81E-05	[15]	Tier 2	0	4.01E-04	9.62E-03	1.73E-03	0.00	4.01E-04	9.62E-03	1.73E-03	5.05E-05
								Acenaphthylene	9.23E-06	lb/MMbtu	1.28E-06	[15]	Tier 2	0	2.85E-05	6.83E-04	1.23E-04	0.00	2.85E-05	6.83E-04	1.23E-04	3.59E-06
								Acenaphthene	4.68E-06	lb/MMbtu	6.51E-07	[15]	Tier 2	0	1.44E-05	3.46E-04	6.24E-05	0.00	1.44E-05	3.46E-04	6.24E-05	1.82E-06
								Fluorene	1.28E-05	lb/MMbtu	1.78E-06	[15]	Tier 2	0	3.95E-05	9.48E-04	1.71E-04	0.00	3.95E-05	9.48E-04	1.71E-04	4.98E-06
								Phenanthrene	4.08E-05	lb/MMbtu	5.67E-06	[15]	Tier 2	0	1.26E-04	3.02E-03	5.44E-04	0.00	1.26E-04	3.02E-03	5.44E-04	1.59E-05
								Anthracene	1.23E-06	lb/MMbtu	1.71E-07	[15]	Tier 2	0	3.79E-06	9.11E-05	1.64E-05	0.00	3.79E-06	9.11E-05	1.64E-05	4.78E-07
								Fluoranthene	4.03E-06	lb/MMbtu	5.60E-07	[15]	Tier 2	0	1.24E-05	2.98E-04	5.37E-05	0.00	1.24E-05	2.98E-04	5.37E-05	1.57E-06
								Pyrene	3.71E-06	lb/MMbtu	5.16E-07	[15]	Tier 2	0	1.14E-05	2.75E-04	4.94E-05	0.00	1.14E-05	2.75E-04	4.94E-05	1.44E-06
								Benzo(a)anthracene	6.22E-07	lb/MMbtu	8.65E-08	[15]	Tier 2	0	1.92E-06	4.60E-05	8.29E-06	0.00	1.92E-06	4.60E-05	8.29E-06	2.42E-07
								Chrysene	1.53E-06	lb/MMbtu	2.13E-07	[15]	Tier 2	0	4.72E-06	1.13E-04	2.04E-05	0.00	4.72E-06	1.13E-04	2.04E-05	5.95E-07
								Benzo(b)fluoranthene	1.11E-06	lb/MMbtu	1.54E-07	[15]	Tier 2	0	3.42E-06	8.22E-05	1.48E-05	0.00	3.42E-06	8.22E-05	1.48E-05	4.31E-07
								Benzo(k)fluoranthene	2.18E-07	lb/MMbtu	3.03E-08	[15]	Tier 2	0	6.72E-07	1.61E-05	2.91E-06	0.00	6.72E-07	1.61E-05	2.91E-06	8.47E-08
								Benzo(a)pyrene	2.57E-07	lb/MMbtu	3.57E-08	[15]	Tier 2	0	7.93E-07	1.90E-05	3.42E-06	0.00	7.93E-07	1.90E-05	3.42E-06	9.99E-08
								Indeno(1,2,3-cd)pyrene	4.14E-07	lb/MMbtu	5.75E-08	[15]	Tier 2	0	1.28E-06	3.07E-05	5.52E-06	0.00	1.28E-06	3.07E-05	5.52E-06	1.61E-07
								Dibenzo(a,h)anthracene	3.46E-07	lb/MMbtu	4.81E-08	[15]	Tier 2	0	1.07E-06	2.56E-05	4.61E-06	0.00	1.07E-06	2.56E-05	4.61E-06	1.34E-07
								Benzo(g,h,i)perylene	5.56E-07	lb/MMbtu	7.73E-08	[15]	Tier 2	0	1.72E-06	4.12E-05	7.41E-06	0.00	1.72E-06	4.12E-05	7.41E-06	2.16E-07
								Arsenic	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 2	0	3.39E-05	8.14E-04	1.47E-04	0.00	3.39E-05	8.14E-04	1.47E-04	4.28E-06
								Beryllium	3.1E-07	lb/MMbtu	4.31E-08	[16]	Tier 2	0	9.56E-07	2.30E-05	4.13E-06	0.00	9.56E-07	2.30E-05	4.13E-06	1.20E-07
								Cadmium	4.8E-06	lb/MMbtu	6.67E-07	[16]	Tier 2	0	1.48E-05	3.55E-04	6.40E-05	0.00	1.48E-05	3.55E-04	6.40E-05	1.87E-06

PolyMet - Hoyt Lakes, Minnesota
Table 5: Air Toxic Pollutant Emissions from Mine Vehicle Exhaust

Manufacturer	Model	Engine	Description	Engine Power (hp)	Hourly	Daily	Annual	Pollutant	Factor	units	lb/gal	Reference	Note	CE [3]	lb/hr	lb/day	tpy	g/sec	lb/hr	lb/day	tpy	g/sec
								Chromium	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 2	0	3.39E-05	8.14E-04	1.47E-04	0.00	3.39E-05	8.14E-04	1.47E-04	4.28E-06
								Pb	1.4E-05	lb/MMbtu	1.95E-06	[16]	Tier 2	0	4.32E-05	1.04E-04	1.87E-04	0.00	4.32E-05	1.04E-04	1.87E-04	5.44E-06
								Manganese	7.9E-04	lb/MMbtu	1.10E-04	[16]	Tier 2	0	2.44E-03	5.85E-02	1.05E-02	0.00	2.44E-03	5.85E-02	1.05E-02	3.07E-04
								Mercury	1.2E-06	lb/MMbtu	1.67E-07	[16]	Tier 2	0	3.70E-06	8.88E-05	1.60E-05	0.00	3.70E-06	8.88E-05	1.60E-05	4.66E-07
								Nickel	4.6E-06	lb/MMbtu	6.39E-07	[16]	Tier 2	0	1.42E-05	3.41E-04	6.13E-05	0.00	1.42E-05	3.41E-04	6.13E-05	1.79E-06
								Selenium	2.5E-05	lb/MMbtu	3.48E-06	[16]	Tier 2	0	7.71E-05	1.85E-03	3.33E-04	0.00	7.71E-05	1.85E-03	3.33E-04	9.72E-06
								H2SO4/SO3	1.8E-05	lb/gal	1.82E-05	[17]	500 ppm	0	4.04E-04	9.69E-03	1.74E-03	0.00	4.04E-04	9.69E-03	1.74E-03	5.09E-05
								PCDD/PCDF TEQ	288	pg/km	1.32E-11	[18]	Tier 2	0	2.93E-10	7.04E-09	1.27E-09	0.00	2.93E-10	7.04E-09	1.27E-09	3.70E-11
Caterpillar	446D	3114 DIT	Backhoe w/ hammer	110	0.49	11.8	4241	NOx	2.98	g/hp-hr	0.1271	[10]	Tier 3	0	0.06	1.50	0.27	0.01	0.06	1.50	0.27	0.01
								N2O	0.0E+00	lb/gal	0.0000	[12]	Tier 3	0	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
								Benzene	9.33E-04	lb/MMbtu	1.30E-04	[13]	Tier 3	0	2.88E-03	6.91E-02	1.24E-02	0.00	2.88E-03	6.91E-02	1.24E-02	3.63E-04
								Toluene	4.09E-04	lb/MMbtu	5.69E-05	[13]	Tier 3	0	1.26E-03	3.03E-02	5.45E-03	0.00	1.26E-03	3.03E-02	5.45E-03	1.59E-04
								Xylene	2.85E-04	lb/MMbtu	3.96E-05	[13]	Tier 3	0	8.79E-04	2.11E-02	3.80E-03	0.00	8.79E-04	2.11E-02	3.80E-03	1.11E-04
								Propylene	2.58E-03	lb/MMbtu	3.59E-04	[13]	Tier 3	0	7.96E-03	1.91E-01	3.44E-02	0.00	7.96E-03	1.91E-01	3.44E-02	1.00E-03
								1,3-Butadiene	3.91E-05	lb/MMbtu	5.43E-06	[13]	Tier 3	0	1.21E-04	2.89E-03	5.21E-04	0.00	1.21E-04	2.89E-03	5.21E-04	1.52E-05
								Formaldehyde	1.18E-03	lb/MMbtu	1.64E-04	[13]	Tier 3	0	3.64E-03	8.74E-02	1.57E-02	0.00	3.64E-03	8.74E-02	1.57E-02	4.59E-04
								Acetaldehyde	7.67E-04	lb/MMbtu	1.07E-04	[13]	Tier 3	0	2.37E-03	5.68E-02	1.02E-02	0.00	2.37E-03	5.68E-02	1.02E-02	2.98E-04
								Acrolein	9.25E-05	lb/MMbtu	1.29E-05	[13]	Tier 3	0	2.85E-04	6.85E-03	1.23E-03	0.00	2.85E-04	6.85E-03	1.23E-03	3.60E-05
								Naphthalene	8.48E-05	lb/MMbtu	1.18E-05	[13]	Tier 3	0	2.62E-04	6.28E-03	1.13E-03	0.00	2.62E-04	6.28E-03	1.13E-03	3.30E-05
								Acenaphthylene	5.06E-06	lb/MMbtu	7.03E-07	[13]	Tier 3	0	1.56E-05	3.75E-04	6.74E-05	0.00	1.56E-05	3.75E-04	6.74E-05	1.97E-06
								Acenaphthene	1.42E-06	lb/MMbtu	1.97E-07	[13]	Tier 3	0	4.38E-06	1.05E-04	1.89E-05	0.00	4.38E-06	1.05E-04	1.89E-05	5.52E-07
								Fluorene	2.92E-05	lb/MMbtu	4.06E-06	[13]	Tier 3	0	9.01E-05	2.16E-03	3.89E-04	0.00	9.01E-05	2.16E-03	3.89E-04	1.13E-05
								Phenanthrene	2.94E-05	lb/MMbtu	4.09E-06	[13]	Tier 3	0	9.07E-05	2.18E-03	3.92E-04	0.00	9.07E-05	2.18E-03	3.92E-04	1.14E-05
								Anthracene	1.87E-06	lb/MMbtu	2.60E-07	[13]	Tier 3	0	5.77E-06	1.38E-04	2.49E-05	0.00	5.77E-06	1.38E-04	2.49E-05	7.27E-07
								Fluoranthene	7.61E-06	lb/MMbtu	1.06E-06	[13]	Tier 3	0	2.35E-05	5.63E-04	1.01E-04	0.00	2.35E-05	5.63E-04	1.01E-04	2.96E-06
								Pyrene	4.78E-06	lb/MMbtu	6.64E-07	[13]	Tier 3	0	1.47E-05	3.54E-04	6.37E-05	0.00	1.47E-05	3.54E-04	6.37E-05	1.86E-06
								Benzo(a)anthracene	1.68E-06	lb/MMbtu	2.34E-07	[13]	Tier 3	0	5.18E-06	1.24E-04	2.24E-05	0.00	5.18E-06	1.24E-04	2.24E-05	6.53E-07
								Chrysene	3.53E-07	lb/MMbtu	4.91E-08	[13]	Tier 3	0	1.09E-06	2.61E-05	4.70E-06	0.00	1.09E-06	2.61E-05	4.70E-06	1.37E-07
								Benzo(b)fluoranthene	9.91E-08	lb/MMbtu	1.38E-08	[13]	Tier 3	0	3.06E-07	7.34E-06	1.32E-06	0.00	3.06E-07	7.34E-06	1.32E-06	3.85E-08
								Benzo(k)fluoranthene	1.55E-07	lb/MMbtu	2.15E-08	[13]	Tier 3	0	4.78E-07	1.15E-05	2.07E-06	0.00	4.78E-07	1.15E-05	2.07E-06	6.02E-08
								Benzo(a)pyrene	1.88E-07	lb/MMbtu	2.61E-08	[13]	Tier 3	0	5.80E-07	1.39E-05	2.51E-06	0.00	5.80E-07	1.39E-05	2.51E-06	7.31E-08
								Indeno(1,2,3-cd)pyrene	3.75E-07	lb/MMbtu	5.21E-08	[13]	Tier 3	0	1.16E-06	2.78E-05	5.00E-06	0.00	1.16E-06	2.78E-05	5.00E-06	1.46E-07
								Dibenzo(a,h)anthracene	5.83E-07	lb/MMbtu	8.10E-08	[13]	Tier 3	0	1.80E-06	4.32E-05	7.77E-06	0.00	1.80E-06	4.32E-05	7.77E-06	2.27E-07
								Benzo(g,h,i)perylene	4.89E-07	lb/MMbtu	6.80E-08	[13]	Tier 3	0	1.51E-06	3.62E-05	6.52E-06	0.00	1.51E-06	3.62E-05	6.52E-06	1.90E-07
								Arsenic	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 3	0	3.39E-05	8.14E-04	1.47E-04	0.00	3.39E-05	8.14E-04	1.47E-04	4.28E-06
								Beryllium	3.1E-07	lb/MMbtu	4.31E-08	[16]	Tier 3	0	9.56E-07	2.30E-05	4.13E-06	0.00	9.56E-07	2.30E-05	4.13E-06	1.20E-07
								Cadmium	4.8E-06	lb/MMbtu	6.67E-07	[16]	Tier 3	0	1.48E-05	3.55E-04	6.40E-05	0.00	1.48E-05	3.55E-04	6.40E-05	1.87E-06
								Chromium	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 3	0	3.39E-05	8.14E-04	1.47E-04	0.00	3.39E-05	8.14E-04	1.47E-04	4.28E-06
								Pb	1.4E-05	lb/MMbtu	1.95E-06	[16]	Tier 3	0	4.32E-05	1.04E-03	1.87E-04	0.00	4.32E-05	1.04E-03	1.87E-04	5.44E-06
								Manganese	7.9E-04	lb/MMbtu	1.10E-04	[16]	Tier 3	0	2.44E-03	5.85E-02	1.05E-02	0.00	2.44E-03	5.85E-02	1.05E-02	3.07E-04
								Mercury	1.2E-06	lb/MMbtu	1.67E-07	[16]	Tier 3	0	3.70E-06	8.88E-05	1.60E-05	0.00	3.70E-06	8.88E-05	1.60E-05	4.66E-07
								Nickel	4.6E-06	lb/MMbtu	6.39E-07	[16]	Tier 3	0	1.42E-05	3.41E-04	6.13E-05	0.00	1.42E-05	3.41E-04	6.13E-05	1.79E-06
								Selenium	2.5E-05	lb/MMbtu	3.48E-06	[16]	Tier 3	0	7.71E-05	1.85E-03	3.33E-04	0.00	7.71E-05	1.85E-03	3.33E-04	9.72E-06
								H2SO4/SO3	1.8E-05	lb/gal	1.82E-05	[17]	500 ppm	0	4.04E-04	9.69E-03	1.74E-03	0.00	4.04E-04	9.69E-03	1.74E-03	5.09E-05
								PCDD/PCDF TEQ	288	pg/km	1.32E-11	[18]	Tier 3	0	2.93E-10	7.04E-09	1.27E-09	0.00	2.93E-10	7.04E-09	1.27E-09	3.70E-11
Caterpillar	IT62H	C7 ACERT Tier 3	Integrated Tool Carrier	230	0.80	19.3	6942	NOx	2.98	g/hp-hr	0.1271	[10]	Tier 3	0	0.10	2.45	0.44	0.01	0.10	2.45	0.44	0.01
								N2O	0.0E+00	lb/gal	0.0000	[12]	Tier 3	0	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
								Benzene	9.33E-04	lb/MMbtu	1.30E-04	[13]	Tier 3	0	2.88E-03	6.91E-02	1.24E-02	0.00	2.88E-03	6.91E-02	1.24E-02	3.63E-04
								Toluene	4.09E-04	lb/MMbtu	5.69E-05	[13]	Tier 3	0	1.26E-03	3.03E-02	5.45E-03	0.00	1.26E-03	3.03E-02	5.45E-03	1.59E-04
								Xylene	2.85E-04	lb/MMbtu	3.96E-05	[13]	Tier 3	0	8.79E-04	2.11E-02	3.80E-03	0.00	8.79E-04	2.11E-02	3.80E-03	1.11E-04
								Propylene	2.58E-03	lb/MMbtu	3.59E-04	[13]	Tier 3	0	7.96E-03	1.91E-01	3.44E-02	0.00	7.96E-03	1.91E-01	3.44E-02	1.00E-03
								1,3-Butadiene	3.91E-05	lb/MMbtu	5.43E-06	[13]	Tier 3	0	1.21E-04	2.89E-03	5.21E-04	0.00	1.21E-04	2.89E-03	5.21E-04	1.52E-05
								Formaldehyde	1.18E-03	lb/MMbtu	1.64E-04	[13]	Tier 3	0	3.64E-03	8.74E-02	1.57E-02	0.00	3.64E-03	8.74E-02	1.57E-02	4.59E-04
								Acetaldehyde	7.67E-04	lb/MMbtu	1.07E-04	[13]	Tier 3	0	2.37E-03	5.68E-02	1.02E-02	0.00	2.37E-03	5.68E-02	1.02E-02	2.98E-04
								Acrolein	9.25E-05	lb/MMbtu	1.29E-05	[13]	Tier 3	0	2.85E-04	6.85E-03	1.23E-03	0.00	2.85E-04	6.85E-03	1.23E-03	3.60E-05
								Naphthalene	8.48E-05	lb/MMbtu	1.18E-05	[13]	Tier 3	0	2.62E-04	6.28E-03	1.13E-03	0.00	2.62E-04	6.28E-03	1.13E-03	3.30E-05
								Acenaphthylene	5.06E-06	lb/MMbtu	7.03E-07	[13]	Tier 3	0	1.56E-05	3.75E-04	6.74E-05	0.00	1.56E-05	3.75E-04	6.74E-05	1.97E-06
								Acenaphthene	1.42E-06	lb/MMbtu	1.97E-07	[13]	Tier 3	0	4.38E-06	1.05E-04	1.89E-05	0.00	4.38E-06	1.05E-04	1.89E-05	5.52E-07
								Fluorene	2.92E-05	lb/MMbtu	4.06E-06	[13]	Tier 3	0	9.01E-05	2.16E-03	3.89E-04	0.00	9.01E-05	2.16E-03	3.89E-04	1.13E-05
								Phenanthrene	2.94E-05	lb/MMbtu	4.09E-06	[13]	Tier 3	0	9.07E-05	2.18E-03	3.92E-04	0.00	9.07E-05	2.18E-03	3.92E-04	1.14E-05
								Anthracene	1.87E-06	lb/MMbtu	2.60E-07	[13]	Tier 3	0	5.77E-06	1.38E-04	2.49E-05	0.00	5.77E-06	1.38E-04	2.49E-05	7.27E-07
								Fluoranthene	7.61E-06	lb/MMbtu	1.06E-06	[13]	Tier 3	0	2.35E-05	5.63E-04	1.01E-04	0.00	2.35E-05	5.63E-04	1.01E-04	2.96E-06
								Pyrene	4.78E-06	lb/MMbtu	6.64E-07	[13]	Tier 3	0	1.47E-05	3.54E-04	6.37E-05	0.00	1.47E-05	3.54E-04	6.37E-05	1.86E-06
								Benzo(a)anthracene	1.68E-06	lb/MMbtu	2.34E-07	[13]	Tier 3	0	5.18E-06	1.24E-04	2.24E-05	0.00	5.18E-06	1.24E-04	2.24E-05	6.53E-07

PolyMet - Hoyt Lakes, Minnesota
Table 5: Air Toxic Pollutant Emissions from Mine Vehicle Exhaust

Manufacturer	Model	Engine	Description	Engine Power (hp)	Hourly	Daily	Annual	Pollutant	Factor	units	lb/gal	Reference	Note	CE [3]	Unc lb/hr	Unc lb/day	Unc tpy	Unc g/sec	Ctrl lb/hr	Ctrl lb/day	Ctrl tpy	Ctrl g/sec
								Chrysene	3.53E-07	lb/MMbtu	4.91E-08	[13]	Tier 3	0	1.09E-06	2.61E-05	4.70E-06	0.00	1.09E-06	2.61E-05	4.70E-06	1.37E-07
								Benzo(b)fluoranthene	9.91E-08	lb/MMbtu	1.38E-08	[13]	Tier 3	0	3.06E-07	7.34E-06	1.32E-06	0.00	3.06E-07	7.34E-06	1.32E-06	3.85E-08
								Benzo(k)fluoranthene	1.55E-07	lb/MMbtu	2.15E-08	[13]	Tier 3	0	4.78E-07	1.15E-05	2.07E-06	0.00	4.78E-07	1.15E-05	2.07E-06	6.02E-08
								Benzo(a)pyrene	1.88E-07	lb/MMbtu	2.61E-08	[13]	Tier 3	0	5.80E-07	1.39E-05	2.51E-06	0.00	5.80E-07	1.39E-05	2.51E-06	7.31E-08
								Indeno(1,2,3-cd)pyrene	3.75E-07	lb/MMbtu	5.21E-08	[13]	Tier 3	0	1.16E-06	2.78E-05	5.00E-06	0.00	1.16E-06	2.78E-05	5.00E-06	1.46E-07
								Dibenzo(a,h)anthracene	5.83E-07	lb/MMbtu	8.10E-08	[13]	Tier 3	0	1.80E-06	4.32E-05	7.77E-06	0.00	1.80E-06	4.32E-05	7.77E-06	2.27E-07
								Benzo(g,h,i)perylene	4.89E-07	lb/MMbtu	6.80E-08	[13]	Tier 3	0	1.51E-06	3.62E-05	6.52E-06	0.00	1.51E-06	3.62E-05	6.52E-06	1.90E-07
								Arsenic	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 3	0	3.39E-05	8.14E-04	1.47E-04	0.00	3.39E-05	8.14E-04	1.47E-04	4.28E-06
								Beryllium	3.1E-07	lb/MMbtu	4.31E-08	[16]	Tier 3	0	9.56E-07	2.30E-05	4.13E-06	0.00	9.56E-07	2.30E-05	4.13E-06	1.20E-07
								Cadmium	4.8E-06	lb/MMbtu	6.67E-07	[16]	Tier 3	0	1.48E-05	3.55E-04	6.40E-05	0.00	1.48E-05	3.55E-04	6.40E-05	1.87E-06
								Chromium	1.1E-05	lb/MMbtu	1.53E-06	[16]	Tier 3	0	3.39E-05	8.14E-04	1.47E-04	0.00	3.39E-05	8.14E-04	1.47E-04	4.28E-06
								Pb	1.4E-05	lb/MMbtu	1.95E-06	[16]	Tier 3	0	4.32E-05	1.04E-03	1.87E-04	0.00	4.32E-05	1.04E-03	1.87E-04	5.44E-06
								Manganese	7.9E-04	lb/MMbtu	1.10E-04	[16]	Tier 3	0	2.44E-03	5.85E-02	1.05E-02	0.00	2.44E-03	5.85E-02	1.05E-02	3.07E-04
								Mercury	1.2E-06	lb/MMbtu	1.67E-07	[16]	Tier 3	0	3.70E-06	8.88E-05	1.60E-05	0.00	3.70E-06	8.88E-05	1.60E-05	4.66E-07
								Nickel	4.6E-06	lb/MMbtu	6.39E-07	[16]	Tier 3	0	1.42E-05	3.41E-04	6.13E-05	0.00	1.42E-05	3.41E-04	6.13E-05	1.79E-06
								Selenium	2.5E-05	lb/MMbtu	3.48E-06	[16]	Tier 3	0	7.71E-05	1.85E-03	3.33E-04	0.00	7.71E-05	1.85E-03	3.33E-04	9.72E-06
								H2SO4/SO3	1.8E-05	lb/gal	1.82E-05	[17]	500 ppm	0	4.04E-04	9.69E-03	1.74E-03	0.00	4.04E-04	9.69E-03	1.74E-03	5.09E-05
								PCDD/PCDF TEQ	288	pg/km	1.32E-11	[18]	Tier 3	0	2.93E-10	7.04E-09	1.27E-09	0.00	2.93E-10	7.04E-09	1.27E-09	3.70E-11
			Totals		369.77	8874.47	3194807.7	NOx							72.23	1733.62	312.05	9.10	21.16	507.76	91.40	2.67
								N2O							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								Benzene							4.58E-02	1.10E+00	1.98E-01	5.78E-03	4.58E-02	1.10E+00	1.98E-01	5.78E-03
								Toluene							1.72E-02	4.13E-01	7.43E-02	2.17E-03	1.72E-02	4.13E-01	7.43E-02	2.17E-03
								Xylene							1.18E-02	2.84E-01	5.12E-02	1.49E-03	1.18E-02	2.84E-01	5.12E-02	1.49E-03
								Propylene							1.58E-01	3.80E+00	6.84E-01	2.00E-02	1.58E-01	3.80E+00	6.84E-01	2.00E-02
								1,3-Butadiene							3.25E-04	7.81E-03	1.41E-03	4.10E-05	3.25E-04	7.81E-03	1.41E-03	4.10E-05
								Formaldehyde							1.37E-02	3.29E-01	5.91E-02	1.73E-03	1.37E-02	3.29E-01	5.91E-02	1.73E-03
								Acetaldehyde							7.62E-03	1.83E-01	3.29E-02	9.60E-04	7.62E-03	1.83E-01	3.29E-02	9.60E-04
								Acrolein							1.16E-03	2.78E-02	5.00E-03	1.46E-04	1.16E-03	2.78E-02	5.00E-03	1.46E-04
								Naphthalene							7.08E-03	1.70E-01	3.06E-02	8.93E-04	7.08E-03	1.70E-01	3.06E-02	8.93E-04
								Acenaphthylene							4.95E-04	1.19E-02	2.14E-03	6.24E-05	4.95E-04	1.19E-02	2.14E-03	6.24E-05
								Acenaphthene							2.41E-04	5.79E-03	1.04E-03	3.04E-05	2.41E-04	5.79E-03	1.04E-03	3.04E-05
								Fluorene							8.71E-04	2.09E-02	3.76E-03	1.10E-04	8.71E-04	2.09E-02	3.76E-03	1.10E-04
								Phenanthrene							2.25E-03	5.39E-02	9.71E-03	2.83E-04	2.25E-03	5.39E-02	9.71E-03	2.83E-04
								Anthracene							7.59E-05	1.82E-03	3.28E-04	9.56E-06	7.59E-05	1.82E-03	3.28E-04	9.56E-06
								Fluoranthene							2.61E-04	6.27E-03	1.13E-03	3.29E-05	2.61E-04	6.27E-03	1.13E-03	3.29E-05
								Pyrene							2.22E-04	5.32E-03	9.58E-04	2.79E-05	2.22E-04	5.32E-03	9.58E-04	2.79E-05
								Benzo(a)anthracene							4.45E-05	1.07E-03	1.92E-04	5.61E-06	4.45E-05	1.07E-03	1.92E-04	5.61E-06
								Chrysene							7.80E-05	1.87E-03	3.37E-04	9.83E-06	7.80E-05	1.87E-03	3.37E-04	9.83E-06
								Benzo(b)fluoranthene							5.53E-05	1.33E-03	2.39E-04	6.97E-06	5.53E-05	1.33E-03	2.39E-04	6.97E-06
								Benzo(k)fluoranthene							1.20E-05	2.88E-04	5.18E-05	1.51E-06	1.20E-05	2.88E-04	5.18E-05	1.51E-06
								Benzo(a)pyrene							1.42E-05	3.40E-04	6.12E-05	1.79E-06	1.42E-05	3.40E-04	6.12E-05	1.79E-06
								Indeno(1,2,3-cd)pyrene							2.34E-05	5.62E-04	1.01E-04	2.95E-06	2.34E-05	5.62E-04	1.01E-04	2.95E-06
								Dibenzo(a,h)anthracene							2.18E-05	5.24E-04	9.43E-05	2.75E-06	2.18E-05	5.24E-04	9.43E-05	2.75E-06
								Benzo(g,h,i)perylene							3.13E-05	7.52E-04	1.35E-04	3.95E-06	3.13E-05	7.52E-04	1.35E-04	3.95E-06
								Arsenic							6.31E-04	1.52E-02	2.73E-03	7.95E-05	6.31E-04	1.52E-02	2.73E-03	7.95E-05
								Beryllium							1.78E-05	4.27E-04	7.69E-05	2.24E-06	1.78E-05	4.27E-04	7.69E-05	2.24E-06
								Cadmium							2.75E-04	6.61E-03	1.19E-03	3.47E-05	2.75E-04	6.61E-03	1.19E-03	3.47E-05
								Chromium							6.31E-04	1.52E-02	2.73E-03	7.95E-05	6.31E-04	1.52E-02	2.73E-03	7.95E-05
								Pb							8.03E-04	1.93E-02	3.47E-03	1.01E-04	8.03E-04	1.93E-02	3.47E-03	1.01E-04
								Manganese							4.53E-02	1.09E+00	1.96E-01	5.71E-03	4.53E-02	1.09E+00	1.96E-01	5.71E-03
								Mercury							6.89E-05	1.65E-03	2.97E-04	8.68E-06	6.89E-05	1.65E-03	2.97E-04	8.68E-06
								Nickel							2.64E-04	6.34E-03	1.14E-03	3.33E-05	2.64E-04	6.34E-03	1.14E-03	3.33E-05
								Selenium							1.43E-03	3.44E-02	6.20E-03	1.81E-04	1.43E-03	3.44E-02	6.20E-03	1.81E-04
								H2SO4/SO3							7.51E-03	1.80E-01	3.25E-02	9.47E-04	7.51E-03	1.80E-01	3.25E-02	9.47E-04
								PCDD/PCDF TEQ							5.46E-09	1.31E-07	2.36E-08	6.88E-10	5.46E-09	1.31E-07	2.36E-08	6.88E-10

Notes:

[1] Other vehicles of similar size and function may be used

[2] Based on worst case annual fuel usage for 20 year mine life as calculated by Wardrop.

[3] NOx control efficiency based on information on SCR obtained from potential equipment provider (Cummins).

SO2 reduction based on the fact that ultra low sulfur diesel (15 ppm) must be used with SCR system (0.162 g/hp-hr @ 500 ppm, 0.00487 g/hp-hr @ 15 ppm; (1-0.00487/0.162) * 100 = 97%

[10] Emission factors for PM and NOx based on standard for current model year for non-road vehicle with an appropriate engine size.

[11] SO2 emission factor based on calculation below:

$$SO_2 = (BSFC \times 453.6 \times (1 - 0.022) - HC) \times 0.0005 \times 2$$

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Table 5: Air Toxic Pollutant Emissions from Mine Vehicle Exhaust

Current Proposed Vehicle Fleet [1]					Fuel Usage (total, gal) [2]				Emission Factors						Emissions						
															Uncontrolled				Controlled		
Manufacturer	Model	Engine	Description	Engine Power (hp)	Hourly	Daily	Annual	Pollutant	Factor	units	lb/gal	Reference	Note	CE [3]	lb/hr	lb/day	tpy	g/sec	lb/hr	lb/day	tpy	g/sec
									=	0.005												

where SO_2 is in g/hp-hr

       BSFC is the in-use adjusted fuel consumption in lb/hp-hr

       453.6 is the conversion factor from pounds to grams

       1 - 0.022 is an adjustment for sulfur converted to direct PM

       HC is the in-use adjusted hydrocarbon emissions in g/hp-hr (HC emission factor from AP-42 Table 3.4-1 converted to g/hp-hr)

       0.0005 is maximum expected sulfur weight fraction in nonroad diesel fuel per Don Hunter of PolyMet

       2 is the grams of SO_2 formed from a gram of sulfur

    assume BSFC   0.367 lb/hp-hr

       (SO2 factor from EPA Report No. NR-009A *'Exhaust Emission Factors for Nonroad Engine*

          Modeling -- Compression Ignition' revised 6/15/1998, pp. 9-10; BSFC from Table 1)

[12] Emission factors taken from IPCC Guidelines, Volume 2 Chapter 3, Table 3.3.1. See conversion below:

$$\left(\frac{28.6\text{ kg N}_2\text{O}}{TJ}\right)\left(\frac{TJ}{10^3\text{ GJ}}\right)\left(\frac{0.1404\text{ GJ}^A}{gal}\right) = 0.0040\ \frac{\text{kg N}_2\text{O}}{gal}$$

    [A]AP-42 Chapter 3.3 lists an average brake-specific fuel consumption (BSFC) of 7000 Btu/hp-hr for conversions.

[13] Emission factors from AP-42 Chapter 3.3 Table 3.3-2 "Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines"

[14] Emission factors from AP-42 Chapter 3.4 Table 3.4-3 "Speciated Organic Compound Emissions Factors for Large Uncontrolled Stationary Diesel Engines"

[15] Emission factors from AP-42 Chapter 3.4 Table 3.4-4 "PAH Emission Factors for Large Uncontrolled Stationary Diesel Engines"

[16] Emission factors from AP-42 Chapter 3.1 Table 3.1-5 "Emission Factors for Metallic Hazardous Air Pollutants From Distillate Oil-Fired Stationary Gas Turbines"

[17] Emission factor for H2SO4 calculated from data presented in "The Sulfur Speciation of Diesel Emissions from a Non-road Generator" by Zifei Liu, Mingming Lu, Tim C. Keener, and Fuyan Liang. Figure 5 presents sulfur conversion to SO_4^{2-}, which is indicated elsewhere in the paper to be at least 90% H2SO4.

    From the figure, for the highest sulfur fuel (0.22%) at the highest load, the percent conversion is about 1.67%. The H2SO4 emission factor was calculated by %S / 100 * 7.13 lb/gallon * 98 lb/lb-mole H2SO4 / 32 lb/lb-mole S * 1.67/100 mole H2SO4/Mole S / 140000 Btu/gallon * 10^6 MMBtu/Btu =

    0.026 * %S lb/MMBtu. This makes the emission calculations conservative since the SO2 factor assumes 100% conversion to SO2.

[18] Emission factor for Dioxins is the average of all US studies from 1996-1998 cited in the EPA 2002 report "Health Assesment Document for Diesel Engine Exhaust". Emission factors of 2,3,7,8 TCDD equivalents (TEQs) in pg/km were used as cited and represent the TEQ methodology at the time of the study.

    A heavy duty diesel milage factor of 5.5 km/L was used for conversion, as cited in the EPA report.

[19] No emission factors for electric motors

    Assumptions:

BSFC =	0.367 lb/hp-hr	see above
diesel heating value	19300 BTU/lb	AP-42 sections 3.3
diesel heating value	0.139 MMbtu/gal	AP-42 sections 3.1
HD diesel milage	5.5 km/L	EPA Health Assessment for Diesel Engine Exhaust, 2002

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Table 6: Refined Criteria Pollutant Emissions from Mine Vehicles and Locomotives

Model 11a - Updated fuel usage from Wardrop; first five years worst case (Year 5)

Qty	Machine	Engine	Wardrop Fuel Data (l/yr)	Fuel Data gal/yr	HP	Tier	SCR	CCM	DPF	NOx (g/bhp-hr)	PM (g/bhp-hr)	SO2 (g/hp-hr) 500 ppm	SO2 Reduction (15 ppm)	SCR Eff.	PM Red Eff	NOx (g/24hr)	NOx (T/24h)	SO2 (g/24h)	SO2 (T/24h)	PM (g/24h)	PM (T/24h)	NOx-PM (T/24H)	NOx (T/yr)	SO2 (T/yr)	PM (T/yr)	NOx-PM (T/yr)	Load Factor	NOx (T/yr)	SO2 (T/yr)	PM (T/yr)	NOx-PM (T/yr)	NOx lb/hr	SO2 lb/hr	PM lb/hr
1	994		291837	77095	1577	2		Y		4.8	0.15	0.162			0.2	181,670	0.20	6131.38	0.01	4542	0.005	0.205	72.09	2.43	1.80	76.33	0.11	7.9	0.266	0.20	8.36	1.83	0.06	0.05
7	Mine Truck (CAT 793C)	793C	5810590	1534995	2300	1		Y		6.9	0.30	0.162			0.2	2,666,160	2.94	62596.80	0.07	92736	0.102	3.041	1058.02	24.84	36.80	1119.66	0.21	225.9	5.303	7.86	239.03	52.28	1.23	1.82
2	D10	3412E	997667	263556	646	3			Y	2.6	0.15	0.162			0.9	80,621	0.09	5023.30	0.01	465	0.001	0.089	31.99	1.99	0.18	34.17	0.46	14.6	0.911	0.08	15.61	3.38	0.21	0.02
1	834G	3456	201172	53144	481	3		Y		2.6	0.15	0.162			0.2	30,014	0.03	1870.13	0.00	1385	0.002	0.035	11.91	0.74	0.55	13.20	0.25	2.9	0.184	0.14	3.27	0.68	0.04	0.03
2	16M	3406	280662	74143	275	3		Y		2.6	0.15	0.162			0.2	34,320	0.04	2138.40	0.00	1584	0.002	0.040	13.62	0.85	0.63	15.10	0.30	4.1	0.256	0.19	4.56	0.95	0.06	0.04
2	777D	3408B	232380	61388	938	2		Y		4.8	0.15	0.162			0.2	216,115	0.24	7293.89	0.01	5403	0.006	0.244	85.76	2.89	2.14	90.80	0.07	6.3	0.212	0.16	6.65	1.45	0.05	0.04
1	Drill	3512	649833	171668	1550	2		Y		4.8	0.15	0.162			0.2	178,560	0.20	6026.40	0.01	4464	0.005	0.202	70.86	2.39	1.77	75.02	0.25	17.6	0.593	0.44	18.60	4.07	0.14	0.10
1	Tool Handler	C7 ACERT	26280	6942	230	3		Y		2.6	0.15	0.162			0.2	14,352	0.02	894.24	0.00	662	0.001	0.017	5.70	0.35	0.26	6.31	0.07	0.4	0.024	0.02	0.43	0.09	0.01	0.00
1	Backhoe w/ hammer	3114 DIT	37570	9925	110	3		Y		2.98	0.15	0.162			0.2	7,867	0.01	427.68	0.00	317	0.000	0.009	3.12	0.17	0.13	3.42	0.09	0.3	0.015	0.01	0.31	0.07	0.00	0.00
1	990 (Cleanup)	C27 ACERT	168836	44602	627	3		Y		2.6	0.15	0.162			0.2	39,125	0.04	2437.78	0.00	1806	0.002	0.045	15.53	0.97	0.72	17.21	0.16	2.5	0.154	0.11	2.74	0.57	0.04	0.03
1	Locomotive - Switcher	T-3 gensets			2100	3		Y		2.6	0.15	0.162			0.2	131,040	0.14	8164.80	0.01	6048	0.007	0.151	52.00	3.24	2.40	57.64	0.15	8.0	0.499	0.37	8.88	1.86	0.12	0.09
3	Locomotive - Line Haul	T-3 gensets			2100	3		Y		2.6	0.15	0.162			0.2	393,120	0.43	24494.40	0.03	18144	0.020	0.453	156.00	9.72	7.20	172.92	0.15	23.5	1.464	1.08	26.04	5.44	0.34	0.25
	Totals																**4.38**				**0.15**	**4.53**	**1576.60**		**54.59**	**1681.78**		**313.9**	**9.9**	**10.7**	**334.5**	**72.7**	**2.3**	**2.5**
	Mine Vehicles Only																											**282.4**	**7.9**	**9.2**	**299.5**	**65.4**	**1.83**	**2.1**

Comments:
   Load factors for mine vehicles calculated from fuel usage data developed by mining consultant (Wardrop)
   Load factors for locomotives calculated from fuel usage estimates made by PolyMet
   Emission rates based on certified emissions for vehicle and input from potential supplier where applicable
   PM controls and control efficiency based on input from potential supplier
          CCM = Catalyzed Converter/Muffler
          DPF = Diesel Particulate Filter
   First five years of operation with Tier 1 trucks is worst case for emissions. Thereafter, at a minimum, haul trucks would meet Tier 2 standards.

PolyMet - Hoyt Lakes, Minnesota
Table 7: Air Toxics Emissions from Locomotives

Manufacturer	Model	Engine	Description [1]	Engine Power (hp)	Number	Average Total Power (hp-hr)			Pollutant	Emission Factors				Emissions			
						Hourly	Daily	Annual		g/hp-hr	lb/hp-hr	Reference	Note	lb/hr	lb/day	tpy	g/sec
TBD	TBD	TBD	Main Line Ore Haulage Locomotives	3000	4 or 6	983.81	23611.5	8618213	NOx	5	0.0110	[2]	Tier 2	10.84	260.27	47.50	1.37
									N2O		0.0005	[4]		4.45E-01	1.07E+01	1.95E+00	5.61E-02
									Benzene	0.00192	4.2329E-06	[5]		4.16E-03	9.99E-02	1.82E-02	5.25E-04
									1,3-Butadiene	0.00209	4.6077E-06	[5]		4.53E-03	1.09E-01	1.99E-02	5.71E-04
									Formaldehyde	0.0196	4.3211E-05	[5]		4.25E-02	1.02E+00	1.86E-01	5.36E-03
									Acetaldehyde	0.0074	1.6314E-05	[5]		1.61E-02	3.85E-01	7.03E-02	2.02E-03
									Acrolein	0.0011	2.4251E-06	[5]		2.39E-03	5.73E-02	1.05E-02	3.01E-04
									Naphthalene	0.00191	4.2109E-06	[5]		4.14E-03	9.94E-02	1.81E-02	5.22E-04
									2-Methylnaphthalene	5.23E-04	1.1530E-06	[5]		1.13E-03	2.72E-02	4.97E-03	1.43E-04
									Acenaphthylene	3.00E-04	6.6139E-07	[5]		6.51E-04	1.56E-02	2.85E-03	8.20E-05
									Acenaphthene	2.80E-05	6.1730E-08	[5]		6.07E-05	1.46E-03	2.66E-04	7.65E-06
									Fluorene	1.22E-04	2.6897E-07	[5]		2.65E-04	6.35E-03	1.16E-03	3.33E-05
									Phenanthrene	4.67E-04	1.0296E-06	[5]		1.01E-03	2.43E-02	4.44E-03	1.28E-04
									Anthracene	7.30E-05	1.6094E-07	[5]		1.58E-04	3.80E-03	6.94E-04	2.00E-05
									Fluoranthene	5.20E-05	1.1464E-07	[5]		1.13E-04	2.71E-03	4.94E-04	1.42E-05
									Pyrene	9.50E-05	2.0944E-07	[5]		2.06E-04	4.95E-03	9.03E-04	2.60E-05
									Benzo(a)anthracene	1.80E-05	3.9683E-08	[5]		3.90E-05	9.37E-04	1.71E-04	4.92E-06
									Chrysene	6.00E-06	1.3228E-08	[5]		1.30E-05	3.12E-04	5.70E-05	1.64E-06
									Benzo(b)fluoranthene	3.00E-06	6.6139E-09	[5]		6.51E-06	1.56E-04	2.85E-05	8.20E-07
									Benzo(k)fluoranthene	3.00E-06	6.6139E-09	[5]		6.51E-06	1.56E-04	2.85E-05	8.20E-07
									Benzo(a)pyrene	2.00E-06	4.4093E-09	[5]		4.34E-06	1.04E-04	1.90E-05	5.47E-07
									Benzo(e)pyrene	3.00E-06	6.6139E-09	[5]		6.51E-06	1.56E-04	2.85E-05	8.20E-07
									Perylene	0.00E+00	0.0000E+00	[5]		0.00E+00	0.00E+00	0.00E+00	0.00E+00
									Indeno(1,2,3-cd)pyrene	2.00E-06	4.4093E-09	[5]		4.34E-06	1.04E-04	1.90E-05	5.47E-07
									Dibenzo(a,h)anthracene	0	0.0000E+00	[5]		0.00E+00	0.00E+00	0.00E+00	0.00E+00
									Benzo(g,h,i)perylene	3.00E-06	6.6139E-09	[5]		6.51E-06	1.56E-04	2.85E-05	8.20E-07
									Arsenic		7.90E-08	[6]		7.78E-05	1.87E-03	3.41E-04	9.80E-06
									Beryllium		2.23E-09	[6]		2.19E-06	5.26E-05	9.60E-06	2.76E-07
									Cadmium		3.45E-08	[6]		3.39E-05	8.14E-04	1.49E-04	4.28E-06
									Chromium		7.90E-08	[6]		7.78E-05	1.87E-03	3.41E-04	9.80E-06
									Pb		1.01E-07	[6]		9.90E-05	2.38E-03	4.33E-04	1.25E-05
									Manganese		5.68E-06	[6]		5.58E-03	1.34E-01	2.45E-02	7.04E-04
									Mercury		8.62E-09	[6]		8.48E-06	2.04E-04	3.72E-05	1.07E-06
									Nickel		3.31E-08	[6]		3.25E-05	7.80E-04	1.42E-04	4.10E-06
									Selenium		1.80E-07	[6]		1.77E-04	4.24E-03	7.74E-04	2.23E-05
TBD	TBD	TBD	Switching Locomotive	2000	1	482.85	11588.4	4229766	NOx	7.3	0.0161	[2]	Tier 2	7.77	186.50	34.04	0.98
									N2O		0.0005	[4]		2.18E-01	5.24	0.96	2.75E-02
									Benzene	0.00192	4.23E-06	[5]		2.04E-03	0.05	0.01	2.58E-04
									1,3-Butadiene	0.00209	4.61E-06	[5]		2.22E-03	0.05	0.01	2.80E-04
									Formaldehyde	0.0196	4.32E-05	[5]		2.09E-02	0.50	0.09	2.63E-03
									Acetaldehyde	0.0074	1.63E-05	[5]		7.88E-03	0.19	0.03	9.93E-04
									Acrolein	0.0011	2.43E-06	[5]		1.17E-03	0.03	0.01	1.48E-04
									Naphthalene	0.00191	4.21E-06	[5]		2.03E-03	0.05	0.01	2.56E-04
									2-Methylnaphthalene	5.23E-04	1.15E-06	[5]		5.57E-04	0.01	0.00	7.01E-05
									Acenaphthylene	3.00E-04	6.61E-07	[5]		3.19E-04	0.01	0.00	4.02E-05
									Acenaphthene	2.80E-05	6.17E-08	[5]		2.98E-05	0.00	0.00	3.76E-06
									Fluorene	1.22E-04	2.69E-07	[5]		1.30E-04	0.00	0.00	1.64E-05
									Phenanthrene	4.67E-04	1.03E-06	[5]		4.97E-04	0.01	0.00	6.26E-05
									Anthracene	7.30E-05	1.61E-07	[5]		7.77E-05	0.00	0.00	9.79E-06
									Fluoranthene	5.20E-05	1.15E-07	[5]		5.54E-05	0.00	0.00	6.97E-06
									Pyrene	9.50E-05	2.09E-07	[5]		1.01E-04	0.00	0.00	1.27E-05
									Benzo(a)anthracene	1.80E-05	3.97E-08	[5]		1.92E-05	0.00	0.00	2.41E-06
									Chrysene	6.00E-06	1.32E-08	[5]		6.39E-06	0.00	0.00	8.05E-07
									Benzo(b)fluoranthene	3.00E-06	6.61E-09	[5]		3.19E-06	0.00	0.00	4.02E-07

PolyMet - Hoyt Lakes, Minnesota
Table 7: Air Toxics Emissions from Locomotives

Manufacturer	Model	Engine	Description [1]	Engine Power (hp)	Number	Average Total Power (hp-hr)			Pollutant	Emission Factors				Emissions			
						Hourly	Daily	Annual		g/hp-hr	lb/hp-hr	Reference	Note	lb/hr	lb/day	tpy	g/sec
									Benzo(a)pyrene	2.00E-06	4.41E-09	[5]		2.13E-06	0.00	0.00	2.68E-07
									Benzo(e)pyrene	3.00E-06	6.61E-09	[5]		3.19E-06	0.00	0.00	4.02E-07
									Perylene	0.00E+00	0.00E+00	[5]		0.00E+00	0.00	0.00	0.00E+00
									Indeno(1,2,3-cd)pyrene	2.00E-06	4.41E-09	[5]		2.13E-06	0.00	0.00	2.68E-07
									Dibenzo(a,h)anthracene	0	0.00E+00	[5]		0.00E+00	0.00	0.00	0.00E+00
									Benzo(g,h,i)perylene	3.00E-06	6.61E-09	[5]		3.19E-06	0.00	0.00	4.02E-07
									Arsenic		7.90E-08	[6]		3.82E-05	0.00	0.00	4.81E-06
									Beryllium		2.23E-09	[6]		1.08E-06	0.00	0.00	1.36E-07
									Cadmium		3.45E-08	[6]		1.67E-05	0.00	0.00	2.10E-06
									Chromium		7.90E-08	[6]		3.82E-05	0.00	0.00	4.81E-06
									Pb		1.01E-07	[6]		4.86E-05	0.00	0.00	6.12E-06
									Manganese		5.68E-06	[6]		2.74E-03	0.07	0.01	3.45E-04
									Mercury		8.62E-09	[6]		4.16E-06	0.00	0.00	5.25E-07
									Nickel		3.31E-08	[6]		1.60E-05	0.00	0.00	2.01E-06
									Selenium		1.80E-07	[6]		8.67E-05	0.00	0.00	1.09E-05

Notes:

[1] Switching locomotive emissions occur at the plant site and the main line ore haul locomotive emissions are divided between the plant and mine site, 50% at each

[2] NOx and PM emission factors taken from "Emission Factors for Locomotives"; EPA420-F-97-051; U.S. EPA Office of Mobile Sources; December 1997.

