

**Rosemont Copper Company**  
**Revised AERMOD Modeling Report to**  
**Assess Ambient Air Quality Impacts**

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## 1. INTRODUCTION

The proposed Rosemont Copper Company Project (Rosemont Project) is a new open pit copper mine that will be located in the Santa Rita Mountains approximately 30 miles southeast of Tucson, Arizona in Pima County (Figure 1.1). The *Rosemont Project, Mine Plan of Operations* was submitted to the Coronado National Forest in July 2007 (complete document available at [www.rosemontcopper.com](http://www.rosemontcopper.com)). The Coronado National Forest represents the Federal Land Manager for purposes of the Environmental Impact Statement (EIS) that will be prepared for the Rosemont Project.

The Federal Land Manager (FLM) requested that an air impact analysis be submitted as part of the EIS to demonstrate the protection of the National Ambient Air Quality Standards (NAAQS). In response, the Rosemont Project submitted a modeling protocol titled "*Modeling Protocol to Assess Ambient Air Quality Impacts from the Rosemont Copper Project*" to the FLM in October, 2009. A modeling analysis titled "Modeling Report to Assess Ambient Air Quality Impacts" based on the protocol referenced above was subsequently submitted on July 28, 2010. Comments to this modeling analysis were provided by the Forrest Services on February 25, 2011. Additional comments and recommendations for addressing the Forrest services concerns were provided by conference calls on March 14, 25, 29 and 31, 2011.

Additionally, the Rosemont Project has re-evaluated its operation and made changes to its operations that affect emissions and predicted impacts. These include the following:

- A reduction in the number of blasts that can occur on a daily basis from two to one.
- Limiting blasting events to occur from Noon to 4:00 in the afternoon, and
- Reduction in the average annual operating hours of its haul trucks from 92% availability (8,060 hours) to the more realistic value necessary to meet its mining plan of 6600 hours per truck.

The modeling presented herein incorporates the changes in emissions due to the changes in operations and addresses the comments and recommendations made by the Forrest Services. The remaining sections of this report present the air dispersion modeling methodology and modeling results for the Rosemont Project.

### 1.1 Facility Description

The Rosemont Project will include an open-pit mine; and ore processing operations comprised of milling, a concentrator, leaching and solvent extraction/electrowinning. The production schedule developed from mining sequence plans indicates a project operating life of approximately 20-25 years using only proven and probable mineral reserves. Peak mining rates were initially estimated at approximately 378,000 tpd of total material (ore and waste) to be realized in Year 1. These mining rates included a 20% capacity factor above the average capacity. During this year of operation, however, operations would still be in the development stages more typical of 316,000 tpd mining rate. Mining rates during Year 2 are estimated at 376,000 tpd and for Years 3-12 at approximately 360,000

tpd of total material. These rates include the additional 20% capacity factor. These rates will taper off toward the final years of the project.

Mining of the ore will be through conventional open-pit mining techniques including drilling, blasting, loading, hauling and unloading. Waste rock will be transported by haul truck to the waste rock storage areas. Ore will be either transported by haul truck to the leach pad (oxide ore), or crushed and loaded onto a conveyor for transport to the mill (sulfide ore). The copper and molybdenum concentrates from the milling and flotation operations will be shipped off site for further processing. Oxide ore will be placed on the lined leach pad. Pregnant leach solution (PLS) from the pad will be collected in a solution pond and then processed through the SX/EW plant. Copper cathodes generated from the SX/EW plant will be transported off site for further processing.

## **1.2 Site Description**

The Rosemont Project will be located in Pima County, approximately 30 miles southeast of Tucson, Arizona as shown in Figure 1.1. Regionally, the facility location is in the Sonoran Desert Section of the Basin and Range Physiographic Province which is characterized by northerly trending fault block mountains separated by broad, down-faulted valleys (see Figures 1.1 and 4.1). The site is at an elevation of approximately 5,350 feet.



**Figure 1.1 General location map of the Rosemont Project and surrounding area.**

## **2. REGULATORY STATUS**

### **2.1 Source Designation**

The Rosemont Project will be a non-categorical stationary source. Criteria pollutant emissions from the facility will be below the New Source Review major source threshold of 250 tons/year. Therefore, the facility will not be subject to PSD regulations. Additionally, the potential to emit hazardous air pollutants (HAPs) will be less than 10 tons/year for any individual (HAP), and less than 25 tons/year for all HAPs combined and therefore, the facility will not be a major HAP source. Point source emissions of criteria pollutants from the facility will be less than the Title V source threshold of 100 tons per year. Consequently, the facility will operate under a Class II Permit issued by the Pima County Department of Environmental Quality (PCDEQ).

### **2.2 Area Classifications**

The Rosemont Project area is classified as “attainment” (better than national standards) or unclassifiable/attainment for particulate matter less than 10 microns nominal aerodynamic diameter (PM<sub>10</sub>), particulate matter less than 2.5 microns nominal aerodynamic diameter (PM<sub>2.5</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), and ozone (O<sub>3</sub>) (see 40 CFR Part 81.303).