Emission factors for Tier 2 engines used based on PolyMet's willingness to commit to using locomotives that meet Tier 2 standards. Line-Haul factors used for ore haul locomotives; switch factors used for the switching locomotive based on the nature of their intended use.

[3] SO2 emission factor based on calculation below:

$$SO_2 = (BSFC \times 453.6 \times (1 - 0.022) - HC) \times 0.0005 \times 2$$
$$= 0.162$$

where

SO_2 is in g/hp-hr

BSFC is the in-use adjusted fuel consumption in lb/hp-hr

453.6 is the conversion factor from pounds to grams

1 - 0.022 is an adjustment for sulfur converted to direct PM

HC is the in-use adjusted hydrocarbon emissions in g/hp-hr (average value for Tier 2 switch and line-haul locomotives used)

0.0005 is maximum expected sulfur weight fraction in nonroad diesel fuel per Don Hunter of PolyMet

2 is the grams of SO_2 formed from a gram of sulfur

assume

BSFC   0.367 lb/hp-hr

(SO2 factor from EPA Report No. NR-009A *'Exhaust Emission Factors for Nonroad Engine Modeling -- Compression Ignition'* revised 6/15/1998, pp. 9-10; BSFC from Table 1)

[4] Emission factors taken from IPCC Guidelines, Volume 2 Chapter 3, Table 3.3.1. See conversion below:

$$\left(\frac{28.6 \text{ kg N}_2\text{O}}{\text{TJ}}\right)\left(\frac{\text{TJ}}{10^3 \text{ GJ}}\right)\left(\frac{0.1404 \text{ GJ}^A}{\text{gal}}\right) = 0.0040 \frac{\text{kg N}_2\text{O}}{\text{gal}}$$

^{A}AP-42 Chapter 3.3 lists an average brake-specific fuel consumption (BSFC) of 7000 Btu/hp-hr for conversions.

[5] VOC and PAH emission factors from "Diesel fuel effects on locomotive exhaust emissions" CARB, 2000. The highest EF using on-highway diesel fuel is used.

[6] Emission factors from AP-42 Chapter 3.1 Table 3.1-5 "Emission Factors for Metallic Hazardous Air Pollutants From Distillate Oil-Fired Stationary Gas Turbines"

BSFC   0.367 lb/hp-hr

fuel density   7.1 lb/gal

heat value   0.139 MMMBTU/gal

PolyMet Mining Inc.

Table 8 - Fuel Burn Rates for 16 Car Trains

Gen-Set Locomotive type 3GS21C

20 May 2008

	Locomotive		Round trips	Idling						Loaded haul		Empty return		Idling	TOTAL
				standing	loading	loading	dumping	dumping	Total	cycles	fuel used	cycles	fuel used	fuel used	fuel used
	Type	no.	per shift	(hrs)	cycles	(hrs)	cycles	(hrs)	(hrs)		(gals)		(gals)	(gals)	(gals)
D/S	3GS21C	1	3	0.75	2.00	2.00	3.00	2.25	5.00	3.00	134.40	2.00	16.80	4.73	155.93
	3GS21C	2	2	0.83	3.00	3.00	2.00	1.50	5.33	2.50	112.00	2.00	16.80	5.04	133.84
	3GS21C	3	2	1.42	2.25	2.25	2.00	1.50	5.17	2.00	89.60	3.00	25.20	4.89	119.69
	Total		7						15.50		336.00				409.45

	Locomotive		Round trips	Idling						Loaded haul		Empty return		Idling	TOTAL
				standing	loading	loading	dumping	dumping	Total	cycles	fuel used	cycles	fuel used	fuel used	fuel used
	Type	no.	per shift	(hrs)	cycles	(hrs)	cycles	(hrs)	(hrs)		(gals)		(gals)	(gals)	(gals)
A/S	3GS21C	1	2	1.30	2.58	2.58	2.00	1.50	5.38	2.00	89.60	2.58	21.67	5.08	116.36
	3GS21C	2	3	0.75	2.00	2.00	3.00	2.25	5.00	3.00	134.40	2.00	16.80	4.73	155.93
	3GS21C	3	2	1.42	2.50	2.50	2.00	1.50	5.42	2.00	89.60	2.50	21.00	5.12	115.72
	Total		7						15.80		313.60				388.00

	Locomotive		Round trips	Idling						Loaded haul		Empty return		Idling	TOTAL
				standing	loading	loading	dumping	dumping	Total	cycles	fuel used	cycles	fuel used	fuel used	fuel used
	Type	no.	per shift	(hrs)	cycles	(hrs)	cycles	(hrs)	(hrs)		(gals)		(gals)	(gals)	(gals)
N/S	3GS21C	1	3	1.42	2.00	2.00	3.00	2.25	5.67	2.00	89.60	2.00	16.80	5.36	111.76
	3GS21C	2	2	1.92	2.25	2.25	2.00	1.50	5.67	2.00	89.60	2.00	16.80	5.36	111.76
	3GS21C	3	3	1.25	2.25	2.25	2.00	1.50	5.00	3.00	134.40	2.00	16.80	4.73	155.93
	Total		8						16.34		313.60				379.44

		3GS21C
Cycle times		
Loading	(hrs)	1.00
Dumping	(hrs)	0.75

Total Fuel Usage	
	gals/day
3GS21C	1,177

Fuel burn rates

idling, loading, dumping	(gals/hr)	0.945
loaded haul	(gals/run)	44.80
return empty	(gals/run)	8.40

Total Gen-Set Fuel Consumption

Locomotive	Total Fuel
1	384
2	402
3	391
Max	402
Total	1,177

PolyMet, Inc.
Table 9 - Calculation of Gen-Set Locomotive Load Factors

Gen-Set Ore Haul Locomotives

Estimate Maximum Daily Fuel Usage	1176.9	gallons/day
Brake Specific Fuel Consumption [1]	0.367	lb/hp-hr
Fuel Density [2]	7.1	lb/gallon
Total Daily Power (hp-hr)	**22768**	hp-hr
Total hp per locomotive	**2100**	hp
Number of locomotives	**3**	
Total locomotive Hp	6300	hp
Total actual hourly power	948.68	hp
Load Factor	0.15	

Gen-Set Switching Locomotive Analysis

Daily Estimae Fuel Usage for Locomotives [3]	402	gallons/day
Brake Specific Fuel Consumption [1]	0.367	lb/hp-hr
Fuel Density [2]	7.1	lb/gallon
Total Daily Power (hp-hr)	**7768**	hp-hr
Total hp per locomotive	**2100**	hp
Number of locomotives	**1**	
Total locomotive Hp	2100.00	hp
Total actual hourly power	323.66	hp
Load Factor	0.15	

[1] From "Exhaust Emissions Factors for Nonroad Engine Modeling -- Compression Ignition";
report No. NR-009A; revised June 15, 1998; Megan Beardsley and Chris Lindhjem U.S. EPA Office of Mobile
Sources, Assessment Modeling Division
[2] From AP-42 Table 3.4-1, footnote a.
[3] Daily fuel usage for switching locomotive assumed equivalent to highest fuel usage for ore haul locomotives

Emission Comparison for Reasonable Alternative RA1 and Tailings Basin Geotechnical Mitigation (RS57E)

PolyMet Mining Inc.

November 2008

RS 57E – Company Finalizes Emission Calculations (alternative and mitigation)

Emission Comparison for Reasonable Alternative RA1 and Tailings Basin Geotechnical Mitigation (RS57E)

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List of Appendices

1.0 Introduction

PolyMet Mining Inc (PolyMet) submitted updated emission calculations for the NorthMet Project Mine Site and Plant Site as required by the Environmental Impact Statement (EIS) scoping decision in February of 2007. These calculations were submitted as two reports, RS57A and RS57B.

As noted above, the original emission calculation submittal for the EIS was contained in two separate reports. These two reports were updated and submitted as one report along with this additional Section, RS57C in September of 2007.

At the request of the Minnesota Pollution Control Agency (MPCA), the emission calculation spreadsheets for the Plant Site and Mine Site from the September 2007 combined report were reformatted and submitted in December of 2007.

Due to the changes that have occurred in the emission calculation, the Minnesota Department of Natural Resources (MDNR), the Responsible Governmental Unit (RGU) for the NorthMet Project EIS, has requested that an updated version of the complete RS57 report be submitted. The updated report is intended to aid those reviewing the complete Preliminary Draft EIS (PDEIS) by providing the latest version of all relevant emission calculations in a single report. Because the emissions from mining vehicles and locomotives have been considered in air dispersion modeling, the calculations for these sources are included in the corresponding new report section identified as RS57D. The title of the overall report has been modified to reflect this addition.

As part of the EIS preparation process, alternatives to the proposed project and potential mitigation measures are being evaluated. Calculations were performed to assess the changes in air emissions associated with one alternative (Reasonable Alternative RA1 - no long term water treatment option at Mine Site) and one proposed mitigation measure (Tailings Basin Geotechnical Mitigation - use of LTV Steel Mining Company (LTVSMC) tailings to build tailings basin dams). The purpose of RS57E is to describe these calculations and to discuss potential changes to air quality impacts due to RA1 and the proposed tailings basin mitigation.

This report reflects the current emission calculations as of the preparation of the complete PDEIS. Further changes may occur prior to the Draft EIS being put on public notice as a result of comments from the reviewers of the PDEIS. After the completion of the review of the PDEIS, PolyMet will

discuss with MDNR whether or not an additional update is needed prior to the Draft EIS public notice period.

References are made in this document to other reports that have been prepared as part of the EIS process or for other purposes related to the NorthMet Project. The report identification numbers along with the report titles are listed below:

- RS38 – Air Emissions Risk Analysis (AERA) – Plant Site (Draft-01, March 2007; Addendum-01, October 2007)

- RS57A – Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Plant Site (Draft-03, November 2008)

- RS57B - Stationary Point and Fugitive Source Emission Calculations for the NorthMet Project Mine Site (Draft-03, November 2008)

Reasonable Alternative RA1 (no long term water treatment option at Mine Site) involves the placement of potentially acid generating rock in temporary stockpiles during the first 11 years of mine operation. Thereafter, the potentially acid generating rock will be placed in the East Pit, which will be mined out after Year 11. Between Year 12 and closure, the rock in the temporary stockpiles will be transferred to the East Pit. This will result in a certain amount of "double handling" of rock that raised concerns over possible increased impact to ambient air quality. After the rock has been removed from the Category 2/3 (originally Category 3) waste rock and Category 3 lean ore stockpiles, these footprints will be used for permanent placement of Category 1 waste rock that was planned to be disposed in the East Pit under the proposed project. An evaluation of potential emission changes due to rock hauling is presented in Section 2.1.

Another element of RA1 is the addition of lime or limestone to the temporary stockpiles to prevent the rock from going acid prior to subaqueous disposal in the pit. Additional emissions due to the use of lime or limestone are discussed in Section 2.2.

2.1 Analysis of Potential Emission Changes from Rock Hauling

Ton-miles (product of tons hauled and haul distance) has been used as a surrogate for air emissions, and therefore impacts, related to RA1. Much of the emissions associated with the NorthMet project at the Mine Site are associated with haul truck traffic. Therefore, if it can be shown that the ton-miles for RA1 do not exceed the ton-miles for the years that were modeled to assess impacts for the proposed project, it can reasonably be inferred that the impacts for RA1 will not be greater than for the proposed project.

RA1 and ton-mile approach were discussed during an April 17, 2008 conference call with representatives of MPCA, MDNR and ERM. It was agreed that the ton-mile approach was reasonable, with the conditions that the comparison be with the year modeled for the proposed project for the in-pit disposal phase (Year 16) for the latter years of RA1. This is because although emissions were greater for the worst case year during the temporary stockpile phase, the impacts were greater for the worst case year for the in-pit disposal phase. It was also requested that the ton-miles be calculated for all years for the proposed project. This report incorporates these comments.

2.1.1 Description of Ton-Mile Analysis

Table 1 presents a comparison of ton-miles for the proposed project and RA1. Tables 2, 3, 5 and 6 show the data in Table 1. Table 1 presents the total ton-miles for each type of material (waste rock, overburden and ore) for each year for the proposed project and RA1. The final two columns contain a comparison of the ton-miles for RA1 to those for the proposed project for the appropriate modeled year: Year 8 for Years 0 to 11 (temporary stockpile phase) and Year 16 for years 12 to 20 (in-pit disposal phase). This provides for a comparison to the modeled ton-miles for the relevant operating mode (temporary stockpile or in-pit disposal). A negative number in the column indicates that the ton-miles for RA1 are lower than those for the modeled proposed project year.

Tables 2 and 3 present additional detail on the ton-miles for the proposed project and RA1 respectively. The ton-miles are apportioned to the specific haul routes. It should be noted that there is not sufficient room in the Category 3 stockpile footprint to store all of the Category 2 and 3 rock that requires temporary stockpiling. The surplus rock is temporarily stored in the Category 4 stockpile.

The proposed project includes the disposal of about 150 million tons of Category 1/2 waste rock in the East Pit. Subsequent work has identified the optimal quantity placed in the East Pit to be about 125 million tons. If the project proceeds with the original proposal, the balance can either be stored in additional lifts on the Category 1/2 stockpile, be used for construction (if approved), or placed in the West Pit.

Table 4 shows the rock movement for RA1 in tons instead of ton-miles. The ton values are more readily interpreted and compared to other data.

Tables 5 and 6 present the detailed calculation of ton-miles for the proposed project and RA1. The data that is used Tables 2 and 3 are highlighted in blue and the data that are used in Table 4 are highlighted in green.

2.1.2 Interpretation of Results

The key information is shown in Table 1 which presents the comparison of the proposed project and the RA1. The two columns furthest to the right present the difference between the ton-miles for RA1 and the ton-miles for the appropriate modeled year for the proposed project (Year 8 for temporary stockpile, Year 16 for in-pit disposal).

As can be seen in these columns, all of the results are negative, which means the modeled years for the proposed project have higher ton-miles than each year for RA1. Therefore, it can be reasonably concluded that air quality impacts will not be greater for RA1 than for the proposed project.

This analysis can be applied to the criteria pollutant impacts in the Class II and Class I areas as well as the toxic pollutant impacts evaluated in the AERA, because ton-miles is an indicator of both road dust and vehicle exhaust emissions from rock hauling activities. It is also important to consider that the haul truck traffic will continue to be primarily in the same general areas in and around the mine pits and the stockpiles under RA1 as for the proposed project. In other words, emission generating activities would not be located closer to the dispersion modeling receptor grid.

Another issue that has been raised is concern over possible increases in short term (e.g. 24-hr) mining activities. There is no plan to increase the size of the mining fleet to accommodate RA1. Therefore, the maximum short term mining activities are not expected to change disproportionately to the annual totals. In other words, the additional rock handling will be accomplished in time periods when the mine was not otherwise scheduled to be operating at full short term capacity.

2.2 Lime or Limestone Addition to Stockpiles

As part of RA1 (no long term water treatment option), PolyMet is considering the addition of lime or limestone to the temporary stockpiles to prevent the potentially acid generating rock from going acidic prior to final disposal in the East Pit. See Appendix A "Lime or Limestone Addition to NorthMet Temporary Category 3 and 4 Stockpiles" for further information on lime and limestone addition to the stockpiles.

The current version of the Plant Site and Mine Site emission calculations, as presented in the previously referenced RS57A and 57B reports, include the production and transport of lime slurry to the Mine Site for use at the Waste Water Treatment Facility (WWTF) and to be added to the East Pit. This lime slurry demand will not be affected by RA1. The lime slurry added to the pit is to neutralize the rock on the hanging wall; the prevention of acid generation in the temporary stockpiles is a separate operation.

2.2.1 Calculation Procedures

Similar emission estimation techniques to those used to assess emission from the proposed project in RS57A and RS57B were used to estimate emissions from the handling of lime and limestone. Tables 7 through 28 present the calculations in detail, including emission factor references.

As described in Appendix A, PolyMet is considering multiple options for applying lime or limestone to the Category 3 and 4 stockpiles. It was not immediately apparent which approach would be worst case, so emission calculations were performed for four scenarios; each of which is described in detail below.

Some simplifying, generally conservative assumptions were used for all scenarios. The Year 10 Mine Site haul road configuration was used with the maximum Lime/Limestone demand to avoid having to consider multiple years (haul road distances tend to get longer as the mine is developed and Year 10 is towards the end of the temporary stockpile period of mine operation). Also, the affect of the lime/limestone haul on the mean vehicle weight on the mine haul routes was ignored. The traffic level of the lime/limestone trucks is small compared to the haul truck traffic, so this is not expected to have a significant effect.

2.2.1.1 Scenario 1 – Limestone Delivered by Truck Directly to Mine Site

This scenario would be the obvious choice prior to the startup of the hydrometallurgical facility and/or prior to the startup of the equipment to handle rail deliveries of limestone at the Plant Site. During this time period, it would be more efficient to route trucks directly to the Mine Site from the source in Duluth, then to route trucks first to the Plant Site.

As shown in Appendix A, the project geochemist has estimated the annual demand for limestone. The maximum demand occurs in Year 3, so the value for this year was used to assess the maximum change in air emissions due to limestone addition to the stockpiles.

Under this scenario, there would be no additional emissions at the Plant Site. Emission increases at the Mine Site would consist of truck traffic on the Dunka Road and mine haul roads and handling steps for the limestone. The limestone would be delivered as one to two inch lump and placed in small stockpiles at each waste rock or lean ore stockpile where it is needed. Three drop operations were included in the calculations to represent the unloading of the trucks, the loading of a small front end loader, and the application to the rock. This may be a somewhat conservative representation of the proposed operation, but it will allow for minor changes in the equipment configuration without a need to redo the calculations. Based on analysis completed for the limestone stockpile at the Plant Site, wind erosion is not expected to occur at the small limestone stockpiles at the Mine Site. Table 8 presents detailed calculations for this scenario. Tables 10, 11 and 13 provide parameters for Table 8.

2.2.1.2 Scenario 2 – Limestone Delivered by Rail to Plant Site then Trucked to Mine Site

Once the railcar unloading system for limestone is up and running at the Plant Site, there will be economic and environmental benefit to bringing the limestone by rail to the Plant Site and then loading it into 40 ton over-the-road trucks for transport to the Mine Site. Railroad transport from the Duluth will be more efficient, resulting in lower cost and less fuel consumption.

The emission calculations for the Mine Site are the same as for Scenario 1 under this option (Table 8). There would also be emission at the Plant Site resulting from the unloading of railcars, transfer to the stockpile, the loading of trucks and truck traffic on paved and unpaved roads going from the limestone stockpile at the Plant Site to the Mine Site. The Plant Site emissions are provided in detail in Table 9. Table 9 is linked to data in table 12 and 14.

2.2.1.3 Scenario 3 – Limestone Slurry Produced at Plant Site then Trucked to Mine Site.

Under this scenario, the equipment at the Plant Site designed to produce a limestone slurry from lump limestone would be utilized to produce additional slurry for use at the Mine Site. This slurry would then be loaded into 40 ton over-the-road trucks and transported to the Mine Site. The use of slurry eliminates emissions from handling operations at the Mine Site, but there would be additional handling steps at the Plant Site and increased traffic levels to account for the added weight of the slurry (limestone + water).

The increase in emissions due to the extra limestone processing was estimated in the same way that emissions were calculated for limestone handling under the proposed project. The rail haul option is worst case for limestone handling at the Plant Site, so the truck haul option was not considered in the analysis. The emission increase at the Plant Site is calculated in Table 15. Data in Tables 19 and 21 is referenced in Table 15. The emission increase at the Mine Site is calculated in Table 16 with references to data in Tables 17, 18 and 20.

PolyMet has determined that a 30% solids slurry would be suitable for application by the proposed methods at the Mine Site. This results in a 70% increase in the total tonnage hauled from the Plant Site to the Mine Site when compared to trucking lump limestone. This was accounted for in the calculations.

2.2.1.4 Scenario 4 – Lime Slurry Produced at Plant Site then Trucked to Mine Site

Another option being considered is the use of a lime slurry at the Mine Site. Equipment would be located at the Plant Site to produce lime slurry from powdered lime. The direct application of powdered lime is not being considered due to concerns with dust generation and wind erosion.

The increased emissions at the Plant Site from lime slurry production were estimated using the same calculation procedures as for the proposed project. PolyMet also determined that a 30% solids lime slurry would be suitable for application to the rock at the Mine Site. The project geochemist determined the quantity of lime that would be required for each year of operation during the temporary stockpile phase of mine operation (see Appendix A). Less lime is required than limestone. As with limestone, maximum demand occurs in Year 3. The Year 3 demand was used to estimate maximum air emissions.

Emissions from hauling the lime from the reagent building at the Plant Site to the Mine Site were estimated in the same manner as for limestone hauling. As with limestone slurry, there would be no emissions generated from application of the slurry at the Mine Site. The emissions at the Plant Site are calculated in Table 22 with data from Tables 26 and 28. The Mine Site emissions are calculated in Table 23 with data from Tables 24, 25 and 27.

2.2.2 Emission Summary for Lime and Limestone Addition to Stockpiles

Table 7 presents a summary of the emissions changes from the above scenarios. As can be seen in the table, Scenario 1 has the lowest emissions, but this approach would be less efficient overall than Scenario 2. The added weight of the slurries increases emissions under Scenarios 3 and 4, but the use of slurry may offer operational advantages over the use of lump limestone.

2.2.3 Assessment of Change

All of the options discussed above result in some increase in air emissions. However, given the potential overall environmental benefit of RA1 and the relatively low magnitude of the emission increase, all of these options seem viable. To put these emission changes is perspective, it is worth noting that the current total allowable PM_{10} emissions for the project are about 1100 tons per year (240 tons from point sources plus fugitive sources). The increases above range from about 0.04% to 0.2% of this total, so the relative change is insignificant.

Given the low relative increase in emissions, a quantitative assessment (e.g. dispersion modeling) of the change in air quality impacts due to lime or limestone addition to the temporary stockpiles is not warranted at this time.

3.0 Tailings Basin Geotechnical Mitigation

This section provides an assessment of potential air quality impacts that will result from the implementation of a geotechnical mitigation measure at the tailings basin. The mitigation would involve the excavation, hauling and placement of existing LTVSMC taconite tailings in the existing basin perimeter to form future tailings basin embankments.

In order to provide data to assess potential air quality impacts from the mitigation, calculations have been performed to assess the net impact on air emissions from the revised tailings basin design required to implement the mitigation. The following sections describe the emission calculation procedures, present the results and make an initial assessment of potential impacts. A comparison of the chemical composition of the LTVSMC tailings and the NorthMet tailings is also included to provide information on the potential need for additional evaluation of toxic air pollutant emissions.

3.1 Emission Calculations

There are two components to the mitigation that may affect air emissions: 1) the need to excavate, haul and place LTVSMC tailings and 2) changes to the erodable beach acreage and particle size distribution for the exposed tailings. Table 29 presents the emission calculations for the mitigation. Tables 30 and 31 provide input values for the calculations in Table 29. Note: the tailings basin wind erosion for the proposed project is included as a negative emission rate (in red text), because the purpose of the calculations is to determine the emission change in going from the proposed project to the mitigation measure being evaluated.

3.1.1 LTVSMC Tailings Handling and Hauling

Under the geotechnical mitigation, LTVSMC tailing would need to be excavated, transported, and put in place for embankment construction. A schedule has been developed for tailing movement based on the projected LTVSMC tailings demand for embankment construction. This schedule is included as Table 31. The worst case hourly, daily, and annual tailing handling rates were used in the calculation spreadsheet to allow for the calculation of emissions due to truck loading and unloading. The drop operation equation from AP-42 Section 13.2.4 was used to estimate emissions. A moisture content of 2.2%, based on the lowest value recorded during tailing characterization work, was used in the calculation. Note: if there is concern with potential dusting from this operation, water can be applied to the tailing to increase the moisture content.

The other contribution to emissions would be from hauling the tailings from the deposit location to the embankment construction area. The haul distances have been estimated so that the maximum hourly, daily, and annual Vehicle Miles Traveled (VMT) could be determined. The calculation of VMT is shown Table 31. The maximum for each time period was used in the calculations. The procedures of AP-42 Section 3.2.2 are used to calculate emission factors for transport on unpaved roads. It has been assumed that sufficient dust suppressing measures (e.g. water application) would be taken to allow for 80% control efficiency.

Emission factors are calculated in Table 30.

3.1.2 Tailings Basin Wind Erosion under Geotechnical Mitigation

The maximum erodable beach area was calculated by first determining the required deposition area for one year of operation. It was then assumed that one half of this area would be mulched assuming semi-annual mulching operations. Of the remaining beach, it was assumed that 50% could be stabilized by mulching, the use of chemical dust suppressants, the application or water or snow or other means as necessary. Of the remaining area, 25% would be wet due to the recent application of tailings. The end result is an erodable beach length of 1462.5 feet. The portion of the beach constructed of LTVSMC tailings would be 200 feet wide, the width of beach consisting of NorthMet bulk tailings would be 625 feet. The area of erodable NorthMet tailings beach is then 21.0 acres and the area of erodable LTVSMC tailings beach is 6.7 acres.

Emission factors for each type of beach were determined separately based on available particle size distribution data, meteorological data from Hibbing, Minnesota, and the procedures of AP-42 Section 13.2.5. The erodable beach area is very similar to that for the proposed project. There is an increase in emissions due to the finer particle size distribution of the PolyMet bulk tailings as compared to the coarse tailings assumed subject to wind erosion for the proposed project. Wind erosion from the embankments (LTVSMC tailings) is minimal due to the coarser particle size distribution for this material.

3.2 Emission Change

As shown in Table 29, the emission increase associated with the tailings basin mitigation is 57.6 tons per year. This corresponds to an increase of approximately 5% over the current allowable emissions. Although this increase may seem significant, it is not expected to affect the outcome of the air quality impact analysis. The tailings basin is not considered an increment consuming source, because the tailings basin was operating at the baseline date and emissions are not expected to be greater than

baseline emissions when the tailings basin is operated by PolyMet. Calculations performed for Title V permitting for the LTVSMC facility show an erodable beach area of 140 acres for the tailings basin. This reflects the higher operating capacity of the taconite facility and is considerably larger than the total estimated beach area for the NorthMet tailings basin of 27.7 acres. PM_{10} emissions from the LTVSMC tailings basin were estimated as 365 tons per year. The NorthMet project may include some types of activities that were not present when the facility was operated by LTVSMC (i.e. excavating and hauling of tailings), but with the significantly larger erodable beach area at the LTVSMC operation, overall emissions at the tailings basin would be expected to be lower for the NorthMet Project, so it is reasonable to conclude that all activities at the tailings basin do not consume increment.

The tailings basin would however need to be included in any assessment of compliance with the NAAQS. Two sets of NAAQS modeling runs were completed for the proposed project: 1) the emissions from the proposed project at the project ambient air boundary and 2) emissions from the proposed project and other nearby sources at the former LTVSMC ambient air boundary. The modeled impacts for the former case were closest to the NAAQS. The modeled ambient concentration, with background, was 88 $\mu g/m^3$ or 59% of the standard. Given this result, and the fact that the EIS process will evaluate the suitability of the tailings basin geotechnical mitigation, additional NAAQS modeling was not conducted to assess the impact of the suggested mitigation for the draft EIS.

Possible changes to impacts from toxic air pollutant emissions were evaluated by reviewing the change in the mass of particulate emissions associated with the tailings basin geotechnical mitigation.

The mass of tailings basin particulate emissions assessed in the Plant Site Air Emissions Risk Analysis AERA (RS38; March 2007) was 481 tons per year, with metals speciation based on NorthMet tailings (Table 32 below). After submittal of RS38 to the State Agencies, tailings basin particulate emissions were revised downward to approximately 87.3 tons per year (wind erosion plus unpaved roads) to better reflect the planned basin operations to minimize beach areas and reduce potential fugitive dust from wind erosion. As stated previously, the emission increase associated with the tailings basin geotechnical mitigation is 57.6 tons per year.

The current estimate of potential particulate emissions associated with the tailings basin is approximately 144.9 tons per year (87.3 tons/yr + 57.6 tons/yr = 144.9 tons/yr), a factor of 3.3 lower than the tailings basin particulate emissions assessed in RS38. Based on the mass of tailings basin

particulate emissions previously assessed in RS38 (481 tons per year), the particulate emissions associated with the tailings basin geotechnical mitigation (57.6 tons per year) is not expected to have any negative effect on the quantitative risk estimates in RS38.

3.3 LTVSMC Tailings Chemical Composition

Possible changes to impacts from toxic air pollutant emissions were also evaluated by comparing the change in mass of particulate emissions from the tailings basin and the composition of the LTVSMC tailings to the NorthMet tailings.

Table 32 compares the composition of the LTVSMC tailings and the NorthMet tailings.

Table 32 Comparison of Available Data on LTVSMC Tailings and NorthMet Tailings

LTVSMC Tailings Coarse Sand Analysis (From RS54/RS46 Table 5-1)													
			As	Cd	Cr	Cu	MN	Ni	Pb	Zn	Ba	Be	Sb
Core	Start ft	Finish Ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GP-1	8	12	31	<0.5	100	14	5970	5	7	14	30	1.2	<5
GP-1	20	40	36	<0.5	90	25	7110	8	5	13	30	1.2	<5
GP-3	8	12	16	<0.5	42	7	3420	3	4	9	10	1	<5
GP-4	4	16	19	<0.5	57	9	3890	1	7	9	10	1.1	<5
GP-4	20	24	21	<0.5	45	8	4010	3	5	34	20	1.2	<5
Average			24.6	<0.5	66.8	12.6	4880	4	5.6	15.8	20	1.14	<5
NorthMet Tailings Composition Assumed for AERA (from RS57A)													
			80.5	0.08	310	547	1400	510	383.3	548	210	0.169	0.056

The table includes metals for which LTVSMC data were available and that were evaluated quantitatively in the Plant Site Air Emission Risk Analysis (AERA) (RS38). As can be seen in the table the only metal for which the content is appreciably higher in the LTVSMC tailings is manganese, for which the concentration is approximately a factor of 3.5 higher. Manganese was not a noncancer chronic risk driver in the Plant Site AERA completed for the proposed project. Individual total facility manganese risk, hazard quotient, was estimated to be 0.08 at the Plant Site operating boundary and total facility noncancer chronic risk was estimated to be 0.19 (both values compared to the Minnesota Department of Health guideline value of 1.0).

If it is conservatively assumed that total facility risks from manganese are solely due to the tailings basin fugitive dust and increase in proportion to the manganese concentration in the LTVSMC tailings as compared to the NorthMet tailings, a factor of 3.5, estimated risks from manganese potentially increase to 0.28. If this revised individual risk of 0.28 for manganese is added to the total facility noncancer chronic risk of 0.19, the revised estimate of potential total facility risk = 0.47 and is well below the guideline value of 1.0.

While manganese concentrations in the LTVSMC tailings are higher than in the NorthMet tailings, the concentrations of all other metals for which there are data are lower in the LTVSMC tailings.

This is an important consideration for arsenic because arsenic from the tailings basin was an acute risk driver pollutant (hazard quotient = 0.13). With concentrations in the LTVSMC tailings being a factor of 3 lower than in the NorthMet tailings, the estimated acute risk from arsenic is expected to be lower under the tailings basin mitigation.

It is also worth noting that only about 7.9 tons of the emissions calculated for the suggested mitigation would be directly due to the handling of LTVSMC tailing or wind erosion on the embankments constructed of LTVSMC tailings. Given the low emissions of LTVSMC tailings and the chemical composition, a quantitative assessment of changes to toxic pollutant impacts is not warranted to assess the use of LTVSMC tailings in embankment construction.

Mercury is not a risk driver for the NorthMet project, but mercury emissions are an important environmental issue in Minnesota. The LTVSMC tailing data referenced in the table above did not report mercury concentration. Data for the mercury content of LTVSMC tailings was located in Table 9 of "Mercury Emission Taconite Pellet Production", with an average reported value of 14.7 ng/g (ppb). The mercury concentration in the NorthMet tailings, as used in the emission calculations, is 47 ppb. Therefore, the mercury content of the LTVSMC tailings is lower than that assumed for the NorthMet tailings and there would not be expected to be any additional issues relating to mercury due to the use of LTVSMC tailings in embankment construction.

4.0 References

Compilation of Air Pollutant Emission Factors, AP-42 5th edit. Volume I Stationary Point and Area Sources, January 1995 as updated. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina

Mercury Emissions from Taconite Pellet Production, Coleraine Minerals Research Laboratory, September 1997

Tables

PolyMet - Hoyt Lakes, Minnesota
Table 1 - Comparison of Modeled Years for Proposed Project to No Long Term Treatment Alternative

									< 0 = Fewer Ton-Miles than Modeled Year	
Ton Mile Comparison									Alt Year - Proposed Yr 8	Alt Year - Proposed Yr 16
	OB		WR		Ore		Total			
Year	Proposed	Alt	Proposed	Alt	Proposed	Alt	Proposed	Alt		
0	23,214,934	23,214,934	175,864	175,864	164,407	164,407	23,555,205	23,555,205	-110,504,597	
1	40,151,048	40,151,048	23,603,442	23,550,796	9,876,263	9,876,263	73,630,752	73,578,107	-60,481,695	
2	25,886,641	25,886,641	50,541,845	50,554,948	21,307,699	21,307,699	97,736,184	97,749,287	-36,310,514	
3	26,825,298	26,825,298	46,428,794	46,671,052	25,670,482	25,670,482	98,924,573	99,166,832	-34,892,970	
4	39,513,449	39,513,449	47,137,094	47,082,680	20,145,946	20,145,946	106,796,489	106,742,075	-27,317,726	
5	6,895,054	6,895,054	65,442,815	65,159,402	23,034,508	23,034,508	95,372,377	95,088,964	-38,970,838	
6	31,949,810	31,949,810	53,343,521	53,531,240	22,659,607	22,659,607	107,952,938	108,140,658	-25,919,144	
7	7,336,531	7,336,531	42,659,731	42,239,567	29,876,701	29,876,701	79,872,962	79,452,799	-54,607,003	
8	6,895,054	6,895,054	101,873,679	101,030,550	25,291,068	25,291,068	**134,059,802**	133,216,672	-843,130	
9	6,895,054	6,895,054	56,865,222	55,954,844	26,363,470	26,363,470	90,123,747	89,213,368	-44,846,433	
10	22,013,739	22,013,739	69,475,650	68,865,444	33,272,925	33,272,925	124,762,314	124,152,108	-9,907,694	
11	3,542,033	3,542,033	45,406,411	44,248,756	25,987,182	25,987,182	74,935,626	73,777,971	-60,281,831	
12	3,460,390	3,460,390	95,652,093	101,687,120	29,167,820	29,167,820	128,280,303	134,315,330		-201,101
13	14,350,783	14,350,783	76,914,949	91,400,343	28,737,116	28,737,116	120,002,848	134,488,242		-28,189
14	11,161,193	11,161,193	68,404,432	99,899,031	23,338,876	23,338,876	102,904,501	134,399,100		-117,331
15	0	0	118,884,834	114,865,206	19,321,642	19,321,642	138,206,476	134,186,848		-329,583
16	0	0	105,900,312	105,858,555	28,616,119	28,616,119	**134,516,431**	134,474,675		-41,756
17	0	0	79,137,771	91,067,169	41,952,014	41,952,014	121,089,785	133,019,183		-1,497,248
18	0	0	93,022,057	105,124,980	28,940,049	28,940,049	121,962,106	134,065,029		-451,402
19	0	0	75,246,304	98,789,792	29,340,491	29,340,491	104,586,795	128,130,283		-6,386,148
20	0	0	81,038,989	78,220,458	22,638,083	22,638,083	103,677,072	100,858,541		-33,657,890
Total	270,091,012	270,091,012	1,397,155,807	1,485,977,797	515,702,468	515,702,468	2,182,949,287	2,271,771,277		

Modeled Years:

Year 8 = worst case for proposed project stockpile disposal phase

Year 16 = worst case for proposed project in-pit disposal phase

PolyMet - Hoyt Lakes, Minnesota
Table 2 - Proposed Project Rock Movement Summary

Ton Miles by Year

Year	Ore Pocket	Ore To OSP	Ore From OSP	Cat 1/2 SP	Cat 1/2 EP [1]	Cat 1/2 SP-3LO	Cat 1/2 SP-3	Cat 3 to SP	Cat 3 to EP	Cat 3 Fr SP	Cat 3 LO to SP	Cat 3 LO to EP	Cat 3 LO Fr SP	Cat 4 to SP	Cat 4 to EP	Cat 4 Fr SP	Cat 4 LO to SP	Cat 4 LO to EP	Cat 4 LO Fr SP	OB Pit	OB Stockpile	Tot OB	Tot WR	Tot Ore	Tot Total
0		78,335		50,604										125,260			0			23,214,934		23,214,934	175,864	164,407	23,555,205
1	6,497,515	0	28,823	18,520,297				579,456			4,489,899			13,790			0			0	40,151,048	40,151,048	23,603,442	9,876,263	73,630,752
2	11,680,000	254,642	0	43,774,316				654,151			5,557,803			539,726			15,848			3,915,356	21,971,285	25,886,641	50,541,845	21,307,699	97,736,184
3	11,680,000	2,223,050	0	35,861,803				1,816,400			6,065,445			2,685,146			0			4,854,013	21,971,285	26,825,298	46,428,794	25,670,482	98,924,573
4	11,680,000	0	1,210,494	37,590,229				2,286,176			4,972,206			2,288,483			0			17,542,165	21,971,285	39,513,449	47,137,094	20,145,946	106,796,489
5	11,680,000	1,011,704	0	58,368,701				1,454,725			2,944,075			2,510,816			164,498			0	6,895,054	6,895,054	65,442,815	23,034,508	95,372,377
6	11,680,000	919,220	0	44,633,175				1,657,928			3,780,618			3,013,213			258,587			25,054,756	6,895,054	31,949,810	53,343,521	22,659,607	107,952,938
7	11,680,000	1,049,069	0	34,943,599				1,475,518			4,310,421			1,556,181			374,012			441,476	6,895,054	7,336,531	42,659,731	29,876,701	79,872,962
8	11,680,000	0	1,801,321	89,520,373				1,977,652			8,777,343			1,185,390			412,920			0	6,895,054	6,895,054	101,873,679	25,291,068	**134,059,802**
9	11,680,000	0	600,248	50,085,141				1,544,957			3,556,450			1,360,392			318,282			0	6,895,054	6,895,054	56,865,222	26,363,470	90,123,747
10	11,680,000	2,333,411	0	60,089,543				1,440,103			6,319,231			1,173,800			452,973			18,553,349	3,460,390	22,013,739	69,475,650	33,272,925	124,762,314
11	11,680,000	0	559,245	36,653,305				2,151,416			4,427,161			1,691,723			482,806			81,643	3,460,390	3,542,033	45,406,411	25,987,182	74,935,626
12	11,680,000	1,055,906	0		79,817,569			3,868,447			10,976,675			522,901			466,501			0	3,460,390	3,460,390	95,652,093	29,167,820	128,280,303
13	11,680,000	763,434	0		63,073,214			3,298,607			9,888,530			270,600			383,999			10,890,393	3,460,390	14,350,783	76,914,949	28,737,116	120,002,848
14	11,680,000	0	408,268		57,007,805			2,957,719			8,157,931			74,319			206,657			7,700,803	3,460,390	11,161,193	68,404,432	23,338,876	102,904,501
15	11,680,000	0	4,822,811		98,149,530			3,011,351			17,382,263			244,912			96,778			0	0	0	118,884,834	19,321,642	138,206,476
16	11,680,000	0	257,559		88,002,858			2,327,489			14,929,805			350,819			289,342			0	0	0	105,900,312	28,616,119	**134,516,431**
17	11,680,000	3,983,317	0		69,257,998			3,041,467			6,098,684			190,624			548,998			0	0	0	79,137,771	41,952,014	121,089,785
18	11,680,000	0	19,376		80,921,660			3,956,880			7,785,219			185,781			172,517			0	0	0	93,022,057	28,940,049	121,962,106
19	11,680,000	114,752	0		64,695,299			3,766,415			6,567,760			188,392			28,438			0	0	0	75,246,304	29,340,491	104,586,795
20	11,364,962	0	4,078,693		64,721,192			6,764,859			8,597,069			609,689			346,179			0	0	0	81,038,989	22,638,083	103,677,072
Totals	228,102,477	13,786,839	13,786,839	510,091,087	665,647,123	0	0	50,031,716	0	0	145,584,588	0	0	20,781,957	0	0	5,019,335	0	0	112,248,889	157,842,124	270,091,012	1,397,155,807	515,702,468	2,182,949,287

Ore Tons / Ore Ton-Miles

Year	Total Ore East	Total Ore West	Total Ore Total	To RTH East	To RTH West	To RTH Total	To Ore Stockpile East	To Ore Stockpile West	To Ore Stockpile Total	From OSP	Total Ore to RTH	ТМ To RTH East	ТМ To RTH West	ТМ To OSP East	ТМ To OSP West	ТМ From OSP	ТМ Total
0	9,940	68,394	78,334	0	0	0	9,940	68,394	78,334	0	0	0	0	15,308	149,099	0	164,407
1	2,892,503	3,576,190	6,468,692	2,892,503	3,576,190	6,468,692	0	0	0	28,823	6,497,515	4,801,554	5,042,428	0	0	32,281	9,876,263
2	4,438,517	7,496,126	11,934,642	4,343,815	7,336,185	11,680,000	94,702	159,940	254,642	0	11,680,000	8,122,933	12,618,239	166,675	399,851	0	21,307,699
3	3,023,494	10,879,556	13,903,050	2,540,048	9,139,952	11,680,000	483,446	1,739,604	2,223,050	0	11,680,000	4,749,889	15,720,718	850,866	4,349,009	0	25,670,482
4	5,217,620	5,251,886	10,469,506	5,217,620	5,251,886	10,469,506	0	0	0	1,210,494	11,680,000	9,756,949	9,033,244	0	0	1,355,754	20,145,946
5	5,257,733	7,433,970	12,691,704	4,838,620	6,841,380	11,680,000	419,114	592,590	1,011,704	0	11,680,000	9,048,219	11,767,174	737,640	1,481,475	0	23,034,508
6	3,196,982	9,402,238	12,599,220	2,963,735	8,716,265	11,680,000	233,247	685,973	919,220	0	11,680,000	5,542,184	14,991,976	410,515	1,714,932	0	22,659,607
7	6,350,733	6,378,336	12,729,069	5,827,336	5,852,664	11,680,000	523,397	525,672	1,049,069	0	11,680,000	13,927,332	13,168,495	1,193,345	1,587,529	0	29,876,701
8	7,475,434	2,403,245	9,878,679	7,475,434	2,403,245	9,878,679	0	0	0	1,801,321	11,680,000	17,866,286	5,407,302	0	0	2,017,479	25,291,068
9	5,441,079	5,638,672	11,079,752	5,441,079	5,638,672	11,079,752	0	0	0	600,248	11,680,000	13,004,180	12,687,012	0	0	672,278	26,363,470
10	8,264,362	5,749,048	14,013,411	6,888,241	4,791,759	11,680,000	1,376,121	957,290	2,333,411	0	11,680,000	16,462,896	10,781,457	3,137,557	2,891,015	0	33,272,925
11	4,802,922	6,317,833	11,120,755	4,802,922	6,317,833	11,120,755	0	0	0	559,245	11,680,000	12,535,627	12,825,200	0	0	626,355	25,987,182
12	4,932,307	7,803,599	12,735,906	4,523,380	7,156,620	11,680,000	408,927	646,979	1,055,906	0	11,680,000	11,806,023	14,527,938	1,022,317	1,811,542	0	29,167,820
13	5,492,485	6,950,949	12,443,434	5,155,508	6,524,492	11,680,000	336,977	426,457	763,434	0	11,680,000	13,455,877	13,244,718	842,442	1,194,079	0	28,737,116
14		11,271,732	11,271,732	0	11,271,732	11,271,732	0	0	0	408,268	11,680,000	0	22,881,615	0	0	457,260	23,338,876
15		6,857,189	6,857,189	0	6,857,189	6,857,189	0	0	0	4,822,811	11,680,000	0	13,920,094	0	0	5,401,548	19,321,642
16		11,422,441	11,422,441	0	11,422,441	11,422,441	0	0	0	257,559	11,680,000	0	28,327,652	0	0	288,467	28,616,119
17		15,663,317	15,663,317	0	11,680,000	11,680,000	0	3,983,317	3,983,317	0	11,680,000	0	28,966,400	0	12,985,614	0	41,952,014
18		11,660,624	11,660,624	0	11,660,624	11,660,624	0	0	0	19,376	11,680,000	0	28,918,348	0	0	21,701	28,940,049
19		11,794,752	11,794,752	0	11,680,000	11,680,000	0	114,752	114,752	0	11,680,000	0	28,966,400	0	374,091	0	29,340,491
20		7,286,269	7,286,269	0	7,286,269	7,286,269	0	0	0	4,078,693	11,364,962	0	18,069,946	0	0	4,568,137	22,638,083
Totals	66,796,111	161,306,365	228,102,476	62,910,240	151,405,398	214,315,638	3,885,871	9,900,968	13,786,839	13,786,839	228,102,477	141,079,950	321,866,357	8,376,664	28,938,237	15,441,260	515,702,468

Ore Haul Distances

From / To / Years	East Pocket miles	West Pocket miles	East OSP miles	West OSP miles	OSP Pocket miles
0-1	1.66	1.41	1.54	2.18	1.12
2-6	1.87	1.72	1.76	2.50	1.12
7-10	2.39	2.25	2.28	3.02	1.12
11-15	2.61	2.03	2.50	2.80	1.12
16-20	2.62	2.48	2.50	3.26	1.12

Notes:
[1] 151,451,850 Total Cat 1/2 listed as to East Pit (tons)
125,000,000 East Pit Capacity (tons)
26,451,850 Balance (tons)
Rock that will not fit in East Pit will be used for construction as allowed, stored in added lifts on Cat 1/2 Stockpile, or deposited in West Pit