### **2.3 Baseline Area**

The Rosemont Project will be located within the Pima Intrastate Air Quality Control Region (AQCR) which encompasses Pima County. This AQCR represents the “baseline area” for PSD purposes. The Rosemont Project, however, will not be subject to PSD regulations.

### **3. AMBIENT DATA REQUIREMENTS**

#### **3.1 *Pre-Application Air Quality Monitoring***

The primary pollutant that will be emitted by the Rosemont Project operations will be particulate matter. Consequently, Rosemont initiated pre-application air quality monitoring for PM<sub>10</sub> in June 2006. The monitoring ended in June 2009. The location of the monitoring site is shown in Figure 4.1. Complete quarterly data summary and audit reports have been submitted to the PCDEQ since the monitoring began. Details of the monitoring program can be found in these quarterly reports. The PM<sub>10</sub> monitoring data will be used to define background concentrations as explained in Section 3.4 below.

Emissions from the Rosemont Project operations will include tail pipe emissions from mobile equipment conducting mining operations, and minor fuel combustion sources used in ore processing operations. Tail pipe emissions from mobile sources are not considered in applications for air quality permits, but are included in air impact analyses for Environmental Impact Statements. Consequently the planned air impact analysis will consider emissions from both process sources and mobile sources. Tail pipe emissions are generally comprised primarily of NO<sub>x</sub> and CO.

#### **3.2 *Post-Construction Air Quality Monitoring***

No post-construction monitoring is proposed.

#### **3.3 *Meteorological Monitoring***

On-site meteorological monitoring was initiated by Rosemont in April 2006 and is continuing to date. Complete quarterly data summary and semi-annual audit reports have been submitted to the PCDEQ since the monitoring began. The location of the monitoring site is shown in Figure 4.1 below. Details of the monitoring program can be found in these quarterly reports. The meteorological data that was used in the modeling is explained further in Section 4 of this report.

#### **3.4 *Background Concentrations***

Criteria pollutants for which background concentrations were considered for the Rosemont Project modeling are PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, CO, and SO<sub>2</sub>.

##### **3.4.1 *PM<sub>10</sub>***

As stated above, PM<sub>10</sub> measurements in the vicinity of the proposed Rosemont Project began in June 2006 and ended in June 2009. The monitoring program has yielded a little over twelve quarters of data.

As required by the November 9, 2005 Revision to the Air Quality Models (40 CFR 51), the 24-hr PM<sub>10</sub> background concentration were based on the average of the highest 24-hr concentrations recorded for each year. With respect to determination of this value, ambient PM<sub>10</sub> monitoring commenced at the start of the 3<sup>rd</sup> quarter of 2006. Annual time periods are thus considered to represent the time period, July of one year to June of the following year.

As indicated in the Modeling Protocol referenced in section 1, representative 3 year (July 2006 – June 2009) average of the highest 24-hr concentration for each year was 33.0  $\mu\text{g}/\text{m}^3$ . The annual  $\text{PM}_{10}$  background concentration was based on the average of the annual averages for each of the years, as required by the November 9, 2005 Revision to the Air Quality Models (40 CFR 51). The 3 year average of the annual average concentrations was 11.9  $\mu\text{g}/\text{m}^3$ . These values were used as the background  $\text{PM}_{10}$  concentrations for the fence line and near vicinity Impact analysis. Background concentrations for the impact analysis at the Saguaro East NP were based on the (2007-2009) Aerosol data from the Saguaro East NP IMPROVE site. The 24-hr and annual average background  $\text{PM}_{10}$  concentrations of 47.6  $\mu\text{g}/\text{m}^3$  and 12.6  $\mu\text{g}/\text{m}^3$  respectively were used.

### **3.4.2 NO<sub>2</sub>**

Nitrogen Dioxide,  $\text{NO}_2$ , is formed by the oxidation of nitric oxide (NO) which is a byproduct of combustion. The  $\text{NO}_2$  monitoring sites in Arizona are located in urban areas (Phoenix and Tucson) and near major coal-fired electrical power plants (Springerville, Page, and Bullhead City). There are no monitoring sites in the immediate vicinity of the proposed Rosemont Project. The ADEQ recommended  $\text{NO}_2$  background concentration for rural areas with no major sources of  $\text{NO}_2$  was 4  $\mu\text{g}/\text{m}^3$ . This value was used as the annual  $\text{NO}_x$  background concentration for the modeling analysis.

Ambient 1-hr  $\text{NO}_2$  concentrations are available only at urban areas, near coal fired power plants, and a rural background site where emissions are due to minor vehicle traffic and outboard motorboats on Alamo Lake in Arizona. The Rosemont site is similar to the Alamo Lake site in that the only sources of  $\text{NO}_2$  are minor vehicle traffic on a road approximately 2.5 miles from the site. The highest recorded background 1-hr  $\text{NO}_2$  concentrations at the Alamo Lake site measured during a two year monitoring program (2005-2006) were 20.7  $\mu\text{g}/\text{m}^3$  and 24.5  $\mu\text{g}/\text{m}^3$ . Thus, the highest of the two years, 24.5  $\mu\text{g}/\text{m}^3$  will be used as the 1-hr background  $\text{NO}_2$  concentration. This value will also be used for the Saguaro East NP.

### **3.4.3 CO**

CO is produced by the incomplete combustion of fuels with anthropogenic activities (automobiles, construction equipment, lawn and garden equipment, commercial and residential heating, etc.) representing the major source of emissions. Consequently, the CO monitoring sites in Arizona are located exclusively in urban areas (Phoenix, Tucson and Casa Grande). Thus, there are no representative monitoring stations to determine background CO concentrations.

The ADEQ recommended CO background concentrations for rural areas with no major sources of CO for both the 1-hour and 8-hour averaging periods are 582  $\mu\text{g}/\text{m}^3$ . These values were used as background CO concentrations for the fence line, near vicinity and Saguaro East NP Impact analysis.

### **3.4.4 SO<sub>2</sub>**

Historically, the principal source of  $\text{SO}_2$  emissions in Arizona has been the smelting of copper and coal fired power plants. Urban areas also represent a major source of  $\text{SO}_2$  emissions. Thus, the  $\text{SO}_2$  monitoring sites in Arizona are located in the historical smelting areas (Miami, Globe, Hayden),

near power plants (Springerville, Page and Bullhead City) and in urban areas (Phoenix and Tucson). Thus, there are no representative monitoring stations to determine background SO<sub>2</sub> concentrations.

The ADEQ recommended SO<sub>2</sub> background concentrations for rural areas with no major sources of SO<sub>2</sub> for the 3-hour, 24-hour and annual averaging periods are 43 µg/m<sup>3</sup>, 17 µg/m<sup>3</sup> and 3 µg/m<sup>3</sup>, respectively. These values were used as background SO<sub>2</sub> concentrations for the fence line and near vicinity Impact analysis as well as for the Saguaro East NP Impact analysis.

Sulfur dioxide emissions from the Rosemont Project operations are produced from blasting operations and the use of ultra-low sulfur diesel fuel. Emissions are very small. Background 1-hr SO<sub>2</sub> data is not available as all historic data has been compiled for comparison with applicable standards, i.e. 3-hr, 24-hr and annual SO<sub>2</sub> standards. The closest source of SO<sub>2</sub> emissions in the vicinity of the Rosemont Project is the Tucson Electrical Power Station (TEP). It is approximately 50 Km from the proposed Rosemont Project site. Emission information for TEP is currently unavailable to evaluate any impact to the background concentrations in the vicinity of the Rosemont Project. Since there are no SO<sub>2</sub> sources in the immediate area of the Rosemont site, the highest 1-hour impact from Rosemont facility was used as the background concentration.

#### **3.4.5 PM<sub>2.5</sub>**

In the absence of any representative PM<sub>2.5</sub> monitoring station in the close vicinity of the Rosemont site, the Chiricahua National Monument IMPROVE PM<sub>2.5</sub> monitoring station data was used. The 3 year (2006-2008) 98<sup>th</sup> percentile average of the maximum 24-hr concentrations was 9.7 µg/m<sup>3</sup>. The 3 year average of the annual average concentrations was 3.6 µg/m<sup>3</sup>. These values were used as background PM<sub>2.5</sub> concentrations for the fence line and near vicinity Impact analysis. Background concentrations for the impact analysis at the Saguaro East NP were based on the (2007-2009) Aerosol data from the Saguaro East NP IMPROVE site. The 24-hr and annual average background PM<sub>2.5</sub> concentrations of 11.4 µg/m<sup>3</sup> and 5.1 µg/m<sup>3</sup> respectively were used.

## **4. TOPOGRAPHY, CLIMATOLOGY AND METEOROLOGY**

### **4.1 Regional Topography**

The Rosemont Project will be located in the Santa Rita Mountains which trend northeast to southwest with elevations ranging from 4,500 feet to over 6,000 feet (Figure 4.1). To the west of the mountains lies the broad Santa Cruz River Valley and to the east lies a smaller valley bisected by Cienega Creek.

### **4.2 Regional Climatology**

The climate of the area is semi-arid with precipitation varying with elevation and season. The 30-year normal (1971 to 2000) annual average precipitation for the Santa Rita Experimental Range station is 23.41 inches (Western Regional Climate Center). Over this 30-year period, nearly half of the precipitation occurred in the months associated with the Arizona Monsoon of July, August and September. The least amount of precipitation occurred during the months of April, May and June.