Table 3 - No Long Term Treatment Alternative (RA1) Rock Movement Summary

Ton Miles by Year

Year	Ore Pocket	Ore To OSP	Ore From OSP	Cat 1 SP	Cat 1 EP	Cat 1 SP-3LO	Cat 1 SP-3	Cat 2/3 [1] to SP	Cat 2/3 to EP	Cat 2/3 Fr SP	Cat 3 LO to SP	Cat 3 LO to EP	Cat 3 LO Fr SP	Cat 4 to SP	Cat 4 to EP	Cat 4 Fr SP	Cat 4 LO to SP	Cat 4 LO to EP	Cat 4 LO Fr SP	OB Pit	OB Stockpile	Tot OB	Tot WR	Tot Ore	Total
0		78,335		50,604										125,260			0			23,214,934	0	23,214,934	175,864	164,407	23,555,205
1	6,497,515	0	28,823	18,359,468				687,640			4,489,899			13,790			0			0	40,151,048	40,151,048	23,550,796	9,876,263	73,578,107
2	11,680,000	254,642	0	43,121,002				1,320,568			5,557,803			539,726			15,848			3,915,356	21,971,285	25,886,641	50,554,948	21,307,699	97,749,287
3	11,680,000	2,223,050	0	43,101,381				3,819,080			6,065,445			2,685,146			0			4,854,013	21,971,285	26,825,298	46,671,052	25,670,482	99,166,832
4	11,680,000	0	1,210,494	34,768,972				5,053,020			4,972,206			2,288,483			0			17,542,165	21,971,285	39,513,449	47,082,680	20,145,946	106,742,075
5	11,680,000	1,011,704	0	54,667,795				4,872,219			2,944,075			2,510,816			164,498				6,895,054	6,895,054	65,159,402	23,034,508	95,088,964
6	11,680,000	919,220	0	40,259,223				6,219,600			3,780,618			3,013,213			258,587			25,054,756	6,895,054	31,949,810	53,531,240	22,659,607	108,140,658
7	11,680,000	1,049,069	0	31,050,523				4,948,431			4,310,421			1,556,181			374,012			441,476	6,895,054	7,336,531	42,239,567	29,876,701	79,452,799
8	11,680,000	0	1,801,321	82,450,958				8,203,938			8,777,343			1,185,390			412,920			0	6,895,054	6,895,054	101,030,550	25,291,068	133,216,672
9	11,680,000	600,248	0	45,307,669				4,910,610			3,556,450			1,861,833			318,282			0	6,895,054	6,895,054	55,954,844	26,363,470	89,213,368
10	11,680,000	2,333,411	0	56,356,307				0			6,319,231			5,736,933			452,973			18,553,349	3,460,390	22,013,739	68,865,444	33,272,925	124,152,108
11	11,680,000	0	559,245	32,481,354				0			4,427,161			6,857,435			482,806			81,643	3,460,390	3,542,033	44,248,756	25,987,182	73,777,971
12	11,680,000	1,055,906	0	63,030,138					15,674,709			12,391,120	9,475,316		649,337		466,501			0	3,460,390	3,460,390	101,687,120	29,167,820	134,315,330
13	11,680,000	763,434	0	43,798,933					16,697,632			11,230,325	18,950,631		338,823		383,999			10,890,393	3,460,390	14,350,783	91,400,343	28,737,116	134,488,242
14	11,680,000	0	408,268	40,103,477					13,767,858			9,353,058	24,214,696		94,499	12,158,787	206,657			7,700,803	3,460,390	11,161,193	99,899,031	23,338,876	134,399,100
15	11,680,000	0	4,822,811	42,596,846		24,998,113			11,418,891			20,486,239	0		330,401	14,937,938	96,778			0	0	0	114,865,206	19,321,642	134,186,848
16	11,680,000	0	257,559			69,936,045			9,277,324	1,544,930		17,339,015	0		524,022	6,947,878	289,342			0	0	0	105,858,555	28,616,119	134,474,675
17	11,680,000	3,983,317	0		18,429,724	36,849,457			11,727,342	15,449,299		7,082,823	0		284,738	694,788	548,998			0	0	0	91,067,169	41,952,014	133,019,183
18	11,680,000	0	19,376		69,287,889				16,046,025	10,299,533		9,041,513			277,502		172,517			0	0	0	105,124,980	28,940,049	134,065,029
19	11,680,000	114,752	0		31,148,850		19,960,072		15,539,532	24,203,902		7,627,594			281,403		28,438			0	0	0	98,789,792	29,340,491	128,130,283
20	11,364,962	0	4,078,693				43,964,341		23,014,868			9,984,371			910,699		346,179			0	0	0	78,220,458	22,638,083	100,858,541
Totals	228,102,477	13,786,839	13,786,839	662,504,648	118,866,463	131,783,614	63,924,413	40,035,106	133,164,181	51,497,663	55,200,652	104,536,059	52,640,643	28,374,206	3,691,424	34,739,392	5,019,335	0	0	112,248,889	157,842,124	270,091,012	1,485,977,797	515,702,468	2,271,771,277

Total C1 977,079,138 | Total C2/3 224,696,950 | Total C3 LO 212,377,353 | Total C4 66,805,021

Ore Tons / Ore Ton-Miles

Year	Total Ore East	Total Ore West	Total Ore Total	Pocket East	Pocket West	Pocket Total	To OSP East	To OSP West	To OSP Total	From OSP	Total Ore to Pocket	OTM Pocket East	OTM Pocket West	OTM To OSP East	OTM To OSP West	OTM From OSP	OTM Total
0	9,940	68,394	78,334	0	0	0	9,940	68,394	78,334		0			15,308	149,099	0	164,407
1	2,892,503	3,576,190	6,468,692	2,892,503	3,576,190	6,468,692	0	0	0	28,823	6,497,515	4,801,554	5,042,428	0	0	32,281	9,876,263
2	4,438,517	7,496,126	11,934,642	4,343,815	7,336,185	11,680,000	94,702	159,940	254,642	0	11,680,000	8,122,933	12,618,239	166,675	399,851	0	21,307,699
3	3,023,494	10,879,556	13,903,050	2,540,048	9,139,952	11,680,000	483,446	1,739,604	2,223,050	0	11,680,000	4,749,889	15,720,718	850,866	4,349,009	0	25,670,482
4	5,217,620	5,251,886	10,469,506	5,217,620	5,251,886	10,469,506	0	0	0	1,210,494	11,680,000	9,756,949	9,033,244	0	0	1,355,754	20,145,946
5	5,257,733	7,433,970	12,691,704	4,838,620	6,841,380	11,680,000	419,114	592,590	1,011,704	0	11,680,000	9,048,219	11,767,174	737,640	1,481,475	0	23,034,508
6	3,196,982	9,402,238	12,599,220	2,963,735	8,716,265	11,680,000	233,247	685,973	919,220	0	11,680,000	5,542,184	14,991,976	410,515	1,714,932	0	22,659,607
7	6,350,733	6,378,336	12,729,069	5,827,336	5,852,664	11,680,000	523,397	525,672	1,049,069	0	11,680,000	13,927,332	13,168,495	1,193,345	1,587,529	0	29,876,701
8	7,475,434	2,403,245	9,878,679	7,475,434	2,403,245	9,878,679	0	0	0	1,801,321	11,680,000	17,866,286	5,407,302	0	0	2,017,479	25,291,068
9	5,441,079	5,638,672	11,079,752	5,441,079	5,638,672	11,079,752	0	0	0	600,248	11,680,000	13,004,180	12,687,012	0	0	672,278	26,363,470
10	8,264,362	5,749,048	14,013,411	6,888,241	4,791,759	11,680,000	1,376,121	957,290	2,333,411	0	11,680,000	16,462,896	10,781,457	3,137,557	2,891,015	0	33,272,925
11	4,802,922	6,317,833	11,120,755	4,802,922	6,317,833	11,120,755	0	0	0	559,245	11,680,000	12,535,627	12,825,200	0	0	626,355	25,987,182
12	4,932,307	7,803,599	12,735,906	4,523,380	7,156,620	11,680,000	408,927	646,979	1,055,906	0	11,680,000	11,806,023	14,527,938	1,022,317	1,811,542	0	29,167,820
13	5,492,485	6,950,949	12,443,434	5,155,508	6,524,492	11,680,000	336,977	426,457	763,434	0	11,680,000	13,455,877	13,244,718	842,442	1,194,079	0	28,737,116
14		11,271,732	11,271,732	0	11,271,732	11,271,732	0	0	0	408,268	11,680,000	0	22,881,615	0	0	457,260	23,338,876
15		6,857,189	6,857,189	0	6,857,189	6,857,189	0	0	0	4,822,811	11,680,000	0	13,920,094	0	0	5,401,548	19,321,642
16		11,422,441	11,422,441	0	11,422,441	11,422,441	0	0	0	257,559	11,680,000	0	28,327,652	0	0	288,467	28,616,119
17		15,663,317	15,663,317	0	11,680,000	11,680,000	0	3,983,317	3,983,317	0	11,680,000	0	28,966,400	0	12,985,614	0	41,952,014
18		11,660,624	11,660,624	0	11,660,624	11,660,624	0	0	0	19,376	11,680,000	0	28,918,348	0	0	21,701	28,940,049
19		11,794,752	11,794,752	0	11,680,000	11,680,000	0	114,752	114,752	0	11,680,000	0	28,966,400	0	374,091	0	29,340,491
20		7,286,269	7,286,269	0	7,286,269	7,286,269	0	0	0	4,078,693	11,364,962	0	18,069,946	0	0	4,568,137	22,638,083
Total	66,796,111	161,306,365	228,102,476	62,910,240	151,405,398	214,315,638	3,885,871	9,900,968	13,786,839	13,786,839	228,102,477	141,059,050	321,866,357	8,376,664	28,938,237	15,441,260	515,702,468

Haul Distance

From To Years	East Pocket miles	West Pocket miles	East OSP miles	West OSP miles	OSP Pocket miles
0-1	1.66	1.41	1.54	2.18	1.12
2-6	1.87	1.72	1.76	2.50	1.12
7-10	2.39	2.25	2.28	3.02	1.12
11-15	2.61	2.03	2.50	2.80	1.12
16-20	2.62	2.48	2.50	3.26	1.12

[1] Category 2/3 Waste Rock going to Cat 4 WR stockpile is listed with Category 4 WR

Table 4 - No Long Term Treatment Alternative - Rock Movement in Tons

Tons Moved by Year

Year	Ore Pocket	Ore To OSP	Ore From OSP	Cat 1 SP	Cat 1 EP	Cat 1 SP-3LO	Cat 1 SP-3	Cat 2/3 [1] to SP	Cat 2/3 [1] to EP	Cat 2/3 [1] Fr SP	Cat 3 LO [1] to SP	Cat 3 LO [1] to EP	Cat 3 LO [1] Fr SP	Cat 4 to SP	Cat 4 to EP	Cat 4 Fr SP	Cat 4 LO to SP	Cat 4 LO to EP	Cat 4 LO Fr SP	Overburden Pit	Overburden Stockpile	OB	WR	Ore	Total
0		78,335		18,203										74,559			0			5,323,613	0	5,323,613	92,762	78,335	5,494,710
1	6,497,515	0	28,823	6,129,467				272,512			1,605,061			8,208			0			0	8,075,338	8,075,338	8,015,248	6,497,515	22,588,102
2	11,680,000	254,642	0	16,252,952				475,370			1,793,557			252,209			9,005			797,425	4,274,417	5,071,842	18,783,092	11,934,642	35,789,576
3	11,680,000	2,223,050	0	13,054,399				1,258,977			2,129,494			1,254,741			0			988,597	4,274,417	5,263,014	17,697,612	13,903,050	36,863,676
4	11,680,000	0	1,210,494	13,548,572				1,941,752			1,701,833			1,025,464			0			3,906,941	4,274,417	8,181,358	18,217,621	11,680,000	38,078,979
5	11,680,000	1,011,704	0	21,336,232				2,001,872			1,070,203			1,173,278			71,027			0	1,354,600	1,354,600	25,652,613	12,691,704	39,698,916
6	11,680,000	919,220	0	15,529,519				2,296,020			1,347,766			1,398,799			124,855			5,497,293	1,354,600	6,851,893	20,696,959	12,599,220	40,148,071
7	11,680,000	1,049,069	0	9,692,704				1,684,139			1,288,444			637,857			140,799			91,026	1,354,600	1,445,626	13,443,943	12,729,069	27,618,637
8	11,680,000	0	1,801,321	25,930,622				2,944,012			2,495,861			498,023			160,832			0	1,354,600	1,354,600	32,029,350	11,680,000	45,063,950
9	11,680,000	0	600,248	14,013,560				1,881,122			1,093,809			771,864			125,119			0	1,354,600	1,354,600	17,885,475	11,680,000	30,920,074
10	11,680,000	2,333,411	0	17,829,274				0			1,769,310			2,054,837			178,297			3,336,933	684,286	4,021,219	21,831,718	14,013,411	39,866,348
11	11,680,000	0	559,245	9,967,299				0			1,251,543			2,468,686			186,248			15,204	684,286	699,489	13,873,776	11,680,000	26,253,265
12	11,680,000	1,055,906	0	17,807,685					4,255,838			3,202,453	3,158,439		188,528		187,144			0	684,286	684,286	28,800,086	12,735,906	42,220,278
13	11,680,000	763,434	0	12,773,243					4,331,544			2,861,908	6,316,877		98,160		158,747			2,317,105	684,286	3,001,391	26,540,478	12,443,434	41,985,303
14	11,680,000	0	408,268	11,805,010					3,401,061			2,330,837	8,071,565	26,241		4,066,484	88,532			1,638,469	684,286	2,322,755	29,789,729	11,680,000	43,792,484
15	11,680,000	0	4,822,811	13,282,459		7,794,859			2,661,746			4,775,347	0	77,016		4,995,966	34,564			0	0	0	33,621,957	11,680,000	45,301,957
16	11,680,000	0	257,559			17,120,207			1,954,355	442,673		3,650,319	0	110,320		2,323,705	0			0	0	0	25,690,335	11,680,000	37,370,335
17	11,680,000	3,983,317	0		4,276,038	8,549,758			2,470,474	4,426,733		1,491,121	0	59,945		232,371	168,404			0	0	0	21,674,844	15,663,317	37,338,161
18	11,680,000	0	19,376		14,586,924				3,380,245	2,951,155		1,903,476		58,422			52,919			0	0	0	22,933,142	11,680,000	34,613,142
19	11,680,000	114,752	0		6,845,901		4,386,829		3,273,548	6,935,215		1,605,809		59,243			8,723			0	0	0	23,115,269	11,794,752	34,910,021
20	11,364,962	0	4,078,693				10,368,948		4,848,297			2,101,973		191,726			106,190			0	0	0	17,617,135	11,364,962	28,982,097
Total	228,102,477	13,786,839	13,786,839	218,971,200	25,708,863	33,464,824	14,755,777	14,755,777	30,577,109	14,755,777	17,546,881	23,923,244	17,546,881	11,618,526	869,600	11,618,526	1,890,162	0	0	23,912,605	31,093,016	55,005,621	438,003,146	241,889,316	734,898,083

Total C1: 292,900,664
Total C2/3: 45,332,886
Total C3 LO: 41,470,125
Total C4: 12,488,126

Total to East Pit: 125,000,000

[1] Category 2/3 Waste Rock going to Cat 4 WR stockpile is listed with Category 4 WR

PolyMet - Hoyt Lakes, Minnesota
Table 5 - Rock Movement Detail - No Long Term Treatment Alternative (RA1)

Cat	year	PIT	cat 2	SumOfATons
Cat1	0	EAST	N	18,203
Cat1	1	EAST	N	631,350
Cat1	1	WEST	N	5,498,117
Cat1	2	EAST	N	2,912,737
Cat1	2	WEST	N	13,340,215
Cat1	3	EAST	N	5,896,059
Cat1	3	WEST	N	7,158,340
Cat1	4	EAST	N	10,274,673
Cat1	4	WEST	N	3,273,899
Cat1	5	EAST	N	16,755,384
Cat1	5	WEST	N	4,580,849
Cat1	6	EAST	N	9,065,918
Cat1	6	WEST	N	6,463,600
Cat1	7	EAST	N	5,389,570
Cat1	7	WEST	N	4,303,133
Cat1	8	EAST	N	12,546,908
Cat1	8	WEST	N	13,383,714
Cat1	9	EAST	N	9,050,660
Cat1	9	WEST	N	4,962,900
Cat1	10	EAST	N	7,611,821
Cat1	10	WEST	N	10,217,452
Cat1	11	CENTRAL	N	1,378,811
Cat1	11	EAST	N	1,138,226
Cat1	11	WEST	N	7,450,262
Cat1 Stockpile Tons				**163,302,803**

year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons
0		18,203		0	50,604	0	50,604	18,203
1		631,350	5,498,117	0	1,755,154	16,604,314	18,359,468	6,129,467
2		2,912,737	13,340,215	0	7,369,225	35,751,777	43,121,002	16,252,952
3		5,896,059	7,158,340	0	14,917,029	19,184,352	34,101,381	13,054,399
4		10,274,673	3,273,899	0	25,994,923	8,774,049	34,768,972	13,548,572
5		16,755,384	4,580,849	0	42,391,120	12,276,674	54,667,795	21,336,232
6		9,065,918	6,463,600	0	22,936,774	17,322,449	40,259,223	15,529,519
7		5,389,570	4,303,133	0	18,055,061	12,995,463	31,050,523	9,692,704
8		12,546,908	13,383,714	0	42,032,142	40,418,816	82,450,958	25,930,622
9		9,050,660	4,962,900	0	30,319,709	14,987,959	45,307,669	14,013,560
10		7,611,821	10,217,452	0	25,499,602	30,856,706	56,356,307	17,829,274
11	1,378,811	1,138,226	7,450,262	5,529,033	4,974,050	21,978,272	32,481,354	9,967,299
Totals	**1,378,811**	**81,291,510**	**80,632,481**	**5,529,033**	**236,295,393**	**231,150,829**	**472,975,255**	**163,302,803**

Haul Distances

From	Cent	East	West
To	Cat 1	Cat 1	Cat 1 SP
Yr	miles	miles	miles
0-1		2.78	3.02
2-6		2.53	2.68
7-10		3.35	3.02
11-14	4.01	4.37	2.95

Cat	year	PIT	cat 2	SumOfATons
Cat1	12	CENTRAL	N	7,392,582
Cat1	12	WEST	N	10,415,103
Cat1	13	CENTRAL	N	4,308,357
Cat1	13	WEST	N	8,464,886
Cat1	14	CENTRAL	N	3,717,393
Cat1	14	WEST	N	8,087,617
Cat1	15	WEST	N	21,077,318
Cat1	16	WEST	N	17,120,207
Cat1	17	WEST	N	12,825,796
Cat1	18	WEST	N	14,586,924
Cat1	19	WEST	N	11,232,730
Cat1	20	WEST	N	10,368,948
Pit/C3LO/C23 SP Tons				**129,597,861**
Total Tons C1				**292,900,664**

year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons
12		7,392,582	10,415,103	0	32,305,584	30,724,554	63,030,138	17,807,685
13		4,308,357	8,464,886	0	18,827,520	24,971,413	43,798,933	12,773,243
14		3,717,393	8,087,617	0	16,245,007	23,858,470	40,103,477	11,805,010
15			21,077,318	0	0	67,594,959	67,594,959	21,077,318
16			17,120,207	0	0	69,936,045	69,936,045	17,120,207
17			12,825,796	0	0	55,279,181	55,279,181	12,825,796
18			14,586,924	0	0	69,287,889	69,287,889	14,586,924
19			11,232,730	0	0	51,108,922	51,108,922	11,232,730
20			10,368,948	0	0	43,964,341	43,964,341	10,368,948
Totals	**0**	**15,418,332**	**114,179,529**	**0**	**67,378,111**	**436,725,773**	**504,103,883**	**129,597,861**

Haul Distances

From	Central	East	West	
To	Cat 1 SP	Cat 1 SP	Varous	
Yr	miles	miles	miles	
11-14	4.01	4.37	2.95	
15			3.207	Weighted Average Cat 1 SP and Cat 3 LO
16			4.085	All to C3 LO SP
17			4.31	Weighted Average Cat 3LO and Pit
18			4.75	All to Pit
19			4.55	Weighted Average Cat 2/3 and Pit
20			4.24	Cat 3 SP

Cat	year	PIT	cat 2	SumOfATons
Cat 3	1	EAST	N	31,111
Cat 2	1	EAST	Y	57,852
Cat 3	1	WEST	N	183,548
Cat 3	2	EAST	N	52,010
Cat 2	2	EAST	Y	114,826
Cat 3	2	WEST	N	173,159
Cat 2	2	WEST	Y	135,375

year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons
0								
1		88,964	183,548	0	166,362	521,277	687,640	272,512
2		166,836	308,533	0	348,688	971,880	1,320,568	475,370
3		138,394	1,120,583	0	289,244	3,529,836	3,819,080	1,258,977
4		1,003,301	938,451	0	2,096,900	2,956,119	5,053,020	1,941,752
5		1,352,528	649,345	0	2,826,783	2,045,436	4,872,219	2,001,872
6		955,531	1,340,489	0	1,997,060	4,222,540	6,219,600	2,296,020

PolyMet - Hoyt Lakes, Minnesota
Table 5 - Rock Movement Detail - No Long Term Treatment Alternative (RA1)

Cat	#	Dir	Y/N	tons
Cat 3	3	EAST	N	63,174
Cat 2	3	EAST	Y	75,221
Cat 3	3	WEST	N	534,720
Cat 2	3	WEST	Y	585,863
Cat 3	4	EAST	N	381,835
Cat 2	4	EAST	Y	621,467
Cat 3	4	WEST	N	472,426
Cat 2	4	WEST	Y	466,025
Cat 3	5	EAST	N	297,352
Cat 2	5	EAST	Y	1,055,176
Cat 3	5	WEST	N	264,527
Cat 2	5	WEST	Y	384,818
Cat 3	6	EAST	N	299,926
Cat 2	6	EAST	Y	655,605
Cat 3	6	WEST	N	327,328
Cat 2	6	WEST	Y	1,013,161
Cat 3	7	EAST	N	173,696
Cat 2	7	EAST	Y	681,739
Cat 3	7	WEST	N	295,840
Cat 2	7	WEST	Y	532,864
Cat 3	8	EAST	N	516,407
Cat 2	8	EAST	Y	1,280,530
Cat 3	8	WEST	N	226,665
Cat 2	8	WEST	Y	920,410
Cat 3	9	EAST	N	462,633
Cat 2	9	EAST	Y	1,048,436
Cat 3	9	WEST	N	141,609
Cat 2	9	WEST	Y	418,944
Cat 3	10	EAST	N	102,290
Cat 2	10	EAST	Y	707,941
Cat 3	10	WEST	N	329,009
Cat 2	10	WEST	Y	450,872
Cat 3	11	CENTRAL	N	101,803
Cat 2	11	CENTRAL	Y	400,066
Cat 3	11	EAST	N	215,547
Cat 2	11	EAST	Y	330,429
Cat 3	11	WEST	N	386,044
Cat 2	11	WEST	Y	380,919
tot tons				**18,351,197**
	Cat 2			**12,318,540**
	Cat 3			**6,032,657**

Cat	#	Dir	Y/N	tons
Cat 3	12	CENTRAL	N	543,860
Cat 2	12	CENTRAL	Y	2,013,402
Cat 3	12	WEST	N	699,706
Cat 2	12	WEST	Y	998,869
Cat 3	13	CENTRAL	N	334,297
Cat 2	13	CENTRAL	Y	1,531,732
Cat 3	13	WEST	N	693,169
Cat 2	13	WEST	Y	1,772,345
Cat 3	14	CENTRAL	N	292,493
Cat 2	14	CENTRAL	Y	522,054
Cat 3	14	WEST	N	626,947
Cat 2	14	WEST	Y	1,959,567
Cat 3	15	WEST	N	860,386
Cat 2	15	WEST	Y	1,801,360
Cat 3	16	WEST	N	547,644
Cat 2	16	WEST	Y	1,406,711

Upper-right movement block

Yr							
7	855,435	828,705	0	1,890,511	3,057,920	4,948,431	1,684,139
8	1,796,937	1,147,075	0	3,971,231	4,232,707	8,203,938	2,944,012
9	1,372,115	509,007	0	3,032,374	1,878,235	4,910,610	1,881,122
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
Totals	0	7,730,042	7,025,736	0	16,619,154	23,415,952	40,035,106	14,755,777

Transfer to East Pit

ton miles	Year	tons
1,544,930	Yr 16	442,673
15,449,299	Yr 17	4,426,733
10,299,533	Yr 18	2,951,155
24,203,902	Yr 19	6,935,215
total t-m	51,497,663	

Haul Distances

From	Cent	East	West	Cat 3 SP
To	Cat 3 SP	Cat 3 SP	Cat 3 SP	EP
Yr	miles	miles	miles	miles
0-1		1.87	2.84	
2-6		2.09	3.15	
7-10		2.21	3.69	
11	2.9	2.77	3.8	3.49

Split movement block

To Cat 3 SP	To Cat 4 WR SP	Combined 2/3
420,090	42,542	
952,025	96,411	138,953
128,587	13,022	
380,419	38,525	51,547
0	102,290	
0	707,941	810,231
0	329,009	
0	450,872	779,881
0	101,803	
0	400,066	501,869
0	215,547	
0	330,429	545,976
0	386,044	
0	380,919	766,963
Total	3,595,420	

Year 9 Split Calculations

		to Cat 2/3 SP	to cat 4	% Cat 2/3	% C4
Total Rock	2,071,622	1881122	190,500	0.908042925	0.091957075

Lower-right year block

year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons
12	2,557,263		1,698,575	8,387,821	0	7,286,888	15,674,709	4,255,838
13	1,866,029	2,465,514		6,120,577	0	10,577,055	16,697,632	4,331,544
14	814,547	2,586,514		2,671,714	0	11,096,143	13,767,858	3,401,061
15			2,661,746	0	0	11,418,891	11,418,891	2,661,746
16			1,954,355	0	0	9,277,324	9,277,324	1,954,355
17			2,470,474	0	0	11,727,342	11,727,342	2,470,474
18			3,380,245	0	0	16,046,025	16,046,025	3,380,245
19			3,273,548	0	0	15,539,532	15,539,532	3,273,548
20			4,848,297	0	0	23,014,868	23,014,868	4,848,297
	5,237,839	25,339,270	17,180,112	0	115,984,069	133,164,181		

Haul Distances

From	Cent	East	West
To	EP	SP	EP
Yr	miles	miles	miles
12-15	3.28	2.77	4.29
16-20			4.747

PolyMet - Hoyt Lakes, Minnesota
Table 5 - Rock Movement Detail - No Long Term Treatment Alternative (RA1)

Cat	year	PIT		tons
Cat 3	17	WEST	N	715,639
Cat 2	17	WEST	Y	1,754,835
Cat 3	18	WEST	N	931,031
Cat 2	18	WEST	Y	2,449,215
Cat 3	19	WEST	N	886,215
Cat 2	19	WEST	Y	2,387,333
Cat 2	20	WEST	Y	3,256,566
Cat 3	20	WEST	N	1,591,732
tot tons				**30,577,109**

	Cat 2	**21,853,989**
	Cat 3	**8,723,119**

Cat	year	PIT	cat 2	SumOfATons	year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons
Cat 3 Lean Ore	1	EAST	N	30,790	1		30,790	1,574,271	0	66,199	4,423,700	4,489,899	1,605,061
Cat 3 Lean Ore	1	WEST	N	1,574,271	2	168,121	1,625,435	0	405,173	5,152,630	5,557,803	1,793,557	
Cat 3 Lean Ore	2	EAST	N	168,121	3	901,385	1,228,109	0	2,172,338	3,893,107	6,065,445	2,129,494	
Cat 3 Lean Ore	2	WEST	N	1,625,435	4	556,061	1,145,773	0	1,340,106	3,632,100	4,972,206	1,701,833	
Cat 3 Lean Ore	3	EAST	N	901,385	5	590,092	480,111	0	1,422,122	1,521,953	2,944,075	1,070,203	
Cat 3 Lean Ore	3	WEST	N	1,228,109	6	647,105	700,661	0	1,559,524	2,221,094	3,780,618	1,347,766	
Cat 3 Lean Ore	4	EAST	N	556,061	7	466,384	822,060	0	1,235,917	3,074,504	4,310,421	1,288,444	
Cat 3 Lean Ore	4	WEST	N	1,145,773	8	511,171	1,984,690	0	1,354,602	7,422,741	8,777,343	2,495,861	
Cat 3 Lean Ore	5	EAST	N	590,092	9	490,270	603,538	0	1,299,217	2,257,234	3,556,450	1,093,809	
Cat 3 Lean Ore	5	WEST	N	480,111	10	273,383	1,495,926	0	724,466	5,594,765	6,319,231	1,769,310	
Cat 3 Lean Ore	6	EAST	N	647,105	11	133,914	93,999	1,023,630	419,152	281,996	3,726,013	4,427,161	1,251,543
Cat 3 Lean Ore	6	WEST	N	700,661	**Totals**	133,914	4,728,762	12,684,205	419,152	11,861,660	42,919,840	55,200,652	17,546,881
Cat 3 Lean Ore	7	EAST	N	466,384									
Cat 3 Lean Ore	7	WEST	N	822,060									
Cat 3 Lean Ore	8	EAST	N	511,171									
Cat 3 Lean Ore	8	WEST	N	1,984,690									
Cat 3 Lean Ore	9	EAST	N	490,270									
Cat 3 Lean Ore	9	WEST	N	603,538									
Cat 3 Lean Ore	10	EAST	N	273,383									
Cat 3 Lean Ore	10	WEST	N	1,495,926									
Cat 3 Lean Ore	11	CENTRAL	N	133,914									
Cat 3 Lean Ore	11	EAST	N	93,999									
Cat 3 Lean Ore	11	WEST	N	1,023,630									
tot tons				**17,546,881**									

Haul Distances

From	Cent	East	West	3LO SP
To	3LO SP	3LO SP	3LO SP	EP
Yr	miles	miles	miles	miles
0-1		2.15	2.81	
2-6		2.41	3.17	
7-10		2.65	3.74	
11	3.13	3.00	3.64	3.00

Transfer to East Pit

ton miles	Year	tons
9,475,316	Yr 12	3,158,439
18,950,631	Yr 13	6,316,877
24,214,696	Yr 14	8,071,565
0	Yr 15	0
0	Yr 16	0
0	Yr 17	0
total t-m	52,640,643	

Cat	year	PIT	cat 2	SumOfATons	year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons
Cat 3 Lean Ore	12	CENTRAL	N	1,320,836	12	1,320,836	10,357	1,871,260	4,332,342	31,070	8,027,707	12,391,120	3,202,453
Cat 3 Lean Ore	12	EAST	N	10,357	13	1,036,891		1,825,017	3,401,004	0	7,829,321	11,230,325	2,861,908
Cat 3 Lean Ore	12	WEST	N	1,871,260	14	639,835		1,691,002	2,098,658	0	7,254,399	9,353,058	2,330,837
Cat 3 Lean Ore	13	CENTRAL	N	1,036,891	15			4,775,347	0	0	20,486,239	20,486,239	4,775,347
Cat 3 Lean Ore	13	WEST	N	1,825,017	16			3,650,319	0	0	17,339,015	17,339,015	3,650,319
Cat 3 Lean Ore	14	CENTRAL	N	639,835	17			1,491,121	0	0	7,082,823	7,082,823	1,491,121
Cat 3 Lean Ore	14	WEST	N	1,691,002	18			1,903,476	0	0	9,041,513	9,041,513	1,903,476
Cat 3 Lean Ore	15	WEST	N	4,775,347	19			1,605,809	0	0	7,627,594	7,627,594	1,605,809
Cat 3 Lean Ore	16	WEST	N	3,650,319	20			2,101,973	0	0	9,984,371	9,984,371	2,101,973
Cat 3 Lean Ore	17	WEST	N	1,491,121	**Totals**	2,997,562	10,357	20,915,325	9,832,005	31,070	94,672,984	104,536,059	23,923,244
Cat 3 Lean Ore	18	WEST	N	1,903,476									
Cat 3 Lean Ore	19	WEST	N	1,605,809									
Cat 3 Lean Ore	20	WEST	N	2,101,973									
tot tons				**23,923,244**									

Haul Distances

From	Cent	East	West
To	EP	SP	EP
Yr	miles	miles	miles
12-15	3.28	3.00	4.29
16-20	3.28		4.75

Cat	year	PIT	cat 2	SumOfATons	year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons

PolyMet - Hoyt Lakes, Minnesota
Table 5 - Rock Movement Detail - No Long Term Treatment Alternative (RA1)

Cat 4 (Years 0–11)

Cat	year	PIT	cat 2	SumOfATons
Cat 4	0	EAST	N	74,559
Cat 4	1	EAST	N	8,208
Cat 4	2	EAST	N	252,209
Cat 4	3	EAST	N	1,254,741
Cat 4	4	EAST	N	900,144
Cat 4	4	WEST	N	125,320
Cat 4	5	EAST	N	1,173,278
Cat 4	6	EAST	N	1,372,422
Cat 4	6	WEST	N	26,377
Cat 4	7	EAST	N	578,971
Cat 4	7	WEST	N	58,885
Cat 4	8	EAST	N	479,489
Cat 4	8	WEST	N	18,534
Cat 4	9	EAST	N	581,364
Cat 4	10	EAST	N	384,780
Cat 4	10	WEST	N	79,946
Cat 4	11	CENTRAL	N	16,552
Cat 4	11	EAST	N	592,447
Cat 4	11	WEST	N	44,879
Temp SP				**8,023,106**

Movement detail (Years 0–11)

yr	c1	c2	c3	c4	c5	c6	tot ton-mi (cyan)	total tons (green)
0		74,559		0	125,260	0	125,260	74,559
1		8,208		0	13,790	0	13,790	8,208
2		252,209		0	539,726	0	539,726	252,209
3		1,254,741		0	2,685,146	0	2,685,146	1,254,741
4		900,144	125,320	0	1,926,308	362,175	2,288,483	1,025,464
5		1,173,278		0	2,510,816	0	2,510,816	1,173,278
6		1,372,422	26,377	0	2,936,982	76,231	3,013,213	1,398,799
7		578,971	58,885	0	1,354,793	201,388	1,556,181	637,857
8		479,489	18,534	0	1,122,003	63,387	1,185,390	498,023
9		720,318	51,547	0	1,685,543	176,290	1,861,833	771,864
10		1,195,011	859,827	0	2,796,325	2,940,608	5,736,933	2,054,837
11	518,421	1,138,423	811,842	1,384,183	2,891,594	2,581,658	6,857,435	2,468,686
Totals	518,421	9,147,772	1,952,333	1,384,183	20,588,286	6,401,736	28,374,206	11,618,526

Transfer to East Pit

ton miles	Year	Tons
12,158,787	Yr 14	4,066,484
14,937,938	Yr 15	4,995,966
6,947,878	Yr 16	2,323,705
694787.84	Yr 17	232,371
total t-m	34,739,392	

Haul Distances

From To	Cent 4 SP	East 4 SP	West 4 SP	4 SP EP
	miles	miles	miles	miles
0-1		1.68	2.34	
2-6		2.14	2.89	
7-10		2.34	3.42	
11	2.67	2.54	3.18	2.99

Cat 4 (Years 12–20)

Cat	year	PIT	cat 2	SumOfATons
Cat 4	12	CENTRAL	N	130,166
Cat 4	12	EAST	N	15,988
Cat 4	12	WEST	N	42,374
Cat 4	13	CENTRAL	N	81,468
Cat 4	13	WEST	N	16,692
Cat 4	14	CENTRAL	N	17,895
Cat 4	14	WEST	N	8,346
Cat 4	15	WEST	N	77,016
Cat 4	16	WEST	N	110,320
Cat 4	17	WEST	N	59,945
Cat 4	18	WEST	N	58,422
Cat 4	19	WEST	N	59,243
Cat 4	20	WEST	N	191,726
East Pit				**869,600**

Movement detail (Years 12–20)

year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons
12	130,166	15,988	42,374	426,944	40,610	181,782	649,337	188,528
13	81,468		16,692	267,215	0	71,608	338,823	98,160
14	17,895		8,346	58,695	0	35,804	94,499	26,241
15			77,016	0	0	330,401	330,401	77,016
16			110,320	0	0	524,022	524,022	110,320
17			59,945	0	0	284,738	284,738	59,945
18			58,422	0	0	277,502	277,502	58,422
19			59,243	0	0	281,403	281,403	59,243
20			191,726	0	0	910,699	910,699	191,726
Totals	229,529	15,988	624,084	752,854	40,610	2,897,960	3,691,424	6,629,994

Haul Distances

From To Yr	Cent EP	East SP	West EP
	miles	miles	miles
12-15	3.28	2.54	4.29
16-20			4.75

Cat 4 Lean Ore

Cat	year	PIT	cat 2	SumOfATons
Cat 4 Lean Ore	2	EAST	N	9,005
Cat 4 Lean Ore	5	EAST	N	17,660
Cat 4 Lean Ore	5	WEST	N	53,367
Cat 4 Lean Ore	6	EAST	N	72,366
Cat 4 Lean Ore	6	WEST	N	52,489
Cat 4 Lean Ore	7	EAST	N	70,147
Cat 4 Lean Ore	7	WEST	N	70,653
Cat 4 Lean Ore	8	EAST	N	99,203
Cat 4 Lean Ore	8	WEST	N	61,630
Cat 4 Lean Ore	9	EAST	N	81,107
Cat 4 Lean Ore	9	WEST	N	44,013
Cat 4 Lean Ore	10	EAST	N	116,358
Cat 4 Lean Ore	10	WEST	N	61,940
Cat 4 Lean Ore	11	CENTRAL	N	17,839
Cat 4 Lean Ore	11	EAST	N	89,716
Cat 4 Lean Ore	11	WEST	N	78,693
Cat 4 Lean Ore	12	CENTRAL	N	62,575
Cat 4 Lean Ore	12	EAST	N	54,009
Cat 4 Lean Ore	12	WEST	N	70,561
Cat 4 Lean Ore	13	CENTRAL	N	79,454

Movement detail — Cat 4 Lean Ore

Year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	9,005	0	0	15,848	0	15,848	9,005
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	17,660	53,367	0	31,082	133,416	164,498	71,027
6	0	72,366	52,489	0	127,365	131,222	258,587	124,855
7	0	70,147	70,653	0	159,934	214,077	374,012	140,799
8	0	99,203	61,630	0	226,182	186,738	412,920	160,832
9	0	81,107	44,013	0	184,924	133,358	318,282	125,119
10	0	116,358	61,940	0	265,295	187,677	452,973	178,297
11	17,839	89,716	78,693	38,176	224,289	220,341	482,806	186,248
12	62,575	54,009	70,561	133,910	135,022	197,569	466,501	187,144
13	79,454	26,844	52,449	170,033	67,109	146,857	383,999	158,747
14	62,473	0	26,059	133,692	0	72,965	206,657	88,532
15	0	0	34,564	0	0	96,778	96,778	34,564
16	0	0	88,755	0	0	289,342	289,342	88,755
17	0	0	168,404	0	0	548,998	548,998	168,404
18	0	0	52,919	0	0	172,517	172,517	52,919
19	0	0	8,723	0	0	28,438	28,438	8,723

PolyMet - Hoyt Lakes, Minnesota
Table 5 - Rock Movement Detail - No Long Term Treatment Alternative (RA1)

Cat 4 Lean Ore	13	EAST	N	26,844	20	0	0	106,190	0	0	346,179	346,179	106,190
Cat 4 Lean Ore	13	WEST	N	52,449	Totals	222,341	636,413	1,031,407	475,810	1,437,051	3,106,475	5,019,335	1,890,162

Haul Distances

From	Cent 4 SP	East 4 SP	West 4 SP
To			
Yr	miles	miles	miles
0-1			
2-6		1.76	2.5
7-10		2.28	3.03
11-15	2.14	2.5	2.8
16-20	2.14	2.5	3.26

(Cat 4 Lean Ore detail, continued)

	Year	Location		Tons
Cat 4 Lean Ore	14	CENTRAL	N	62,473
Cat 4 Lean Ore	14	WEST	N	26,059
Cat 4 Lean Ore	15	WEST	N	34,564
Cat 4 Lean Ore	16	WEST	N	88,755
Cat 4 Lean Ore	17	WEST	N	168,404
Cat 4 Lean Ore	18	WEST	N	52,919
Cat 4 Lean Ore	19	WEST	N	8,723
Cat 4 Lean Ore	20	WEST	N	106,190
tot tons				**1,890,162**

Pit Overburden

PIT	Year	Tons
EAST	0	1,112,416
EAST	2	797,425
EAST	3	988,597
EAST	6	885,501
EAST	10	3,336,933
CENTRAL	11	15,204
WEST	0	4,211,197
WEST	4	3,906,941
WEST	6	4,611,792
WEST	7	91,026
WEST	13	2,317,105
WEST	14	1,638,469
Total Pit Overburden		**23,912,605**

Year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons
0		1,112,416	4,211,197	0	5,317,347	17,897,588	23,214,934	5,323,613
1				0	0	0	0	0
2		797,425		0	3,915,356	0	3,915,356	797,425
3		988,597		0	4,854,013	0	4,854,013	988,597
4			3,906,941	0	0	17,542,165	17,542,165	3,906,941
5				0	0	0	0	0
6		885,501	4,611,792	0	4,347,812	20,706,944	25,054,756	5,497,293
7			91,026	0	0	441,476	441,476	91,026
8				0	0	0	0	0
9				0	0	0	0	0
10		3,336,933		0	18,553,349	0	18,553,349	3,336,933
11	15,204			81,643	0	0	81,643	15,204
12				0	0	0	0	0
13		2,317,105		0	0	10,890,393	10,890,393	2,317,105
14		1,638,469		0	0	7,700,803	7,700,803	1,638,469
15				0	0	0	0	0
16							0	0
17							0	0
18							0	0
19							0	0
20							0	0
Tons	15,204	7,120,873	16,776,529	81,643	36,987,877	75,179,368	112,248,889	23,912,605

From	Central Stor & SP	East Stor & SP	West Stor & SP	
To				
Yr	miles	miles	miles	
0-1		4.78	4.25	Haul to
2-6		4.91	4.49	storage area
7-10		5.56	4.85	plus haul to
11-15	5.37		4.7	stockpile

Stockpile Construction Overburden

Stockpile	Year 1	Years 2-4	Years 5-9	Years 10-14
Cat 1	4230634	3205483	752573	38677
Cat 2/3	226803	251725	162860	192698
Cat 3 Lean Ore	1355945	363235	260210	452911
Cat 4	171419	453973	178957	0
Cat 4 Lean Ore	2090538	0	0	0

Year	Cat 1	Cat 2/3	Cat 3 LO	Cat 4	Cat 4 LO	ton-miles	ton-miles	ton-miles	ton-miles	ton-miles	tot ton-mi	total tons
0												
1	4,230,634	226,803	1,355,945	171,419	2,090,538	22,168,524	1,147,622	6,833,961	781,669	9,219,271	40,151,048	8,075,338
2	3,205,483	251,725	363,235	453,973		16,796,732	1,273,728	1,830,705	2,070,119	0	21,971,285	4,274,417
3	3,205,483	251,725	363,235	453,973		16,796,732	1,273,728	1,830,705	2,070,119	0	21,971,285	4,274,417
4	3,205,483	251,725	363,235	453,973		16,796,732	1,273,728	1,830,705	2,070,119	0	21,971,285	4,274,417
5	752,573	162,860	260,210	178,957		3,943,483	824,069	1,311,459	816,043	0	6,895,054	1,354,600
6	752,573	162,860	260,210	178,957		3,943,483	824,069	1,311,459	816,043	0	6,895,054	1,354,600
7	752,573	162,860	260,210	178,957		3,943,483	824,069	1,311,459	816,043	0	6,895,054	1,354,600
8	752,573	162,860	260,210	178,957		3,943,483	824,069	1,311,459	816,043	0	6,895,054	1,354,600
9	752,573	162,860	260,210	178,957		3,943,483	824,069	1,311,459	816,043	0	6,895,054	1,354,600
10	38,677	192,698	452,911			202,666	975,050	2,282,673	0	0	3,460,390	684,286
11	38,677	192,698	452,911			202,666	975,050	2,282,673	0	0	3,460,390	684,286
12	38,677	192,698	452,911			202,666	975,050	2,282,673	0	0	3,460,390	684,286
13	38,677	192,698	452,911			202,666	975,050	2,282,673	0	0	3,460,390	684,286

PolyMet - Hoyt Lakes, Minnesota
Table 5 - Rock Movement Detail - No Long Term Treatment Alternative (RA1)

14	38,677	192,698	452,911			202,666	975,050	2,282,673	0	0	3,460,390	684,286
15												
16												
17												
18												
19												
20												
Totals	17,803,334	2,759,764	6,011,258	2,428,123	2,090,538	93,289,468	13,964,405	30,296,739	11,072,240	9,219,271	157,842,124	31,093,016

Haul Distances

From To Yr	Cat 1 Stor & SP miles	Cat 2/3 Stor & SP miles	Cat 3 LO Stor & SP miles	Cat 4 Stor & SP miles	Cat 4 LO Stor & SP miles	
0-1	5.24	5.06	5.04	4.56	4.41	Haul to
2-4	5.24	5.06	5.04	4.56	4.41	storage area
6-9	5.24	5.06	5.04	4.56	4.41	plus haul to
10-14	5.24	5.06	5.04	4.56	4.41	stockpile

PolyMet - Hoyt Lakes, Minnesota
Table 6 - Rock Movement Detail - Proposed Action

Cat	year	PIT	cat 2	SumOfATons
Cat1	0	EAST	N	18,203
Cat1	1	EAST	N	631,350
Cat 2	1	EAST	Y	57,852
Cat1	1	WEST	N	5,498,117
Cat1	2	EAST	N	2,912,737
Cat 2	2	EAST	Y	114,826
Cat1	2	WEST	N	13,340,215
Cat 2	2	WEST	Y	135,375
Cat1	3	EAST	N	5,896,059
Cat 2	3	EAST	Y	75,221
Cat1	3	WEST	N	7,158,340
Cat 2	3	WEST	Y	585,863
Cat1	4	EAST	N	10,274,673
Cat 2	4	EAST	Y	621,467
Cat1	4	WEST	N	3,273,899
Cat 2	4	WEST	Y	466,025
Cat1	5	EAST	N	16,755,384
Cat 2	5	EAST	Y	1,055,176
Cat1	5	WEST	N	4,580,849
Cat 2	5	WEST	Y	384,818
Cat1	6	EAST	N	9,065,918
Cat 2	6	EAST	Y	655,605
Cat1	6	WEST	N	6,463,600
Cat 2	6	WEST	Y	1,013,161
Cat1	7	EAST	N	5,389,570
Cat 2	7	EAST	Y	681,739
Cat1	7	WEST	N	4,303,133
Cat 2	7	WEST	Y	532,864
Cat1	8	EAST	N	12,546,908
Cat 2	8	EAST	Y	1,280,530
Cat1	8	WEST	N	13,383,714
Cat 2	8	WEST	Y	920,410
Cat1	9	EAST	N	9,050,660
Cat 2	9	EAST	Y	1,048,436
Cat1	9	WEST	N	4,962,900
Cat 2	9	WEST	Y	418,944
Cat1	10	EAST	N	7,611,821
Cat 2	10	EAST	Y	707,941
Cat1	10	WEST	N	10,217,452
Cat 2	10	WEST	Y	450,872
Cat1	11	CENTRAL	N	1,378,811
Cat 2	11	CENTRAL	Y	400,066
Cat1	11	EAST	N	1,138,226
Cat 2	11	EAST	Y	330,429
Cat1	11	WEST	N	7,450,262
Cat 2	11	WEST	Y	380,919
Stockpile Tons				**175,621,343**

year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi
0		18,203		0	50,604	0	50,604
1	689,203	5,498,117	0	1,915,983	16,604,314		18,520,297
2	3,027,563	13,475,590	0	7,659,735	36,114,581		43,774,316
3	5,971,280	7,744,203	0	15,107,338	20,754,465		35,861,803
4	10,896,140	3,739,924	0	27,567,234	10,022,995		37,590,229
5	17,810,559	4,965,667	0	45,060,715	13,307,987		58,368,701
6	9,721,524	7,476,761	0	24,595,455	20,037,721		44,633,175
7	6,071,309	4,835,998	0	20,338,886	14,604,713		34,943,599
8	13,827,438	14,304,124	0	46,321,918	43,198,455		89,520,373
9	10,099,096	5,381,845	0	33,831,970	16,253,171		50,085,141
10	8,319,762	10,668,324	0	27,871,204	32,218,339		60,089,543
11	1,778,877	1,468,655	7,831,181	7,133,297	6,418,024	23,101,983	36,653,305
Totals	**1,778,877**	**87,920,732**	**85,921,734**	**7,133,297**	**256,739,065**	**246,218,725**	**510,091,087**

Haul Distances

From To yr	Cent Cat 1/2 SP miles	East Cat 1/2 SP miles	West Cat 1/2 SP miles
0-1		2.78	3.02
2-6		2.53	2.68
7-10		3.35	3.02
11	4.01	4.37	2.95