Temperatures regionally are moderate to extreme with maximums and minimums also varying with elevation. The 30-year normal average monthly maximum temperatures at the Santa Rita Experimental Range station ranged from a low of 60.4°F in January to a high of 93.3°F in June. Average monthly minimum temperatures ranged from a low of 37.5°F in December and January to a high of 66.8°F in July.

### **4.3 Modeling Meteorological Data**

#### **4.3.1 On-Site Data**

The modeling was based upon the on-site weather observations from the Rosemont monitoring site. The Rosemont monitoring site is located at the center of the proposed open pit at an elevation of 5,350 feet as shown in Figure 4.1. Parameters measured at the Rosemont monitoring site include ambient temperature at 2 meters, differential temperature between 2 and 10 meters, and wind speed and wind direction at 10 meters.

As stated above, monitoring began in April 2006 and is on-going. The data base, however, is not continuous as data between December 2006 and February 2007 were lost due to a data logger malfunction (see quarterly and audit reports submitted to the PCDEQ). The modeling will be conducted based upon 3 full years of on-site data, with missing data periods filled in with data from other years for the same time period.

Wind roses for the data collected in 2006-2007, 2007-2008 and 2008-2009 are presented in Figures 4.2, 4.3 and 4.4, respectively. The missing data for the December 2006 to February 2007 was filled in with data for the same period from the next year.