Cat	year	PIT	cat 2	SumOfATons
Cat1	12	CENTRAL	N	7,392,582
Cat 2	12	CENTRAL	Y	2,013,402
Cat1	12	WEST	N	10,415,103
Cat 2	12	WEST	Y	998,869
Cat1	13	CENTRAL	N	4,308,357
Cat 2	13	CENTRAL	Y	1,531,732
Cat1	13	WEST	N	8,464,886
Cat 2	13	WEST	Y	1,772,345

year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi
12	9,405,984		11,413,972	30,851,628	0	48,965,940	79,817,569
13	5,840,089		10,237,231	19,155,492	0	43,917,722	63,073,214
14	4,239,447		10,047,184	13,905,387	0	43,102,418	57,007,805
15			22,878,678	0	0	98,149,530	98,149,530
16			18,526,917	0	0	88,002,858	88,002,858
17			14,580,631	0	0	69,257,998	69,257,998
18			17,036,139	0	0	80,921,660	80,921,660
19			13,620,063	0	0	64,695,299	64,695,299

Cat	year	PIT	cat2	SumOfATons								
Cat1	14	CENTRAL	N	3,717,393	20			13,625,514	0	0	64,721,192	64,721,192
Cat 2	14	CENTRAL	Y	522,054	Totals	19,485,521		131,966,330	63,912,508	0	601,734,616	665,647,123
Cat1	14	WEST	N	8,087,617								
Cat 2	14	WEST	Y	1,959,567								
Cat1	15	WEST	N	21,077,318								
Cat 2	15	WEST	Y	1,801,360								
Cat1	16	WEST	N	17,120,207								
Cat 2	16	WEST	Y	1,406,711								
Cat1	17	WEST	N	12,825,796								
Cat 2	17	WEST	Y	1,754,835								
Cat1	18	WEST	N	14,586,924								
Cat 2	18	WEST	Y	2,449,215								
Cat1	19	WEST	N	11,232,730								
Cat 2	19	WEST	Y	2,387,333								
Cat1	20	WEST	N	10,368,948								
Cat 2	20	WEST	Y	3,256,566								
EP Tons				**151,451,850**								

Haul Distances

From	Cent EP	East EP	West EP
To			
yr	miles	miles	miles
12-14	3.28		4.29
15			4.29
16-18			4.75
19			4.75
20			4.75

Cat	year	PIT	cat 2	SumOfATons	year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi
Cat 3	1	EAST	N	31,111	0							
Cat 3	1	WEST	N	183,548	1		31,111	183,548	0	58,178	521,277	579,456
Cat 3	2	EAST	N	52,010	2		52,010	173,159	0	108,702	545,449	654,151
Cat 3	2	WEST	N	173,159	3		63,174	534,720	0	132,033	1,684,367	1,816,400
Cat 3	3	EAST	N	63,174	4		381,835	472,426	0	798,035	1,488,141	2,286,176
Cat 3	3	WEST	N	534,720	5		297,352	264,527	0	621,466	833,259	1,454,725
Cat 3	4	EAST	N	381,835	6		299,926	327,328	0	626,845	1,031,083	1,657,928
Cat 3	4	WEST	N	472,426	7		173,696	295,840	0	383,868	1,091,650	1,475,518
Cat 3	5	EAST	N	297,352	8		516,407	226,665	0	1,141,259	836,393	1,977,652
Cat 3	5	WEST	N	264,527	9		462,633	141,609	0	1,022,418	522,539	1,544,957
Cat 3	6	EAST	N	299,926	10		102,290	329,009	0	226,061	1,214,042	1,440,103
Cat 3	6	WEST	N	327,328	11	101,803	215,547	386,044	265,706	534,556	1,351,154	2,151,416
Cat 3	7	EAST	N	173,696	12	543,860		699,706	1,419,476	0	2,448,972	3,868,447
Cat 3	7	WEST	N	295,840	13	334,297		693,169	872,516	0	2,426,090	3,298,607
Cat 3	8	EAST	N	516,407	14	292,493		626,947	763,406	0	2,194,313	2,957,719
Cat 3	8	WEST	N	226,665	15			860,386	0	0	3,011,351	3,011,351
Cat 3	9	EAST	N	462,633	16			547,644	0	0	2,327,489	2,327,489
Cat 3	9	WEST	N	141,609	17			715,639	0	0	3,041,467	3,041,467
Cat 3	10	EAST	N	102,290	18			931,031	0	0	3,956,880	3,956,880
Cat 3	10	WEST	N	329,009	19			886,215	0	0	3,766,415	3,766,415
Cat 3	11	CENTRAL	N	101,803	20			1,591,732	0	0	6,764,859	6,764,859
Cat 3	11	EAST	N	215,547	Totals	1,272,453	2,595,980	10,887,343	3,321,104	5,653,421	41,057,191	50,031,716
Cat 3	11	WEST	N	386,044								
Cat 3	12	CENTRAL	N	543,860								
Cat 3	12	WEST	N	699,706								
Cat 3	13	CENTRAL	N	334,297								
Cat 3	13	WEST	N	693,169								
Cat 3	14	CENTRAL	N	292,493								
Cat 3	14	WEST	N	626,947								
Cat 3	15	WEST	N	860,386								
Cat 3	16	WEST	N	547,644								
Cat 3	17	WEST	N	715,639								
Cat 3	18	WEST	N	931,031								
Cat 3	19	WEST	N	886,215								
Cat 3	20	WEST	N	1,591,732								
Stockpile Tons				**14,755,777**								

Haul Distances

From	Cent Cat 3 SP	East Cat 3 SP	West Cat 3 SP
To			
yr	miles	miles	miles
0-1		1.87	2.84
2-6		2.09	3.15
7-10		2.21	3.69
11-15	2.61	2.48	3.5
16-20	3.13	3.49	4.25

PolyMet - Hoyt Lakes, Minnesota
Table 6 - Rock Movement Detail - Proposed Action

Cat	year	PIT	cat 2	SumOfATons	year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi
Cat 3 Lean Ore	1	EAST	N	30,790	1		30,790	1,574,271	0	66,199	4,423,700	4,489,899
Cat 3 Lean Ore	1	WEST	N	1,574,271	2		168,121	1,625,435	0	405,173	5,152,630	5,557,803
Cat 3 Lean Ore	2	EAST	N	168,121	3		901,385	1,228,109	0	2,172,338	3,893,107	6,065,445
Cat 3 Lean Ore	2	WEST	N	1,625,435	4		556,061	1,145,773	0	1,340,106	3,632,100	4,972,206
Cat 3 Lean Ore	3	EAST	N	901,385	5		590,092	480,111	0	1,422,122	1,521,953	2,944,075
Cat 3 Lean Ore	3	WEST	N	1,228,109	6		647,105	700,661	0	1,559,524	2,221,094	3,780,618
Cat 3 Lean Ore	4	EAST	N	556,061	7		466,384	822,060	0	1,235,917	3,074,504	4,310,421
Cat 3 Lean Ore	4	WEST	N	1,145,773	8		511,171	1,984,690	0	1,354,602	7,422,741	8,777,343
Cat 3 Lean Ore	5	EAST	N	590,092	9		490,270	603,538	0	1,299,217	2,257,234	3,556,450
Cat 3 Lean Ore	5	WEST	N	480,111	10		273,383	1,495,926	0	724,466	5,594,765	6,319,231
Cat 3 Lean Ore	6	EAST	N	647,105	11	133,914	93,999	1,023,630	419,152	281,996	3,726,013	4,427,161
Cat 3 Lean Ore	6	WEST	N	700,661	12	1,320,836	10,357	1,871,260	4,134,217	31,070	6,811,388	10,976,675
Cat 3 Lean Ore	7	EAST	N	466,384	13	1,036,891		1,825,017	3,245,470	0	6,643,060	9,888,530
Cat 3 Lean Ore	7	WEST	N	822,060	14	639,835		1,691,002	2,002,683	0	6,155,248	8,157,931
Cat 3 Lean Ore	8	EAST	N	511,171	15			4,775,347	0	0	17,382,263	17,382,263
Cat 3 Lean Ore	8	WEST	N	1,984,690	16			3,650,319	0	0	14,929,805	14,929,805
Cat 3 Lean Ore	9	EAST	N	490,270	17			1,491,121	0	0	6,098,684	6,098,684
Cat 3 Lean Ore	9	WEST	N	603,538	18			1,903,476	0	0	7,785,219	7,785,219
Cat 3 Lean Ore	10	EAST	N	273,383	19			1,605,809	0	0	6,567,760	6,567,760
Cat 3 Lean Ore	10	WEST	N	1,495,926	20			2,101,973	0	0	8,597,069	8,597,069
Cat 3 Lean Ore	11	CENTRAL	N	133,914	**Totals**	**3,131,477**	**4,739,119**	**33,599,529**	**9,801,522**	**11,892,730**	**123,890,336**	**145,584,588**
Cat 3 Lean Ore	11	EAST	N	93,999					Haul Distances			
Cat 3 Lean Ore	11	WEST	N	1,023,630		From	Cent	East	West			
Cat 3 Lean Ore	12	CENTRAL	N	1,320,836		To	3LO SP	3LO SP	3LO SP			
Cat 3 Lean Ore	12	EAST	N	10,357		yr	miles	miles	miles			
Cat 3 Lean Ore	12	WEST	N	1,871,260		0-1		2.15	2.81			
Cat 3 Lean Ore	13	CENTRAL	N	1,036,891		2-6		2.41	3.17			
Cat 3 Lean Ore	13	WEST	N	1,825,017		7-10		2.65	3.74			
Cat 3 Lean Ore	14	CENTRAL	N	639,835		11-15	3.13	3.00	3.64			
Cat 3 Lean Ore	14	WEST	N	1,691,002		16-20	2.97	3.33	4.09			
Cat 3 Lean Ore	15	WEST	N	4,775,347								
Cat 3 Lean Ore	16	WEST	N	3,650,319								
Cat 3 Lean Ore	17	WEST	N	1,491,121								
Cat 3 Lean Ore	18	WEST	N	1,903,476								
Cat 3 Lean Ore	19	WEST	N	1,605,809								
Cat 3 Lean Ore	20	WEST	N	2,101,973								
Stockpile tons				**41,470,125**								

Cat	year	PIT	cat 2	SumOfATons	year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi
Cat 4	0	EAST	N	74,559	0		74,559		0	125,260	0	125,260
Cat 4	1	EAST	N	8,208	1		8,208		0	13,790	0	13,790
Cat 4	2	EAST	N	252,209	2		252,209		0	539,726	0	539,726
Cat 4	3	EAST	N	1,254,741	3		1,254,741		0	2,685,146	0	2,685,146
Cat 4	4	EAST	N	900,144	4		900,144	125,320	0	1,926,308	362,175	2,288,483
Cat 4	4	WEST	N	125,320	5		1,173,278		0	2,510,816	0	2,510,816
Cat 4	5	EAST	N	1,173,278	6		1,372,422	26,377	0	2,936,982	76,231	3,013,213
Cat 4	6	EAST	N	1,372,422	7		578,971	58,885	0	1,354,793	201,388	1,556,181
Cat 4	6	WEST	N	26,377	8		479,489	18,534	0	1,122,003	63,387	1,185,390
Cat 4	7	EAST	N	578,971	9		581,364		0	1,360,392	0	1,360,392
Cat 4	7	WEST	N	58,885	10		384,780	79,946	0	900,385	273,416	1,173,800
Cat 4	8	EAST	N	479,489	11	16,552	592,447	44,879	44,193	1,504,816	142,714	1,691,723
Cat 4	8	WEST	N	18,534	12	130,166	15,988	42,374	347,543	40,610	134,748	522,901
Cat 4	9	EAST	N	581,364	13	81,468		16,692	217,519	0	53,080	270,600
Cat 4	10	EAST	N	384,780	14	17,895		8,346	47,779	0	26,540	74,319
Cat 4	10	WEST	N	79,946	15			77,016	0	0	244,912	244,912
Cat 4	11	CENTRAL	N	16,552	16			110,320	0	0	350,819	350,819
Cat 4	11	EAST	N	592,447	17			59,945	0	0	190,624	190,624

PolyMet - Hoyt Lakes, Minnesota
Table 6 - Rock Movement Detail - Proposed Action

Cat 4	11	WEST	N	44,879
Cat 4	12	CENTRAL	N	130,166
Cat 4	12	EAST	N	15,988
Cat 4	12	WEST	N	42,374
Cat 4	13	CENTRAL	N	81,468
Cat 4	13	WEST	N	16,692
Cat 4	14	CENTRAL	N	17,895
Cat 4	14	WEST	N	8,346
Cat 4	15	WEST	N	77,016
Cat 4	16	WEST	N	110,320
Cat 4	17	WEST	N	59,945
Cat 4	18	WEST	N	58,422
Cat 4	19	WEST	N	59,243
Cat 4	20	WEST	N	191,726
Stockpile tons				**8,892,706**

18			58,422	0	0	185,781	185,781
19			59,243	0	0	188,392	188,392
20			191,726	0	0	609,689	609,689
Totals	**246,080**	**7,668,600**	**978,025**	**657,035**	**17,021,027**	**3,103,896**	**20,781,957**

Haul Distances

From	Cent	East	West
To	4 SP	4 SP	4 SP
Yr	miles	miles	miles
0-1		1.68	2.34
2-6		2.14	2.89
7-10		2.34	3.42
11-15	2.67	2.54	3.18
16-20	2.63	2.99	3.74

Cat	year	PIT	cat 2	SumOfATons
Cat 4 Lean Ore	2	EAST	N	9,005
Cat 4 Lean Ore	5	EAST	N	17,660
Cat 4 Lean Ore	5	WEST	N	53,367
Cat 4 Lean Ore	6	EAST	N	72,366
Cat 4 Lean Ore	6	WEST	N	52,489
Cat 4 Lean Ore	7	EAST	N	70,147
Cat 4 Lean Ore	7	WEST	N	70,653
Cat 4 Lean Ore	8	EAST	N	99,203
Cat 4 Lean Ore	8	WEST	N	61,630
Cat 4 Lean Ore	9	EAST	N	81,107
Cat 4 Lean Ore	9	WEST	N	44,013
Cat 4 Lean Ore	10	EAST	N	116,358
Cat 4 Lean Ore	10	WEST	N	61,940
Cat 4 Lean Ore	11	CENTRAL	N	17,839
Cat 4 Lean Ore	11	EAST	N	89,716
Cat 4 Lean Ore	11	WEST	N	78,693
Cat 4 Lean Ore	12	CENTRAL	N	62,575
Cat 4 Lean Ore	12	EAST	N	54,009
Cat 4 Lean Ore	12	WEST	N	70,561
Cat 4 Lean Ore	13	CENTRAL	N	79,454
Cat 4 Lean Ore	13	EAST	N	26,844
Cat 4 Lean Ore	13	WEST	N	52,449
Cat 4 Lean Ore	14	CENTRAL	N	62,473
Cat 4 Lean Ore	14	WEST	N	26,059
Cat 4 Lean Ore	15	WEST	N	34,564
Cat 4 Lean Ore	16	WEST	N	88,755
Cat 4 Lean Ore	17	WEST	N	168,404
Cat 4 Lean Ore	18	WEST	N	52,919
Cat 4 Lean Ore	19	WEST	N	8,723
Cat 4 Lean Ore	20	WEST	N	106,190
Total tons				**1,890,162**

Year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi
0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0
2	0	9,005	0	0	15,848	0	15,848
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	17,660	53,367	0	31,082	133,416	164,498
6	0	72,366	52,489	0	127,365	131,222	258,587
7	0	70,147	70,653	0	159,934	214,077	374,012
8	0	99,203	61,630	0	226,182	186,738	412,920
9	0	81,107	44,013	0	184,924	133,358	318,282
10	0	116,358	61,940	0	265,295	187,677	452,973
11	17,839	89,716	78,693	38,176	224,289	220,341	482,806
12	62,575	54,009	70,561	133,910	135,022	197,569	466,501
13	79,454	26,844	52,449	170,033	67,109	146,857	383,999
14	62,473	0	26,059	133,692	0	72,965	206,657
15	0	0	34,564	0	0	96,778	96,778
16	0	0	88,755	0	0	289,342	289,342
17	0	0	168,404	0	0	548,998	548,998
18	0	0	52,919	0	0	172,517	172,517
19	0	0	8,723	0	0	28,438	28,438
20	0	0	106,190	0	0	346,179	346,179
Totals	**222,341**	**636,413**	**1,031,407**	**475,810**	**1,437,051**	**3,106,475**	**5,019,335**

From	Cent	East	West
To	4 SP	4 SP	4 SP
Yr	miles	miles	miles
0-1			
2-6		1.76	2.5
7-10		2.28	3.03
11-15	2.14	2.5	2.8
16-20	2.14	2.5	3.26

Pit Overburden

PIT	Year	Tons
EAST	0	1,112,416
EAST	2	797,425
EAST	3	988,597

Year	Cent	East	West	ton-miles	ton-miles	ton-miles	tot ton-mi
0		1,112,416	4,211,197	0	5,317,347	17,897,588	23,214,934
1			0	0	0	0	0
2		797,425	0	3,915,356	0		3,915,356

PolyMet - Hoyt Lakes, Minnesota
Table 6 - Rock Movement Detail - Proposed Action

EAST	6	885,501
EAST	10	3,336,933
CENTRAL	11	15,204
WEST	0	4,211,197
WEST	4	3,906,941
WEST	6	4,611,792
WEST	7	91,026
WEST	13	2,317,105
WEST	14	1,638,469
Total Pit Overburden		**23,912,605**

Year							Total
3		988,597		0	4,854,013	0	4,854,013
4		3,906,941		0	0	17,542,165	17,542,165
5				0	0	0	0
6		885,501	4,611,792	0	4,347,812	20,706,944	25,054,756
7			91,026	0	0	441,476	441,476
8				0	0	0	0
9				0	0	0	0
10		3,336,933		0	18,553,349	0	18,553,349
11	15,204			81,643	0	0	81,643
12				0	0	0	0
13		2,317,105		0	0	10,890,393	10,890,393
14		1,638,469		0	0	7,700,803	7,700,803
15				0	0	0	0
16							0
17							0
18							0
19							0
20							0
Totals	15,204	7,120,873	16,776,529	81,643	36,987,877	75,179,368	112,248,889

Haul Distances

From To Yr	Central Stor & SP miles	East Stor & SP miles	West Stor & SP miles	
0-1		4.78	4.25	
2-6		4.91	4.49	Haul to storage
7-10		5.56	4.85	area plus haul
11-15	5.37		4.7	to stockpile

Stockpile Construction Overburden Tons

Stockpile	Year 1	Years 2-4	Years 5-9	Years 10-14
Cat 1	4,230,634	3,205,483	752,573	38,677
Cat 2/3	226,803	251,725	162,860	192,698
Cat 3 Lean Ore	1,355,945	363,235	260,210	452,911
Cat 4	171,419	453,973	178,957	0
Cat 4 Lean Ore	2,090,538	0	0	0

Year	Cat 1/2	Cat 3	Cat 3 LO	Cat 4	Cat 4 LO	ton-miles	ton-miles	ton-miles	ton-miles	ton-miles	tot ton-mi
0											
1	4,230,634	226,803	1,355,945	171,419	2,090,538	22,168,524	1,147,622	6,833,961	781,669	9,219,271	40,151,048
2	3,205,483	251,725	363,235	453,973		16,796,732	1,273,728	1,830,705	2,070,119	0	21,971,285
3	3,205,483	251,725	363,235	453,973		16,796,732	1,273,728	1,830,705	2,070,119	0	21,971,285
4	3,205,483	251,725	363,235	453,973		16,796,732	1,273,728	1,830,705	2,070,119	0	21,971,285
5	752,573	162,860	260,210	178,957		3,943,483	824,069	1,311,459	816,043	0	6,895,054
6	752,573	162,860	260,210	178,957		3,943,483	824,069	1,311,459	816,043	0	6,895,054
7	752,573	162,860	260,210	178,957		3,943,483	824,069	1,311,459	816,043	0	6,895,054
8	752,573	162,860	260,210	178,957		3,943,483	824,069	1,311,459	816,043	0	6,895,054
9	752,573	162,860	260,210	178,957		3,943,483	824,069	1,311,459	816,043	0	6,895,054
10	38,677	192,698	452,911			202,666	975,050	2,282,673	0	0	3,460,390
11	38,677	192,698	452,911			202,666	975,050	2,282,673	0	0	3,460,390
12	38,677	192,698	452,911			202,666	975,050	2,282,673	0	0	3,460,390
13	38,677	192,698	452,911			202,666	975,050	2,282,673	0	0	3,460,390
14	38,677	192,698	452,911			202,666	975,050	2,282,673	0	0	3,460,390
15											
16											
17											
18											
19											
20											
Totals	17,803,334	2,759,764	6,011,258	2,428,123	2,090,538	93,289,468	13,964,405	30,296,739	11,072,240	9,219,271	157,842,124

31,093,016

Haul Distances

From To Yr	Cat 1 Stor & SP miles	Cat 2/3 Stor & SP miles	Cat 3 LO Stor & SP miles	Cat 4 Stor & SP miles	Cat 4 LO Stor & SP miles	
0-1	5.24	5.06	5.04	4.56	4.41	Haul to
2-4	5.24	5.06	5.04	4.56	4.41	storage area
6-9	5.24	5.06	5.04	4.56	4.41	plus haul to
10-14	5.24	5.06	5.04	4.56	4.41	stockpile

PolyMet - Hoyt Lakes, Minnesota
Table 7 - Summary of Emission Increases Due to Stockpile Neutralization

Scenario	Description	Tons/yr PM10		
		Mine Site Increase	Plant Site Increase	Total Increase
1	Lump limestone trucked directly to Mine Site	0.45	0	0.45
2	Lump limestone rail hauled to Plant Site; trucked to Mine Site	0.45	0.39	0.83
3	Limestone slurry produced at Plant Site; trucked to Mine Site	1.23	1.28	2.51
4	Lime slurry produced at Plant Site, trucked to Mine Site	0.45	1.63	2.08

Key Assumptions

A. Lime and limestone slurries contain 30% solids (may be able to increase for specific equipment types)

B. All hauling (solid or slurry) by over the road (40 ton) trucks with a 24 ton payload

C. Calculations based on year 3, which has maximum lime or limestone demand

D. Year 10 mine configuration assumed to avoid considering multiple years

PolyMet - Hoyt Lakes, Minnesota
Table 8 Calculation of Potential Emissions at Mine Site for Lump Limestone Option

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	Throughput Maximum (Units/yr) Note	Throughput Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	Max. Uncontrolled (tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)
C23WRMH		Limestone Unloading - Cat 2/3	NA	48 [207]	2,386 [307]	2,386 [401]	tons limestone		PM10	N	N	0.008 [114]	0.37	0.009	0.009	0 [502]	0.37	0.009	0.009		0.009
C23WRMH				48 [207]	2,386 [307]	2,386 [401]	tons limestone		Total PM	N	N	0.016 [114]	0.78	0.019	0.019	0 [502]	0.78	0.019	0.019		0.019
C3LOMH		Limestone Unloading - Cat 3 LO	NA	48 [207]	2,864 [307]	2,864 [401]	tons limestone		PM10	N	N	0.008 [114]	0.37	0.011	0.011	0 [502]	0.37	0.011	0.011		0.011
C3LOMH				48 [207]	2,864 [307]	2,864 [401]	tons limestone		Total PM	N	N	0.016 [114]	0.78	0.023	0.023	0 [502]	0.78	0.023	0.023		0.023
C4WRMH		Limestone Unloading - Cat 4	NA	48 [207]	2,102 [307]	2,102 [401]	tons limestone		PM10	N	N	0.008 [114]	0.37	0.008	0.008	0 [502]	0.37	0.008	0.008		0.008
C4WRMH				48 [207]	2,102 [307]	2,102 [401]	tons limestone		Total PM	N	N	0.016 [114]	0.78	0.017	0.017	0 [502]	0.78	0.017	0.017		0.017
C23WRMH		Limestone Loading - Cat 2/3	NA	48 [207]	2,386 [307]	2,386 [401]	tons limestone		PM10	N	N	0.008 [114]	0.37	0.009	0.009	0 [502]	0.37	0.009	0.009		0.009
C23WRMH				48 [207]	2,386 [307]	2,386 [401]	tons limestone		Total PM	N	N	0.016 [114]	0.78	0.019	0.019	0 [502]	0.78	0.019	0.019		0.019
C3LOMH		Limestone Loading - Cat 3 LO	NA	48 [207]	2,864 [307]	2,864 [401]	tons limestone		PM10	N	N	0.008 [114]	0.37	0.011	0.011	0 [502]	0.37	0.011	0.011		0.011
C3LOMH				48 [207]	2,864 [307]	2,864 [401]	tons limestone		Total PM	N	N	0.016 [114]	0.78	0.023	0.023	0 [502]	0.78	0.023	0.023		0.023
C4WRMH		Limestone Loading - Cat 4	NA	48 [207]	2,102 [307]	2,102 [401]	tons limestone		PM10	N	N	0.008 [114]	0.37	0.008	0.008	0 [502]	0.37	0.008	0.008		0.008
C4WRMH				48 [207]	2,102 [307]	2,102 [401]	tons limestone		Total PM	N	N	0.016 [114]	0.78	0.017	0.017	0 [502]	0.78	0.017	0.017		0.017
C23WRMH		Limestone Application - Cat 2/3	NA	48 [207]	2,386 [307]	2,386 [401]	tons limestone		PM10	N	N	0.008 [114]	0.37	0.009	0.009	0 [502]	0.37	0.009	0.009		0.009
C23WRMH				48 [207]	2,386 [307]	2,386 [401]	tons limestone		Total PM	N	N	0.016 [114]	0.78	0.019	0.019	0 [502]	0.78	0.019	0.019		0.019
C3LOMH		Limestone Application - Cat 3 LO	NA	48 [207]	2,864 [307]	2,864 [401]	tons limestone		PM10	N	N	0.008 [114]	0.37	0.011	0.011	0 [502]	0.37	0.011	0.011		0.011
C3LOMH				48 [207]	2,864 [307]	2,864 [401]	tons limestone		Total PM	N	N	0.016 [114]	0.78	0.023	0.023	0 [502]	0.78	0.023	0.023		0.023
C4WRMH		Limestone Application - Cat 4	NA	48 [207]	2,102 [307]	2,102 [401]	tons limestone		PM10	N	N	0.008 [114]	0.37	0.008	0.008	0 [502]	0.37	0.008	0.008		0.008
C4WRMH				48 [207]	2,102 [307]	2,102 [401]	tons limestone		Total PM	N	N	0.016 [114]	0.78	0.017	0.017	0 [502]	0.78	0.017	0.017		0.017
AABB	FS 011	Mine Haul Roads, Segment AA to BB	NA	1 [213]	92 [311]	92 [401]	VMT	134	PM10	N	N	6.222 [114]	3.68	0.182	0.182	80 [501]	0.74	0.036	0.036		0.036
AABB				1 [213]	92 [311]	92 [401]	VMT	134	Total PM	N	N	23.508 [114]	13.91	0.687	0.687	80 [501]	2.78	0.137	0.137		0.137
AAFF	FS 011	Mine Haul Roads, Segment AA to FF	NA	0 [213]	13 [311]	13 [401]	VMT	134	PM10	N	N	6.222 [114]	0.52	0.025	0.025	80 [501]	0.10	0.005	0.005		0.005
AAFF				0 [213]	13 [311]	13 [401]	VMT	134	Total PM	N	N	23.508 [114]	1.95	0.096	0.096	80 [501]	0.39	0.019	0.019		0.019
C3LORD	FS 011	Mine Haul Roads, Segment BB to CC	NA	1 [213]	92 [311]	92 [401]	VMT	134	PM10	N	N	6.222 [114]	3.67	0.181	0.181	80 [501]	0.73	0.036	0.036		0.036
C3LORD				1 [213]	92 [311]	92 [401]	VMT	134	Total PM	N	N	23.508 [114]	13.86	0.684	0.684	80 [501]	2.77	0.137	0.137		0.137
DK	FS 011	Mine Haul Roads, Segment D to K	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
DK				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
DU	FS 011	Mine Haul Roads, Segment D to U	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
DU				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ED	FS 011	Mine Haul Roads, Segment E to D	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ED				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ET	FS 011	Mine Haul Roads, Segment E to T	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ET				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
FE	FS 011	Mine Haul Roads, Segment F to E	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
FE				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
FM	FS 011	Mine Haul Roads, Segment F to M	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
FM				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
C4WRRD	FS 011	Mine Haul Roads, Segment FF to GG	NA	0 [213]	67 [311]	67 [401]	VMT	134	PM10	N	N	6.222 [114]	2.66	0.131	0.131	80 [501]	0.53	0.026	0.026		0.026
C4WRRD				0 [213]	67 [311]	67 [401]	VMT	134	Total PM	N	N	23.508 [114]	10.04	0.496	0.496	80 [501]	2.01	0.099	0.099		0.099
GF	FS 011	Mine Haul Roads, Segment G to F	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
GF				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
EASTP	FS 011	Mine Haul Roads, Segment I to H	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
EASTP				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JI	FS 011	Mine Haul Roads, Segment J to I	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JI				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JW	FS 011	Mine Haul Roads, Segment J to W	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JW				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JJL	FS 011	Mine Haul Roads, Segment JJ to L	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JJL				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
KJ	FS 011	Mine Haul Roads, Segment K to J		0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
KJ				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
KO	FS 011	Mine Haul Roads, Segment K to O	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
KO				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OBSRRD	FS 011	Mine Haul Roads, Segment KK to G	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OBSRRD				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
LLL	FS 011	Mine Haul Roads, Segment L to LL	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
LLL				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
LLN	FS 011	Mine Haul Roads, Segment LL to N	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
LLN				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
MLL	FS 011	Mine Haul Roads, Segment M to L	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
MLL				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
NM	FS 011	Mine Haul Roads, Segment N to M	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
NM				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ON	FS 011	Mine Haul Roads, Segment O to N	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ON				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OOO	FS 011	Mine Haul Roads, Segment O to OO	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OOO				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OP	FS 011	Mine Haul Roads, Segment O to P	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OP				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
C4LORD	FS 011	Mine Haul Roads, Segment OO to EE	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
C4LORD				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
PQ	FS 011	Mine Haul Roads, Segment P to Q	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
PZ	FS 011	Mine Haul Roads, Segment P to Z	NA	1 [213]	86 [311]	86 [401]	VMT	134	PM10	N	N	6.222 [114]	3.42	0.169	0.169	80 [501]	0.68	0.034	0.034		0.034
PZ				1 [213]	86 [311]	86 [401]	VMT	134	Total PM	N	N	23.508 [114]	12.92	0.638	0.638	80 [501]	2.58	0.128	0.128		0.128
WESTP	FS 011	Mine Haul Roads, Segment S to HH	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
WESTP				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
WESTP	FS 011	Mine Haul Roads, Segment S to II	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
WESTP				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000

PolyMet - Hoyt Lakes, Minnesota
Table 8 Calculation of Potential Emissions at Mine Site for Lump Limestone Option

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	(Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)
WESTP	FS 011	Mine Haul Roads, Segment T to S	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
WESTP				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
UV		Mine Haul Roads, Segment U to V		0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
UV				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
WX		Mine Haul Roads, Segment W to X	NA	1	[213]	91	[311]	91	[401]	VMT	134	PM10	N	N	6.222	[114]	3.62	0.179	0.179	80	[501]	0.72	0.036	0.036		0.036
WX				1	[213]	91	[311]	91	[401]	VMT	134	Total PM	N	N	23.508	[114]	13.69	0.676	0.676	80	[501]	2.74	0.135	0.135		0.135
C3WRRD	FS 011	Mine Haul Roads, Segment X to Y	NA	0	[213]	47	[311]	47	[401]	VMT	134	PM10	N	N	6.222	[114]	1.89	0.093	0.093	80	[501]	0.38	0.019	0.019		0.019
C3WRRD				0	[213]	47	[311]	47	[401]	VMT	134	Total PM	N	N	23.508	[114]	7.14	0.352	0.352	80	[501]	1.43	0.070	0.070		0.070
ZAA	FS 011	Mine Haul Roads, Segment Z to AA	NA	0	[213]	71	[311]	71	[401]	VMT	134	PM10	N	N	6.222	[114]	2.84	0.140	0.140	80	[501]	0.57	0.028	0.028		0.028
ZAA				0	[213]	71	[311]	71	[401]	VMT	134	Total PM	N	N	23.508	[114]	10.72	0.529	0.529	80	[501]	2.14	0.106	0.106		0.106
ZW	FS 011	Mine Haul Roads, Segment Z to W	NA	0	[213]	38	[311]	38	[401]	VMT	134	PM10	N	N	6.222	[114]	1.52	0.075	0.075	80	[501]	0.30	0.015	0.015		0.015
ZW				0	[213]	38	[311]	38	[401]	VMT	134	Total PM	N	N	23.508	[114]	5.73	0.283	0.283	80	[501]	1.15	0.057	0.057		0.057
VMM		Mine Haul Roads, Segment V to MM	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
VMM				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
VNN		Mine Haul Roads, Segment V to NN	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
FS012A	FS 012	Unpaved Roads, Dunka Rd. A (Lime Trucks)	NA	1.46	[219]	225	[316]	225	[401]	VMT	134	PM10	N	N	0.893	[114]	1.31	0.064	0.064	80	[501]	0.26	0.013	0.013		0.013
FS012A				1.46	[219]	225	[316]	225	[401]	VMT	134	Total PM	N	N	3.582	[114]	5.24	0.255	0.255	80	[501]	1.05	0.051	0.051		0.051
FS012B		Unpaved Roads, Dunka Rd. B (Lime Trucks)	NA	7.76	[219]	1,191	[316]	1,191	[401]	VMT	134	PM10	N	N	0.951	[114]	1.48	0.072	0.359	80	[501]	1.48	0.072	0.072		0.072
FS012B				7.76	[219]	1,191	[316]	1,191	[401]	VMT	134	Total PM	N	N	3.816	[114]	29.61	1.438	1.438	80	[501]	5.92	0.288	0.288		0.288
FS012B3		Unpaved Roads, Dunka Rd. B3 (Lime Trucks)	NA	4.66	[219]	716	[316]	716	[401]	VMT	134	PM10	N	N	0.983	[114]	4.59	0.223	0.223	80	[501]	0.92	0.045	0.045		0.045
FS012B3				4.66	[219]	716	[316]	716	[401]	VMT	134	Total PM	N	N	3.944	[114]	18.40	0.894	0.894	80	[501]	3.68	0.179	0.179		0.179

Contractor Crushing Operations (for road construction, etc.)

Stack ID	ID	Emission Unit Description	APCD ID	Max (Units/hr)	Note	(Units/yr)	Note	Proj Act (Units/yr)	Note	Units	Days	Pollutant	PSD	HAP	EF (lb/Unit)	Note	(lb/hr)	(tons/yr)	(ton/yr)	CE(%)	Note	(lb/hr)	(tons/yr)	Proj Act (tons/yr)	Std/Limit	Limited (tons/yr)
OBSRMH	FS 023	Primary Crushing	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	0.00054	[126]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	0.0012	[126]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Screening	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	0.00074	[128]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	0.0022	[128]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		To Product Conveyor	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	4.60E-05	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	0.00014	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Conveyor to Secondary Crushing (2 transfers)	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	9.20E-05	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	2.80E-04	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Secondary Crushing	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	0.00054	[126]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	0.0012	[126]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Screening	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	0.00074	[128]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	0.0022	[128]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		GP 001
OBSRMH		Return Conveyor (2 transfers)	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	9.20E-05	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	2.80E-04	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Product to Stock Pile	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	N	N	4.60E-05	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	N	N	0.00014	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000
OBSRMH		Truck Loading	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	N	N	0.0044	[114]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	N	N	0.0094	[114]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000

Totals for PSD Applicability (i.e. PSD Point Sources)

Criteria Pollutant Totals		Pollutant	(lb/hr)	(tons/yr)	(ton/yr)	(lb/hr)	(tons/yr)	(tons/yr)	Limited (tons/yr)
		PM10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total PM	0.00	0.00	0.00	0.00	0.00	24.03	2.03

Mine Site Totals (Point and Fugitive Sources)

Criteria Pollutant Totals [4]		Pollutant	(lb/hr)	(tons/yr)	(ton/yr)	(lb/hr)	(tons/yr)	(tons/yr)	Limited (tons/yr)
		PM10	40.41	1.91	1.91	10.74	0.45	0.45	0.45
		Total PM	150.24	7.21	7.21	35.66	1.58	1.58	1.58

Notes:

General References:
[1] Max. Uncontrolled Emissions (lb/hr) = EF (lb/unit) x Max. Hourly Throughput (units/hr).
   Max. Uncontrolled Emissions (tons/yr) = EF (lb/unit) x Max. Annual Throughput (units/yr) / 2,000 (lb/ton).
[2] Max. Controlled Emissions (lb/hr) = Max. Uncontrolled Emissions (lb/hr) x (1-Control Eff./100).
   Max. Controlled Emissions (tons/yr) = Max. Uncontrolled Emissions (tons/yr) x (1-Control Eff./100).

Emission Factor References:
[114] See Fugitive Emission Factor Calculation Tabs
[126] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Tertiary Crushing (controlled). Emission factors are not given for primary and secondary crushing,
   but footnote n indicates that the tertiary crushing factors can be used as an upper bound.
[128] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Screening (controlled).
[129] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Conveyor Transfer Point (controlled). Where the emission unit consist of a transfer to and from the conveyor, the emission factor is multiplied by 2.

Maximum Hourly Throughput References:
[207] The maximum quantity of limestone required for each stockpile was estimated by the project geochemist. It was assumed that the maximum handled in one hour would be two truckloads or 48 tons.
[213] Haul distances for limestone on mine haul roads were determined by assigning a letter to each intersection or termination for the haul roads. The distance between each point assigned a letter was determined from aerial photographs. The route for each haul was determined.
   Limestone would be hauled in 40 ton trucks with a 24 ton payload. The total number of trips for hauling to each stockpile were determined by dividing the limestone required as calculated by the project geochemist by 24.
   The emission for each segment were calculated by summing the trips for the hauling of limestone to each stockpile, multiplying by the length of the segment, and multiplying by 2 to account for round trips. Hourly VMT assume roughly two trips to each stockpile per hour.
[214] A rough estimate of light truck traffic at the mine was made by scaling down VMT for light trucks at the Cliffs Erie mine by the ratio of the production levels. VMT for Cliffs Erie = 57.02 VMT/hr * 32000 tpd PolyMet/100000 tpd Cliffs Erie = 18.25 VMT/hr.
[217] Estimates of light truck traffic on the portions the Dunka Rd where PolyMet will control the surrounding land were made based on information in the 43-101 document, the DFS executive summary, Summary Description of Proposed Mining Operations (2004) and communications with PolyMet.
   Personnel traveling to the mine site and Area 2 are assumed to be as follows: 149 mine operations staff (mine), 18 mine technical services (12 mine, 6 area 2), 25 railroad operations (Area 2), 3 mine management (area 2), 3 EHS etc. (plant to mine).
   The above staff were assigned to shifts as shown in the table below. The road segments traveled are also included:

Category	Location	1st shift	2nd Shift	3rd Shift	Road Segments Traveled	Road S	Distance (miles)	Max Hourly Trips	Max Daily Trips	Hourly VMT	Annual VMT	Daily VMT
Mine Ops	Mine	64	43	42	A, B, B2, C, D, H	A	0.366	33	90	12.09	12034.15	32.97
Mine Tech Serv	Mine	4	4	4	A, B, B2, C, D, H	B	1.940	33	90	64.02	63725.13	174.59
Mine Tech Serv	Area 2	4	2	0	D, H	B2	0.160	33	90	5.27	5250.60	14.39

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Table 8 Calculation of Potential Emissions at Mine Site for Lump Limestone Option

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	(Units/yr)	Note	Projected Actual (Units/yr)	Note
Mine Manage.	Area 2			3		0		0	D, H
RR Ops	Area 2			13		9		3	D, H
EHS	PP to mine			3		0		0	A, B, B2, C, D, E, F
Total				91		58		49	

Pollutant	Emission Factor (lb/Unit)	Note	Annual days with precipitation	Pollutant	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)
B3	1.166		33	90	38.48	38303.10	104.94
C	1.928		33	90	63.62	63326.89	173.50
D	0.148		171	456	25.24	24566.69	67.31
E	0.722		3	6	2.17	1580.93	4.33
F	0.370		3	6	1.11	810.25	2.22
H	0.114		146	390	16.62	16208.90	44.41

The distance for each road segment was estimated from an aerial photograph. It was assumed that the mine operations personnel would travel to Area 2 in personal vehicles and then be shuttled in 6 passenger vans to the mine site. All other personal were assumed to drive a vehicle all the way to their destination. Maximum hourly emissions will occur at shift changes where the vehicles transporting both shifts could be on the road during the same hour. To be conservative it was assumed that all travel would occur between the eight hour shifts although at least some railroad personnel will be working 12 hour shifts and other personnel may travel at other times. The maximum daily and hourly trips are shown in the table above as well as the hourly and annual miles. Only segments A, B, and B3 are located at the Mine Site.

The emissions from the other segments are calculated in the Plant Site emission calculation spreadsheet.

[219] Traffic levels for tranporting limestone down the Dunka Rd. were estimated from the total quantity of limestone required at the Mine Site. This quanity was obtained from the project geochemist.

Assume maximum hourly rate is two round trips. Length of segment A = 0.366 miles, B = 1.94, B3 = 1.166 miles.

[225] No crushing will be required for this scenario.

Maximum Annual Throughput References:

[307] The total maximum quanity of limestone required for each stockpile was estimated by the project geochemist.

[311] Haul distances for limestone on mine haul roads were determined by assigning a letter to each intersection or termination for the haul roads. The distance between each point assigned a letter was determined from aerial photographs. The route for each haul was determined.

Limestone would be hauled in 40 ton trucks with a 24 ton payload. The total number of trips for hauling to each stockpile were determined by dividing the limestone required as calculated by the project geochemist by 24.

The emission for each segment were calculated by summing the trips for the hauling of limestone to each stockpile, multiplying by the length of the segment, and multiplying by 2 to account for round trips.

[316] Traffic levels for tranporting limestone down the Dunka Rd. were estimated from the total quantity of limestone required at the Mine Site. This quanity was obtained from the project geochemist.

Length of segment A = 0.366 miles, B = 1.94, B3 = 1.166 miles.

[322] No crushing will be required for this scenario.

Projected Actual Throughput References

[401] Projected actual emissions are equivalent to potential emissions.

Control Efficiency References:

[501] Level 3A control measures, consistent with agreement reached by the IMA-MPCA Fugitive Emissions Workgroup as described in the November 18, 1998 "Taconite Industry Haul Truck Unpaved Road Fugitive Particulate Emission Factor and Control Efficiency" were observed at the Cliffs Erie facility; control practices are expected to be similar at the PolyMet facilities. The referenced document allows 80% for Level 3A control measures.

[502] Either no Air Pollution Control Devices (APCDs) are used in this process or the APCD does not control this pollutant. Therefore, Control Efficiency is 0.

[503] Controlled emission factors (with wet suppression) were used for all sources except truck loading. The material in the stockpile may be wet due to residual moisture from the wet suppression, depending on how long the material remains in the pile. If this is the case, then the emissions may be overestimated. Adjustment to the material moisture content can be made to reflect this phenomenon.

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Table 9: Calculation of Potential Emissions - Processing Plant Lump Limestone Option

Indicates source that will only operate for first 1 to 2 years of plant operation.