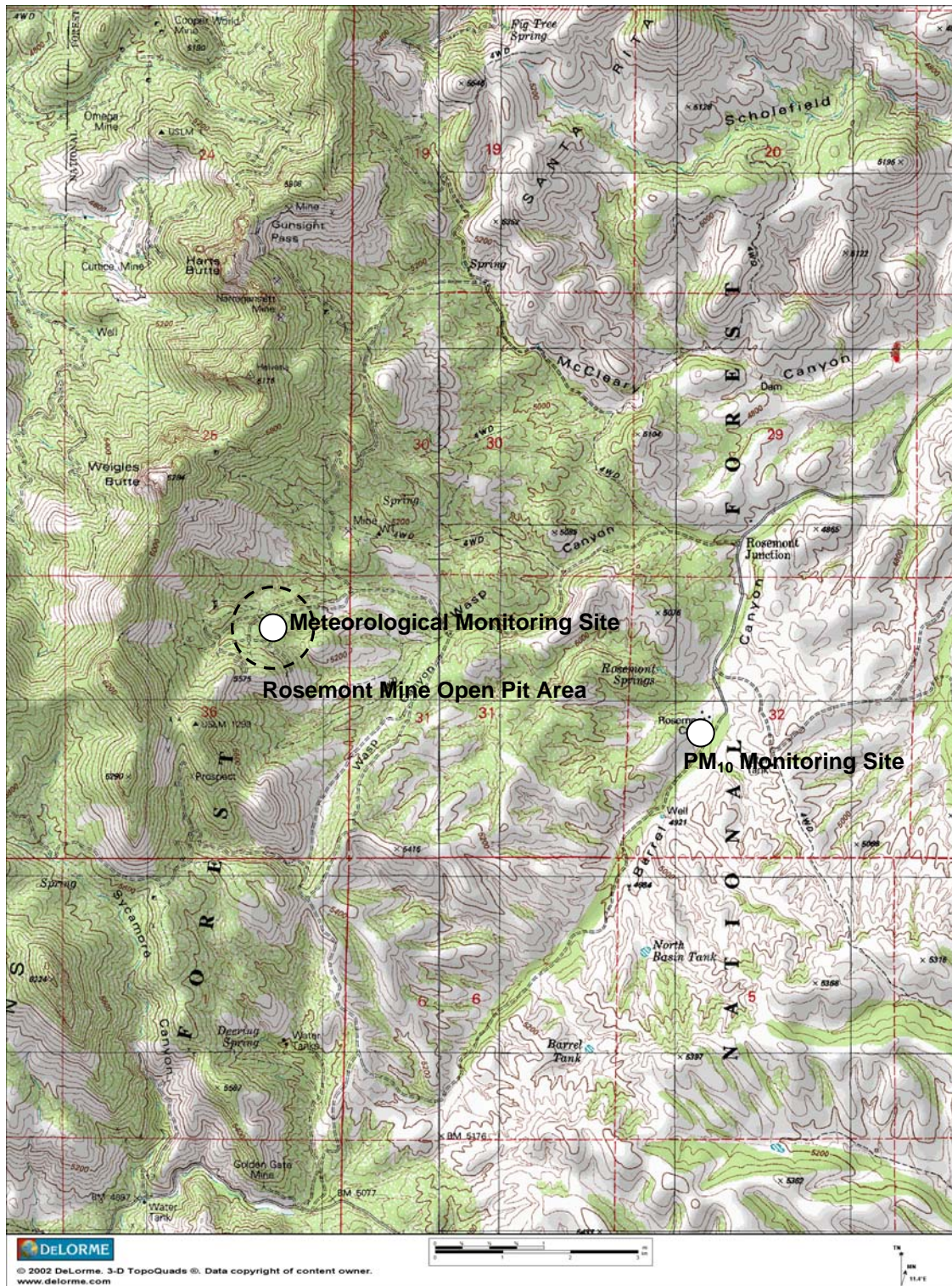
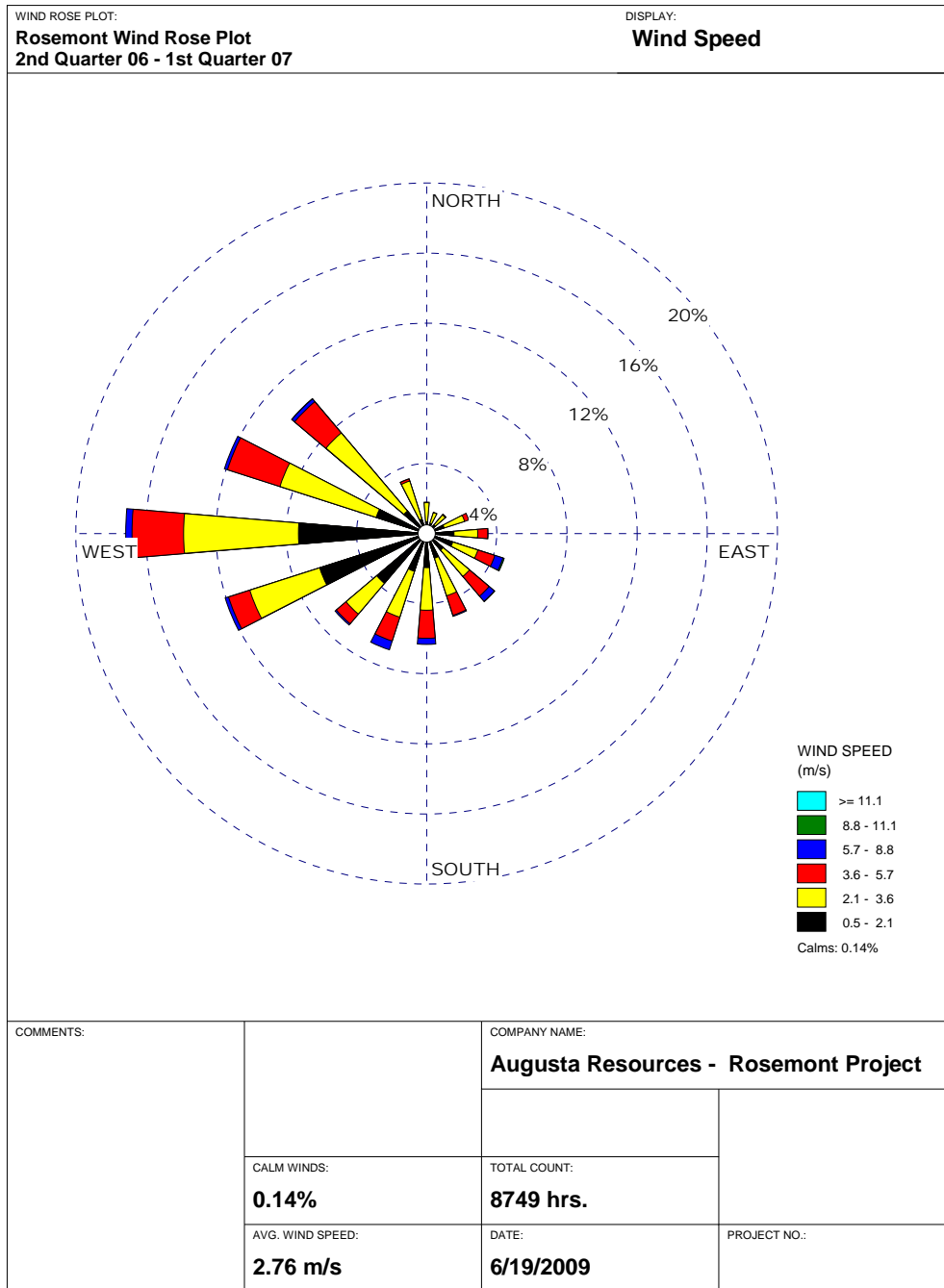