Stack ID	ID	Emission Unit Description	APCD ID	Maximum (Units/hr)	Note	Maximum (Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)
Reag V	EU 220	Lime Silo	CE 220	0 [227]		0 [312]		0 [423]		ft^3 exh.		PM10	Y	N	0.00	[176]	0.00	0.000	0.000	99	[512]	0.00	0.000	0.000		GP 001
Reag V				0 [228]		0 [312]		0 [423]		ton		Total PM	Y	N	0.99	[156]	0.00	0.000	0.000	99	[512]	0.00	0.000	0.000		GP 001
Reag V	EU 221	Lime Conveyor	NA	0 [228]		0 [312]		0 [423]		ton		PM10	Y	N	0.61	[177]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Reag V				0 [228]		0 [312]		0 [423]		ton		Total PM	Y	N	0.61	[177]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
SV 221	EU 321	Lime Slaker (w/scrubber)	CE 301	0 [228]		0 [312]		0 [423]		ton		PM10	Y	N	0.64	[178]	0.00	0.000	0.000	90	[517]	0.00	0.000	0.000		GP 001
SV 221				0 [228]		0 [312]		0 [423]		ton		Total PM	Y	N	0.64	[178]	0.00	0.000	0.000	90	[517]	0.00	0.000	0.000	IPER for PM	GP 001
Reag V	EU 321	Lime Slaker (fugitive emissions)	NA	0 [228]		0 [312]		0 [423]		ton		PM10	Y	N	0.16	[178]	0.00	0.000	0.000	0	[517]	0.00	0.000	0.000		GP 001
Reag V				0 [228]		0 [312]		0 [423]		ton		Total PM	Y	N	0.16	[178]	0.00	0.000	0.000	0	[517]	0.00	0.000	0.000		GP 001
SV 323	EU 326	Limestone Railcar Dump	CE 305	67950.72 [229]		3543076 [305]		3543076 [423]		ft^3 exh.		PM10	Y	N	8.57E-07	[179]	5.82	0.152	0.152	99	[515]	0.06	0.002	0.002	0.022 gr/cf PM	GP 001
SV 323				67950.72 [229]		3543076 [305]		3543076 [423]		ft^3 exh.		Total PM	Y	N	8.57E-07	[179]	5.82	0.152	0.152	99	[515]	0.06	0.002	0.002	(NSPS)	GP 001
SV 323				67950.72 [229]		3543076 [305]		3543076 [423]		ft^3 exh.		Crystalline Silica	Y	N	1.71E-08	[180]	0.12	0.003	0.003	99	[515]	0.00	0.000	0.000		
SV 323	EU 327	Limestone hopper to conveyor	CE 305																							
SV 323																										
SV 323				Emissions included with EU 326																						
CarDmp V	EU 328	Limestone Reclaim chute (to tunnel conveyor)	NA	0 [231]		0 [310]		0 [423]		ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
CarDmp V				0 [231]		0 [310]		0 [423]		ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
CarDmp V				0 [231]		0 [310]		0 [423]		ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
Addit V	EU 329	Limestone Tunnel Conveyor to Bunker	NA	0 [231]		0 [310]		0 [423]		ton		PM10	Y	N	0.0077	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Total PM	Y	N	0.0162	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Crystalline Silica	Y	N	0.0003	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
Addit V	EU 330	Limestone Bunker to crusher feed conveyor (enclosed)	NA	0 [231]		0 [310]		0 [423]		ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
Addit V	EU 322	Limestone Crusher Feed Conveyor Discharge (enclosed)	NA	0 [231]		0 [310]		0 [423]		ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
SV 322	EU 323	Limestone Crusher (stack emissions)	CE 304	0 [231]		0 [310]		0 [423]		ton		PM10	Y	N	7.14E-07	[181]	0.00	0.000	0.000	99	[516]	0.00	0.000	0.000	0.022 gr/cf PM	GP 001
SV 322				0 [231]		0 [310]		0 [423]		ton		Total PM	Y	N	7.14E-07	[181]	0.00	0.000	0.000	99	[516]	0.00	0.000	0.000	(NSPS)	GP 001
SV 322				0 [231]		0 [310]		0 [423]		ton		Crystalline Silica	Y	N	1.43E-08	[180]	0.00	0.000	0.000	99	[516]	0.00	0.000	0.000		0.000
Addit V	EU 323	Limestone Crusher (fugitive emissions)		0 [231]		0 [310]		0 [423]		ton		PM10	Y	N	1.79E-05	[182]	0.00	0.000	0.000	0	[516]	0.00	0.00	0.000		GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Total PM	Y	N	1.79E-05	[182]	0.00	0.000	0.000	0	[516]	0.00	0.00	0.000		GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Crystalline Silica	Y	N	3.57E-07	[180]	0.00	0.000	0.000	0	[516]	0.00	0.000	0.000		0.000
Addit V	EU 324	Limestone Crusher to Conveyor	NA	0 [231]		0 [310]		0 [423]		ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
Addit V	EU 224	Limestone Conveyor to Mix Tank	NA	0 [231]		0 [310]		0 [423]		ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
Addit V				0 [231]		0 [310]		0 [423]		ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 024	FS 024	Limestone conveyor to stacker conveyor	NA	141 [230]		7352 [308]		7352 [423]		ton		PM10	Y	N	0.0011	[183]	0.16	0.004	0.004	0	[502]	0.16	0.004	0.004	10% opacity	GP 001
FS 024				141 [230]		7352 [308]		7352 [423]		ton		Total PM	Y	N	0.003	[183]	0.42	0.011	0.011	0	[502]	0.42	0.011	0.011	(NSPS)	GP 001
FS 024				141 [230]		7352 [308]		7352 [423]		ton		Crystalline Silica	Y	N	0.0001	[180]	0.01	0.000	0.000	0	[502]	0.01	0.000	0.000		0.000
FS 033	FS 033	Limestone Stacker Conveyor to stockpile	NA	141 [230]		7352 [308]		7352 [423]		ton		PM10	N	N	0.0077	[185]	1.08	0.028	0.028	0	[502]	1.08	0.028	0.028		0.028
FS 033				141 [230]		7352 [308]		7352 [423]		ton		Total PM	N	N	0.0162	[185]	2.29	0.060	0.060	0	[502]	2.29	0.060	0.060		0.060
FS 033				141 [230]		7352 [308]		7352 [423]		ton		Crystalline Silica	N	N	0.0003	[180]	0.05	0.001	0.001	0	[502]	0.05	0.001	0.001		0.001
FS 025	FS 025	Limestone Truck Loading (FEL)	NA	141 [230]		7352 [308]		7352 [423]		ton		PM10	Y	N	0.0077	[192]	1.08	0.028	0.028	0	[502]	1.08	0.028	0.028		GP 001
FS 025				141 [230]		7352 [308]		7352 [423]		ton		Total PM	Y	N	0.0162	[192]	2.29	0.060	0.060	0	[502]	2.29	0.060	0.060		GP 001
FS 025				141 [230]		7352 [308]		7352 [423]		ton		Crystalline Silica	Y	N	0.0003	[180]	0.05	0.001	0.001	0	[502]	0.05	0.001	0.001		0.001
FS 034	FS 034	Limestone Reclaim Feeder to Conveyor	NA	0 [231]		0 [310]		0 [423]		ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 034				0 [231]		0 [310]		0 [423]		ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 034				0 [231]		0 [310]		0 [423]		ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 035	FS 035	Limestone Truck Dump	NA	0 [238]		0 [309]		0 [423]		ton		PM10	Y	N	0.0077	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 035				0 [238]		0 [309]		0 [423]		ton		Total PM	Y	N	0.0162	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 035				0 [238]		0 [309]		0 [423]		ton		Crystalline Silica	Y	N	0.0003	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 036	FS 036	Limestone Truck Dump Grizzly	NA	0 [238]		0 [309]		0 [423]		ton		PM10	Y	N	0.0087	[193]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 036				0 [238]		0 [309]		0 [423]		ton		Total PM	Y	N	0.0250	[193]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 036				0 [238]		0 [309]		0 [423]		ton		Crystalline Silica	Y	N	0.0005	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 037	FS 037	Limestone Grizzly to Conveyor Belt	NA	0 [238]		0 [309]		0 [423]		ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	Enclosed shed	GP 001
FS 037				0 [238]		0 [309]		0 [423]		ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	constructed over	GP 001
FS 037				0 [238]		0 [309]		0 [423]		ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	unloading point	0.000
FS 038	FS 038	Plant Site Paved Roads - Limestone Haul	NA	4.64 [239]		712 [314]		712 [423]		VMT	134	PM10	N	N	1.14	[185]	5.29	0.369	0.369	50	[519]	2.65	0.185	0.185		0.185
FS 038				4.64 [239]		712 [314]		712 [423]		VMT	134	Total PM	N	N	5.85	[185]	27.14	1.892	1.892	50	[519]	13.57	0.946	0.946		0.946
FS012B2	FS 012	Unpaved Roads, Dunka Rd. B2 (Limestone Trucks)	NA	0.64 [243]		98 [318]		98 [423]		VMT	134	PM10	N	N	0.959	[185]	0.61	0.030	0.030	60	[501]	0.25	0.012	0.012		0.012
FS012B2				0.64 [243]		98 [318]		98 [423]		VMT	134	Total PM	N	N	3.848	[185]	2.46	0.120	0.120	60	[501]	0.98	0.048	0.048		0.048
FS012C	FS 012	Unpaved Roads, Dunka Rd. C (Limestone Trucks)	NA	7.71 [243]		1,184 [318]		1184 [423]		VMT	134	PM10	N	N	0.777	[185]	5.99	0.291	0.291	60	[501]	2.40	0.116	0.116		0.116
FS012C				7.71 [243]		1,184 [318]		1184 [423]		VMT	134	Total PM	N	N	3.117	[185]	24.04	1.167	1.167	60	[501]	9.61	0.467	0.467		0.467
FS012D	FS 012	Unpaved Roads, Dunka Rd. H (Limestone Trucks)	NA	0.46 [243]		70 [318]		70 [423]		VMT	134	PM10	N	N	0.592	[185]	0.27	0.013	0.013	60	[501]	0.11	0.005	0.005		0.005
FS012D				0.46 [243]		70 [318]		70 [423]		VMT	134	Total PM	N	N	2.376	[185]	1.08	0.053	0.053	60	[501]	0.43	0.021	0.021		0.021
FS012E	FS 012	Unpaved Roads, Dunka Rd. H2 (Limestone Trucks)	NA	0.46 [244]		70 [319]		70 [423]		VMT	134	PM10	N	N	0.592	[185]	0.27	0.013	0.013	60	[501]	0.11	0.005	0.005		0.005
FS012E				0.46 [244]		70 [319]		70 [423]		VMT	134	Total PM	N	N	2.376	[185]	1.08	0.053	0.053	60	[501]	0.43	0.021	0.021		0.021
NA	GP 001	All PM/PM10 Point Sources	[3]	NA		NA		NA		NA		PM10	Y	N	NA		NA	NA	NA			NA	NA	See above	See above	240
NA				NA		NA		NA		NA		Total PM	Y	N	NA		NA	NA	NA			NA	NA	See above	See above	240

Totals for PSD Applicability (i.e. PSD Point Sources)

												Pollutant					(lb/hr)	(tons/yr)	(ton/yr)			(lb/hr)	(tons/yr)	(tons/yr)		(tons/yr)
Criteria Pollutant Totals												PM10					7.06	0.18	0.18			1.30	0.03	0.034		240.00
												Total PM					8.54	0.22	0.22			2.77	0.07	0.07		240.00

Plant Site Totals (Point and Fugitive Sources)

												Pollutant					(lb/hr)	(tons/yr)	(ton/yr)			(lb/hr)	(tons/yr)	(tons/yr)		(tons/yr)
Criteria Pollutant Totals [6]			240.35									PM10					20.59	0.93	0.93			7.89	0.39	0.39		240.35
												Total PM					66.63	3.57	3.57			30.10	1.63	1.63		241.56

Notes:

General References:

PolyMet - Hoyt Lakes, Minnesota
Table 9: Calculation of Potential Emissions - Processing Plant Lump Limestone Option

| | Indicates source that will only operate for first 1 to 2 years of plant operation. | | | | | | | | | | | | | | | | | | |

Stack ID	Emission Unit		APCD ID	Throughput				Annual days with precipitation	Pollutant	PSD Applicability	HAP?	Emission Factor	Max. Uncontrolled Potential to Emit [1]		Proj. Act. Uncontrolled Emissions	Control Efficiency		Max. Controlled Potential to Emit [2]		Proj. Act. Controlled Emissions	Emission Std or Operational Limit	Limited Controlled Potential to Emit
	ID	Description		Maximum		Projected Actual		Units			(Y/N)	(Y/N)											
				(Units/hr)	Note	(Units/yr)	Note	(Units/yr)	Note					(lb/Unit)	Note	(lb/hr)	(tons/yr)	(ton/yr)	(%)	Note	(lb/hr)	(tons/yr)	(tons/yr)	(tons/yr)

[1] Max. Uncontrolled Emissions (lb/hr) = EF (lb/unit) x Max. Hourly Throughput (units/hr).
   Max. Uncontrolled Emissions (tons/yr) = EF (lb/unit) x Max. Annual Throughput (units/yr) / 2,000 (lb/ton).
[2] Max. Controlled Emissions (lb/hr) = Max. Uncontrolled Emissions (lb/hr) x (1-Control Eff./100).
   Max. Controlled Emissions (tons/yr) = Max. Uncontrolled Emissions (tons/yr) x (1-Control Eff./100).

Emission Factor References:
[156] Emission factors from AP-42 Table 11.19.2-4 "Emission Factors for Pulverized Mineral Processing Operations", Product Storage with Fabric Filter Control. Controlled PM emission factor = 0.0099; uncontrolled emissions estimated by assuming 99% control for fabric filter by: 0.0099/(1-99/100) = 0.99.
   Controlled PM10 emission factor = 0.0016 lb/ton; uncontrolled emissions estimated by assuming 99% control by: 0.0016/(1-99/100) = 0.16.
[176] Emission factor based on performance specification for the lime silo filter of 0.005 gr/cf. The emission factor in lb/cf is then: 0.005 gr/cf * 1/7000 gr/lb = 7.14 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a control efficiency of 99% for the filter. Uncontrolled emissions then equal controlled emission divided by (1-99/100). Baghouse performance based emission factor used for PM10;
   AP-42 factor used for PM because it produced a higher result.
[177] Feed system consists of an enclosed screw feeder from silo to slaker. Emissions expected to be minimal. As a conservative estimate, emission factor for loading lime into an enclosed truck was taken from AP-42 Table 11.17-4. PM10 assumed equal to PM.
[178] Emission factor from AP-42 Table 11.17-2, Atmospheric Hydrator with wet scrubber. An uncontrolled emission factor was estimated by assuming 90% control for the scrubber. Emission factor is sum of filterable and inorganic condensable PM. PM10 assumed equal to PM. Because of the assumed 80% capture efficiency,
   the emissions routed to the scrubber = 80% of the emission factor and emissions that escape through the building ventillation system = 20% of the emission factor.
[179] Emission factor based on performance specification for the limestone railcar unloading baghouse of 0.006 gr/cf. The emission factor in lb/cf is then: 0.006 gr/cf * 1/7000 gr/lb = 8.57 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a removal efficiency of 99% for the baghouse and a capture efficiency of 80%. Uncontrolled emissions then equal controlled emissions divided by (1-99/100) and then divided by 0.8.
[180] Per the MSDS for this reagent, typical limestone contains >1% crystalline silica. Based on other data sources, a typical upper bound is 2% crystalline silica, which was used in the calculations (the PM was assumed to be 2% crystalline silica).
[181] Emission factor based on performance specification for the limestone crusher baghouse of 0.005 gr/cf. The emission factor in lb/cf is then: 0.005 gr/cf * 1/7000 gr/lb = 7.14 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a removal efficiency of 99% for the baghouse. Emissions not routed to the baghouse are calculated in the following entry in the spreadsheet.
[182] Emissions not routed to the control device were calculated by dividing the controlled emission factor for the stack emissions by (1-99/100) to get the uncontrolled emissions, dividing by 0.8 capture efficiency to get total emissions (captured + uncaptured) and times (1-.8) to get the fraction not routed to the control device.
[183] Emission factors (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Conveyor transfer point.
[185] See Fugitive Emission Factor Calculation Tabs
[192] Emission factor taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Truck Unloading - Fragmented Stone. Truck dumping would be a similar operation to dumping material in the reclaim hopper with a front end loader.
[193] Emission factors taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Screening.

Maximum Hourly Throughput References:
[227] Under this scenario, limestone will be used to neutrlize the stockpiles, so no lime will be used.
[228] Under this scenario, limestone will be used to neutrlize the stockpiles, so no lime will be used.
[229] The emissions from the limestone railcar unloading operation and the limestone hopper transfer to the conveyor will be vented to a common baghouse. Emission estimates are based on the estimated airflow and a baghouse performance specification of 0.006 gr/cf. The total airflow was estimated based on the unobstructed opening area where the railcars pass through the building and a face velocity of 200 fpm.
   The additional airflow from unloading the limestone to neutralize the stockpiles were estimated by multiplying the hourly airflow by the ratio of limestone required to the capacity of the equipment.
[230] Hourly throughput assumed equal to the weekly demand for limestone at the Mine Site as calculated by the project geochemist.
[231] This equipment will not be utilized to provide lump limestone for transport to the Mine Site.
[238] If the truck haul scenario is utilized and lump limestone is used at the Mine Site, the appropriate number of trucks will be routed directly to the Mine Site.
[239] Limestone slurry would be driven from the stockpile to the intersection with the unpaved road that goes to the Mine Site. The distance for this route is 1.16 miles. It was assumed that a maximum of two round trips per hour would be completed.
[241] Estimates of light truck traffic on the portions of the Dunka Rd. surrounded by land that will be controlled by PolyMet were made based on information in the 43-101 document, the DFS executive summary, Summary Description of Proposed Mining Operations (2004) and communications with PolyMet.
   Personnel traveling to the mine site and Area 2 are assumed to be as follows: 149 mine operations staff (mine), 18 mine technical services (12 mine, 6 area 2), 25 railroad operations (Area 2), 3 mine management (area 2), 3 EHS etc. (plant to mine).
   The above staff were assigned to shifts as shown in the table below. The road segments traveled are also included:

Category	Location	1st shift	2nd Shift	3rd Shift	Road Segments Traveled
Mine Ops	Mine	64	43	42	A, B, B2, B3, C, D, H
Mine Tech Serv	Mine	4	4	4	A, B, B2, B3, C, D, H
Mine Tech Serv	Area 2	4	2	0	D, H
Mine Manage.	Area 2	3	0	0	D, H
RR Ops	Area 2	13	9	3	D, H
EHS	PP to mine	3	0	0	A, B, B2, B3, C, D, E, F
Total		91	58	49	

Road Segment	Distance (miles)	Max Hourly Trips	Max Daily Trips	Hourly VMT	Annual VMT	Daily VMT
A	0.366	33	90	12.09	12034.15	32.97
B	1.940	33	90	64.02	63725.13	174.59
B2	0.160	33	90	5.27	5250.60	14.39
B3	1.166	33	90	38.49	38316.15	104.98
C	1.928	33	90	63.62	63326.89	173.50
D	0.148	171	456	25.24	24566.69	67.31
E	0.722	3	6	2.17	1580.93	4.33
F	0.370	3	6	1.11	810.25	2.22
H	0.114	146	390	16.62	16208.90	44.41

   The distance for each road segment was estimated from an aerial photograph. It was assumed that the mine operations personnel would travel to Area 2 in personal vehicles and then be shuttled in 6 passenger vans to the mine site. Maximum hourly emissions will occur at shift changes where the vehicles transporting both shifts could be on the road during the same hour. To be conservative it was assumed that all travel would occur between the eight hour shifts although at least some railroad personnel will be
   working 12 hour shifts and other personnel may travel at other times. The maximum daily and hourly trips are shown in the table above as well as the hourly and annual miles. Only segments B2, C, D, E, F, and H are located at the Plant Site.
   Emissions from the other segments are calculated in the Mine Site emission calculation spreadsheet.
[243] Traffic levels for tranporting limestone down the Dunka Rd. were estimated from the total quantity of limestone required at the Mine Site. This quanity was obtained from the project geochemist.
   Maximum VMT for each time period calculated by multiplying the number of trips times 2 for round trips and times the appropriate segment length: B2 = 0.16 miles, C = 1.928 miles, and H = 0.114 miles. It was assumed that a maximum of two round trips could be completed in one hour.
[244] A additional portion of road segment H has been incorporated within the PolyMet ambient air boundary. This segment is identified as "H2". The segment length is within a few meters of the length of segment H and the traffic levels would be identical. Therefore, the same VMT is used for segment H2 as for segment H.

Maximum Annual Throughput References:
[305] Annual exhaust assumed equal to hourly exhaust times the number of hours required to unload the limestone required at the Mine Site.
[308] Annual througnput is equivalent to maximum annual limestone demand at the Mine Site as calculated by the project geochemist.
[309] If the truck haul scenario is utilized and lump limestone is used at the Mine Site, the appropriate number of trucks will be routed directly to the Mine Site.
[310] This equipment will not be utilized to provide lump limestone for transport to the Mine Site.
[312] Under this scenario, limestone will be used to neutrlize the stockpiles, so no lime will be used.
[314] Limestone slurry would be driven from the limestone stockpile to the intersection with the unpaved road that goes to the Mine Site. The distance for this route is 1.16 miles. The total number of trips per year is equivalent to the limestone demand divided by 24 tons limestone per truck. VMT = trips * 2 * 1.16 miles.
[318] Traffic levels for tranporting limestone slurry down the Dunka Rd. were estimated from the total quantity of limestone slurry required at the Mine Site. This quanity was obtained from the project geochemist.
   Maximum VMT for each time period calculated by multiplying the number of trips times 2 for round trips and times the appropriate segment length: B2 = 0.16 miles, C = 1.928 miles, and H = 0.114 miles.
[319] A additional portion of road segment H has been incorporated within the PolyMet ambient air boundary. This segment is identified as "H2". The segment length is within a few meters of the length of segment H and the traffic levels would be identical. Therefore, the same VMT is used for segment H2 as for segment H.

Projected Actual Throughput References
[423] Projected actual emissions are equivalent to potential emissions.

Control Efficiency References:
[501] Level 3A control measures, consistent with agreement reached by the IMA-MPCA Fugitive Emissions Workgroup as described in the November 18, 1998 "Taconite Industry Haul Truck Unpaved Road Fugitive Particulate Emission Factor and Control Efficiency" were observed at the Cliffs Erie facility;
   control practices are expected to be similar at the PolyMet facilities. 60% control efficiency was used in the calculations as a reasonably conservative first estimate of emissions. (The referenced document allows 80% for Level 3A control measures).
[502] Either no Air Pollution Control Devices (APCDs) are used in this process or the APCD does not control this pollutant. Therefore, Control Efficiency is 0.
[512] For enclosed silos, 100% capture was assumed. Fabric filters or equivalent control measures are used to control emissions from multiple silos based on information received from the plant design company. Removal efficiency taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018.
[515] Limestone delivered by rail will be unloaded in an enclosed building. The final design is not complete, but PolyMet intends to install a system that will qualify as a total enclosure (100% capture). The removal efficiency (99%) was taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018.
[516] Final design for the limestone crushing system has not been completed, so it was assumed that a well designed hood would be installed with 80% capture. The removal efficiency (99%) was taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018. The overall control efficiency is then 80% capture * 99* control efficiency = 79.2%.
   The stack and fugitive emissions are assigned different lines in the spreadsheet.
[517] Final design has not been completed on the lime slaker, so it was assumed that a well designed hood with 80% capture would be used. The removal efficiencies (90%) for PM and PM10 for a high efficiency wet scrubber (CE code 001) were taken from MPCA form GI-05A instructions, Table GI-05A.1. The overall control efficiency is then: 80% capture * 90% removal efficiency = 72%.
   The stack and fugitive emissions are given in separate lines in the spreadsheet.
[519] An effective control efficiency was calculated for the proposed 15 mph speed limit for limestone trucks on PolyMet property as Speed/30 or 15/30 = 50% reduction. This speed reduction factor was taken from Equation 3-1 in *Control of Open Fugitive Dust Sources* (EPA-450/3-88-008).

PolyMet - Hoyt Lake, Minnesota
Table 10 - Vehicle Miles Travelled at Mine Site for Lump Limestone Option

East Pit		Trips	AA to BB	AA to FF	BB to CC	D to K	D to U	E to D	E to T	F to E	F to M	FF to GG
									Trips by Segment			
Limestone to C2/3	East	99.4										
Limestone to C3LO	East	119.3	119.3		119.3							
Limestone to C4	East	87.6		87.6								87.6
Total (trips/year)			119.3	87.6	119.3	0.0	0.0	0.0	0.0	0.0	0.0	87.6
Miles/segment			0.3867	0.0739	0.3854	0.5858	0.0396	0.1902	0.0555	0.1905	0.0932	0.3803
VMT/year			92.3	12.9	92.0	0.0	0.0	0.0	0.0	0.0	0.0	66.6

PolyMet - Hoyt Lake, Minnesota
Table 10 - Vehicle Miles Travelled at Mine Site for Lump Limestone Option

East Pit		Trips	Trips by Segment									
			G to F	I to H	J to I	J to W	JJ to L	K to J	K to O	KK to G	L to LL	LL to N
Limestone to C2/3	East	99.4										
Limestone to C3LO	East	119.3										
Limestone to C4	East	87.6										
Total (trips/year)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Miles/segment			0.1748	1.3199	0.0358	0.1631	0.3559	0.2436	0.1744	0.2322	0.1400	0.4057
VMT/year			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PolyMet - Hoyt Lake, Minnesota
Table 10 - Vehicle Miles Travelled at Mine Site for Lump Limestone Option

East Pit		Trips	Trips by Segment									
			M to L	N to M	O to N	O to OO	O to P	OO to EE	P to Q	P to Z	S to HH	S to II
Limestone to C2/3	East	99.4								99.4		
Limestone to C3LO	East	119.3								119.3		
Limestone to C4	East	87.6								87.6		
Total (trips/year)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	306.3	0.0	0.0
Miles/segment			0.1631	0.3614	0.2142	0.1701	0.1362	0.3345	0.3737	0.1400	0.7273	1.4468
VMT/year			0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.8	0.0	0.0

PolyMet - Hoyt Lake, Minnesota
Table 10 - Vehicle Miles Travelled at Mine Site for Lump Limestone Option

East Pit		Trips	Trips by Segment							
			T to S	U to V	W to X	X to Y	Z to AA	Z to W	V to MM	V to NN
Limestone to C2/3	East	99.4			99.4	99.4		99.4		
Limestone to C3LO	East	119.3					119.3			
Limestone to C4	East	87.6					87.6			
Total (trips/year)			0.0	0.0	99.4	99.4	206.9	99.4	0.0	0.0
Miles/segment			0.5208	0.6669	0.4570	0.2383	0.1720	0.1913	1.0919	0.4617
VMT/year			0.0	0.0	90.9	47.4	71.2	38.0	0.0	0.0

PolyMet - Hoyt Lakes, Minnesota
Table 11 Calculation of Emission Factors for Fugitive Sources at Mine Site - Lump Limestone Option

Stack ID	ID	Emission Unit Description	Pollutant	k [2]	U [3] (mph)	M [4] (%)	s [6] (%)	a	b	W [7] (tons)	Emission Factor (lb/Unit)	Note
Fugitive	FS 001, 029,	Surface Overburden, Truck Load	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	017, 048	Surface Overburden, Truck Load	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 002, 014,	Surface Overburden, Truck Unload	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	045, 018	Surface Overburden, Truck Unload	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 039, 047	Surface Overburden, Screen Discharge	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	FS 039, 047	Surface Overburden, Screen Discharge	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 004	Waste Rock, Truck Load	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS 004	Waste Rock, Truck Load	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 005	Waste Rock, Truck Unload	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS 005	Waste Rock, Truck Unload	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 007	Ore, Truck Load	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 007	Ore, Truck Load	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS 009, 020	Ore, Truck Unload	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 009, 020	Ore, Truck Unload	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS 010	Ore, Railcar Load	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 010	Ore, Railcar Load	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS023	Crushed rock to truck	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS023	Crushed rock to truck	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 011	Unpaved Roads, Mine										
	& FS 021 [8]	Unpaved Roads, Mine (Haul Trucks - Avg.)	PM10	1.5			5.8	0.9	0.45	303.15	6.2224	[5]
		Unpaved Roads, Mine (Haul Trucks - Avg.)	PM	4.9			5.8	0.7	0.45	303.15	23.5077	[5]
		Unpaved Roads, Mine (Light Trucks)	PM10	1.5			5.8	0.9	0.45	2.5	0.7183	[5]
		Unpaved Roads, Mine (Light Trucks)	PM	4.9			5.8	0.7	0.45	2.5	2.7135	[5]
		Unpaved Roads, Mine (Fuel Truck)	PM10	1.5			5.8	0.9	0.45	11	1.3991	[5]
		Unpaved Roads, Mine (Fuel Truck)	PM	4.9			5.8	0.7	0.45	11	5.2856	[5]
Fugitive	FS 012	Unpaved Roads, Dunka Rd.										
		Unpaved Roads, Dunka Rd. (segment A)	PM10	1.5			4.3	0.9	0.45	7.38	0.8931	[5]
		Unpaved Roads, Dunka Rd. (segment A)	PM	4.9			4.3	0.7	0.45	7.38	3.5823	[5]
		Unpaved Roads, Dunka Rd. (segment B)	PM10	1.5			4.3	0.9	0.45	8.49	0.9514	[5]
		Unpaved Roads, Dunka Rd. (segment B)	PM	4.9			4.3	0.7	0.45	8.49	3.8161	[5]
		Unpaved Roads, Dunka Rd. (segment B3)	PM10	1.5			4.3	0.9	0.45	9.14	0.9833	[5]
		Unpaved Roads, Dunka Rd. (segment B3)	PM	4.9			4.3	0.7	0.45	9.14	3.9441	[5]
Fugitive	FS 021	Unpaved Roads, Fueling Facility Circle	PM10	1.5			4.3	0.9	0.45	246.5	4.3309	[5]
		Unpaved Roads, Fueling Facility Circle	PM	4.9			4.3	0.7	0.45	246.5	17.3710	[5]

Notes:

[1] EF = k x 0.0032 x (U/5)^1.3 / (M/2)^1.4 lb/ton

   Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Page 13.2.4-3.

[2] k = particle size multiplier (dimensionless).

           0.35 for PM10 for equation in [1].   0.74 for PM for equation in [1]

           1.50 for PM10 for equation in [5].   4.9 for PM for equation in [5]

[3] U = mean wind speed (mph).

         9.3 mph. Source: "Climates of the States", Vol. II, Water Information Center, 1974 for International Falls, MN.

[4] M = moisture content (%).

        12.7 % for surface overburden based on data from "Phase I Geotechnical Field Investigation", Golder Associates, August 2006

        1.33 % for waste rock from whole rock data for waste rock zone

        1.05 % for ore from whole rock data for ore zone

[5] EF = k x (s/12)^a x (W/3)^b lb/VMT

   Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Pages 13.2.2-4 and 13.2.2-5.

   Precipitation is accounted for in emission calculation spreadsheet. Emission factors are multiplied by (1-p/365) for annual emission calculations; where p = days with precipitation.

   Note: the equation for roads at industrial sites is being used for the Dunka Rd. because the road will not generally be accessible to the public.

[6] s = silt content (%)

        5.8 % for taconite mine haul road from AP-42 Table 13.2.2-1

        4.3 % for taconite mine service road from AP-42 Table 13.2.2-1

[7] W = mean vehicle weight (tons).

      425.30 tons for loaded 240 ton trucks hauling surface overburden, waste rock, and ore in mine

      181.00 tons for empty 240 ton trucks used for hauling surface overburden, waste rock, and ore in mine.

      303.15 tons mean weight for haul trucks

        2.5 tons for all light trucks (supervisor vehicles, passenger vans, etc.)

       11 tons for mine fuel tanker based on information received from a fuel vendor

       40 tons for loaded tanker delivering fuel to mine based on information from a fuel vendor

      13.2 tons for empty tanker leaving mine site

     26.6 tons for mean tanker weight

       40 tons for loaded WWTF truck

       16 tons for empty WWTF truck

       28 tons mean weight for WWTF truck

        See Table 4 for Mean weight calculation for Dunka Road segments with multiple vehicle types and refueling circle

PolyMet - Hoyt Lakes, Minnesota
Table 12 Calculation of Emission Factors for Fugitive Sources at Plant Site - Lump Limestone Option

Stack ID	ID	Emission Unit Description	Pollutant	k [2]	U [3] (mph)	M [4] (%)	s [6] (%)	a	b	W [7] (tons)	Emission Factor (lb/Unit)	Note
Fugitive	FS 033, 035	Mine Limestone Handling; Stacker Conveyor	PM10	0.35	7.1	0.7					0.0077	[1]
		Mine Limestone Handling; Stacker Conveyor	PM	0.74	7.1	0.7					0.0162	[1]
Fugitive	FS 038	Paved Roads, Limestone Truck Haul	PM10	0.016			8.2			28	1.1411	[9]
		Paved Roads, Limestone Truck Haul	PM	0.082			8.2			28	5.8498	[9]
Fugitive	FS 012	Unpaved Roads, Dunka Rd. (segment B2)	PM10	1.5			4.3	0.9	0.45	8.65	0.9594	[5]
		Unpaved Roads, Dunka Rd. (segment B2)	PM	4.9			4.3	0.7	0.45	8.65	3.8481	[5]
		Unpaved Roads, Dunka Rd. (segment C)	PM10	1.5			4.3	0.9	0.45	5.42	0.7771	[5]
		Unpaved Roads, Dunka Rd. (segment C)	PM	4.9			4.3	0.7	0.45	5.42	3.1171	[5]
		Unpaved Roads, Dunka Rd. (segment D)	PM10	1.5			4.3	0.9	0.45	2.69	0.5671	[5]
		Unpaved Roads, Dunka Rd. (segment D)	PM	4.9			4.3	0.7	0.45	2.69	2.2745	[5]
		Unpaved Roads, Dunka Rd. (segment E)	PM10	1.5			4.3	0.9	0.45	11.77	1.1016	[5]
		Unpaved Roads, Dunka Rd. (segment E)	PM	4.9			4.3	0.7	0.45	11.77	4.4185	[5]
		Unpaved Roads, Dunka Rd. (segment F)	PM10	1.5			4.3	0.9	0.45	11.77	1.1016	[5]
		Unpaved Roads, Dunka Rd. (segment F)	PM	4.9			4.3	0.7	0.45	11.77	4.4185	[5]
		Unpaved Roads, Dunka Rd. (segment H/H2)	PM10	1.5			4.3	0.9	0.45	2.96	0.5924	[5]
		Unpaved Roads, Dunka Rd. (segment H/H2)	PM	4.9			4.3	0.7	0.45	2.96	2.3761	[5]

Notes:

[1] EF = k x 0.0032 x (U/5)^1.3 / (M/2)^1.4 lb/ton

Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Page 13.2.4-3.

[2] k = particle size multiplier (dimensionless).

0.35 for PM10 for equation in [1].	0.74 for PM for equation in [1]
1.50 for PM10 for equation in [5].	4.9 for PM for equation in [5]
0.016 for PM10 for equation in [9]	0.082 for PM for equation in [9]

[3] U = mean wind speed (mph).

7.1 mph. Source: average value from 2001 - 2005 Hibbing, MN Meteorlogical Data Set

[4] M = moisture content (%).

0.7 % for crushed limestone from AP-42 Table 13.2.4-1

[5] EF = k x (s/12)^a x (W/3)^b lb/VMT

Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Pages 13.2.2-4 and 13.2.2-5.

Precipitation is accounted for in emission calculation spreadsheet. Emission factors are multiplied by (1-p/365) for annual emission calculations; where p = days with precipitation.

Note: the equation for roads at industrial sites is being used for the Dunka Rd. because the road will not generally be accessible to the public.

[6] s = silt content (%)

4.3 % for taconite mine service road from AP-42 Table 13.2.2-1

8.2 % for paved roads at a quarry from AP-42 Table 13.2.1-4

[7] W = mean vehicle weight (tons).

40 tons for loaded limestone delivery trucks and WWTF trucks

16 tons for empty limestone delivery trucks and WWTF trucks

28 tons average for limestone delivery trucks and WWTF trucks

2.5 tons for all light trucks (supervisor vehicles, passenger vans, etc.)
80 tons for empty 100 ton trucks going to the Area 1 Shop for Maintenance
40 tons for loaded tanker delivering fuel to mine based on information from a fuel vendor
13.2 tons for empty tanker leaving mine site
26.6 tons for mean tanker weight
40 tons for loaded WWTF truck
16 tons for empty WWTF truck
28 tons mean weight for WWTF truck
181 tons for empty 240 ton haul trucks
See Table 2B for Mean weight calculation for Dunka Road segments with multiple vehicle types

[8] Tailings haul roads at plant assumed equivalent to mine haul roads.

[9] EF = k * (sL/2)^0.65 * (W/3)^1.5 - C lb/VMT
Source = "AP-42 Compilation of Air Pollutant Emission Factors", 5th Edit., January 1995 Page 13.2.1-4, eqn. 1

[10] C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear
0.00047 for PM and PM10 with units of lb/VMT from AP-42 Table 13.2.1-2

Note: Calculations based on Annual VMT

Segment B

Segment Length		1.94			
ID	Activity	B VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
FS 012B	Empty Haul Trucks	1359.70	181	0.019	3.374
FS 012B	Light Trucks	63725.13	2.5	0.874	2.184
FS 012B	Tanker	4249.73	26.6	0.058	1.550
FS 012B	Limestone Haul	1191.16	28	0.016	0.457
FS 012B	WWTF Trucks	2424.85	28	0.033	0.931
	Total	72950.57		1.000	8.495

Segment A

Segment Length		0.37			
ID	Activity	A VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
FS 012A	Empty Haul Trucks	255.29	181	0.019	3.469
FS 012A	Light Trucks	12034.15	2.5	0.903	2.258
FS 012A	Limestone Haul	224.72	2.5	0.017	0.042
FS 012A	Tanker	807.70	26.6	0.061	1.613
	Total	13321.87		1	7.382

Fueling Facility Circle

Segment Length		0.22			
ID	Activity	RFC VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
RFCRD	Fuel Tanker	0.67	26.6	0.091	2.419
RFCRD	Haul Trucks (240 t)	5.35	303.15	0.727	220.463
RFCRD	Haul Trucks (100 t)	1.34	130	0.182	23.635
	Total	7.36		1.000	246.518

Segment B3

Segment Length		1.17			
ID	Activity	B3 VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
FS 012B3	Empty Haul Trucks	815.82	181	0.018	3.242
FS 012B3	Light Trucks	38303.10	2.5	0.841	2.103
FS 012B3	Tanker	4249.73	26.6	0.093	2.482
FS 012B3	Limestone Haul	715.92	26.6	0.016	0.418
FS 012B3	WWTF Trucks	1457.50	28	0.032	0.896
	Total	45542.07		1.000	9.141

PolyMet - Hoyt Lakes, Minnesota
Table 14 - Plant Site Mean Vehicle Weight Calculations - Lump Limestone Option

Note: Calculations based on Annual VMT

Segment B2

ID	Activity	B2 VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		0.16			
FS 012B2	Empty Haul Trucks	111	181.0	0.018	3.344
FS 012B2	Light Trucks	5250.60	2.5	0.874	2.185
FS 012B2	Tanker	347.931	26.6	0.058	1.541
FS 012B2	Limestone Haul	98.139	40.0	0.016	0.653
FS 012B2	WWTF Trucks	199.79	28.0	0.033	0.931
	Total	6007.46		1	8.654

Segment C

ID	Activity	C VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		1.93			
FS 012C	Light Trucks	63326.89	2.5	0.890	2.225
FS 012C	Tanker	4224.87	26.6	0.059	1.580
FS 012C	Limestone Haul	1183.64	40.0	0.017	0.665
FS 012C	WWTF Trucks	2409.70	28.0	0.034	0.948
	Total	71145.11		1	5.419

Segment D

ID	Activity	D VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		0.148			
FS 012D	Light Trucks	24566.69	2.5	0.993	2.481
FS 012D	WWTF Trucks	184.501	28.0	0.007	0.209
	Total	24751.19		1	2.690

Segment E

ID	Activity	E VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		0.722			
FS 012E	Light Trucks	1580.930	2.5	0.637	1.592
FS 012E	WWTF Trucks	902.357	28.0	0.363	10.174
	Total	2483.288		1	11.766

Segment F

ID	Activity	F VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		0.37			
FS 012F	Light Trucks	810.251	2.5	0.637	1.592
FS 012F	WWTF Trucks	462.472	28.0	0.363	10.174
	Total	1272.723		1	11.766

Segment H/H2

ID	Activity	H VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
Segment Length		0.114			
FS 012H	Light Trucks	16208.904	2.5	0.981	2.452
FS 012H	Limestone Haul	69.914	26.6	0.004	0.113
FS 012H	Tanker	248.522	26.6	0.015	0.400
	Total	16527.340		1	2.964

PolyMet - Hoyt Lakes, Minnesota
Table 15 - Calculation of Potential Emissions - Processing Plant - Limestone Slurry Option

| | | Indicates source that will only operate for first 1 to 2 years of plant operation. |

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) [Note]	Maximum (Units/yr) [Note]	Projected Actual (Units/yr) [Note]	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) [Note]	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) [Note]	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)
Reag V	EU 220	Lime Silo	CE 220	0 [227]	0 [312]	0 [423]	ft^3 exh.		PM10	Y	N	0.00 [176]	0.00	0.000	0.000	99 [512]	0.00	0.000	0.000		GP 001
Reag V				0 [228]	0 [312]	0 [423]	ton		Total PM	Y	N	0.99 [156]	0.00	0.000	0.000	99 [512]	0.00	0.000	0.000		GP 001
Reag V	EU 221	Lime Conveyor	NA	0 [228]	0 [312]	0 [423]	ton		PM10	Y	N	0.61 [177]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		GP 001
Reag V				0 [228]	0 [312]	0 [423]	ton		Total PM	Y	N	0.61 [177]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		GP 001
SV 221	EU 321	Lime Slaker (w/scrubber)	CE 301	0 [228]	0 [312]	0 [423]	ton		PM10	Y	N	0.64 [178]	0.00	0.000	0.000	90 [517]	0.00	0.000	0.000		GP 001
SV 221				0 [228]	0 [312]	0 [423]	ton		Total PM	Y	N	0.64 [178]	0.00	0.000	0.000	90 [517]	0.00	0.000	0.000	IPER for PM	GP 001
Reag V	EU 321	Lime Slaker (fugitive emissions)	NA	0 [228]	0 [312]	0 [423]	ton		PM10	Y	N	0.16 [178]	0.00	0.000	0.000	0 [517]	0.00	0.000	0.000		GP 001
Reag V				0 [228]	0 [312]	0 [423]	ton		Total PM	Y	N	0.16 [178]	0.00	0.000	0.000	0 [517]	0.00	0.000	0.000		GP 001
SV 323	EU 326	Limestone Railcar Dump	CE 305	67950.72 [229]	3543076 [305]	3543076 [423]	ft^3 exh.		PM10	Y	N	8.57E-07 [179]	5.82	0.152	0.152	99 [515]	0.06	0.002	0.002	0.022 gr/cf PM	GP 001
SV 323				67950.72 [229]	3543076 [305]	3543076 [423]	ft^3 exh.		Total PM	Y	N	8.57E-07 [179]	5.82	0.152	0.152	99 [515]	0.06	0.002	0.002	(NSPS)	GP 001
SV 323				67950.72 [229]	3543076 [305]	3543076 [423]	ft^3 exh.		Crystalline Silica	Y	N	1.71E-08 [180]	0.12	0.003	0.003	99 [515]	0.00	0.000	0.000		
SV 323	EU 327	Limestone hopper to conveyor	CE 305																		
SV 323																					
SV 323				Emissions included with EU 326																	
CarDmp V	EU 328	Limestone Reclaim chute (to tunnel conveyor)	NA	141 [230]	7352 [308]	7352 [423]	ton		PM10	Y	N	0.0011 [183]	0.16	0.004	0.004	0 [502]	0.16	0.004	0.004		GP 001
CarDmp V				141 [230]	7352 [308]	7352 [423]	ton		Total PM	Y	N	0.003 [183]	0.42	0.011	0.011	0 [502]	0.42	0.011	0.011	NSPS OOO [5]	GP 001
CarDmp V				141 [230]	7352 [308]	7352 [423]	ton		Crystalline Silica	Y	N	0.0001 [180]	0.01	0.000	0.000	0 [502]	0.01	0.000	0.000		
Addit V	EU 329	Limestone Tunnel Conveyor to Bunker	NA	141 [230]	7352 [308]	7352 [423]	ton		PM10	Y	N	0.0077 [185]	1.08	0.028	0.028	0 [502]	1.08	0.028	0.028		GP 001
Addit V				141 [230]	7352 [308]	7352 [423]	ton		Total PM	Y	N	0.0162 [185]	2.29	0.060	0.060	0 [502]	2.29	0.060	0.060	NSPS OOO [5]	GP 001
Addit V				141 [230]	7352 [308]	7352 [423]	ton		Crystalline Silica	Y	N	0.0003 [180]	0.05	0.001	0.001	0 [502]	0.05	0.001	0.001		
Addit V	EU 330	Limestone Bunker to crusher feed conveyor (enclosed)	NA	100 [231]	7352 [308]	7352 [423]	ton		PM10	Y	N	0.0011 [183]	0.11	0.004	0.004	0 [502]	0.11	0.004	0.004		GP 001
Addit V				100 [231]	7352 [308]	7352 [423]	ton		Total PM	Y	N	0.003 [183]	0.30	0.011	0.011	0 [502]	0.30	0.011	0.011	NSPS OOO [5]	GP 001
Addit V				100 [231]	7352 [308]	7352 [423]	ton		Crystalline Silica	Y	N	0.0001 [180]	0.01	0.000	0.000	0 [502]	0.01	0.000	0.000		
Addit V	EU 322	Limestone Crusher Feed Conveyor Discharge (enclosed)	NA	100 [231]	7352 [308]	7352 [423]	ton		PM10	Y	N	0.0011 [183]	0.11	0.004	0.004	0 [502]	0.11	0.004	0.004		GP 001
Addit V				100 [231]	7352 [308]	7352 [423]	ton		Total PM	Y	N	0.003 [183]	0.30	0.011	0.011	0 [502]	0.30	0.011	0.011	NSPS OOO [5]	GP 001
Addit V				100 [231]	7352 [308]	7352 [423]	ton		Crystalline Silica	Y	N	0.0001 [180]	0.01	0.000	0.000	0 [502]	0.01	0.000	0.000		
SV 322	EU 323	Limestone Crusher (stack emissions)	CE 304	115680 [232]	8504793.6 [305]	8504794 [423]	ton		PM10	Y	N	7.14E-07 [181]	8.26	0.304	0.304	99 [516]	0.08	0.003	0.003	0.022 gr/cf PM	GP 001
SV 322				115680 [232]	8504793.6 [305]	8504794 [423]	ton		Total PM	Y	N	7.14E-07 [181]	8.26	0.304	0.304	99 [516]	0.08	0.003	0.003	(NSPS)	GP 001
SV 322				115680 [232]	8504793.6 [305]	8504794 [423]	ton		Crystalline Silica	Y	N	1.43E-08 [180]	0.17	0.006	0.006	99 [516]	0.00	0.000	0.000		
Addit V	EU 323	Limestone Crusher (fugitive emissions)		115680 [232]	8504793.6 [305]	8504794 [423]	ton		PM10	Y	N	1.79E-05 [182]	2.07	0.076	0.076	0 [516]	2.07	0.08	0.076		GP 001
Addit V				115680 [232]	8504793.6 [305]	8504794 [423]	ton		Total PM	Y	N	1.79E-05 [182]	2.07	0.076	0.076	0 [516]	2.07	0.08	0.076		GP 001
Addit V				115680 [232]	8504793.6 [305]	8504794 [423]	ton		Crystalline Silica	Y	N	3.57E-07 [180]	0.04	0.002	0.190	0 [516]	0.04	0.00	0.002		
Addit V	EU 324	Limestone Crusher to Conveyor	NA	100 [231]	7352 [308]	7352 [423]	ton		PM10	Y	N	0.0011 [183]	0.11	0.004	0.004	0 [502]	0.11	0.004	0.004		GP 001
Addit V				100 [231]	7352 [308]	7352 [423]	ton		Total PM	Y	N	0.003 [183]	0.30	0.011	0.011	0 [502]	0.30	0.011	0.011	NSPS OOO [5]	GP 001
Addit V				100 [231]	7352 [308]	7352 [423]	ton		Crystalline Silica	Y	N	0.0001 [180]	0.01	0.000	0.000	0 [502]	0.01	0.000	0.000		
Addit V	EU 224	Limestone Conveyor to Mix Tank	NA	100 [231]	7352 [308]	7352 [423]	ton		PM10	Y	N	0.0011 [183]	0.11	0.004	0.004	0 [502]	0.11	0.004	0.004		GP 001
Addit V				100 [231]	7352 [308]	7352 [423]	ton		Total PM	Y	N	0.003 [183]	0.30	0.011	0.011	0 [502]	0.30	0.011	0.011	NSPS OOO [5]	GP 001
Addit V				100 [231]	7352 [308]	7352 [423]	ton		Crystalline Silica	Y	N	0.0001 [180]	0.01	0.000	0.000	0 [502]	0.01	0.000	0.000		
FS 024	FS 024	Limestone conveyor to stacker conveyor	NA	141 [230]	7352 [308]	7352 [423]	ton		PM10	Y	N	0.0011 [183]	0.16	0.004	0.004	0 [502]	0.16	0.004	0.004	10% opacity	GP 001
FS 024				141 [230]	7352 [308]	7352 [423]	ton		Total PM	Y	N	0.003 [183]	0.42	0.011	0.011	0 [502]	0.42	0.011	0.011	(NSPS)	GP 001
FS 024				141 [230]	7352 [308]	7352 [423]	ton		Crystalline Silica	Y	N	0.0001 [180]	0.01	0.000	0.000	0 [502]	0.01	0.000	0.000		
FS 033	FS 033	Limestone Stacker Conveyor to stockpile	NA	141 [230]	7352 [308]	7352 [423]	ton		PM10	N	N	0.0077 [185]	1.08	0.028	0.028	0 [502]	1.08	0.028	0.028		GP 001
FS 033				141 [230]	7352 [308]	7352 [423]	ton		Total PM	N	N	0.0162 [185]	2.29	0.060	0.060	0 [502]	2.29	0.060	0.060		GP 001
FS 033				141 [230]	7352 [308]	7352 [423]	ton		Crystalline Silica	N	N	0.0003 [180]	0.05	0.001	0.001	0 [502]	0.05	0.001	0.001		
FS 025	FS 025	Limestone Reclaim Pocket Dump	NA	141 [230]	7352 [308]	7352 [423]	ton		PM10	Y	N	1.60E-05 [192]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		GP 001
FS 025				141 [230]	7352 [308]	7352 [423]	ton		Total PM	Y	N	4.80E-05 [192]	0.01	0.000	0.000	0 [502]	0.01	0.000	0.000		GP 001
FS 025				141 [230]	7352 [308]	7352 [423]	ton		Crystalline Silica	Y	N	9.60E-07 [180]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		
FS 034	FS 034	Limestone Reclaim Feeder to Conveyor	NA	141 [230]	7352 [308]	7352 [423]	ton		PM10	Y	N	0.0011 [183]	0.16	0.004	0.004	0 [502]	0.16	0.004	0.004		GP 001
FS 034				141 [230]	7352 [308]	7352 [423]	ton		Total PM	Y	N	0.003 [183]	0.42	0.011	0.011	0 [502]	0.42	0.011	0.011		GP 001
FS 034				141 [230]	7352 [308]	7352 [423]	ton		Crystalline Silica	Y	N	0.0001 [180]	0.01	0.000	0.000	0 [502]	0.01	0.000	0.000		
FS 035	FS 035	Limestone Truck Dump	NA	0 [238]	0 [309]	0 [423]	ton		PM10	Y	N	0.0077 [185]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		GP 001
FS 035				0 [238]	0 [309]	0 [423]	ton		Total PM	Y	N	0.0162 [185]	0.00	0.000	0.000	90 [502]	0.00	0.000	0.000		GP 001
FS 035				0 [238]	0 [309]	0 [423]	ton		Crystalline Silica	Y	N	0.0003 [180]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		
FS 036	FS 036	Limestone Truck Dump Grizzly	NA	0 [238]	0 [309]	0 [423]	ton		PM10	Y	N	0.0087 [193]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		GP 001
FS 036				0 [238]	0 [309]	0 [423]	ton		Total PM	Y	N	0.0250 [193]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		GP 001
FS 036				0 [238]	0 [309]	0 [423]	ton		Crystalline Silica	Y	N	0.0005 [180]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		
FS 037	FS 037	Limestone Grizzly to Conveyor Belt	NA	0 [238]	0 [309]	0 [423]	ton		PM10	Y	N	0.0011 [183]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	Enclosed shed	GP 001
FS 037				0 [238]	0 [309]	0 [423]	ton		Total PM	Y	N	0.003 [183]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	constructed over	GP 001
FS 037				0 [238]	0 [309]	0 [423]	ton		Crystalline Silica	Y	N	0.0001 [180]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000	unloading point	
FS 038	FS 038	Plant Site Paved Roads - Limestone Slurry Haul	NA	4.64 [239]	2371 [314]	2371 [423]	VMT	134	PM10	N	N	1.14 [185]	5.29	1.229	1.229	50 [519]	2.65	0.614	0.614		
FS 038				4.64 [239]	2371 [314]	2371 [423]	VMT	134	Total PM	N	N	5.85 [185]	27.14	6.299	6.299	50 [519]	13.57	3.149	3.149		
FS012B2	FS 012	Unpaved Roads, Dunka Rd. B2 (Limestone Trucks)	NA	0.64 [243]	327 [318]	327 [423]	VMT	134	PM10	N	N	1.015 [185]	0.65	0.105	0.105	60 [501]	0.26	0.042	0.042		
FS012B2				0.64 [243]	327 [318]	327 [423]	VMT	134	Total PM	N	N	4.070 [185]	2.60	0.421	0.421	60 [501]	1.04	0.168	0.168		
FS012C	FS 012	Unpaved Roads, Dunka Rd. C (Limestone Trucks)	NA	7.71 [243]	3,940 [318]	3940 [423]	VMT	134	PM10	N	N	0.856 [185]	6.60	1.067	1.067	60 [501]	2.64	0.427	0.427		
FS012C				7.71 [243]	3,940 [318]	3940 [423]	VMT	134	Total PM	N	N	3.431 [185]	26.46	4.279	4.279	60 [501]	10.58	1.711	1.711		
FS012D	FS 012	Unpaved Roads, Dunka Rd. H (Limestone Trucks)	NA	0.46 [243]	233 [318]	233 [423]	VMT	134	PM10	N	N	0.613 [185]	0.28	0.045	0.045	60 [501]	0.11	0.018	0.018		
FS012D				0.46 [243]	233 [318]	233 [423]	VMT	134	Total PM	N	N	2.458 [185]	1.12	0.181	0.181	60 [501]	0.45	0.072	0.072		
FS012E	FS 012	Unpaved Roads, Dunka Rd. H2 (Limestone Trucks)	NA	0.46 [244]	233 [319]	233 [423]	VMT	134	PM10	N	N	0.613 [185]	0.28	0.045	0.045	60 [501]	0.11	0.018	0.018		
FS012E				0.46 [244]	233 [319]	233 [423]	VMT	134	Total PM	N	N	2.458 [185]	1.12	0.181	0.181	60 [501]	0.45	0.072	0.072		

Totals for PSD Applicability (i.e. PSD Point Sources)																				
Criteria Pollutant Totals									PM10				18.14	0.59	0.59		4.20	0.14	0.137		0.00
									Total PM				20.92	0.67	0.67		6.97	0.22	0.22		0.00
Plant Site Totals (Point and Fugitive Sources)																				
Criteria Pollutant Totals									PM10				32.33	3.11	3.11		11.05	1.28	1.28		1.15
									Total PM				81.65	12.09	12.09		35.35	5.45	5.45		5.23

Notes:

General References:
[1] Max. Uncontrolled Emissions (lb/hr) = EF (lb/unit) x Max. Hourly Throughput (units/hr).
   Max. Uncontrolled Emissions (tons/yr) = EF (lb/unit) x Max. Annual Throughput (units/yr) / 2,000 (lb/ton).
[2] Max. Controlled Emissions (lb/hr) = Max. Uncontrolled Emissions (lb/hr) x (1-Control Eff./100).

Max. Controlled Emissions (tons/yr) = Max. Uncontrolled Emissions (tons/yr) x (1-Control Eff./100).

Emission Factor References:

[156] Emission factors from AP-42 Table 11.19.2-4 "Emission Factors for Pulverized Mineral Processing Operations", Product Storage with Fabric Filter Control. Controlled PM emission factor = 0.0099; uncontrolled emissions estimated by assuming 99% control for fabric filter by: 0.0099/(1-99/100) = 0.99.
   Controlled PM10 emission factor = 0.0016 lb/ton; uncontrolled emissions estimated by assuming 99% control by: 0.0016/(1-99/100) = 0.16.

[176] Emission factor based on performance specification for the lime silo filter of 0.005 gr/cf. The emission factor in lb/cf is then: 0.005 gr/cf * 1/7000 gr/lb = 7.14 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a control efficiency of 99% for the filter. Uncontrolled emissions then equal controlled emission divided by (1-99/100). Baghouse performance based emission factor used for PM10;
   AP-42 factor used for PM because it produced a higher result.

[177] Feed system consists of an enclosed screw feeder from silo to slaker. Emissions expected to be minimal. As a conservative estimate, emission factor for loading lime into an enclosed truck was taken from AP-42 Table 11.17-4. PM10 assumed equal to PM.

[178] Emission factor from AP-42 Table 11.17-2, Atmospheric Hydrator with wet scrubber. An uncontrolled emission factor was estimated by assuming 90% control for the scrubber. Emission factor is sum of filterable and inorganic condensable PM. PM10 assumed equal to PM.
   Because of the assumed 80% capture efficiency, the emissions routed to the scrubber = 80% of the emission factor and emissions that escape through the building ventilation system = 20% of the emission factor.

[179] Emission factor based on performance specification for the limestone railcar unloading baghouse of 0.006 gr/cf. The emission factor in lb/cf is then: 0.006 gr/cf * 1/7000 gr/lb = 8.57 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a removal efficiency of 99% for the baghouse and a capture efficiency of 80%. Uncontrolled emissions then equal controlled emissions divided by (1-99/100) and then divided by 0.8.

[180] Per the MSDS for this reagent, typical limestone contains >1% crystalline silica. Based on other data sources, a typical upper bound is 2% crystalline silica, which was used in the calculations (the PM was assumed to be 2% crystalline silica).

[181] Emission factor based on performance specification for the limestone crusher baghouse of 0.005 gr/cf. The emission factor in lb/cf is then: 0.005 gr/cf * 1/7000 gr/lb = 7.14 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a removal efficiency of 99% for the baghouse. Emissions not routed to the baghouse are calculated in the following entry in the spreadsheet.

[182] Emissions not routed to the control device were calculated by dividing the controlled emission factor for the stack emissions by (1-99/100) to get the uncontrolled emissions, dividing by 0.8 capture efficiency to get total emissions (captured + uncaptured) and times (1-.8) to get the fraction not routed to the control device.

[183] Emission factors (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Conveyor transfer point.

[185] See Fugitive Emission Calculation Tabs

[192] Emission factor taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Truck Unloading - Fragmented Stone. Truck dumping would be a similar operation to dumping material in the reclaim hopper with a front end loader.

[193] Emission factors taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Screening.

Maximum Hourly Throughput References:

[227] Under this scenario, limestone will be used to neutralize the stockpiles, so no lime will be used.

[228] Under this scenario, limestone will be used to neutralize the stockpiles, so no lime will be used.

[229] The emissions from the limestone railcar unloading operation and the limestone hopper transfer to the conveyor will be vented to a common baghouse. Emission estimates are based on the estimated airflow and a baghouse performance specification of 0.006 gr/cf. The total airflow was estimated based on the unobstructed opening area where the railcars pass through the building and a face velocity of 200 fpm.
   The additional airflow from unloading the limestone to neutralize the stockpiles were estimated by multiplying the hourly airflow by the ratio of limestone required to the capacity of the equipment.

[230] Hourly throughput assumed equal to the weekly demand for limestone at the Mine Site as calculated by the project geochemist.

[231] Hourly maximum rate taken from "General and Process Design Criteria" (rev. E1), prepared by plant design company (Bateman).

[232] Emissions from the limestone crusher are calculated based on the estimated airflow and a performance specification of 0.005 gr/cf for the baghouse. The airflow was estimated based on a scaled airflow for the fine ore crushers and an adjustment for one crushing stage versus two.

[238] Rail delivery of limestone is worst case for emissions, so it was assumed that limestone used to produce the slurry for the Mine Site was delivered by rail.

[239] Limestone slurry would be driven from the additive buidling to the intersection with the unpaved road that goes to the Mine Site. The distance for this route is 1.16 miles. It was assumed that a maximum of two round trips per hour would be completed.

[241] Estimates of light truck traffic on the portions of the Dunka Rd. surrounded by land that will be controlled by PolyMet were made based on information in the 43-101 document, the DFS executive summary, Summary Description of Proposed Mining Operations (2004) and communications with PolyMet.
   Personnel traveling to the mine site and Area 2 are assumed to be as follows: 149 mine operations staff (mine), 18 mine technical services (12 mine, 6 area 2), 25 railroad operations (Area 2), 3 mine management (area 2), 3 EHS etc. (plant to mine).
   The above staff were assigned to shifts as shown in the table below. The road segments traveled are also included:

Category	Location	1st shift	2nd Shift	3rd Shift	Road Segments Traveled
Mine Ops	Mine	64	43	42	A, B, B2, B3, C, D, H
Mine Tech Serv	Mine	4	4	4	A, B, B2, B3, C, D, H
Mine Tech Serv	Area 2	4	2	0	D, H
Mine Manage.	Area 2	3	0	0	D, H
RR Ops	Area 2	13	9	3	D, H
EHS	PP to mine	3	0	0	A, B, B2, B3, C, D, E, F
Total		91	58	49	

Road Segment	Distance (miles)	Max Hourly Trips	Max Daily Trips	Hourly VMT	Annual VMT	Daily VMT
A	0.366	33	90	12.09	12034.15	32.97
B	1.940	33	90	64.02	63725.13	174.59
B2	0.160	33	90	5.27	5250.60	14.39
B3	1.166	33	90	38.49	38316.15	104.98
C	1.928	33	90	63.62	63326.89	173.50
D	0.148	171	456	25.24	24566.69	67.31
E	0.722	3	6	2.17	1580.93	4.33
F	0.370	3	6	1.11	810.25	2.22
H	0.114	146	390	16.62	16208.90	44.41

   The distance for each road segment was estimated from an aerial photograph. It was assumed that the mine operations personnel would travel to Area 2 in personal vehicles and then be shuttled in 6 passenger vans to the mine site. All other personnel were assumed to drive a vehicle all the way to their
   destination. Maximum hourly emissions will occur at shift changes where the vehicles transporting both shifts could be on the road during the same hour. To be conservative it was assumed that all travel would occur between the eight hour shifts although at least some railroad personnel will be
   working 12 hour shifts and other personnel may travel at other times. The maximum daily and hourly trips are shown in the table above as well as the hourly and annual miles. Only segments B2, C, D, E, F, and H are located at the Plant Site.
   Emissions from the other segments are calculated in the Mine Site emission calculation spreadsheet.

[243] Traffic levels for tranporting limestone slurry down the Dunka Rd. were estimated from the total quantity of limestone slurry required at the Mine Site. This quanity was obtained from the project geochemist with an adjustment for the additional weight that must be tranported due to the addition of water to the limestone to form a slurry.
   Maximum VMT for each time period calculated by multiplying the number of trips times 2 for round trips and times the appropriate segment length: B2 = 0.16 miles, C = 1.928 miles, and H = 0.114 miles. It was assumed that a maximum of two round trips could be completed in one hour.

[244] A additional portion of road segment H has been incorporated within the PolyMet ambient air boundary. This segment is identified as "H2". The segment length is within a few meters of the length of segment H and the traffic levels would be identical. Therefore, the same VMT is used for segment H2 as for segment H.

Maximum Annual Throughput References:

[305] Annual exhaust assumed equal to hourly exhaust times the number of hours required to unload the limestone required at the Mine Site.

[308] Annual througnput is equivalent to maximum annual limestone demand at the Mine Site as calculated by the project geochemist.

[309] Rail delivery of limestone is worst case for emissions, so it was assumed that limestone used to produce the slurry for the Mine Site was delivered by rail.

[312] Under this scenario, limestone will be used to neutrlize the stockpiles, so no lime will be used.

[314] Limestone slurry would be driven from the additive buidling to the intersection with the unpaved road that goes to the Mine Site. The distance for this route is 1.16 miles. The total number of trips per year is equivalent to the limestone demand divided by 7.2 tons solids per truck (24 ton payload * 30% solids). VMT = trips * 2 * 1.16 miles.

[318] Traffic levels for tranporting limestone slurry down the Dunka Rd. were estimated from the total quantity of limestone slurry required at the Mine Site. This quanity was obtained from the project geochemist with an adjustment for the additional weight that must be tranported due to the addition of water to the limestone to form a slurry.
   Maximum VMT for each time period calculated by multiplying the number of trips times 2 for round trips and times the appropriate segment length: B2 = 0.16 miles, C = 1.928 miles, and H = 0.114 miles.

[319] A additional portion of road segment H has been incorporated within the PolyMet ambient air boundary. This segment is identified as "H2". The segment length is within a few meters of the length of segment H and the traffic levels would be identical. Therefore, the same VMT is used for segment H2 as for segment H.

Projected Actual Throughput References

[423] Projected actual emissions are equivalent to potential emissions.

Control Efficiency References:

[501] Level 3A control measures, consistent with agreement reached by the IMA-MPCA Fugitive Emissions Workgroup as described in the November 18, 1998 "Taconite Industry Haul Truck Unpaved Road Fugitive Particulate Emission Factor and Control Efficiency" were observed at the Cliffs Erie facility;
   control practices are expected to be similar at the PolyMet facilities. 60% control efficiency was used in the calculations as a reasonably conservative first estimate of emissions. (The referenced document allows 80% for Level 3A control measures).

[502] Either no Air Pollution Control Devices (APCDs) are used in this process or the APCD does not control this pollutant. Therefore, Control Efficiency is 0.

[512] For enclosed silos, 100% capture was assumed. Fabric filters or equivalent control measures are used to control emissions from multiple silos based on information received from the plant design company. Removal efficiency taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018.

[515] Limestone delivered by rail will be unloaded in an enclosed building. The final design is not complete, but PolyMet intends to install a system that will qualify as a total enclosure (100% capture). The removal efficiency (99%) was taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018.

[516] Final design for the limestone crushing system has not been completed, so it was assumed that a well designed hood would be installed with 80% capture. The removal efficiency (99%) was taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018. The overall control efficiency is then 80% capture efficiency * 99* control efficiency = 79.2%.
   The stack and fugitive emissions are assigned different lines in the spreadsheet.

[517] Final design has not been completed on the lime slaker, so it was assumed that a well designed hood with 80% capture would be used. The removal efficiencies (90%) for PM and PM10 for a high efficiency wet scrubber (CE code 001) were taken from MPCA form GI-05A instructions, Table GI-05A.1. The overall control efficiency is then: 80% capture efficiency * 90% removal efficiency = 72%.
   The stack and fugitive emissions are given in separate lines in the spreadsheet.

[519] An effective control efficiency was calculated for the proposed 15 mph speed limit for limestone trucks on PolyMet property as Speed/30 or 15/30 = 50% reduction. This speed reduction factor was taken from Equation 3-1 in *Control of Open Fugitive Dust Sources* (EPA-450/3-88-008).

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Table 16 - Calculation of Potential Emissions at Mine Site - Limestone Slurry Option

Stack ID	ID	Description	APCD ID	Maximum (Units/hr) Note	Maximum (Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled PTE [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled PTE [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled PTE (tons/yr)
C23WRMH		Limestone Unloading - Cat 2/3	NA	0 [207]	0 [307]	0 [401]	tons limestone		PM10	N	N	0.008 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C23WRMH				0 [207]	0 [307]	0 [401]	tons limestone		Total PM	N	N	0.016 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C3LOMH		Limestone Unloading - Cat 3 LO	NA	0 [207]	0 [307]	0 [401]	tons limestone		PM10	N	N	0.008 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C3LOMH				0 [207]	0 [307]	0 [401]	tons limestone		Total PM	N	N	0.016 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C4WRMH		Limestone Unloading - Cat 4	NA	0 [207]	0 [307]	0 [401]	tons limestone		PM10	N	N	0.008 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons limestone		Total PM	N	N	0.016 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C23WRMH		Limestone Loading - Cat 2/3	NA	0 [207]	0 [307]	0 [401]	tons limestone		PM10	N	N	0.008 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C23WRMH				0 [207]	0 [307]	0 [401]	tons limestone		Total PM	N	N	0.016 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C3LOMH		Limestone Loading - Cat 3 LO	NA	0 [207]	0 [307]	0 [401]	tons limestone		PM10	N	N	0.008 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C3LOMH				0 [207]	0 [307]	0 [401]	tons limestone		Total PM	N	N	0.016 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C4WRMH		Limestone Loading - Cat 4	NA	0 [207]	0 [307]	0 [401]	tons limestone		PM10	N	N	0.008 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons limestone		Total PM	N	N	0.016 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C23WRMH		Limestone Application - Cat 2/3	NA	0 [207]	0 [307]	0 [401]	tons limestone		PM10	N	N	0.008 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C23WRMH				0 [207]	0 [307]	0 [401]	tons limestone		Total PM	N	N	0.016 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C3LOMH		Limestone Application - Cat 3 LO	NA	0 [207]	0 [307]	0 [401]	tons limestone		PM10	N	N	0.008 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C3LOMH				0 [207]	0 [307]	0 [401]	tons limestone		Total PM	N	N	0.016 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C4WRMH		Limestone Application - Cat 4	NA	0 [207]	0 [307]	0 [401]	tons limestone		PM10	N	N	0.008 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
C4WRMH				0 [207]	0 [307]	0 [401]	tons limestone		Total PM	N	N	0.016 [113]	0.00	0.000	0.000	0 [502]	0.00	0.000	0.000		0.000
AABB	FS 011	Mine Haul Roads, Segment AA to BB	NA	1 [213]	308 [311]	308 [401]	VMT	134	PM10	N	N	6.222 [114]	3.50	0.606	0.606	80 [501]	0.70	0.121	0.121		0.121
AABB				1 [213]	308 [311]	308 [401]	VMT	134	Total PM	N	N	23.508 [114]	13.21	2.289	2.289	80 [501]	2.64	0.458	0.458		0.458
AAFF	FS 011	Mine Haul Roads, Segment AA to FF	NA	0 [213]	43 [311]	43 [401]	VMT	134	PM10	N	N	6.222 [114]	0.49	0.085	0.085	80 [501]	0.10	0.017	0.017		0.017
AAFF				0 [213]	43 [311]	43 [401]	VMT	134	Total PM	N	N	23.508 [114]	1.85	0.321	0.321	80 [501]	0.37	0.064	0.064		0.064
C3LORD	FS 011	Mine Haul Roads, Segment BB to CC	NA	1 [213]	307 [311]	307 [401]	VMT	134	PM10	N	N	6.222 [114]	3.48	0.604	0.604	80 [501]	0.70	0.121	0.121		0.121
C3LORD				1 [213]	307 [311]	307 [401]	VMT	134	Total PM	N	N	23.508 [114]	13.17	2.281	2.281	80 [501]	2.63	0.456	0.456		0.456
DK	FS 011	Mine Haul Roads, Segment D to K	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
DK				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
DU	FS 011	Mine Haul Roads, Segment D to U	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
DU				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ED	FS 011	Mine Haul Roads, Segment E to D	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ED				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ET	FS 011	Mine Haul Roads, Segment E to T	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ET				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
FE	FS 011	Mine Haul Roads, Segment F to E	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
FE				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
FM	FS 011	Mine Haul Roads, Segment F to M	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
FM				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
C4WRRD	FS 011	Mine Haul Roads, Segment FF to GG	NA	0 [213]	222 [311]	222 [401]	VMT	134	PM10	N	N	6.222 [114]	2.52	0.437	0.437	80 [501]	0.50	0.087	0.087		0.087
C4WRRD				0 [213]	222 [311]	222 [401]	VMT	134	Total PM	N	N	23.508 [114]	9.53	1.652	1.652	80 [501]	1.91	0.330	0.330		0.330
GF	FS 011	Mine Haul Roads, Segment G to F	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
GF				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
EASTP	FS 011	Mine Haul Roads, Segment I to H	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
EASTP				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JI	FS 011	Mine Haul Roads, Segment J to I	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JI				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JW	FS 011	Mine Haul Roads, Segment J to W	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JW				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JJL	FS 011	Mine Haul Roads, Segment JJ to L	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
JJL				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
KJ	FS 011	Mine Haul Roads, Segment K to J		0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
KJ				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
KO	FS 011	Mine Haul Roads, Segment K to O	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
KO				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OBSRRD	FS 011	Mine Haul Roads, Segment KK to G	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OBSRRD				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
LLL	FS 011	Mine Haul Roads, Segment L to LL	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
LLL				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
LLN	FS 011	Mine Haul Roads, Segment LL to N	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
LLN				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
MLL	FS 011	Mine Haul Roads, Segment M to L	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
MLL				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
NM	FS 011	Mine Haul Roads, Segment N to M	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
NM				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ON	FS 011	Mine Haul Roads, Segment O to N	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
ON				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OOO	FS 011	Mine Haul Roads, Segment O to OO	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OOO				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OP	FS 011	Mine Haul Roads, Segment O to P	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
OP				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
C4LORD	FS 011	Mine Haul Roads, Segment OO to EE	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
C4LORD				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
PQ	FS 011	Mine Haul Roads, Segment P to Q	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
PQ				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
PZ	FS 011	Mine Haul Roads, Segment P to Z	NA	1 [213]	286 [311]	286 [401]	VMT	134	PM10	N	N	6.222 [114]	3.25	0.563	0.563	80 [501]	0.65	0.113	0.113		0.113
PZ				1 [213]	286 [311]	286 [401]	VMT	134	Total PM	N	N	23.508 [114]	12.27	2.126	2.126	80 [501]	2.45	0.425	0.425		0.425
WESTP	FS 011	Mine Haul Roads, Segment S to HH	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
WESTP				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
WESTP	FS 011	Mine Haul Roads, Segment S to II	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
WESTP				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
WESTP	FS 011	Mine Haul Roads, Segment T to S	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000

PolyMet - Hoyt Lakes, Minnesota
Table 16 - Calculation of Potential Emissions at Mine Site - Limestone Slurry Option

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr) Note	(Units/yr) Note	Projected Actual (Units/yr) Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit) Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%) Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)
WESTP				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
UV		Mine Haul Roads, Segment U to V		0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
UV				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
WX		Mine Haul Roads, Segment W to X	NA	1 [213]	303 [311]	303 [401]	VMT	134	PM10	N	N	6.222 [114]	3.44	0.596	0.596	80 [501]	0.69	0.119	0.119		0.119
WX				1 [213]	303 [311]	303 [401]	VMT	134	Total PM	N	N	23.508 [114]	13.01	2.253	2.253	80 [501]	2.60	0.451	0.451		0.451
C3WRRD	FS 011	Mine Haul Roads, Segment X to Y	NA	0 [213]	158 [311]	158 [401]	VMT	134	PM10	N	N	6.222 [114]	1.79	0.311	0.311	80 [501]	0.36	0.062	0.062		0.062
C3WRRD				0 [213]	158 [311]	158 [401]	VMT	134	Total PM	N	N	23.508 [114]	6.78	1.175	1.175	80 [501]	1.36	0.235	0.235		0.235
ZAA	FS 011	Mine Haul Roads, Segment Z to AA	NA	0 [213]	237 [311]	237 [401]	VMT	134	PM10	N	N	6.222 [114]	2.70	0.467	0.467	80 [501]	0.54	0.093	0.093		0.093
ZAA				0 [213]	237 [311]	237 [401]	VMT	134	Total PM	N	N	23.508 [114]	10.19	1.765	1.765	80 [501]	2.04	0.353	0.353		0.353
ZW	FS 011	Mine Haul Roads, Segment Z to W	NA	0 [213]	127 [311]	127 [401]	VMT	134	PM10	N	N	6.222 [114]	1.44	0.250	0.250	80 [501]	0.29	0.050	0.050		0.050
ZW				0 [213]	127 [311]	127 [401]	VMT	134	Total PM	N	N	23.508 [114]	5.44	0.943	0.943	80 [501]	1.09	0.189	0.189		0.189
VMM		Mine Haul Roads, Segment V to MM	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
VMM				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
VNN		Mine Haul Roads, Segment V to NN	NA	0 [213]	0 [311]	0 [401]	VMT	134	PM10	N	N	6.222 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
VNN				0 [213]	0 [311]	0 [401]	VMT	134	Total PM	N	N	23.508 [114]	0.00	0.000	0.000	80 [501]	0.00	0.000	0.000		0.000
FS012A	FS 012	Unpaved Roads, Dunka Rd. A (Lime Trucks)	NA	1.46 [219]	748 [316]	748 [401]	VMT	134	PM10	N	N	0.883 [114]	1.29	0.209	0.209	80 [501]	0.26	0.042	0.042		0.042
FS012A				1.46 [219]	748 [316]	748 [401]	VMT	134	Total PM	N	N	3.542 [114]	5.19	0.838	0.838	80 [501]	1.04	0.168	0.168		0.168
FS012B		Unpaved Roads, Dunka Rd. B (Lime Trucks)	NA	7.76 [219]	3,965 [316]	3,965 [401]	VMT	134	PM10	N	N	0.987 [114]	7.66	1.238	1.238	80 [501]	1.53	0.248	0.248		0.248
FS012B				7.76 [219]	3,965 [316]	3,965 [401]	VMT	134	Total PM	N	N	3.957 [114]	30.71	4.966	4.966	80 [501]	6.14	0.993	0.993		0.993
FS012B3		Unpaved Roads, Dunka Rd. B3 (Lime Trucks)	NA	4.66 [219]	2,383 [316]	2,383 [401]	VMT	134	PM10	N	N	1.013 [114]	4.72	0.764	0.764	80 [501]	0.94	0.153	0.153		0.153
FS012B3				4.66 [219]	2,383 [316]	2,383 [401]	VMT	134	Total PM	N	N	4.062 [114]	18.94	3.063	3.063	80 [501]	3.79	0.613	0.613		0.613

Contractor Crushing Operations (for road construction, etc.)																					
OBSRMH	FS 023	Primary Crushing	NA	0.00 [225]	0 [322]	0 [401]	tons		PM10	Y	N	0.00054 [126]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00 [225]	0 [322]	0 [401]	tons		Total PM	Y	N	0.0012 [126]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Screening	NA	0.00 [225]	0 [322]	0 [401]	tons		PM10	Y	N	0.00074 [128]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00 [225]	0 [322]	0 [401]	tons		Total PM	Y	N	0.0022 [128]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		To Product Conveyor	NA	0.00 [225]	0 [322]	0 [401]	tons		PM10	Y	N	4.60E-05 [129]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00 [225]	0 [322]	0 [401]	tons		Total PM	Y	N	0.00014 [129]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Conveyor to Secondary Crushing (2 transfers)	NA	0.00 [225]	0 [322]	0 [401]	tons		PM10	Y	N	9.20E-05 [129]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00 [225]	0 [322]	0 [401]	tons		Total PM	Y	N	2.80E-04 [129]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Secondary Crushing	NA	0.00 [225]	0 [322]	0 [401]	tons		PM10	Y	N	0.00054 [126]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00 [225]	0 [322]	0 [401]	tons		Total PM	Y	N	0.0012 [126]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Screening	NA	0.00 [225]	0 [322]	0 [401]	tons		PM10	Y	N	0.00074 [128]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00 [225]	0 [322]	0 [401]	tons		Total PM	Y	N	0.0022 [128]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Return Conveyor (2 transfers)	NA	0.00 [225]	0 [322]	0 [401]	tons		PM10	Y	N	9.20E-05 [129]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00 [225]	0 [322]	0 [401]	tons		Total PM	Y	N	2.80E-04 [129]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Product to Stock Pile	NA	0.00 [225]	0 [322]	0 [401]	tons		PM10	N	N	4.60E-05 [129]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000
OBSRMH				0.00 [225]	0 [322]	0 [401]	tons		Total PM	N	N	0.00014 [129]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000
OBSRMH		Truck Loading	NA	0.00 [225]	0 [322]	0 [401]	tons		PM10	N	N	0.0044 [114]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000
OBSRMH				0.00 [225]	0 [322]	0 [401]	tons		Total PM	N	N	0.0094 [114]	0.00	0.000	0.000	0 [503]	0.00	0.000	0.000		0.000

Totals for PSD Applicability (i.e. PSD Point Sources)																					
Criteria Pollutant Totals									PM10				0.00	0.00	0.00		0.00	0.00	0.00		0.00
									Total PM				0.00	0.00	0.00		0.00	0.00	27.96		5.96
Mine Site Totals (Point and Fugitive Sources)																					
Criteria Pollutant Totals [4]									PM10				36.29	6.13	6.13		7.26	1.23	1.23		1.23
									Total PM				140.28	23.67	23.67		28.06	4.73	4.73		4.73

Notes:

General References:

[1] Max. Uncontrolled Emissions (lb/hr) = EF (lb/unit) x Max. Hourly Throughput (units/hr).

Max. Uncontrolled Emissions (tons/yr) = EF (lb/unit) x Max. Annual Throughput (units/yr) / 2,000 (lb/ton).

[2] Max. Controlled Emissions (lb/hr) = Max. Uncontrolled Emissions (lb/hr) x (1-Control Eff./100).

Max. Controlled Emissions (tons/yr) = Max. Uncontrolled Emissions (tons/yr) x (1-Control Eff./100).

Emission Factor References:

[113] Limestone will be delivered to the Mine Site as a slurry under this scenario, so no emissions will be generated from limestone handling.

[114] See Fugitive Emission Calculation Tabs

[126] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Tertiary Crushing (controlled). Emission factors are not given for primary and secondary crushing,
but footnote n indicates that the tertiary crushing factors can be used as an upper bound.

[128] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Screening (controlled).

[129] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Conveyor Transfer Point (controlled). Where the emission unit consist of a transfer to and from the conveyor, the emission factor is multiplied by 2.

Maximum Hourly Throughput References:

[207] Under this scenario, limestone would be delivered to the Mine Site as a slurry, so there is no handling of dry limestone at the Mine Site.

[213] Haul distances for limestone slurry on mine haul roads were determined by assigning a letter to each intersection or termination for the haul roads. The distance between each point assigned a letter was determined from aerial photographs. The route for each haul was determined.

Limestone slurry would be hauled in 40 ton trucks with a 24 ton payload. The slurry was assumed to be 30% solids to allow for application with a drip bar or nozzle. The payload of the trucks in terms of limestone is then 7.2 tons (24 tons * 30% solids). The total number of trips for hauling to each stockpile were determined by dividing the limestone required as calculated by the project geochemist by 7.2.
The emission for each segment were calculated by summing the trips for the hauling of limestone slurry to each stockpile, multiplying by the length of the segment, and multiplying by 2 to account for round trips. Hourly VMT assume roughly two trips to each stockpile per hour.

[217] Estimates of light truck traffic on the portions the Dunka Rd where PolyMet will control the surrounding land were made based on information in the 43-101 document, the DFS executive summary, Summary Description of Proposed Mining Operations (2004) and communications with PolyMet.

Personnel traveling to the mine site and Area 2 are assumed to be as follows: 149 mine operations staff (mine), 18 mine technical services (12 mine, 6 area 2), 25 railroad operations (Area 2), 3 mine management (area 2), 3 EHS etc. (plant to mine).

The above staff were assigned to shifts as shown in the table below. The road segments traveled are also included:

Category	Location	1st shift	2nd Shift	3rd Shift	Road Segments Traveled
Mine Ops	Mine	64	43	42	A, B, B2, C, D, H
Mine Tech Serv	Mine	4	4	4	A, B, B2, C, D, H
Mine Tech Serv	Area 2	4	2	0	D, H
Mine Manage.	Area 2	3	0	0	D, H
RR Ops	Area 2	13	9	3	D, H
EHS	PP to mine	3	0	0	A, B, B2, C, D, E, F

Road Se	Distance (miles)	Max Hourly Trips	Max Daily Trips	Hourly VMT	Annual VMT	Daily VMT
A	0.366	33	90	12.09	12034.15	32.97
B	1.940	33	90	64.02	63725.13	174.59
B2	0.160	33	90	5.27	5250.60	14.39
B3	1.166	33	90	38.48	38303.10	104.94
C	1.928	33	90	63.62	63326.89	173.50
D	0.148	171	456	25.24	24566.69	67.31

Stack ID	Emission Unit		APCD ID	Throughput					Annual days with precipitation	Pollutant	PSD Applicability	HAP?	Emission Factor		Max. Uncontrolled Potential to Emit [1]		Proj. Act. Uncontrolled Emissions	Control Efficiency		Max. Controlled Potential to Emit [2]		Proj. Act. Controlled Emissions	Emission Std or Operational Limit	Limited Controlled Potential to Emit
	ID	Description		Maximum		Projected Actual		Units																
				(Units/hr)	Note	(Units/yr)	Note	(Units/yr)	Note			(Y/N)	(Y/N)	(lb/Unit)	Note	(lb/hr)	(tons/yr)	(ton/yr)	(%)	Note	(lb/hr)	(tons/yr)	(tons/yr)	Limit	(tons/yr)
Total			91	58		49				E	0.722		3		6	2.17	1580.93	4.33							
										F	0.370		3		6	1.11	810.25	2.22							
										H	0.114		146		390	16.62	16208.90	44.41							

The distance for each road segment was estimated from an aerial photograph. It was assumed that the mine operations personnel would travel to Area 2 in personal vehicles and then be shuttled in 6 passenger vans to the mine site. All other personal were assumed to drive a vehicle all the way to their destination. Maximum hourly emissions will occur at shift changes where the vehicles transporting both shifts could be on the road during the same hour. To be conservative it was assumed that all travel would occur between the eight hour shifts although at least some railroad personnel will be working 12 hour shifts and other personnel may travel at other times. The maximum daily and hourly trips are shown in the table above as well as the hourly and annual miles. Only segments A, B, and B3 are located at the Mine Site. The emissions from the other segments are calculated in the Plant Site emission calculation spreadsheet.

[219] Traffic levels for tranporting limestone slurry down the Dunka Rd. were estimated from the total quantity of limestone slurry required at the Mine Site. This quanity was obtained from the project geochemist with an adjustment for the additional weight that must be tranported due to the addition of water to the limestone to form a slurry. Assume maximum hourly rate is two round trips. Length of segment A = 0.366 miles, B = 1.94, B3 = 1.166 miles.

[225] No crushing will be required for this scenario.

Maximum Annual Throughput References:

[307] Under this scenario, limestone will be delivered to the Mine Site as a slurry, so there is no handling of dry limestone at the Mine Site.

[311] Haul distances for limestone slurry on mine haul roads were determined by assigning a letter to each intersection or termination for the haul roads. The distance between each point assigned a letter was determined from aerial photographs. The route for each haul was determined. Limestone slurry would be hauled in 40 ton trucks with a 24 ton payload. The slurry was assumed to be 30% solids to allow for application with a drip bar or nozzle. The payload of the trucks in terms of limestone is then 7.2 tons (24 tons * 30% solids). The total number of trips for hauling to each stockpile were determined by dividing the limestone required as calculated by the project geochemist by 7.2. The emission for each segment were calculated by summing the trips for the hauling of limestone slurry to each stockpile, multiplying by the length of the segment, and multiplying by 2 to account for round trips.

[316] Traffic levels for tranporting limestone slurry down the Dunka Rd. were estimated from the total quantity of limestone slurry required at the Mine Site. This quanity was obtained from the project geochemist with an adjustment for the additional weight that must be tranported due to the addition of water to the limestone to form a slurry. Length of segment A = 0.366 miles, B = 1.94, B3 = 1.166 miles.

[322] No crushing will be required for this scenario.

Projected Actual Throughput References

[401] Projected actual emissions are equivalent to potential emissions.

Control Efficiency References:

[501] Level 3A control measures, consistent with agreement reached by the IMA-MPCA Fugitive Emissions Workgroup as described in the November 18, 1998 "Taconite Industry Haul Truck Unpaved Road Fugitive Particulate Emission Factor and Control Efficiency" were observed at the Cliffs Erie facility; control practices are expected to be similar at the PolyMet facilities. The referenced document allows 80% for Level 3A control measures.

[502] Either no Air Pollution Control Devices (APCDs) are used in this process or the APCD does not control this pollutant. Therefore, Control Efficiency is 0.

[503] Controlled emission factors (with wet suppression) were used for all sources except truck loading. The material in the stockpile may be wet due to residual moisture from the wet suppression, depending on how long the material remains in the pile. If this is the case, then the emissions may be overestimated. Adjustment to the material moisture content can be made to reflect this phenomenon.

PolyMet - Hoyt Lakes, Minnesota
Table 17 - Vehicle Miles Travelled at Mine Site for Limestone Slurry Option

East Pit		Trips	Trips by Segment													
			AA to BB	AA to FF	BB to CC	D to K	D to U	E to D	E to T	F to E	F to M	FF to GG	G to F	I to H	J to I	J to W
Limestone to C2/3	East	331.4														
Limestone to C3LO	East	397.8	397.8		397.8											
Limestone to C4	East	291.9		291.9								291.9				
Total (trips/year)			397.8	291.9	397.8	0.0	0.0	0.0	0.0	0.0	0.0	291.9	0.0	0.0	0.0	0.0
Miles/segment			0.3867	0.0739	0.3854	0.5858	0.0396	0.1902	0.0555	0.1905	0.0932	0.3803	0.1748	1.3199	0.0358	0.1631
VMT/year			307.7	43.1	306.6	0.0	0.0	0.0	0.0	0.0	0.0	222.1	0.0	0.0	0.0	0.0

PolyMet - Hoyt Lakes, Minnesota
Table 17 - Vehicle Miles Travelled at Mine Site for Limestone Slurry Option

| East Pit | | | Trips by Segment | | | | | | | | | | | | | |
		Trips	JJ to L	K to J	K to O	KK to G	L to LL	LL to N	M to L	N to M	O to N	O to OO	O to P	OO to EE	P to Q	P to Z
Limestone to C2/3	East	331.4														331.4
Limestone to C3LO	East	397.8														397.8
Limestone to C4	East	291.9														291.9
Total (trips/year)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1021.1
Miles/segment			0.3559	0.2436	0.1744	0.2322	0.1400	0.4057	0.1631	0.3614	0.2142	0.1701	0.1362	0.3345	0.3737	0.1400
VMT/year			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	285.8

PolyMet - Hoyt Lakes, Minnesota
Table 17 - Vehicle Miles Travelled at Mine Site for Limestone Slurry Option

East Pit		Trips	Trips by Segment									
			S to HH	S to II	T to S	U to V	W to X	X to Y	Z to AA	Z to W	V to MM	V to NN
Limestone to C2/3	East	331.4					331.4	331.4		331.4		
Limestone to C3LO	East	397.8							397.8			
Limestone to C4	East	291.9							291.9			
Total (trips/year)			0.0	0.0	0.0	0.0	331.4	331.4	689.7	331.4	0.0	0.0
Miles/segment			0.7273	1.4468	0.5208	0.6669	0.4570	0.2383	0.1720	0.1913	1.0919	0.4617
VMT/year			0.0	0.0	0.0	0.0	302.9	157.9	237.2	126.8	0.0	0.0

PolyMet - Hoyt Lakes, Minnesota
Table 18 - Calculation of Emission Factors for Fugitive Sources at Mine Site - Limestone Slurry Option

Stack ID	ID	Emission Unit Description	Pollutant	k [2]	U [3] (mph)	M [4] (%)	s [6] (%)	a	b	W [7] (tons)	Emission Factor (lb/Unit)	Note
Fugitive	FS 001, 029,	Surface Overburden, Truck Load	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	017, 048	Surface Overburden, Truck Load	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 002, 014,	Surface Overburden, Truck Unload	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	045, 018	Surface Overburden, Truck Unload	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 039, 047	Surface Overburden, Screen Discharge	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	FS 039, 047	Surface Overburden, Screen Discharge	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 004	Waste Rock, Truck Load	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS 004	Waste Rock, Truck Load	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 005	Waste Rock, Truck Unload	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS 005	Waste Rock, Truck Unload	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 007	Ore, Truck Load	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 007	Ore, Truck Load	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS 009, 020	Ore, Truck Unload	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 009, 020	Ore, Truck Unload	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS 010	Ore, Railcar Load	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 010	Ore, Railcar Load	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS023	Crushed rock to truck	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS023	Crushed rock to truck	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 011	Unpaved Roads, Mine										
	& FS 021 [8]	Unpaved Roads, Mine (Haul Trucks - Avg.)	PM10	1.5			5.8	0.9	0.45	303.15	6.2224	[5]
		Unpaved Roads, Mine (Haul Trucks - Avg.)	PM	4.9			5.8	0.7	0.45	303.15	23.5077	[5]
		Unpaved Roads, Mine (Light Trucks)	PM10	1.5			5.8	0.9	0.45	2.5	0.7183	[5]
		Unpaved Roads, Mine (Light Trucks)	PM	4.9			5.8	0.7	0.45	2.5	2.7135	[5]
		Unpaved Roads, Mine (Fuel Truck)	PM10	1.5			5.8	0.9	0.45	11	1.3991	[5]
		Unpaved Roads, Mine (Fuel Truck)	PM	4.9			5.8	0.7	0.45	11	5.2856	[5]
Fugitive	FS 012	Unpaved Roads, Dunka Rd.										
		Unpaved Roads, Dunka Rd. (segment A)	PM10	1.5			4.3	0.9	0.45	7.20	0.8830	[5]
		Unpaved Roads, Dunka Rd. (segment A)	PM	4.9			4.3	0.7	0.45	7.20	3.5418	[5]
		Unpaved Roads, Dunka Rd. (segment B)	PM10	1.5			4.3	0.9	0.45	9.21	0.9866	[5]
		Unpaved Roads, Dunka Rd. (segment B)	PM	4.9			4.3	0.7	0.45	9.21	3.9573	[5]
		Unpaved Roads, Dunka Rd. (segment B3)	PM10	1.5			4.3	0.9	0.45	9.76	1.0126	[5]
		Unpaved Roads, Dunka Rd. (segment B3)	PM	4.9			4.3	0.7	0.45	9.76	4.0617	[5]
Fugitive	FS 021	Unpaved Roads, Fueling Facility Circle	PM10	1.5			4.3	0.9	0.45	246.5	4.3309	[5]
		Unpaved Roads, Fueling Facility Circle	PM	4.9			4.3	0.7	0.45	246.5	17.3710	[5]

Notes:

[1] EF = k x 0.0032 x (U/5)^1.3 / (M/2)^1.4 lb/ton

    Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Page 13.2.4-3.

[2] k = particle size multiplier (dimensionless).

                  0.35 for PM10 for equation in [1].   0.74 for PM for equation in [1]

                  1.50 for PM10 for equation in [5].   4.9 for PM for equation in [5]

[3] U = mean wind speed (mph).

                9.3 mph. Source: "Climates of the States", Vol. II, Water Information Center, 1974 for International Falls, MN.

[4] M = moisture content (%).

                12.7 % for surface overburden based on data from "Phase I Geotechnical Field Investigation", Golder Associates, August 2006

                1.33 % for waste rock from whole rock data for waste rock zone

                1.05 % for ore from whole rock data for ore zone

[5] EF = k x (s/12)^a x (W/3)^b lb/VMT

    Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Pages 13.2.2-4 and 13.2.2-5.

    Precipitation is accounted for in emission calculation spreadsheet. Emission factors are multiplied by (1-p/365) for annual emission calculations; where p = days with precipitation.

    Note: the equation for roads at industrial sites is being used for the Dunka Rd. because the road will not generally be accessible to the public.

[6] s = silt content (%)

                5.8 % for taconite mine haul road from AP-42 Table 13.2.2-1

                4.3 % for taconite mine service road from AP-42 Table 13.2.2-1

[7] W = mean vehicle weight (tons).

                425.30 tons for loaded 240 ton trucks hauling surface overburden, waste rock, and ore in mine

                181.00 tons for empty 240 ton trucks used for hauling surface overburden, waste rock, and ore in mine.

                303.15 tons mean weight for haul trucks

                2.5 tons for all light trucks (supervisor vehicles, passenger vans, etc.)

                11 tons for mine fuel tanker based on information received from a fuel vendor

                40 tons for loaded tanker delivering fuel to mine based on information from a fuel vendor

                13.2 tons for empty tanker leaving mine site

                26.6 tons for mean tanker weight

                40 tons for loaded WWTF truck

                16 tons for empty WWTF truck

                28 tons mean weight for WWTF truck

                  See Table 4 for Mean weight calculation for Dunka Road segments with multiple vehicle types and refueling circle

PolyMet - Hoyt Lakes, Minnesota
Table 19 - Calculation of Emission Factors for Fugitive Sources at Plant Site - Limestone Slurry Option

Stack ID	ID	Emission Unit Description	Pollutant	k [2]	U [3] (mph)	M [4] (%)	s [6] (%)	a	b	W [7] (tons)	Emission Factor (lb/Unit)	Note
Fugitive	FS 033, 035	Mine Limestone Handling; Stacker Conveyor	PM10	0.35	7.1	0.7					0.0077	[1]
		Mine Limestone Handling; Stacker Conveyor	PM	0.74	7.1	0.7					0.0162	[1]
Fugitive	FS 038	Paved Roads, Limestone Truck Haul	PM10	0.016			8.2			28	1.1411	[9]
		Paved Roads, Limestone Truck Haul	PM	0.082			8.2			28	5.8498	[9]
Fugitive	FS 012	Unpaved Roads, Dunka Rd. (segment B2)	PM10	1.5			4.3	0.9	0.45	9.80	1.0148	[5]
		Unpaved Roads, Dunka Rd. (segment B2)	PM	4.9			4.3	0.7	0.45	9.80	4.0702	[5]
		Unpaved Roads, Dunka Rd. (segment C)	PM10	1.5			4.3	0.9	0.45	6.71	0.8555	[5]
		Unpaved Roads, Dunka Rd. (segment C)	PM	4.9			4.3	0.7	0.45	6.71	3.4315	[5]
		Unpaved Roads, Dunka Rd. (segment D)	PM10	1.5			4.3	0.9	0.45	2.69	0.5671	[5]
		Unpaved Roads, Dunka Rd. (segment D)	PM	4.9			4.3	0.7	0.45	2.69	2.2745	[5]
		Unpaved Roads, Dunka Rd. (segment E)	PM10	1.5			4.3	0.9	0.45	11.77	1.1016	[5]
		Unpaved Roads, Dunka Rd. (segment E)	PM	4.9			4.3	0.7	0.45	11.77	4.4185	[5]
		Unpaved Roads, Dunka Rd. (segment F)	PM10	1.5			4.3	0.9	0.45	11.77	1.1016	[5]
		Unpaved Roads, Dunka Rd. (segment F)	PM	4.9			4.3	0.7	0.45	11.77	4.4185	[5]
		Unpaved Roads, Dunka Rd. (segment H/H2)	PM10	1.5			4.3	0.9	0.45	3.19	0.6127	[5]
		Unpaved Roads, Dunka Rd. (segment H/H2)	PM	4.9			4.3	0.7	0.45	3.19	2.4575	[5]

Notes:

[1] EF = k x 0.0032 x (U/5)^1.3 / (M/2)^1.4 lb/ton

Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Page 13.2.4-3.

[2] k = particle size multiplier (dimensionless).

    0.35 for PM10 for equation in [1].   0.74 for PM for equation in [1]

    1.50 for PM10 for equation in [5].   4.9 for PM for equation in [5]

    0.016 for PM10 for equation in [9]   0.082 for PM for equation in [9]

[3] U = mean wind speed (mph).

    7.1 mph. Source: average value from 2001 - 2005 Hibbing, MN Meteorlogical Data Set

[4] M = moisture content (%).

    0.7 % for crushed limestone from AP-42 Table 13.2.4-1

[5] EF = k x (s/12)^a x (W/3)^b lb/VMT

Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Pages 13.2.2-4 and 13.2.2-5.

Precipitation is accounted for in emission calculation spreadsheet. Emission factors are multiplied by (1-p/365) for annual emission calculations; where p = days with precipitation.

Note: the equation for roads at industrial sites is being used for the Dunka Rd. because the road will not generally be accessible to the public.

[6] s = silt content (%)

    4.3 % for taconite mine service road from AP-42 Table 13.2.2-1

    8.2 % for paved roads at a quarry from AP-42 Table 13.2.1-4

[7] W = mean vehicle weight (tons).