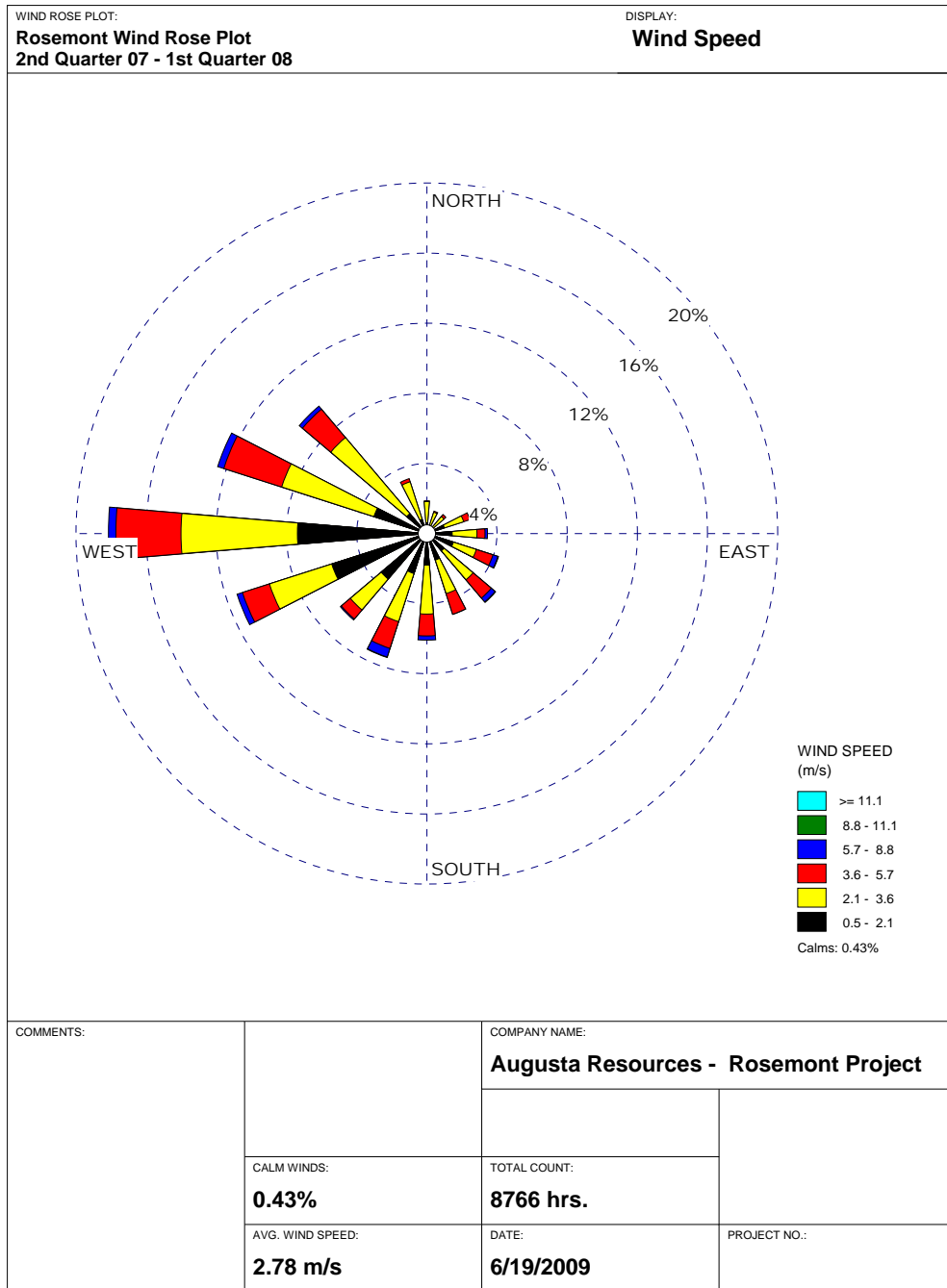