    40 tons for loaded limestone delivery trucks and WWTF trucks

    16 tons for empty limestone delivery trucks and WWTF trucks

    28 tons average for limestone delivery trucks and WWTF trucks

2.5 tons for all light trucks (supervisor vehicles, passenger vans, etc.)
80 tons for empty 100 ton trucks going to the Area 1 Shop for Maintenance
40 tons for loaded tanker delivering fuel to mine based on information from a fuel vendor
13.2 tons for empty tanker leaving mine site
26.6 tons for mean tanker weight
40 tons for loaded WWTF truck
16 tons for empty WWTF truck
28 tons mean weight for WWTF truck
181 tons for empty 240 ton haul trucks
See Table 2B for Mean weight calculation for Dunka Road segments with multiple vehicle types

[8] Tailings haul roads at plant assumed equivalent to mine haul roads.

[9] EF = k * (sL/2)^0.65 * (W/3)^1.5 - C lb/VMT
Source = "AP-42 Compilation of Air Pollutant Emission Factors", 5th Edit., January 1995 Page 13.2.1-4, eqn. 1

[10] C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear
0.00047 for PM and PM10 with units of lb/VMT from AP-42 Table 13.2.1-2

PolyMet - Hoyt Lakes, Minnesota
Table 20 - Mine Site Mean Vehicle Weight Calculations - Limestone Slurry

Note: Calculations based on Annual VMT

Segment B

Segment Length		1.94			
ID	Activity	B VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
FS 012B	Empty Haul Trucks	1359.70	181	0.018	3.250
FS 012B	Light Trucks	63725.13	2.5	0.842	2.104
FS 012B	Tanker	4249.73	26.6	0.056	1.493
FS 012B	Limestone Haul	3965.36	28	0.052	1.466
FS 012B	WWTF Trucks	2424.85	28	0.032	0.897
	Total	75724.77		1.000	9.210

Segment A

Segment Length		0.37			
ID	Activity	A VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
FS 012A	Empty Haul Trucks	255.29	181	0.018	3.337
FS 012A	Light Trucks	12034.15	2.5	0.869	2.173
FS 012A	Limestone Haul	748.10	2.5	0.054	0.135
FS 012A	Tanker	807.70	26.6	0.058	1.552
	Total	13845.25		1	7.197

Fueling Facility Circle

Segment Length		0.22			
ID	Activity	RFC VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
RFCRD	Fuel Tanker	0.67	26.6	0.091	2.419
RFCRD	Haul Trucks (240 t)	5.35	303.15	0.727	220.463
RFCRD	Haul Trucks (100 t)	1.34	130	0.182	23.635
	Total	7.36		1.000	246.518

Segment B3

Segment Length		1.17			
ID	Activity	B3 VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
FS 012B3	Empty Haul Trucks	815.82	181	0.017	3.128
FS 012B3	Light Trucks	38303.10	2.5	0.811	2.028
FS 012B3	Tanker	4249.73	26.6	0.090	2.394
FS 012B3	Limestone Haul	2383.30	26.6	0.050	1.343
FS 012B3	WWTF Trucks	1457.50	28	0.031	0.864
	Total	47209.45		1.000	9.758

Note: Calculations based on Annual VMT

Segment B2

Segment Length		0.16			
ID	Activity	B2 VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012B2	Empty Haul Trucks	111	181.0	0.018	3.222
FS 012B2	Light Trucks	5250.60	2.5	0.842	2.105
FS 012B2	Tanker	347.931	26.6	0.056	1.484
FS 012B2	Limestone Haul	326.704	40.0	0.052	2.096
FS 012B2	WWTF Trucks	199.79	28.0	0.032	0.897
	Total	6236.03		1	9.803

Segment C

Segment Length		1.93			
ID	Activity	C VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012C	Light Trucks	63326.89	2.5	0.857	2.142
FS 012C	Tanker	4224.87	26.6	0.057	1.521
FS 012C	Limestone Haul	3940.34	40.0	0.053	2.133
FS 012C	WWTF Trucks	2409.70	28.0	0.033	0.913
	Total	73901.80		1	6.709

Segment D

Segment Length		0.148			
ID	Activity	D VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012D	Light Trucks	24566.69	2.5	0.993	2.481
FS 012D	WWTF Trucks	184.501	28.0	0.007	0.209
	Total	24751.19		1	2.690

Segment E

Segment Length		0.722			
ID	Activity	E VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012E	Light Trucks	1580.930	2.5	0.637	1.592
FS 012E	WWTF Trucks	902.357	28.0	0.363	10.174
	Total	2483.288		1	11.766

Segment F

Segment Length		0.37			
ID	Activity	F VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012F	Light Trucks	810.251	2.5	0.637	1.592
FS 012F	WWTF Trucks	462.472	28.0	0.363	10.174
	Total	1272.723		1	11.766

Segment H/H2

Segment Length		0.114			
ID	Activity	H VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012H	Light Trucks	16208.904	2.5	0.971	2.428
FS 012H	Limestone Haul	232.743	26.6	0.014	0.371
FS 012H	Tanker	248.522	26.6	0.015	0.396
	Total	16690.169		1	3.195

PolyMet - Hoyt Lakes, Minnesota
Table 22 - Calculation of Potential Emissions - Processing Plant - Lime Slurry Option

Indicates source that will only operate for first 1 to 2 years of plant operation.

Stack ID	Emission Unit ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	Maximum (Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)
Reag V	EU 220	Lime Silo	CE 220	14340	[227]	6451216	[305]	6451216	[423]	ft^3 exh.		PM10	Y	N	0.00	[176]	1.02	0.230	0.230	99	[512]	0.01	0.002	0.002		GP 001
Reag V				6.027	[228]	2711.4	[312]	2711	[423]	ton		Total PM	Y	N	0.99	[156]	5.97	1.342	1.342	99	[512]	0.06	0.013	0.013		GP 001
Reag V	EU 221	Lime Conveyor	NA	6.027	[228]	2711.4	[312]	2711	[423]	ton		PM10	Y	N	0.61	[177]	3.68	0.827	0.827	0	[502]	3.68	0.827	0.827		GP 001
Reag V				6.027	[228]	2711.4	[312]	2711	[423]	ton		Total PM	Y	N	0.61	[177]	3.68	0.827	0.827	0	[502]	3.68	0.827	0.827		GP 001
SV 221	EU 321	Lime Slaker (w/scrubber)	CE 301	6.027	[228]	2711.4	[312]	2711	[423]	ton		PM10	Y	N	0.64	[178]	3.86	0.868	0.868	90	[517]	0.39	0.087	0.087		GP 001
SV 221				6.027	[228]	2711.4	[312]	2711	[423]	ton		Total PM	Y	N	0.64	[178]	3.86	0.868	0.868	90	[517]	0.39	0.087	0.087	IPER for PM	GP 001
Reag V	EU 321	Lime Slaker (fugitive emissions)	NA	6.027	[228]	2711.4	[312]	2711	[423]	ton		PM10	Y	N	0.16	[178]	0.96	0.217	0.217	0	[517]	0.96	0.217	0.217		GP 001
Reag V				6.027	[228]	2711.4	[312]	2711	[423]	ton		Total PM	Y	N	0.16	[178]	0.96	0.217	0.217	0	[517]	0.96	0.217	0.217		GP 001
SV 323	EU 326	Limestone Railcar Dump	CE 305	0	[229]	0	[308]	0	[423]	ft^3 exh.		PM10	Y	N	8.57E-07	[179]	0.00	0.000	0.000	99	[515]	0.00	0.000	0.000	0.022 gr/cf PM	GP 001
SV 323				0	[229]	0	[308]	0	[423]	ft^3 exh.		Total PM	Y	N	8.57E-07	[179]	0.00	0.000	0.000	99	[515]	0.00	0.000	0.000	(NSPS)	GP 001
SV 323				0	[229]	0	[308]	0	[423]	ft^3 exh.		Crystalline Silica	Y	N	1.71E-08	[180]	0.00	0.000	0.000	99	[515]	0.00	0.000	0.000		0.000
SV 323	EU 327	Limestone hopper to conveyor	CE 305																							
SV 323																										
SV 323		Emissions included with EU 326																								
CarDmp V	EU 328	Limestone Reclaim chute (to tunnel conveyor)	NA	0	[230]	0	[308]	0	[423]	ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
CarDmp V				0	[230]	0	[308]	0	[423]	ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
CarDmp V				0	[230]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
Addit V	EU 329	Limestone Tunnel Conveyor to Bunker	NA	0	[230]	0	[308]	0	[423]	ton		PM10	Y	N	0.0077	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Addit V				0	[230]	0	[308]	0	[423]	ton		Total PM	Y	N	0.0162	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
Addit V				0	[230]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0003	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
Addit V	EU 330	Limestone Bunker to crusher feed conveyor (enclosed)	NA	0	[230]	0	[308]	0	[423]	ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Addit V				0	[230]	0	[308]	0	[423]	ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
Addit V				0	[230]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
Addit V	EU 322	Limestone Crusher Feed Conveyor Discharge (enclosed)	NA	0	[230]	0	[308]	0	[423]	ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Addit V				0	[230]	0	[308]	0	[423]	ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
Addit V				0	[230]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
SV 322	EU 323	Limestone Crusher (stack emissions)	CE 304	0	[232]	0	[305]	0	[423]	ton		PM10	Y	N	7.14E-07	[181]	0.00	0.000	0.000	99	[516]	0.00	0.000	0.000	0.022 gr/cf PM	GP 001
SV 322				0	[232]	0	[305]	0	[423]	ton		Total PM	Y	N	7.14E-07	[181]	0.00	0.000	0.000	99	[516]	0.00	0.000	0.000	(NSPS)	GP 001
SV 322				0	[232]	0	[305]	0	[423]	ton		Crystalline Silica	Y	N	1.43E-08	[180]	0.00	0.000	0.000	99	[516]	0.00	0.000	0.000		0.000
Addit V	EU 323	Limestone Crusher (fugitive emissions)		0	[232]	0	[305]	0	[423]	ton		PM10	Y	N	1.79E-05	[182]	0.00	0.000	0.000	0	[516]	0.00	0.00	0.000		GP 001
Addit V				0	[232]	0	[305]	0	[423]	ton		Total PM	Y	N	1.79E-05	[182]	0.00	0.000	0.000	0	[516]	0.00	0.00	0.000		GP 001
Addit V				0	[232]	0	[305]	0	[423]	ton		Crystalline Silica	Y	N	3.57E-07	[180]	0.00	0.000	0.000	0	[516]	0.00	0.00	0.000		0.000
Addit V	EU 324	Limestone Crusher to Conveyor	NA	0	[230]	0	[308]	0	[423]	ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Addit V				0	[230]	0	[308]	0	[423]	ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
Addit V				0	[230]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
Addit V	EU 224	Limestone Conveyor to Mix Tank	NA	0	[230]	0	[308]	0	[423]	ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
Addit V				0	[230]	0	[308]	0	[423]	ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	NSPS OOO [5]	GP 001
Addit V				0	[230]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 024	FS 024	Limestone conveyor to stacker conveyor	NA	0	[230]	0	[308]	0	[423]	ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	10% opacity	GP 001
FS 024				0	[230]	0	[308]	0	[423]	ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	(NSPS)	GP 001
FS 024				0	[230]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 033	FS 033	Limestone Stacker Conveyor to stockpile	NA	0	[230]	0	[308]	0	[423]	ton		PM10	N	N	0.0077	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 033				0	[230]	0	[308]	0	[423]	ton		Total PM	N	N	0.0162	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 033				0	[230]	0	[308]	0	[423]	ton		Crystalline Silica	N	N	0.0003	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 025	FS 025	Limestone Reclaim Pocket Dump	NA	0	[230]	0	[308]	0	[423]	ton		PM10	Y	N	1.60E-05	[192]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 025				0	[230]	0	[308]	0	[423]	ton		Total PM	Y	N	4.80E-05	[192]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 025				0	[230]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	9.60E-07	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 034	FS 034	Limestone Reclaim Feeder to Conveyor	NA	0	[230]	0	[308]	0	[423]	ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 034				0	[230]	0	[308]	0	[423]	ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 034				0	[230]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 035	FS 035	Limestone Truck Dump	NA	0	[238]	0	[308]	0	[423]	ton		PM10	Y	N	0.0077	[185]	0.00	0.000	0.000	90	[502]	0.00	0.000	0.000		GP 001
FS 035				0	[238]	0	[308]	0	[423]	ton		Total PM	Y	N	0.0162	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 035				0	[238]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0003	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
FS 036	FS 036	Limestone Truck Dump Grizzly	NA	0	[238]	0	[308]	0	[423]	ton		PM10	Y	N	0.0087	[193]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 036				0	[238]	0	[308]	0	[423]	ton		Total PM	Y	N	0.0250	[193]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		GP 001
FS 036				0	[238]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0005	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	Enclosed shed	0.000
FS 037	FS 037	Limestone Grizzly to Conveyor Belt	NA	0	[238]	0	[308]	0	[423]	ton		PM10	Y	N	0.0011	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	constructed	GP 001
FS 037				0	[238]	0	[308]	0	[423]	ton		Total PM	Y	N	0.003	[183]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	over unloading	GP 001
FS 037				0	[238]	0	[308]	0	[423]	ton		Crystalline Silica	Y	N	0.0001	[180]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000	point	0.000
FS 038	FS 038	Plant Site Paved Roads - Lime Slurry Haul	NA	6.60	[239]	1255	[318]	1255	[423]	VMT	134	PM10	N	N	1.14	[185]	7.53	0.651	0.651	50	[519]	3.77	0.325	0.325		0.325
FS 038				6.60	[239]	1255	[318]	1255	[423]	VMT	134	Total PM	N	N	5.85	[185]	38.61	3.335	3.335	50	[519]	19.30	1.667	1.667		1.667
FS012B2	FS 012	Unpaved Roads, Dunka Rd. B2 (Lime Trucks)	NA	0.64	[243]	121	[318]	121	[423]	VMT	134	PM10	N	N	0.965	[185]	0.62	0.037	0.037	60	[501]	0.25	0.015	0.015		0.015
FS012B2				0.64	[243]	121	[318]	121	[423]	VMT	134	Total PM	N	N	3.871	[185]	2.48	0.148	0.148	60	[501]	0.99	0.059	0.059		0.059
FS012C	FS 012	Unpaved Roads, Dunka Rd. C (Lime Trucks)	NA	7.71	[243]	1,454	[318]	1454	[423]	VMT	134	PM10	N	N	0.786	[185]	6.06	0.361	0.361	60	[501]	2.42	0.145	0.145		0.145
FS012C				7.71	[243]	1,454	[318]	1454	[423]	VMT	134	Total PM	N	N	3.151	[185]	24.29	1.449	1.449	60	[501]	9.72	0.580	0.580		0.580
FS012D	FS 012	Unpaved Roads, Dunka Rd. H (Lime Trucks)	NA	0.46	[243]	86	[318]	86	[423]	VMT	134	PM10	N	N	0.594	[185]	0.27	0.016	0.016	60	[501]	0.11	0.006	0.006		0.006
FS012D				0.46	[243]	86	[318]	86	[423]	VMT	134	Total PM	N	N	2.384	[185]	1.09	0.065	0.065	60	[501]	0.43	0.026	0.026		0.026
FS012E	FS 012	Unpaved Roads, Dunka Rd. H2 (Lime Trucks)	NA	0.46	[244]	86	[319]	86	[423]	VMT	134	PM10	N	N	0.594	[185]	0.27	0.016	0.016	60	[501]	0.11	0.006	0.006		0.006
FS012E				0.46	[244]	86	[319]	86	[423]	VMT	134	Total PM	N	N	2.384	[185]	1.09	0.065	0.065	60	[501]	0.43	0.026	0.026		0.026

Totals for PSD Applicability (i.e. PSD Point Sources)																										
Criteria Pollutant Totals												PM10					9.52	2.14	2.14			5.04	1.13	1.133		0.00
												Total PM					14.46	3.25	3.25			5.09	1.14	1.14		0.00
Plant Site Totals (Point and Fugitive Sources)																										
Criteria Pollutant Totals [6]												PM10					24.27	3.22	3.22			11.69	1.63	1.63		0.50
												Total PM					82.02	8.31	8.31			35.97	3.50	3.50		2.36

Notes:

General References:
[1] Max. Uncontrolled Emissions (lb/hr) = EF (lb/unit) x Max. Hourly Throughput (units/hr).
    Max. Uncontrolled Emissions (tons/yr) = EF (lb/unit) x Max. Annual Throughput (units/yr) / 2,000 (lb/ton).

☐ Indicates source that will only operate for first 1 to 2 years of plant operation.																					
Stack ID	Emission Unit		APCD ID	Throughput					Annual days with precipitation	Pollutant	PSD Applicability	HAP?	Emission Factor	Max. Uncontrolled Potential to Emit [1]		Proj. Act. Uncontrolled Emissions	Control Efficiency		Max. Controlled Potential to Emit [2]	Proj. Act. Controlled Emissions	Emission Std or Operational Limit	Limited Controlled Potential to Emit
	ID	Description		Maximum		Projected Actual		Units														
				(Units/hr)	Note	(Units/yr)	Note	(Units/yr)	Note			(Y/N)	(Y/N)	(lb/Unit)	Note	(lb/hr)	(tons/yr)	(ton/yr)	(%)	Note	(lb/hr)	(tons/yr)	(tons/yr)	(tons/yr)

[2] Max. Controlled Emissions (lb/hr) = Max. Uncontrolled Emissions (lb/hr) x (1-Control Eff./100).
   Max. Controlled Emissions (tons/yr) = Max. Uncontrolled Emissions (tons/yr) x (1-Control Eff./100).

Emission Factor References:

[156] Emission factors from AP-42 Table 11.19.2-4 "Emission Factors for Pulverized Mineral Processing Operations", Product Storage with Fabric Filter Control. Controlled PM emission factor = 0.0099; uncontrolled emissions estimated by assuming 99% control for fabric filter by: 0.0099/(1-99/100) = 0.99.
   Controlled PM10 emission factor = 0.0016 lb/ton; uncontrolled emissions estimated by assuming 99% control by: 0.0016/(1-99/100) = 0.16.

[176] Emission factor based on performance specification for the lime silo filter of 0.005 gr/cf. The emission factor in lb/cf is then: 0.005 gr/cf * 1/7000 gr/lb = 7.14 e-7 lb/cf. Uncontrolled emissions then equal controlled emission divided by (1-99/100). Baghouse performance based emission factor used for PM10;
   AP-42 factor used for PM because it produced a higher result.

[177] Feed system consists of an enclosed screw feeder from silo to slaker. Emissions expected to be minimal. As a conservative estimate, emission factor for loading lime into an enclosed truck was taken from AP-42 Table 11.17-4. PM10 assumed equal to PM.

[178] Emission factor from AP-42 Table 11.17-2, Atmospheric Hydrator with wet scrubber. An uncontrolled emission factor was estimated by assuming 90% control for the scrubber. Emission factor is sum of filterable and inorganic condensable PM. PM10 assumed equal to PM.
   Because of the assumed 80% capture efficiency, the emissions routed to the scrubber = 80% of the emission factor and emissions that escape through the building ventilation system = 20% of the emission factor.

[179] Emission factor based on performance specification for the limestone railcar unloading baghouse of 0.006 gr/cf. The emission factor in lb/cf is then: 0.006 gr/cf * 1/7000 gr/lb = 8.57 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a removal efficiency of 99% for the baghouse and a capture efficiency of 80%. Uncontrolled emissions then equal controlled emissions divided by (1-99/100) and then divided by 0.8.

[180] Per the MSDS for this reagent, typical limestone contains >1% crystalline silica. Based on other data sources, a typical upper bound is 2% crystalline silica, which was used in the calculations (the PM was assumed to be 2% crystalline silica).

[181] Emission factor based on performance specification for the limestone crusher baghouse of 0.005 gr/cf. The emission factor in lb/cf is then: 0.005 gr/cf * 1/7000 gr/lb = 7.14 e-7 lb/cf. Uncontrolled emissions were estimated by assuming a removal efficiency of 99% for the baghouse. Emissions not routed to the baghouse are calculated in the following entry in the spreadsheet.

[182] Emissions not routed to the control device were calculated by dividing the controlled emission factor for the stack emissions by (1-99/100) to get the uncontrolled emissions, dividing by 0.8 capture efficiency to get total emissions (captured + uncaptured) and times (1-.8) to get the fraction not routed to the control device.

[183] Emission factors (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Conveyor transfer point.

[185] See Fugitive Emission Calculation Tabs

[192] Emission factor taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Truck Unloading - Fragmented Stone. Truck dumping would be a similar operation to dumping material in the reclaim hopper with a front end loader.

[193] Emission factors taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Screening.

Maximum Hourly Throughput References:

[227] Emissions from the lime silo were estimated from the estimated exhaust rate and a filter outlet particulate concentration of 0.005 gr/cf. The hourly airflow was estimated based on the volume displaced by filling the silo.

[228] Annual usage for Plant Site taken from "General and Process Design Criteria" (rev. E1), prepared by plant design company. Hourly max taken as 115% of the annual usage divided by 8760. Additional Lime will also be required for the waste water treatment facility at the Mine Site and addition to the East Pit.
   A maximum demand of 5000 tons/year at the Mine Site was estimated by the Barr engineers working on waste water treatment. Lime will also be added to the hydrometallurgical residues. The quantity required was estimated as 44,000 tons/yr of Ca(OH)2 by the project geochemist,
   which is equivalent to 33,297 tons/year CaO. The total annual throughput for the lime handling system is the sum of the plant usage, the usage at the Mine Site, and the quantity added to the residues. Actual emissions estimates do not include 15% safety factor for Plant Site lime usage.
    Lime will also be used when two separate concentrates are produced in the flotation process. However, the lime usage for this processing step will be less than that used to neutralize the hydrometallurgical residues. Therefore, the lime usage will be at a maximum when the hydrometallurgical plant is operating at full capacity.

[229] Under this scenario, lime slurry will be used at the Mine Site, so no additional limestone needs to be handled at the Plant Site.

[230] Under this scenario, lime slurry will be used at the Mine Site, so no additional limestone needs to be handled at the Plant Site.

[232] Under this scenario, lime slurry will be used at the Mine Site, so no additional limestone needs to be handled at the Plant Site

[238] Under this scenario, lime slurry will be used at the Mine Site, so no additional limestone needs to be handled at the Plant Site.

[239] Lime slurry would be driven from the reagent buidling to the intersection with the unpaved road that goes to the Mine Site. The distance for this route is 1.665 miles. It was assumed that a maximum of two round trips per hour would be completed.

[241] Estimates of light truck traffic on the portions of the Dunka Rd. surrounded by land that will be controlled by PolyMet were made based on information in the 43-101 document, the DFS executive summary, Summary Description of Proposed Mining Operations (2004) and communications with PolyMet.
   Personnel traveling to the mine site and Area 2 are assumed to be as follows: 149 mine operations staff (mine), 18 mine technical services (12 mine, 6 area 2), 25 railroad operations (Area 2), 3 mine management (area 2), 3 EHS etc. (plant to mine).
   The above staff were assigned to shifts as shown in the table below. The road segments traveled are also included:

Category	Location	1st shift	2nd Shift	3rd Shift	Road Segments Traveled		Road Segment	Distance (miles)		Max Hourly Trips	Max Daily Trips	Hourly VMT		Annual VMT	Daily VMT
Mine Ops	Mine	64	43	42	A, B, B2, B3, C, D, H		A	0.366		33	90	12.09		12034.15	32.97
Mine Tech Serv	Mine	4	4	4	A, B, B2, B3, C, D, H		B	1.940		33	90	64.02		63725.13	174.59
Mine Tech Serv	Area 2	4	2	0	D, H		B2	0.160		33	90	5.27		5250.60	14.39
Mine Manage.	Area 2	3	0	0	D, H		B3	1.166		33	90	38.49		38316.15	104.98
RR Ops	Area 2	13	9	3	D, H		C	1.928		33	90	63.62		63326.89	173.50
EHS	PP to mine	3	0	0	A, B, B2, B3, C, D, E, F		D	0.148		171	456	25.24		24566.69	67.31
Total		91	58	49			E	0.722		3	6	2.17		1580.93	4.33
							F	0.370		3	6	1.11		810.25	2.22
							H	0.114		146	390	16.62		16208.90	44.41

   The distance for each road segment was estimated from an aerial photograph. It was assumed that the mine operations personnel would travel to Area 2 in personal vehicles and then be shuttled in 6 passenger vans to the mine site. All other personnel were assumed to drive a vehicle all the way to their
   destination. Maximum hourly emissions will occur at shift changes where the vehicles transporting both shifts could be on the road during the same hour. To be conservative it was assumed that all travel would occur between the eight hour shifts although at least some railroad personnel will be
   working 12 hour shifts and other personnel may travel at other times. The maximum daily and hourly trips are shown in the table above as well as the hourly and annual miles. Only segments B2, C, D, E, F, and H are located at the Plant Site.
   Emissions from the other segments are calculated in the Mine Site emission calculation spreadsheet.

[243] Traffic levels for tranporting lime slurry down the Dunka Rd. were estimated from the total quantity of lime slurry required at the Mine Site. This quanity was obtained from the project geochemist with an adjustment for the additional weight that must be tranported due to the addition of water to the lime to form a slurry.
   Maximum VMT for each time period calculated by multiplying the number of trips times 2 for round trips and times the appropriate segment length: B2 = 0.16 miles, C = 1.928 miles, and H = 0.114 miles. It was assumed that a maximum of two round trips could be completed in one hour.

[244] A additional portion of road segment H has been incorporated within the PolyMet ambient air boundary. This segment is identified as "H2". The segment length is within a few meters of the length of segment H and the traffic levels would be identical. Therefore, the same VMT is used for segment H2 as for segment H.

Maximum Annual Throughput References:

[305] The total annual airflow was calculated from the hourly airflow and the number of hours to process the quanity of lime needed to fill the maximum demand at the Mine Site.

[308] Under this scenario, lime slurry will be used at the Mine Site, so no additional limestone needs to be handled at the Plant Site.

[312] The maximum total lime demand at the Mine Site was estimated by the project geochemist.

[318] Traffic levels for tranporting lime slurry down the Dunka Rd. were estimated from the total quantity of lime slurry required at the Mine Site. This quanity was obtained from the project geochemist with an adjustment for the additional weight that must be tranported due to the addition of water to the lime to form a slurry.
   Maximum VMT for each time period calculated by multiplying the number of trips times 2 for round trips and times the appropriate segment length: B2 = 0.16 miles, C = 1.928 miles, and H = 0.114 miles.

[319] A additional portion of road segment H has been incorporated within the PolyMet ambient air boundary. This segment is identified as "H2". The segment length is within a few meters of the length of segment H and the traffic levels would be identical. Therefore, the same VMT is used for segment H2 as for segment H.

Projected Actual Throughput References

[423] Projected actual emissions are equivalent to potential emissions.

Control Efficiency References:

[501] Level 3A control measures, consistent with agreement reached by the IMA-MPCA Fugitive Emissions Workgroup as described in the November 18, 1998 "Taconite Industry Haul Truck Unpaved Road Fugitive Particulate Emission Factor and Control Efficiency" were observed at the Cliffs Erie facility;
   control practices are expected to be similar at the PolyMet facilities. 60% control efficiency was used in the calculations as a reasonably conservative first estimate of emissions. (The referenced document allows 80% for Level 3A control measures).

[502] Either no Air Pollution Control Devices (APCDs) are used in this process or the APCD does not control this pollutant. Therefore, Control Efficiency is 0.

[512] For enclosed silos, 100% capture was assumed. Fabric filters or equivalent control measures are used to control emissions from multiple silos based on information received from the plant design company. Removal efficiency taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018.

[515] Limestone delivered by rail will be unloaded in an enclosed building. The final design is not complete, but PolyMet intends to install a system that will qualify as a total enclosure (100% capture). The removal efficiency (99%) was taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018.

[516] Final design for the limestone crushing system has not been completed, so it was assumed that a well designed hood would be installed with 80% capture. The removal efficiency (99%) was taken from MPCA GI-05A form instructions Table GI-05A.1 for control equipment type 018. The overall control efficiency is then 80% capture efficiency * 99* control efficiency = 79.2%.
   The stack and fugitive emissions are assigned different lines in the spreadsheet.

[517] Final design has not been completed on the lime slaker, so it was assumed that a well designed hood with 80% capture would be used. The removal efficiencies (90%) for PM and PM10 for a high efficiency wet scrubber (CE code 001) were taken from MPCA form GI-05A instructions, Table GI-05A.1. The overall control efficiency is then: 80% capture efficiency * 90% removal efficiency = 72%.
   The stack and fugitive emissions are given in separate lines in the spreadsheet.

[519] An effective control efficiency was calculated for the proposed 15 mph speed limit for limestone trucks on PolyMet property as Speed/30 or 15/30 = 50% reduction. This speed reduction factor was taken from Equation 3-1 in *Control of Open Fugitive Dust Sources* (EPA-450/3-88-008).

PolyMet - Hoyt Lakes, Minnesota
Table 23 - Calculation of Potential Emissions at Mine Site - Lime Slurry Option

Stack ID	ID	Description	APCD ID	Max (Units/hr)	Note	Max (Units/yr)	Note	Proj Actual (Units/yr)	Note	Units	Annual days w/ precip	Pollutant	PSD (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max Unc PTE (lb/hr)	(tons/yr)	Proj Act Unc Emis (ton/yr)	Control Eff (%)	Note	Max Ctrl PTE (lb/hr)	(tons/yr)	Proj Act Ctrl Emis (tons/yr)	Emission Std or Op Limit	Limited Ctrl PTE (tons/yr)
C23WRMH		Limestone Unloading - Cat 2/3	NA	0	[207]	0	[307]	0	[401]	tons limestone		PM10	N	N	0.008	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C23WRMH				0	[207]	0	[307]	0	[401]	tons limestone		Total PM	N	N	0.016	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C3LOMH		Limestone Unloading - Cat 3 LO	NA	0	[207]	0	[307]	0	[401]	tons limestone		PM10	N	N	0.008	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons limestone		Total PM	N	N	0.016	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C4WRMH		Limestone Unloading - Cat 4	NA	0	[207]	0	[307]	0	[401]	tons limestone		PM10	N	N	0.008	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C4WRMH				0	[207]	0	[307]	0	[401]	tons limestone		Total PM	N	N	0.016	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C23WRMH		Limestone Loading - Cat 2/3	NA	0	[207]	0	[307]	0	[401]	tons limestone		PM10	N	N	0.008	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C23WRMH				0	[207]	0	[307]	0	[401]	tons limestone		Total PM	N	N	0.016	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C3LOMH		Limestone Loading - Cat 3 LO	NA	0	[207]	0	[307]	0	[401]	tons limestone		PM10	N	N	0.008	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons limestone		Total PM	N	N	0.016	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C4WRMH		Limestone Loading - Cat 4	NA	0	[207]	0	[307]	0	[401]	tons limestone		PM10	N	N	0.008	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C4WRMH				0	[207]	0	[307]	0	[401]	tons limestone		Total PM	N	N	0.016	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C23WRMH		Limestone Application - Cat 2/3	NA	0	[207]	0	[307]	0	[401]	tons limestone		PM10	N	N	0.008	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C23WRMH				0	[207]	0	[307]	0	[401]	tons limestone		Total PM	N	N	0.016	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C3LOMH		Limestone Application - Cat 3 LO	NA	0	[207]	0	[307]	0	[401]	tons limestone		PM10	N	N	0.008	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C3LOMH				0	[207]	0	[307]	0	[401]	tons limestone		Total PM	N	N	0.016	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C4WRMH		Limestone Application - Cat 4	NA	0	[207]	0	[307]	0	[401]	tons limestone		PM10	N	N	0.008	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
C4WRMH				0	[207]	0	[307]	0	[401]	tons limestone		Total PM	N	N	0.016	[114]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000
AABB	FS 011	Mine Haul Roads, Segment AA to BB	NA	0	[213]	114	[311]	114	[401]	VMT	134	PM10	N	N	6.222	[114]	1.95	0.225	0.225	80	[501]	0.39	0.045	0.045		0.045
AABB				0	[213]	114	[311]	114	[401]	VMT	134	Total PM	N	N	23.508	[114]	7.37	0.851	0.851	80	[501]	1.47	0.170	0.170		0.170
AAFF	FS 011	Mine Haul Roads, Segment AA to FF	NA	0	[213]	16	[311]	16	[401]	VMT	134	PM10	N	N	6.222	[114]	0.27	0.031	0.031	80	[501]	0.05	0.006	0.006		0.006
AAFF				0	[213]	16	[311]	16	[401]	VMT	134	Total PM	N	N	23.508	[114]	1.01	0.117	0.117	80	[501]	0.20	0.023	0.023		0.023
C3LORD	FS 011	Mine Haul Roads, Segment BB to CC	NA	0	[213]	114	[311]	114	[401]	VMT	134	PM10	N	N	6.222	[114]	1.94	0.224	0.224	80	[501]	0.39	0.045	0.045		0.045
C3LORD				0	[213]	114	[311]	114	[401]	VMT	134	Total PM	N	N	23.508	[114]	7.34	0.848	0.848	80	[501]	1.47	0.170	0.170		0.170
DK	FS 011	Mine Haul Roads, Segment D to K	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
DK				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
DU	FS 011	Mine Haul Roads, Segment D to U	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
DU				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
ED	FS 011	Mine Haul Roads, Segment E to D	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
ED				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
ET	FS 011	Mine Haul Roads, Segment E to T	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
ET				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
FE	FS 011	Mine Haul Roads, Segment F to E	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
FE				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
FM	FS 011	Mine Haul Roads, Segment F to M	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
FM				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
C4WRRD	FS 011	Mine Haul Roads, Segment FF to GG	NA	0	[213]	81	[311]	81	[401]	VMT	134	PM10	N	N	6.222	[114]	1.38	0.159	0.159	80	[501]	0.28	0.032	0.032		0.032
C4WRRD				0	[213]	81	[311]	81	[401]	VMT	134	Total PM	N	N	23.508	[114]	5.21	0.601	0.601	80	[501]	1.04	0.120	0.120		0.120
GF	FS 011	Mine Haul Roads, Segment G to F	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
GF				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
EASTP	FS 011	Mine Haul Roads, Segment I to H	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
EASTP				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
JI	FS 011	Mine Haul Roads, Segment J to I	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
JI				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
JW	FS 011	Mine Haul Roads, Segment J to W	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
JW				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
JJL	FS 011	Mine Haul Roads, Segment JJ to L	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
JJL				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
KJ	FS 011	Mine Haul Roads, Segment K to J		0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
KJ				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
KO	FS 011	Mine Haul Roads, Segment K to O	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
KO				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
OBSRRD	FS 011	Mine Haul Roads, Segment KK to G	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
OBSRRD				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
LLL	FS 011	Mine Haul Roads, Segment L to LL	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
LLL				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
LLN	FS 011	Mine Haul Roads, Segment LL to N	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
LLN				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
MLL	FS 011	Mine Haul Roads, Segment M to L	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
MLL				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
NM	FS 011	Mine Haul Roads, Segment N to M	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
NM				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
ON	FS 011	Mine Haul Roads, Segment O to N	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
ON				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
OOO	FS 011	Mine Haul Roads, Segment O to OO	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
OOO				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
OP	FS 011	Mine Haul Roads, Segment O to P	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
OP				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
C4LORD	FS 011	Mine Haul Roads, Segment OO to EE	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
C4LORD				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
PQ	FS 011	Mine Haul Roads, Segment P to Q	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
PQ				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
PZ	FS 011	Mine Haul Roads, Segment P to Z	NA	0	[213]	105	[311]	105	[401]	VMT	134	PM10	N	N	6.222	[114]	1.80	0.208	0.208	80	[501]	0.36	0.042	0.042		0.042
PZ				0	[213]	105	[311]	105	[401]	VMT	134	Total PM	N	N	23.508	[114]	6.79	0.784	0.784	80	[501]	1.36	0.157	0.157		0.157
WESTP	FS 011	Mine Haul Roads, Segment S to HH	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
WESTP				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
WESTP	FS 011	Mine Haul Roads, Segment S to II	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
WESTP				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
WESTP	FS 011	Mine Haul Roads, Segment T to S	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000

PolyMet - Hoyt Lakes, Minnesota
Table 23 - Calculation of Potential Emissions at Mine Site - Lime Slurry Option

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	(Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)
WESTP				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
UV		Mine Haul Roads, Segment U to V		0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
UV				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
WX		Mine Haul Roads, Segment W to X	NA	0	[213]	112	[311]	112	[401]	VMT	134	PM10	N	N	6.222	[114]	1.91	0.220	0.220	80	[501]	0.38	0.044	0.044		0.044
WX				0	[213]	112	[311]	112	[401]	VMT	134	Total PM	N	N	23.508	[114]	7.21	0.832	0.832	80	[501]	1.44	0.166	0.166		0.166
C3WRRD	FS 011	Mine Haul Roads, Segment X to Y	NA	0	[213]	58	[311]	58	[401]	VMT	134	PM10	N	N	6.222	[114]	0.99	0.115	0.115	80	[501]	0.20	0.023	0.023		0.023
C3WRRD				0	[213]	58	[311]	58	[401]	VMT	134	Total PM	N	N	23.508	[114]	3.76	0.434	0.434	80	[501]	0.75	0.087	0.087		0.087
ZAA	FS 011	Mine Haul Roads, Segment Z to AA	NA	0	[213]	87	[311]	87	[401]	VMT	134	PM10	N	N	6.222	[114]	1.49	0.172	0.172	80	[501]	0.30	0.034	0.034		0.034
ZAA				0	[213]	87	[311]	87	[401]	VMT	134	Total PM	N	N	23.508	[114]	5.63	0.650	0.650	80	[501]	1.13	0.130	0.130		0.130
ZW	FS 011	Mine Haul Roads, Segment Z to W	NA	0	[213]	47	[311]	47	[401]	VMT	134	PM10	N	N	6.222	[114]	0.80	0.092	0.092	80	[501]	0.16	0.018	0.018		0.018
ZW				0	[213]	47	[311]	47	[401]	VMT	134	Total PM	N	N	23.508	[114]	3.02	0.348	0.348	80	[501]	0.60	0.070	0.070		0.070
VMM		Mine Haul Roads, Segment V to MM	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
VMM				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
VNN		Mine Haul Roads, Segment V to NN	NA	0	[213]	0	[311]	0	[401]	VMT	134	PM10	N	N	6.222	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
VNN				0	[213]	0	[311]	0	[401]	VMT	134	Total PM	N	N	23.508	[114]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000
FS012A	FS 012	Unpaved Roads, Dunka Rd. A (Lime Trucks)	NA	1.46	[219]	276	[316]	276	[401]	VMT	134	PM10	N	N	0.883	[114]	1.29	0.077	0.077	80	[501]	0.26	0.015	0.015		0.015
FS012A				1.46	[219]	276	[316]	276	[401]	VMT	134	Total PM	N	N	3.542	[114]	5.19	0.309	0.309	80	[501]	1.04	0.062	0.062		0.062
FS012B		Unpaved Roads, Dunka Rd. B (Lime Trucks)	NA	7.76	[219]	1,463	[316]	1,463	[401]	VMT	134	PM10	N	N	0.987	[114]	7.66	0.457	0.457	80	[501]	1.53	0.091	0.091		0.091
FS012B				7.76	[219]	1,463	[316]	1,463	[401]	VMT	134	Total PM	N	N	3.957	[114]	30.71	1.832	1.832	80	[501]	6.14	0.366	0.366		0.366
FS012B3		Unpaved Roads, Dunka Rd. B3 (Lime Trucks)	NA	4.66	[219]	879	[316]	879	[401]	VMT	134	PM10	N	N	1.013	[114]	4.72	0.282	0.282	80	[501]	0.94	0.056	0.056		0.056
FS012B3				4.66	[219]	879	[316]	879	[401]	VMT	134	Total PM	N	N	4.062	[114]	18.94	1.130	1.130	80	[501]	3.79	0.226	0.226		0.226
Contractor Crushing Operations (for road construction, etc.)																										
OBSRMH	FS 023	Primary Crushing	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	0.00054	[126]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	0.0012	[126]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Screening	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	0.00074	[128]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	0.0022	[128]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		To Product Conveyor	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	4.60E-05	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	0.00014	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Conveyor to Secondary Crushing (2 transfers)	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	9.20E-05	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	2.80E-04	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Secondary Crushing	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	0.00054	[126]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	0.0012	[126]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Screening	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	0.00074	[128]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	0.0022	[128]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Return Conveyor (2 transfers)	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	Y	N	9.20E-05	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	10% opacity	GP 001
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	Y	N	2.80E-04	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000	(NSPS)	GP 001
OBSRMH		Product to Stock Pile	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	N	N	4.60E-05	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	N	N	0.00014	[129]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000
OBSRMH		Truck Loading	NA	0.00	[225]	0	[322]	0	[401]	tons		PM10	N	N	0.0044	[114]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000
OBSRMH				0.00	[225]	0	[322]	0	[401]	tons		Total PM	N	N	0.0094	[114]	0.00	0.000	0.000	0	[503]	0.00	0.000	0.000		0.000
Totals for PSD Applicability (i.e. PSD Point Sources)																										
Criteria Pollutant Totals												PM10					0.00	0.00	0.00			0.00	0.00	0.00		0.00
												Total PM					0.00	0.00	0.00			0.00	0.00	24.20		2.20
Mine Site Totals (Point and Fugitive Sources)																										
Criteria Pollutant Totals [4]												PM10					26.20	2.26	2.26			5.24	0.45	0.45		0.45
												Total PM					102.16	8.74	8.74			20.43	1.75	1.75		1.75

Notes:

General References:

[1] Max. Uncontrolled Emissions (lb/hr) = EF (lb/unit) x Max. Hourly Throughput (units/hr).
   Max. Uncontrolled Emissions (tons/yr) = EF (lb/unit) x Max. Annual Throughput (units/yr) / 2,000 (lb/ton).

[2] Max. Controlled Emissions (lb/hr) = Max. Uncontrolled Emissions (lb/hr) x (1-Control Eff./100).
   Max. Controlled Emissions (tons/yr) = Max. Uncontrolled Emissions (tons/yr) x (1-Control Eff./100).

Emission Factor References:

[114] See Fugitive Emission Calculation Tabs

[126] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Tertiary Crushing (controlled). Emission factors are not given for primary and secondary crushing,
   but footnote n indicates that the tertiary crushing factors can be used as an upper bound.

[128] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Screening (controlled).

[129] Emission factor (lb/ton) taken from AP-42 Table 11.19.2-2, Emission Factors for Crushed Stone Processing Operations (lb/ton); Conveyor Transfer Point (controlled). Where the emission unit consist of a transfer to and from the conveyor, the emission factor is multiplied by 2.

Maximum Hourly Throughput References:

[207] Under this scenario, lime would be delivered to the Mine Site as a slurry, so there is no handling of dry lime or limestone at the Mine Site.

[213] Haul distances for lime slurry on mine haul roads were determined by assigning a letter to each intersection or termination for the haul roads. The distance between each point assigned a letter was determined from aerial photographs. The route for each haul was determined.
   Lime slurry would be hauled in 40 ton trucks with a 24 ton payload. The slurry was assumed to be 30% solids to allow for application with a drip bar or nozzle. The payload of the trucks in terms of lime is then 7.2 tons (24 tons * 30% solids. The total number of trips for hauling to each stockpile was determined by dividing the limestone required as calculated by the project geochemist by 7.2.
   The emission for each segment were calculated by summing the trips for the hauling of limestone slurry to each stockpile, multiplying by the length of the segment, and multiplying by 2 to account for round trips. Hourly VMT assume roughly two trips to each stockpile per hour.

[217] Estimates of light truck traffic on the portions the Dunka Rd where PolyMet will control the surrounding land were made based on information in the 43-101 document, the DFS executive summary, Summary Description of Proposed Mining Operations (2004) and communications with PolyMet.
   Personnel traveling to the mine site and Area 2 are assumed to be as follows: 149 mine operations staff (mine), 18 mine technical services (12 mine, 6 area 2), 25 railroad operations (Area 2), 3 mine management (area 2), 3 EHS etc. (plant to mine).
   The above staff were assigned to shifts as shown in the table below. The road segments traveled are also included:

Category	Location	1st shift	2nd Shift	3rd Shift	Road Segments Traveled
Mine Ops	Mine	64	43	42	A, B, B2, C, D, H
Mine Tech Serv	Mine	4	4	4	A, B, B2, C, D, H
Mine Tech Serv	Area 2	4	2	0	D, H
Mine Manage.	Area 2	3	0	0	D, H
RR Ops	Area 2	13	9	3	D, H
EHS	PP to mine	3	0	0	A, B, B2, C, D, E, F
Total		91	58	49	

Road S.	Distance (miles)	Max Hourly Trips	Max Daily Trips	Hourly VMT	Annual VMT	Daily VMT
A	0.366	33	90	12.09	12034.15	32.97
B	1.940	33	90	64.02	63725.13	174.59
B2	0.160	33	90	5.27	5250.60	14.39
B3	1.166	33	90	38.48	38303.10	104.94
C	1.928	33	90	63.62	63326.89	173.50
D	0.148	171	456	25.24	24566.69	67.31
E	0.722	3	6	2.17	1580.93	4.33

PolyMet - Hoyt Lakes, Minnesota
Table 23 - Calculation of Potential Emissions at Mine Site - Lime Slurry Option

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	(Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Uncontrolled Potential to Emit [1] (lb/hr)	(tons/yr)	Proj. Act. Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Note	Max. Controlled Potential to Emit [2] (lb/hr)	(tons/yr)	Proj. Act. Controlled Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled Potential to Emit (tons/yr)
F				0.370								3			6		1.11		810.25	2.22						
H				0.114								146			390		16.62		16208.90	44.41						

The distance for each road segment was estimated from an aerial photograph. It was assumed that the mine operations personnel would travel to Area 2 in personal vehicles and then be shuttled in 6 passenger vans to the mine site. All other personal were assumed to drive a vehicle all the way to their destination. Maximum hourly emissions will occur at shift changes where the vehicles transporting both shifts could be on the road during the same hour. To be conservative it was assumed that all travel would occur between the eight hour shifts although at least some railroad personnel will be working 12 hour shifts and other personnel may travel at other times. The maximum daily and hourly trips are shown in the table above as well as the hourly and annual miles. Only segments A, B, and B3 are located at the Mine Site. The emissions from the other segments are calculated in the Plant Site emission calculation spreadsheet.

[219] Traffic levels for tranporting lime slurry down the Dunka Rd. were estimated from the total quantity of lime slurry required at the Mine Site. This quanity was obtained from the project geochemist with an adjustment for the additional weight that must be tranported due to the addition of water to the lime to form a slurry. Assume maximum hourly rate is two round trips. Length of segment A = 0.366 miles, B = 1.94, B3 = 1.166 miles.

[225] No crushing will be required for this scenario.

Maximum Annual Throughput References:

[307] Under this scenario, lime will be delivered to the Mine Site as a slurry, so there is no handling of dry lime or limestone at the Mine Site.

[311] Haul distances for lime slurry on mine haul roads were determined by assigning a letter to each intersection or termination for the haul roads. The distance between each point assigned a letter was determined from aerial photographs. The route for each haul was determined. Lime slurry would be hauled in 40 ton trucks with a 24 ton payload. The slurry was assumed to be 10% solids to allow for application with a drip bar or nozzle. The payload of the trucks in terms of limestone is then 2.4 tons. The total number of trips for hauling to each stockpile were determined by dividing the limestone required as calculated by the project geochemist by 2.4. The emission for each segment were calculated by summing the trips for the hauling of limestone slurry to each stockpile, multiplying by the length of the segment, and multiplying by 2 to account for round trips.

[316] Traffic levels for tranporting lime slurry down the Dunka Rd. were estimated from the total quantity of lime slurry required at the Mine Site. This quanity was obtained from the project geochemist with an adjustment for the additional weight that must be tranported due to the addition of water to the lime to form a slurry. Length of segment A = 0.366 miles, B = 1.94, B3 = 1.166 miles.

[322] No crushing will be required for this scenario.

Projected Actual Throughput References

[401] Projected actual emissions are equivalent to potential emissions.