Figure 4.1 Topographic map showing location of the PM<sub>10</sub> and meteorological monitoring sites.

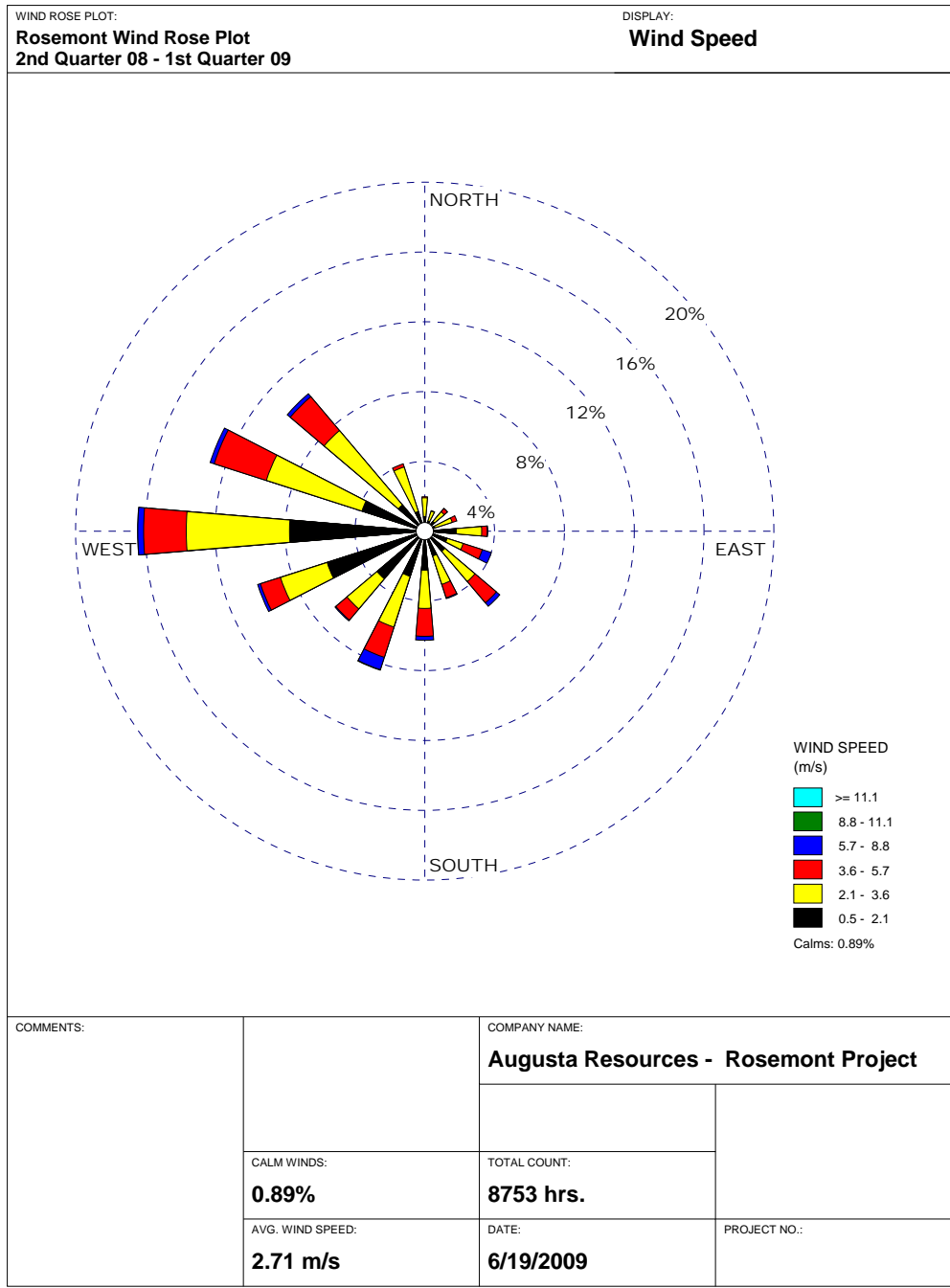


**Figure 4.2** Wind rose for the Rosemont meteorological station for the time period April 1, 2006 - March 31, 2007.



WRPLOT View - Lakes Environmental Software

**Figure 4.3** Wind rose for the Rosemont meteorological station for the time period April 1, 2007 - March 31, 2008.



WRPLOT View - Lakes Environmental Software

**Figure 4.4 Wind rose for the Rosemont meteorological station for the time period April 1, 2008 - March 31, 2009.**

#### **4.3.2 Sky Cover Data**

The modeling was conducted using the guideline model developed by the EPA in conjunction with the American Meteorological Society called the AMS/EPA Regulatory Model (AERMOD). AERMOD is explained further below. AERMOD requires parameters for determining boundary layer conditions which include opaque sky cover (or total sky cover). The Rosemont on-site surface measurements do not include sky cover data. Consequently, the concurrent sky cover data for the on-site surface measurements was obtained from the NWS Tucson Airport (WBAN 23160).

#### **4.3.3 Upper Air Data**

AERMOD also requires upper air data. Upper air data concurrent with the on-site data was obtained from the NWS Tucson Airport station (WBAN 23160). The NWS Tucson station is the closest NWS station with upper air data.

#### **4.3.4 Meteorological Data Processing for AERMOD**

The Rosemont on-site data and the NWS Tucson Airport surface and upper air data were combined into AERMOD ready surface and upper air input files using the EPA AERMET computer program (*User's Guide for the AERMOD Meteorological Preprocessor (AERMET)*, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions, Monitoring, and Analysis Division, Research Triangle Park, North Carolina, EPA-454/B-03-002, November 2004). The AERMET program serves as the meteorological preprocessor for AERMOD. AERMET is designed to combine and quality control on-site and NWS surface and upper air data for use by AERMOD. All AERMET input and output processing files have been provided on the accompanying Modeling Files CD.

## 5. MODELING ANALYSIS DESIGN

### 5.1 Model Selection

Evaluation of the maximum ambient air quality impacts from the proposed Rosemont Project were conducted using AERMOD (*User's Guide for the AMS/EPA Regulatory Model – AERMOD*, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions, Monitoring, and Analysis Division, Research Triangle Park, North Carolina, EPA-454/B-03-001, September 2004). Applied Environmental Consultants, Inc. (AEC) uses the commercial version of AERMOD from BEE-Line Software (P.O. Box 7348, Asheville, NC 28802, (828) 628-0636). Since the Saguaro East National Forrest lies within 50 KM of the proposed Rosemont Project, based on the FLAG 2010 guidance, the Forrest Services recommended using AERMOD to evaluate the ambient air quality impacts at this Class I area.