Control Efficiency References:

[501] Level 3A control measures, consistent with agreement reached by the IMA-MPCA Fugitive Emissions Workgroup as described in the November 18, 1998 "Taconite Industry Haul Truck Unpaved Road Fugitive Particulate Emission Factor and Control Efficiency" were observed at the Cliffs Erie facility; control practices are expected to be similar at the PolyMet facilities. The referenced document allows 80% for Level 3A control measures.

[502] Either no Air Pollution Control Devices (APCDs) are used in this process or the APCD does not control this pollutant. Therefore, Control Efficiency is 0.

[503] Controlled emission factors (with wet suppression) were used for all sources except truck loading. The material in the stockpile may be wet due to residual moisture from the wet suppression, depending on how long the material remains in the pile. If this is the case, then the emissions may be overestimated. Adjustment to the material moisture content can be made to reflect this phenomenon.

PolyMet - Hoyt Lakes, Minnesota
Table 24 - Vehicle Miles Travelled at Mine Site for Lime Slurry Option

East Pit		Trips	Trips by Segment												
			AA to BB	AA to FF	BB to CC	D to K	D to U	E to D	E to T	F to E	F to M	FF to GG	G to F	I to H	J to I	J to W
Limestone to C2/3	East	122.4														
Limestone to C3LO	East	147.9	147.9		147.9											
Limestone to C4	East	106.3		106.3								106.3				
Total (trips/year)			147.9	106.3	147.9	0.0	0.0	0.0	0.0	0.0	0.0	106.3	0.0	0.0	0.0	0.0
Miles/segment			0.3867	0.0739	0.3854	0.5858	0.0396	0.1902	0.0555	0.1905	0.0932	0.3803	0.1748	1.3199	0.0358	0.1631
VMT/year			114.4	15.7	114.0	0.0	0.0	0.0	0.0	0.0	0.0	80.9	0.0	0.0	0.0	0.0

PolyMet - Hoyt Lakes, Minnesota
Table 24 - Vehicle Miles Travelled at Mine Site for Lime Slurry Option

East Pit			Trips	Trips by Segment													
				JJ to L	K to J	K to O	KK to G	L to LL	LL to N	M to L	N to M	O to N	O to OO	O to P	OO to EE	P to Q	P to Z
Limestone to C2/3	East		122.4														122.4
Limestone to C3LO	East		147.9														147.9
Limestone to C4	East		106.3														106.3
Total (trips/year)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	376.6
Miles/segment				0.3559	0.2436	0.1744	0.2322	0.1400	0.4057	0.1631	0.3614	0.2142	0.1701	0.1362	0.3345	0.3737	0.1400
VMT/year				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	105.4

PolyMet - Hoyt Lakes, Minnesota
Table 24 - Vehicle Miles Travelled at Mine Site for Lime Slurry Option

East Pit		Trips	S to HH	S to II	T to S	U to V	W to X	X to Y	Z to AA	Z to W	V to MM	V to NN
									Trips by Segment			
Limestone to C2/3	East	122.4					122.4	122.4		122.4		
Limestone to C3LO	East	147.9							147.9			
Limestone to C4	East	106.3							106.3			
Total (trips/year)			0.0	0.0	0.0	0.0	122.4	122.4	254.2	122.4	0.0	0.0
Miles/segment			0.7273	1.4468	0.5208	0.6669	0.4570	0.2383	0.1720	0.1913	1.0919	0.4617
VMT/year			0.0	0.0	0.0	0.0	111.9	58.3	87.4	46.8	0.0	0.0

PolyMet - Hoyt Lakes, Minnesota
Table 25 - Calculation of Emission Factors for Fugitive Sources at Mine Site - Lime Slurry Option

Stack ID	ID	Description	Pollutant	k [2]	U [3] (mph)	M [4] (%)	s [6] (%)	a	b	W [7] (tons)	Emission Factor (lb/Unit)	Note
Fugitive	FS 001, 029,	Surface Overburden, Truck Load	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	017, 048	Surface Overburden, Truck Load	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 002, 014,	Surface Overburden, Truck Unload	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	045, 018	Surface Overburden, Truck Unload	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 039, 047	Surface Overburden, Screen Discharge	PM10	0.35	9.3	12.7					0.0002	[1]
Fugitive	FS 039, 047	Surface Overburden, Screen Discharge	PM	0.74	9.3	12.7					0.0004	[1]
Fugitive	FS 004	Waste Rock, Truck Load	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS 004	Waste Rock, Truck Load	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 005	Waste Rock, Truck Unload	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS 005	Waste Rock, Truck Unload	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 007	Ore, Truck Load	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 007	Ore, Truck Load	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS 009, 020	Ore, Truck Unload	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 009, 020	Ore, Truck Unload	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS 010	Ore, Railcar Load	PM10	0.35	9.3	1.05					0.0062	[1]
Fugitive	FS 010	Ore, Railcar Load	PM	0.74	9.3	1.05					0.0131	[1]
Fugitive	FS023	Crushed rock to truck	PM10	0.35	9.3	1.33					0.0044	[1]
Fugitive	FS023	Crushed rock to truck	PM	0.74	9.3	1.33					0.0094	[1]
Fugitive	FS 011	Unpaved Roads, Mine										
	& FS 021 [8]	Unpaved Roads, Mine (Haul Trucks - Avg.)	PM10	1.5			5.8	0.9	0.45	303.15	6.2224	[5]
		Unpaved Roads, Mine (Haul Trucks - Avg.)	PM	4.9			5.8	0.7	0.45	303.15	23.5077	[5]
		Unpaved Roads, Mine (Light Trucks)	PM10	1.5			5.8	0.9	0.45	2.5	0.7183	[5]
		Unpaved Roads, Mine (Light Trucks)	PM	4.9			5.8	0.7	0.45	2.5	2.7135	[5]
		Unpaved Roads, Mine (Fuel Truck)	PM10	1.5			5.8	0.9	0.45	11	1.3991	[5]
		Unpaved Roads, Mine (Fuel Truck)	PM	4.9			5.8	0.7	0.45	11	5.2856	[5]
Fugitive	FS 012	Unpaved Roads, Dunka Rd.										
		Unpaved Roads, Dunka Rd. (segment A)	PM10	1.5			4.3	0.9	0.45	7.20	0.8830	[5]
		Unpaved Roads, Dunka Rd. (segment A)	PM	4.9			4.3	0.7	0.45	7.20	3.5418	[5]
		Unpaved Roads, Dunka Rd. (segment B)	PM10	1.5			4.3	0.9	0.45	9.21	0.9866	[5]
		Unpaved Roads, Dunka Rd. (segment B)	PM	4.9			4.3	0.7	0.45	9.21	3.9573	[5]
		Unpaved Roads, Dunka Rd. (segment B3)	PM10	1.5			4.3	0.9	0.45	9.76	1.0126	[5]
		Unpaved Roads, Dunka Rd. (segment B3)	PM	4.9			4.3	0.7	0.45	9.76	4.0617	[5]
Fugitive	FS 021	Unpaved Roads, Fueling Facility Circle	PM10	1.5			4.3	0.9	0.45	246.5	4.3309	[5]
		Unpaved Roads, Fueling Facility Circle	PM	4.9			4.3	0.7	0.45	246.5	17.3710	[5]

Stack ID	Emission Unit		Pollutant	Input Parameters							Emission Factor	
	ID	Description		k [2]	U [3]	M [4]	s [6]	a	b	W [7]	Factor	
					(mph)	(%)	(%)			(tons)	(lb/Unit)	Note

Notes:

[1] EF = k x 0.0032 x (U/5)^1.3 / (M/2)^1.4 lb/ton

  Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Page 13.2.4-3.

[2] k = particle size multiplier (dimensionless).

  0.35 for PM10 for equation in [1].   0.74 for PM for equation in [1]

  1.50 for PM10 for equation in [5].   4.9 for PM for equation in [5]

[3] U = mean wind speed (mph).

  9.3 mph. Source: "Climates of the States", Vol. II, Water Information Center, 1974 for International Falls, MN.

[4] M = moisture content (%).

  12.7 % for surface overburden based on data from "Phase I Geotechnical Field Investigation", Golder Associates, August 2006

  1.33 % for waste rock from whole rock data for waste rock zone

  1.05 % for ore from whole rock data for ore zone

[5] EF = k x (s/12)^a x (W/3)^b lb/VMT

  Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Pages 13.2.2-4 and 13.2.2-5.

  Precipitation is accounted for in emission calculation spreadsheet. Emission factors are multiplied by (1-p/365) for annual emission calculations; where p = days with precipitation.

  Note: the equation for roads at industrial sites is being used for the Dunka Rd. because the road will not generally be accessible to the public.

[6] s = silt content (%)

  5.8 % for taconite mine haul road from AP-42 Table 13.2.2-1

  4.3 % for taconite mine service road from AP-42 Table 13.2.2-1

[7] W = mean vehicle weight (tons).

  425.30 tons for loaded 240 ton trucks hauling surface overburden, waste rock, and ore in mine

  181.00 tons for empty 240 ton trucks used for hauling surface overburden, waste rock, and ore in mine.

  303.15 tons mean weight for haul trucks

  2.5 tons for all light trucks (supervisor vehicles, passenger vans, etc.)

  11 tons for mine fuel tanker based on information received from a fuel vendor

  40 tons for loaded tanker delivering fuel to mine based on information from a fuel vendor

  13.2 tons for empty tanker leaving mine site

  26.6 tons for mean tanker weight

  40 tons for loaded WWTF truck

  16 tons for empty WWTF truck

  28 tons mean weight for WWTF truck

  See Table 4 for Mean weight calculation for Dunka Road segments with multiple vehicle types and refueling circle

PolyMet - Hoyt Lakes, Minnesota
Table 26 - Calculation of Emission Factors for Fugitive Sources at Plant Site - Lime Slurry Option

Stack ID	Emission Unit ID	Emission Unit Description	Pollutant	k [2]	U [3] (mph)	M [4] (%)	s [6] (%)	a	b	W [7] (tons)	Emission Factor (lb/Unit)	Note
Fugitive	FS 033, 035	Mine Limestone Handling; Stacker Conveyor	PM10	0.35	7.1	0.7					0.0077	[1]
		Mine Limestone Handling; Stacker Conveyor	PM	0.74	7.1	0.7					0.0162	[1]
Fugitive	FS 038	Paved Roads, Limestone Truck Haul	PM10	0.016			8.2			28	1.1411	[9]
		Paved Roads, Limestone Truck Haul	PM	0.082			8.2			28	5.8498	[9]
Fugitive	FS 012	Unpaved Roads, Dunka Rd. (segment B2)	PM10	1.5			4.3	0.9	0.45	8.77	0.9652	[5]
		Unpaved Roads, Dunka Rd. (segment B2)	PM	4.9			4.3	0.7	0.45	8.77	3.8713	[5]
		Unpaved Roads, Dunka Rd. (segment C)	PM10	1.5			4.3	0.9	0.45	5.55	0.7855	[5]
		Unpaved Roads, Dunka Rd. (segment C)	PM	4.9			4.3	0.7	0.45	5.55	3.1507	[5]
		Unpaved Roads, Dunka Rd. (segment D)	PM10	1.5			4.3	0.9	0.45	2.69	0.5671	[5]
		Unpaved Roads, Dunka Rd. (segment D)	PM	4.9			4.3	0.7	0.45	2.69	2.2745	[5]
		Unpaved Roads, Dunka Rd. (segment E)	PM10	1.5			4.3	0.9	0.45	11.77	1.1016	[5]
		Unpaved Roads, Dunka Rd. (segment E)	PM	4.9			4.3	0.7	0.45	11.77	4.4185	[5]
		Unpaved Roads, Dunka Rd. (segment F)	PM10	1.5			4.3	0.9	0.45	11.77	1.1016	[5]
		Unpaved Roads, Dunka Rd. (segment F)	PM	4.9			4.3	0.7	0.45	11.77	4.4185	[5]
		Unpaved Roads, Dunka Rd. (segment H/H2)	PM10	1.5			4.3	0.9	0.45	2.99	0.5944	[5]
		Unpaved Roads, Dunka Rd. (segment H/H2)	PM	4.9			4.3	0.7	0.45	2.99	2.3843	[5]

Notes:

[1] EF = k x 0.0032 x (U/5)^1.3 / (M/2)^1.4 lb/ton
   Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Page 13.2.4-3.

[2] k = particle size multiplier (dimensionless).

0.35 for PM10 for equation in [1].	0.74 for PM for equation in [1]
1.50 for PM10 for equation in [5].	4.9 for PM for equation in [5]
0.016 for PM10 for equation in [9]	0.082 for PM for equation in [9]

[3] U = mean wind speed (mph).
   7.1 mph. Source: average value from 2001 - 2005 Hibbing, MN Meteorlogical Data Set

[4] M = moisture content (%).
   0.7 % for crushed limestone from AP-42 Table 13.2.4-1

[5] EF = k x (s/12)^a x (W/3)^b lb/VMT
   Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Pages 13.2.2-4 and 13.2.2-5.
   Precipitation is accounted for in emission calculation spreadsheet. Emission factors are multiplied by (1-p/365) for annual emission calculations; where p = days with precipitation.
   Note: the equation for roads at industrial sites is being used for the Dunka Rd. because the road will not generally be accessible to the public.

[6] s = silt content (%)
   4.3 % for taconite mine service road from AP-42 Table 13.2.2-1
   8.2 % for paved roads at a quarry from AP-42 Table 13.2.1-4

[7] W = mean vehicle weight (tons).
   40 tons for loaded limestone delivery trucks and WWTF trucks
   16 tons for empty limestone delivery trucks and WWTF trucks

Stack ID	Emission Unit		Pollutant	Input Parameters							Emission Factor	
	ID	Description		k [2]	U [3]	M [4]	s [6]	a	b	W [7]	Factor	
					(mph)	(%)	(%)			(tons)	(lb/Unit)	Note

28 tons average for limestone delivery trucks and WWTF trucks

2.5 tons for all light trucks (supervisor vehicles, passenger vans, etc.)

80 tons for empty 100 ton trucks going to the Area 1 Shop for Maintenance

40 tons for loaded tanker delivering fuel to mine based on information from a fuel vendor

13.2 tons for empty tanker leaving mine site

26.6 tons for mean tanker weight

40 tons for loaded WWTF truck

16 tons for empty WWTF truck

28 tons mean weight for WWTF truck

181 tons for empty 240 ton haul trucks

See Table 2B for Mean weight calculation for Dunka Road segments with multiple vehicle types

[8] Tailings haul roads at plant assumed equivalent to mine haul roads.

[9] EF = k * (sL/2)^0.65 * (W/3)^1.5 - C lb/VMT

Source = "AP-42 Compilation of Air Pollutant Emission Factors", 5th Edit., January 1995 Page 13.2.1-4, eqn. 1

[10] C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear

0.00047 for PM and PM10 with units of lb/VMT from AP-42 Table 13.2.1-2

PolyMet - Hoyt Lakes, Minnesota
Table 27 - Plant Site Mean Vehicle Weight Calculations - Lime Slurry Option

Note: Calculations based on Annual VMT

Segment B2

Segment Length		0.16			
ID	Activity	B2 VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012B2	Empty Haul Trucks	111	181.0	0.018	3.332
FS 012B2	Light Trucks	5250.60	2.5	0.871	2.177
FS 012B2	Tanker	347.931	26.6	0.058	1.535
FS 012B2	Limestone Haul	120.516	40.0	0.020	0.799
FS 012B2	WWTF Trucks	199.79	28.0	0.033	0.928
	Total	6029.84		1	8.771

Segment C

Segment Length		1.93			
ID	Activity	C VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012C	Light Trucks	63326.89	2.5	0.887	2.217
FS 012C	Tanker	4224.87	26.6	0.059	1.574
FS 012C	Limestone Haul	1453.53	40.0	0.020	0.814
FS 012C	WWTF Trucks	2409.70	28.0	0.034	0.945
	Total	71414.99		1	5.549

Segment D

Segment Length		0.148			
ID	Activity	D VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012D	Light Trucks	24566.69	2.5	0.993	2.481
FS 012D	WWTF Trucks	184.501	28.0	0.007	0.209
	Total	24751.19		1	2.690

Segment E

Segment Length		0.722			
ID	Activity	E VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012E	Light Trucks	1580.930	2.5	0.637	1.592
FS 012E	WWTF Trucks	902.357	28.0	0.363	10.174
	Total	2483.288		1	11.766

Segment F

Segment Length		0.37			
ID	Activity	F VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012F	Light Trucks	810.251	2.5	0.637	1.592
FS 012F	WWTF Trucks	462.472	28.0	0.363	10.174
	Total	1272.723		1	11.766

Segment H/H2

Segment Length		0.114			
ID	Activity	H VMT	Mean Wt.	Fraction Total VMT	Contribution to Avg. Weight
FS 012H	Light Trucks	16208.904	2.5	0.980	2.449
FS 012H	Limestone Haul	85.855	26.6	0.005	0.138
FS 012H	Tanker	248.522	26.6	0.015	0.400
	Total	16543.281		1	2.987

Note: Calculations based on Annual VMT

Segment B

Segment Length		1.94			
ID	Activity	B VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
FS 012B	Empty Haul Trucks	1359.70	181	0.018	3.250
FS 012B	Light Trucks	63725.13	2.5	0.842	2.104
FS 012B	Tanker	4249.73	26.6	0.056	1.493
FS 012B	Limestone Haul	3965.36	28	0.052	1.466
FS 012B	WWTF Trucks	2424.85	28	0.032	0.897
	Total	75724.77		1.000	9.210

Segment A

Segment Length		0.37			
ID	Activity	A VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
FS 012A	Empty Haul Trucks	255.29	181	0.018	3.337
FS 012A	Light Trucks	12034.15	2.5	0.869	2.173
FS 012A	Limestone Haul	748.10	2.5	0.054	0.135
FS 012A	Tanker	807.70	26.6	0.058	1.552
	Total	13845.25		1	7.197

Fueling Facility Circle

Segment Length		0.22			
ID	Activity	RFC VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
RFCRD	Fuel Tanker	0.67	26.6	0.091	2.419
RFCRD	Haul Trucks (240 t)	5.35	303.15	0.727	220.463
RFCRD	Haul Trucks (100 t)	1.34	130	0.182	23.635
	Total	7.36		1.000	246.518

Segment B3

Segment Length		1.17			
ID	Activity	B3 VMT	Mean Wt.	Fraction total VMT	Contribuition to Avg. Weight
FS 012B3	Empty Haul Trucks	815.82	181	0.017	3.128
FS 012B3	Light Trucks	38303.10	2.5	0.811	2.028
FS 012B3	Tanker	4249.73	26.6	0.090	2.394
FS 012B3	Limestone Haul	2383.30	26.6	0.050	1.343
FS 012B3	WWTF Trucks	1457.50	28	0.031	0.864
	Total	47209.45		1.000	9.758

PolyMet - Hoyt Lakes, Minnesota
Table 29: Calculation of Potential Emissions - Processing Plant - Suggested Tailings Basin Mitigation

Stack ID	ID	Emission Unit Description	APCD ID	Throughput Maximum (Units/hr)	Note	Maximum (Units/yr)	Note	Projected Actual (Units/yr)	Note	Units	Annual days with precipitation	Pollutant	PSD Applicability (Y/N)	HAP? (Y/N)	Emission Factor (lb/Unit)	Note	Max. Unc. PTE (lb/hr)	(tons/yr)	Proj. Act. Unc. Emissions (tons/yr)	Control Eff. (%)	Note	Max. Cont. PTE (lb/hr)	(tons/yr)	Proj. Act. Cont. Emissions (tons/yr)	Emission Std or Operational Limit	Limited Controlled PTE (tons/yr)	Maximum Throughput units/day	Note	Max. Unc. Emissions lb/day	Max. Cont. Emissions lb/day	g/sec Model Input
FS 051	FS 051	LTVSMC Tailings Truck Load Deposit 1	NA	2300	[201]	1592487	[301]	1592487	[423]	Ton		PM10	N	N	0.0015	[185]	3.56	1.231	1.231	0	[502]	3.56	1.231	1.231		1.231	22996	[601]	35.554	35.554	0.187
FS 051				2300	[201]	1592487	[301]	1592487	[423]	Ton		Total PM	N	N	0.0033	[185]	7.52	2.603	2.603	0	[502]	7.52	2.603	2.603		2.603	22996	[601]	75.172	75.172	0.395
FS 051	FS 051	LTVSMC Tailings Truck Load Deposit 2	NA		[201]	337692	[301]	337692	[423]	Ton		PM10	N	N	0.0015	[185]	0.00	0.261	0.261	0	[502]	0.00	0.261	0.261		0.261					0.000
FS 051					[201]	337692	[301]	337692	[423]	Ton		Total PM	N	N	0.0033	[185]	0.00	0.552	0.552	0	[502]	0.00	0.552	0.552		0.552					0.000
FS 051	FS 051	LTVSMC Tailings Truck Load Deposit 3	NA		[201]		[301]		[423]	Ton		PM10	N	N	0.0015	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
FS 051					[201]		[301]		[423]	Ton		Total PM	N	N	0.0033	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
FS 051	FS 051	LTVSMC Tailings Truck Load Deposit 4	NA		[201]		[301]		[423]	Ton		PM10	N	N	0.0015	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
FS 051					[201]		[301]		[423]	Ton		Total PM	N	N	0.0033	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
FS 051	FS 051	LTVSMC Tailings Truck Unload - Cell 1E	NA		[201]		[301]		[423]	Ton		PM10	N	N	0.0015	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
FS 051					[201]		[301]		[423]	Ton		Total PM	N	N	0.0033	[185]	0.00	0.000	0.000	0	[502]	0.00	0.000	0.000		0.000					0.000
FS 051	FS 051	LTVSMC Tailings Truck Unload - Cell 2E	NA	2300	[201]	1930178	[301]	1930178	[423]	Ton		PM10	N	N	0.0015	[185]	3.56	1.492	1.492	0	[502]	3.56	1.492	1.492		1.492	22996	[601]	35.554	35.554	0.187
FS 051				2300	[201]	1930178	[301]	1930178	[423]	Ton		Total PM	N	N	0.0033	[185]	7.52	3.155	3.155	0	[502]	7.52	3.155	3.155		3.155	22996	[601]	75.172	75.172	0.395
FS 052	FS 051	Unpaved Roads, Deposit 1 to Cell 2E	NA		[202]		[302]		[423]	VMT	134	PM10	N	N	2.603	[185]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 052					[202]		[302]		[423]	VMT	134	Total PM	N	N	10.442	[185]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 052	FS 051	Unpaved Roads, Deposit 2 to Cell 2E	NA		[202]		[302]		[423]	VMT	134	PM10	N	N	2.603	[185]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 052					[202]		[302]		[423]	VMT	134	Total PM	N	N	10.442	[185]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 052	FS 051	Unpaved Roads, Deposit 3 to Cell 1E	NA		[202]		[302]		[423]	VMT	134	PM10	N	N	2.603	[185]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 052					[202]		[302]		[423]	VMT	134	Total PM	N	N	10.442	[185]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 052	FS 051	Unpaved Roads, Deposit 3 to Cell 2E	NA		[202]		[302]		[423]	VMT	134	PM10	N	N	2.603	[185]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 052					[202]		[302]		[423]	VMT	134	Total PM	N	N	10.442	[185]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 052	FS 051	Unpaved Roads, Deposit 4 to Cell 1E	NA	269.89	[202]	197247	[302]	197247	[423]	VMT	134	PM10	N	N	2.603	[185]	702.64	162.499	162.499	80	[501]	140.53	32.500	32.500		32.500	2699	[602]	7026.396	1405.279	7.378
FS 052	FS 051			269.89	[202]	197247	[302]	197247	[423]	VMT	134	Total PM	N	N	10.442	[185]	2,818.25	651.775	651.775	80	[501]	563.65	130.355	130.355		130.355	2699	[602]	28182.532	5636.506	29.591
FS 052	FS 051	Unpaved Roads, Deposit 4 to Cell 2E	NA		[202]		[302]		[423]	VMT	134	PM10	N	N	2.603	[185]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 052					[202]		[302]		[423]	VMT	134	Total PM	N	N	10.442	[185]	0.00	0.000	0.000	80	[501]	0.00	0.000	0.000		0.000					0.000
FS 032	FS 032	Tailings Basin Wind Erosion - Proposed Project	NA	NA	[245]	26.8	[321]	26.8	[423]	acres		PM10	N	N	-6,299	[194]	NA	-84.281	-84.281	0	[502]	NA	-84.281	-84.281		-84.281					[4]
FS 032				NA	[245]	26.8	[321]	26.8	[423]	acres		Total PM	N	N	-12,599	[194]	NA	-168.572	-168.572	0	[502]	NA	-168.572	-168.572		-168.572					[4]
FS 032	FS 032	Tailings Basin Wind Erosion - LTVSMC Tailings	NA	NA	[245]	6.7	[322]	6.7	[423]	acres		PM10	N	N	1,543	[194]	NA	5.177	5.177	0	[502]	NA	5.177	5.177		5.177					[4]
FS 032				NA	[245]	6.7	[322]	6.7	[423]	acres		Total PM	N	N	3,085	[194]	NA	10.351	10.351	0	[502]	NA	10.351	10.351		10.351					[4]
FS 032	FS 032	Tailings Basin Wind Erosion - NorthMet Tailings	NA	NA	[245]	21.0	[323]	21.0	[423]	acres		PM10	N	N	9,644	[194]	NA	101.166	101.166	0	[502]	NA	101.166	101.166		101.166					[4]
FS 032				NA	[245]	21.0	[323]	21.0	[423]	acres		Total PM	N	N	19,289	[194]	NA	202.339	202.339	0	[502]	NA	202.339	202.339		202.339					[4]

Plant Site Totals (Point and Fugitive Sources)																															
Criteria Pollutant Totals [6]												PM10					709.75	187.54	187.54			147.64	57.55	57.55		57.55					
												Total PM					2833.29	702.20	702.20			578.69	180.78	180.78		180.78					

Notes:

General References:
[1] Max. Uncontrolled Emissions (lb/hr) = EF (lb/unit) x Max. Hourly Throughput (units/hr).
    Max. Uncontrolled Emissions (tons/yr) = EF (lb/unit) x Max. Annual Throughput (units/yr) / 2,000 (lb/ton).
[2] Max. Controlled Emissions (lb/hr) = Max. Uncontrolled Emissions (lb/hr) x (1-Control Eff./100).
    Max. Controlled Emissions (tons/yr) = Max. Uncontrolled Emissions (tons/yr) x (1-Control Eff./100).
[4] Tailings basin emission are calculated by the dispersion modeling program based on the actual meteorological data for each day modeled.

Emission Factor References:
[185] See "Table 2A: Calculation of Emission Factors for Fugitive Sources".
[194] The emissions from wind erosion in the tailings basin were calculated utilizing the procedure in AP-42 Section 13.2.5. The threshold friction velocity (u*t) of 0.29 m/s was calculated from grain size distribution data obtained from available data.
    Additional data used for the calculation included interpolated fastest mile data based on
    the 2001 - 2005 Hibbing Airport meteorological data, an assumed flat pile shape, daily surface disturbance, and a surface roughness height (Zo) of 0.005 meters. Hourly emissions are not reported because emissions are calculated based on the maximum daily wind speed and emissions on a
    basis of less than 24-hours are not readily determined with this procedure.

Maximum Hourly Throughput References:
[201] Maximum hourly quantity of LTVSMC tailings handled obtained by developing schedule for each year of operation. The highest hourly value was used in the calculations. Emissions were assigned to the appropriate location based on the worst case year.
[202] Maximum hourly vehicle miles traveled obtained from tailings movement schedule. The worst case for all years of operation was used in the calculations. Emissions were assigned to the appropriate haul route based on the worst case year of operation.
[245] Wind erosion emission are calculated by utilizing an entire year's meteorological data and daily fastest wind speed. Short term (< 24 hour) emission rates are not readily calculated by this procedure and the hourly "throughput" is not really a relevant concept.

Maximum Annual Throughput References:
[301] Maximum annual quantity of LTVSMC tailings handled obtained by developing schedule for each year of operation. The highest annual value was used in the calculations. Emissions were assigned to the appropriate location based on the worst case year.
[302] Maximum annual vehicle miles traveled obtained from tailings movement schedule. The worst case for all years of operation was used in the calculations. Emissions were assigned to the appropriate haul route based on the worst case year of operation.
[321] Estimated beach area subject to wind erosion for proposed project based on south beach area being active in 20 year configuration. South beach has sufficient area for approximately 8 months of operation. Assumed coarse beach area would be mulched every two moths, so that approximately 1/4 of the coarse beach area would be subject to wind erosion
    at a given time. Fine beach area is predicted to remain at or near saturation conditions, so wind erosion will not occur in this area. Total coarse beach area along south dike is 118.24 acres * 1/4 = 29.56 acres not mulched. In addition, at the active deposition area where recently deposited tailings would still be wet, wind erosion will not occur.
    This area is estimated as 2.8 acres. The area subject to wind erosion is then: 29.56 - 2.8 - 26.76 acres.
[322] Estimated beach area for proposed mitigation configuration based on length of south beach active and not containing wet tailings or benefiting from dust control measures. Embankment width assumed to be 200 feet.
[323] Estimated beach area for proposed mitigation configuration based on length of south beach active and not containing wet tailings or benefiting from dust control measures. North met tailings beach width assumed to be 625 feet.

Projected Actual Throughput References
[423] Projected actual emissions are equivalent to potential emissions.

Control Efficiency References:
[501] Level 3A control measures, consistent with agreement reached by the IMA-MPCA Fugitive Emissions Workgroup as described in the November 18, 1998 "Taconite Industry Haul Truck Unpaved Road Fugitive Particulate Emission Factor and Control Efficiency" were observed at the Cliffs Erie facility;
    control practices are expected to be similar at the PolyMet facilities. The referenced document allows 80% for Level 3A control measures.
[502] Either no Air Pollution Control Devices (APCDs) are used in this process or the APCD does not control this pollutant. Therefore, Control Efficiency is 0.

Maximum Daily Throughput References
[601] Maximum daily quantity of LTVSMC tailings handled obtained by developing schedule for each year of operation. The highest annual value was used in the calculations. Emissions were assigned to the appropriate location based on the worst case year. The schedule assumes one 10 hour shift per day.
[602] Maximum daily vehicle miles traveled obtained from tailings movement schedule. The worst case for all years of operation was used in the calculations. Emissions were assigned to the appropriate haul route based on the worst case year of operation. The schedule assumes one 10 hour shift per day.

Table 30: Calculation of Emission Factors for Fugitive Sources - Suggested Tailings Basin Mitigation

Stack ID	Emission Unit ID	Description	Pollutant	k [2]	U [3] (mph)	M [4] (%)	s [6] (%)	a	b	W [7] (tons)	Emission Factor (lb/Unit)	Note
Fugitive	FS 051	Tailings Handling	PM10	0.35	7.1	2.2					0.0015	[1]
		Tailings Handling	PM	0.74	7.1	2.2					0.0033	[1]
Fugitive	FS 052	Unpaved Roads, LTV Tailings Haul	PM10	1.5			4.3	0.9	0.45	79.6	2.6035	[5]
		Unpaved Roads, LTV Tailings Haul	PM	4.9			4.3	0.7	0.45	79.6	10.4424	[5]

Notes:

[1] EF = k x 0.0032 x (U/5)^1.3 / (M/2)^1.4 lb/ton

   Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Page 13.2.4-3.

[2] k = particle size multiplier (dimensionless).

   0.35 for PM10 for equation in [1].   0.74 for PM for equation in [1]

   1.50 for PM10 for equation in [5].   4.9 for PM for equation in [5]

[3] U = mean wind speed (mph).

   7.1 mph. Source: average value from 2001 - 2005 Hibbing, MN Meteorlogical Data Set

[4] M = moisture content (%).

   2.2 % for taconite tailings per 9/18/07 report from Soil Engineering Testing; used lowest value (depth = 1 to 3 feet)

[5] EF = k x (s/12)^a x (W/3)^b lb/VMT

   Source = "AP-42: Compilation of Air Pollutant Emission Factors", 5th Edn., January 1995, Pages 13.2.2-4 and 13.2.2-5.

   Precipitation is accounted for in emission calculation spreadsheet. Emission factors are multiplied by (1-p/365) for annual emission calculations; where p = days with precipitation.

[6] s = silt content (%)

   4.3 % for taconite mine service road from AP-42 Table 13.2.2-1

[7] W = mean vehicle weight (tons).

   50 tons for empty Cat 773 Truck

   110 tons for loaded Cat 773 Truck

POLYMET - Hoyt Lakes, Minnesota
Table 31 - TAILINGS DAM VOLUMES & HAULS
5/27/2008

YEAR	VOLUME (CY)	TOTAL from SOURCE	MATERIAL SOURCE	DISTINATION	MATERIAL TYPE	ONE-WAY HAUL DISTANCE (feet)	ONE-WAY HAUL DISTANCE (miles)	TRUCK TYPE	# HAUL TRUCKS	PER TRUCK LOADS/HOUR	TOTAL LOADS/HOUR	TOTAL DISTANCE/HOUR	TRIPS/10 HR SHIFT	SHIFTS REQUIRED	VMT per Hour	VMT per Day	VMT per year	VMT total per year	Density ton/yd3	Hourly Tons	Daily Tons	Total tons	Annual tons
1	1,095,858		1	2E	COARSE	3,000	0.568	773	4	9.6	38.4	115,200	384	84	43.64	436.4	36626	36626	1.76132	2300	22996	1930160	1930160
2	904,142	2,000,000	1	2E	COARSE	3,000	0.568	773	4	9.6	38.4	115,200	384	69	43.64	436.4	30219		1.76132	2300	22996	1592487	
2	191,726		2	2E	COARSE	12,700	2.405	773	10	3.7	37.0	469,900	370	15	177.99	1,779.9	27127	57346	1.76132	2216	22157	337692	1930178
3	872,082		2	2E	COARSE	12,700	2.405	773	10	3.7	37.0	469,900	370	69	177.99	1,779.9	123389	123389	1.76132	2216	22157	1536019	1536019
4	647,707		2	2E	COARSE	12,700	2.405	773	10	3.7	37.0	469,900	370	51	177.99	1,779.9	91643	91643	1.76132	2216	22157	1140822	1140822
5	647,707		2	2E	COARSE	12,700	2.405	773	10	3.7	37.0	469,900	370	51	177.99	1,779.9	91643	91643	1.76132	2216	22157	1140822	1140822
6	634,744		2	2E	COARSE	12,700	2.405	773	10	3.7	37.0	469,900	370	50	177.99	1,779.9	89809	89809	1.76132	2216	22157	1117990	1117990
7	106,034	3,100,000	2	2E	COARSE	12,700	2.405	773	10	3.7	37.0	469,900	370	8	177.99	1,779.9	15003		1.76132	2216	22157	186760	
7	528,710		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	42	217.00	2,170.0	90710	105713	1.76132	2228	22277	931229	1117990
8	623,957		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	49	217.00	2,170.0	107051	107051	1.76132	2228	22277	1098990	1098990
9	613,169		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	48	217.00	2,170.0	105201	105201	1.76132	2228	22277	1079989	1079989
10	613,169		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	48	217.00	2,170.0	105201	105201	1.76132	2228	22277	1079989	1079989
11	567,130		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	45	217.00	2,170.0	97302		1.76132	2228	22277	998899	
11	243,056		3	1E	COARSE	4,000	0.758	773	5	7.6	38.0	152,000	380	19	57.58	575.8	10831	108133	1.76132	2276	22756	428100	1426999
12	567,130		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	45	217.00	2,170.0	97302		1.76132	2228	22277	998899	
12	243,056		3	1E	COARSE	4,000	0.758	773	5	7.6	38.0	152,000	380	19	57.58	575.8	10831	108133	1.76132	2276	22756	428100	1427000
13	494,026		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	39	217.00	2,170.0	84759		1.76132	2228	22277	870140	
13	308,163		3	1E	COARSE	4,000	0.758	773	5	7.6	38.0	152,000	380	24	57.58	575.8	13733	98492	1.76132	2276	22756	542775	1412914
14	420,922		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	33	217.00	2,170.0	72217		1.76132	2228	22277	741379	
14	373,270		3	1E	COARSE	4,000	0.758	773	5	7.6	38.0	152,000	380	29	57.58	575.8	16634	88851	1.76132	2276	22756	657450	1398829
15	420,922		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	33	217.00	2,170.0	72217		1.76132	2228	22277	741379	
15	373,270		3	1E	COARSE	4,000	0.758	773	5	7.6	38.0	152,000	380	29	57.58	575.8	16634	88851	1.76132	2276	22756	657450	1398829
16	277,720		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	22	217.00	2,170.0	47648		1.76132	2228	22277	489155	
16	416,581		3	1E	COARSE	4,000	0.758	773	5	7.6	38.0	152,000	380	32	57.58	575.8	18564	66212	1.76132	2276	22756	733733	1222889
17	277,720		3	2E	COARSE	15,400	2.917	773	12	3.1	37.2	572,880	372	22	217.00	2,170.0	47648		1.76132	2228	22277	489155	
17	416,581		3	1E	COARSE	4,000	0.758	773	5	7.6	38.0	152,000	380	32	57.58	575.8	18564	66212	1.76132	2276	22756	733733	1222889
18	121,448	7,900,000	3	1E	COARSE	4,000	0.758	773	5	7.6	38.0	152,000	380	9	57.58	575.8	5412		1.76132	2276	22756	213909	
18	347,150		4	2E	COARSE	8,000	1.515	773	8	4.7	37.6	300,800	376	27	113.94	1,139.4	30940		1.76132	2252	22517	611443	
18	344,469		4	1E	COARSE	19,000	3.598	773	15	2.5	37.5	712,500	375	27	269.89	2,698.9	72916	109268	1.76132	2246	22457	606721	1432074
19	931,834		4	1E	COARSE	19,000	3.598	773	15	2.5	37.5	712,500	375	73	269.89	2,698.9	197247	197247	1.76132	2246	22457	1641261	1641261
20	931,834	2,555,287	4	1E	COARSE	19,000	3.598	773	15	2.5	37.5	712,500	375	73	269.89	2,698.9	197247	197247	1.76132	2246	22457	1641261	1641261
											0.0	0		0	0.00	0.0	0						
	15,555,287	15,555,287												Max	269.89	2698.9		197247		2300	22996		1930178

Indicates max value for parameter

TRUCK TYPE	EMPTY WT	LOADED WT	PAY LOAD	TONS
CAT 773	99,230	219,000	119,770	59.9

Source
1 North Beach
2 Middle Bench between 1E & 2E
3 South Beach
4 West (basin 2W)

Note This analysis assumes two large excavators (8 CY) to be used for loading tools.

Appendix A

Lime or Limestone Addition to NorthMet
Temporary Category 3 and 4 Stockpiles

Lime Requirement Calculation

Limestone Requirement Calculation

Lime or Limestone Addition to NorthMet Temporary Category 3 and 4 Stockpiles
May 26, 2008

Reasonable Alternative R1 (On Site Subaqueous Disposal of all Potentially Acid Generating Waste Rock) requires temporary storage of Category 2, 3 and 4 Waste Rock and Lean Ore on temporary stockpiles. To keep this rock from becoming acid generating, lime or limestone will be added to the stockpiles.

Table 1 shows the rate of limestone or lime addition to temporary stockpiles when the rock is placed in the temporary stockpiles. The addition per ton of rock is a function of the time that the rock is in the temporary stockpile before being moved to the East Pit (see Lime Calculation and Limestone Calculation pdf files for details).

Table 1 Limestone/Lime Addition Rate		
	Limestone	Lime
Years Stored	lb /Ton of rock	lb / Ton of rock
1	0.22	0.09
2	0.44	0.15
3	0.68	0.24
4	0.90	0.33
5	1.12	0.42
6	1.34	0.51
7	1.56	0.57
8	1.79	0.66
9	2.03	0.75
10	2.25	0.82
11	2.47	0.93
12	2.69	0.99
13	2.91	1.08
14	3.13	1.17
15	3.35	1.23
16	3.57	1.32
17	3.79	1.41
18	4.01	1.50
19	4.23	1.59
20	4.47	1.65

Lime or Limestone Addition to NorthMet Temporary Category 3 and 4 Stockpiles
May 26, 2008

Table 2 shows the amount of limestone that will be added to temporary stockpiles when the rock is placed in the temporary stockpiles. Limestone is shown because it represents a worse case in terms of tons handled.

| | Cat 2/3 | | | | | Cat 3 LO | | | | | Cat 4 | | | | | Total |
| | To | From | In SP | Limestone | | To | From | In SP | Limestone | | To | From | In SP | Limestone | | Limestone |
Year	SP	SP	Years	lb/ton	tons	SP	SP	Years	lb/ton	tons	SP	SP	Years	lb/ton	tons	tons
0											74,559		18	4.01	149	149
1	272,512		19	4.23	576	1,605,061		14	3.13	2,512	8,208		17	3.79	16	3,104
2	475,370		18	4.01	953	1,793,557		13	2.91	2,610	252,209		16	3.57	450	4,013
3	1,258,977		17	3.79	2,386	2,129,494		12	2.69	2,864	1,254,741		15	3.35	2,102	7,352
4	1,941,752		16	3.57	3,466	1,701,833		11	2.47	2,102	1,025,464		14	3.13	1,605	7,173
5	2,001,872		15	3.35	3,353	1,070,203		10	2.25	1,204	1,173,278		13	2.91	1,707	6,264
6	2,296,020		14	3.13	3,593	1,347,766		9	2.03	1,368	1,398,799		12	2.69	1,881	6,843
7	1,684,139		13	2.91	2,450	1,288,444		8	1.79	1,153	637,857		11	2.47	788	4,391
8	2,944,012		12	2.69	3,960	2,495,861		7	1.56	1,947	498,023		10	2.25	560	6,467
9	1,881,122		11	2.47	2,323	1,093,809		6	1.34	733	771,864		9	2.03	783	3,839
10						1,769,310		5	1.12	991	2,054,837		8	1.79	1,839	2,830
11						1,251,543		4	0.90	563	2,468,686		7	1.56	1,926	2,489
12						3,158,439										
13						6,316,877										
14						8,071,565						4,066,484				
15												4,995,966				
16		442,673										2,323,705				
17		4,426,733										232,371				
18		2,951,155														
19		6,935,215														
20																

Table 2 Limestone Addition

Category 2/3 Waste Rock going to Cat 4 WR stockpile is listed with Category 4 WR

Source of Lime/Limestone:

Once the Hydrometallurgical Plant is in operation, lime slurry, limestone slurry (30 micron limestone) and crushed limestone (1" x 2" lump) will be readily available at the Process Plant. Prior to the Hydrometallurgical Plant being operational, crushed limestone will be brought from Duluth directly to the Mine Site. Crushed limestone will be transported in 40 ton over the road trucks and delivered to small (one or two truckload) storage piles at the active stockpiles. Limestone or lime slurry will be transported from the Process Plant to application areas at the Mine Site in a 4,000 to 6,000 gallon tanker truck.

Methods of Application:

If lime is used, it will be applied as a slurry. If limestone is used it will be applied as a slurry or as crushed limestone. Applications will be at intervals based on the tons delivered to the stockpile. It is anticipated that the application interval will vary between daily and weekly. Annual average daily application requirements range from 0.41 to 20.14 tons with an average of 12.54 tons.

Slurry will be applied to the active stockpile area from a tanker truck. Limestone will be distributed evenly into rock that has not been dozed over the stockpile edge by a pressure nozzle directed by the operator or applied via a boom that extends over the edge of the stockpile so that the material most recently dozed over the stockpile edge can be treated. The slurry will be metered such that the tanker truck operator can monitor the tons of lime/limestone applied. The Mine Dispatch system will track the tons delivered to the stockpile since the last treatment and the Mine Dispatcher will advise the tank truck operator of the tons of lime/limestone to be applied.

The crushed limestone application will be accomplished by moving the limestone from a storage pile at the active stockpile areas to the area of application by a small front end loader. The limestone will be distributed evenly into rock that has not been dozed over the stockpile edge or over the edge of the stockpile in areas where all rock has been dozed over the edge. The loader will have a scale such that the loader operator can monitor the tons of limestone applied. The Mine Dispatch system will track the tons delivered to the stockpile since the last treatment and the Mine Dispatcher will advise the loader operator of the tons of limestone to be applied.
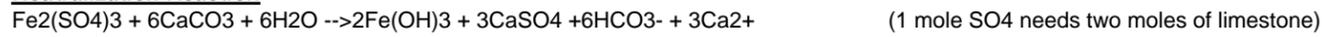
SRK Consulting
Project Name   NorthMet
Project Number   1UP005.001
Author   SJD
Date   5/26/2008 8:28

Calculation of Lime Requirement for Cat 3 and 4 Rock To Maintain Non-Acidic Conditions

Assumptions
- 95th percentile oxidation rates (conservative)
- rates not allowed to decay (conservative)
- rates corrected for temperature
- assumes perfect neutralization (non-conservative)

Neutralization Reaction
$Fe_2(SO_4)_3 + 3Ca(OH)_2 \rightarrow 2Fe(OH)_3 + 3CaSO_4$ (1 mole SO4 needs one mole of lime)

FW for Ca(OH)2   74
FW for SO4   96

Scaling Factors
Particle Size   0.20
Temperature Factor   0.30

Rates of Oxidation Under Non-Acidic Conditions

Category	Lab SO4 mgSO4/kg/week	Site mgSO4/kg/week	Lime Dosage Needed to Offset mg Lime/kg/week		Sulfide Consumed S in Rock %	Time to 100% Converted years
3		11	0.7	0.5	0.8	673
4		11	0.7	0.5	1	852

Lime Requirement Based on Storage Time

Lime InEfficiency Factor   1.50

	Cat 3	**Cat 4**
Starts Acid After	6	0 years

Weeks per year   52.14285714

To Store For Years	**Cat 3** kg Lime/tonne of rock	**Cat 4** kg Lime/tonne of rock
1	0.04	0.04
2	0.08	0.08
3	0.12	0.12
4	0.17	0.16
5	0.21	0.20
6	0.25	0.25
7	0.29	0.29
8	0.33	0.33
9	0.37	0.37
10	0.41	0.41
11	0.46	0.45
12	0.50	0.49
13	0.54	0.53
14	0.58	0.57
15	0.62	0.61
16	0.66	0.65
17	0.70	0.70
18	0.75	0.74
19	0.79	0.78
20	0.83	0.82

SRK Consulting
Project Name   NorthMet
Project Number   1UP005.001
Author   SJD
Date   5/26/2008 8:28

Calculation of Limestone Requirement for Cat 3 and 4 Rock To Maintain Non-Acidic Conditions

Assumptions
- 95th percentile oxidation rates (conservative)
- rates not allowed to decay (conservative)
- rates corrected for temperature
- assumes perfect neutralization (non-conservative)

Neutralization Reaction
$Fe_2(SO_4)_3 + 6CaCO_3 + 6H_2O \longrightarrow 2Fe(OH)_3 + 3CaSO_4 + 6HCO_3^- + 3Ca^{2+}$ (1 mole SO4 needs two moles of limestone)

FW for CaCO3   100
FW for SO4   96

Scaling Factors
Particle Size   0.20
Temperature Factor   0.30

Rates of Oxidation Under Non-Acidic Conditions

Category	Lab SO4 mgSO4/kg/week	Site mgSO4/kg/week	Limestone Dosage Needed to Offset mg limestone/kg/week		Sulfide Consumed S in Rock %	Time to 100% Converted years
3	11		0.7	1.4	0.8	673
4	11		0.7	1.4	1	852

Limestone Requirement Based on Storage Time

Limestone Inefficiency Factor   1.50

	Cat 3	Cat 4
Starts Acid After	6	0 years

Weeks per year   52.14285714

To Store For Years	Cat 3 kg Lst/tonne of rock	Cat 4 kg Lst/tonne of rock
1	0.11	0.11
2	0.22	0.22
3	0.34	0.33
4	0.45	0.44
5	0.56	0.55
6	0.67	0.66
7	0.78	0.77
8	0.89	0.88
9	1.01	0.99
10	1.12	1.10
11	1.23	1.21
12	1.34	1.32
13	1.45	1.44
14	1.57	1.55
15	1.68	1.66
16	1.79	1.77
17	1.90	1.88
18	2.01	1.99
19	2.12	2.10
20	2.24	2.21