### 5.2 Model Input Defaults/Options

The recommended regulatory default options for AERMOD as stated in the *Guidelines* were used for the model runs. The regulatory default options in AERMOD include the use of stack-tip downwash, incorporation of the effects of elevated terrain, and calms and missing data processing routines.

The missing data processing routines that are included in AERMOD allow the model to handle missing meteorological data in the processing of short term averages. The model treats missing meteorological data in the same way as the calms processing routine (i.e., it sets the concentration values to zero for that hour and calculates the short term averages according to EPA's calms policy, as set forth in the Guideline). Calms and missing values are tracked separately for the purpose of flagging the short term averages. An average that includes a calm hour is flagged with a 'c', an average that includes a missing hour is flagged with an 'm', and an average that includes both calm and missing hours is flagged with a 'b'. If the number of hours of missing meteorological data exceeds 10 percent of the total number of hours for a given model run, a cautionary message is written to the main output file, and the user is referred to Section 5.3.2 of *On-site Meteorological Program Guidance for Regulatory Modeling Applications* (EPA, 1987).

The Ozone Limiting method (OLM), which is a non-regulatory option in AERMOD was used to evaluate the impact of NO<sub>2</sub> in the near vicinity of Rosemont Project as well as at the Saguaro East National Park. The OLM involves an initial comparison of the estimated maximum NO<sub>x</sub> concentration and the ambient ozone concentration to determine the limiting factor in the formation of NO<sub>2</sub>. If the ozone concentration is greater than the maximum NO<sub>x</sub> concentration, total conversion is assumed. If the NO<sub>x</sub> concentration is greater than the ozone concentration, the formation of NO<sub>2</sub> is limited by the ambient ozone concentration. The method also uses a correction factor to account for in-stack conversion of NO<sub>x</sub> to NO<sub>2</sub>.

EPAs guidance "*Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard, March 01, 2011*" recommends use of an in-stack NO<sub>2</sub>/NO<sub>x</sub> ratio of 0.5, but allows different ratios to be used provided data justifies use. Lower NO<sub>2</sub>/NO<sub>x</sub> ratios for boilers, blasting and compression ignition internal combustion engines utilized have been recommended by regulatory agencies including the Texas National Resource

Conservation Commission and San Joaquin Valley Air Pollution Control District. An appropriate ratio is currently being evaluated. In the absence of a final NO<sub>2</sub>/NO<sub>x</sub> ratio, values of 0.5, 0.1 and 0.05 were used in the modeling analysis. The value of 0.1 was the default value in the addendum to the AERMOD user guide “*Addendum: User’s Guide for the AMS/EPA Regulatory Model AERMOD, EPA-454/B-03-001, September 2004*”. The OLM method requires hourly background ozone values to calculate the conversion of NO<sub>2</sub> to NO<sub>x</sub>. Hourly background Ozone values from the Chiricahua National Monument IMPROVE site were used, as this was the closest and most representative of the conditions at the proposed site. The OLMGROUP option was also specified which essentially models all the plumes as one combined plume.

### **5.3 Rural/Urban Classification**

For modeling purposes, the rural/urban classification of an area is determined by either the dominance of a specific land use or by population data in the study area. Generally, if the sum of heavy industrial, light-moderate industrial, commercial, and compact residential (single and multiple family) land uses within a three kilometer radius from the facility are greater than 50%, the area is classified as urban. Conversely, if the sum of common residential, estate residential, metropolitan natural, agricultural rural, undeveloped (grasses), undeveloped (heavily wooded) and water surfaces land uses within a three kilometer radius from the facility are greater than 50%, the area is classified as rural. Alternatively, if the population is greater than 750 persons per km<sup>2</sup>, the area is also classified as urban.

As shown in the aerial photograph in Figure 1.1 and the topographic map in Figure 4.1, rural land use in the area surrounding the proposed Rosemont Project is much greater than 50%. Thus, the rural classification was used in the modeling.

### **5.4 Receptor Network**

Following the *ADEQ Guidance*, the receptor grid (See Figure 5.1) consisting of the following was modeled:

- receptors spaced at 25 meters along the Process Area Boundary (PAB);
- receptors spaced at 100 meters from the PAB to 1 kilometer;
- receptors spaced at 500 meters from 1 kilometer to 5 kilometers;
- receptors spaced at 1000 meters from 5 kilometers to 10 kilometers.

Based on the recommendations by the Forrest Services, a second receptor grid consisting of receptors at the Saguaro East National Park was also modeled (see Figure 5.2). These receptors were obtained from the Class I Area Receptor Database developed by the Forrest Services.

## **5.5 Receptor Elevations**

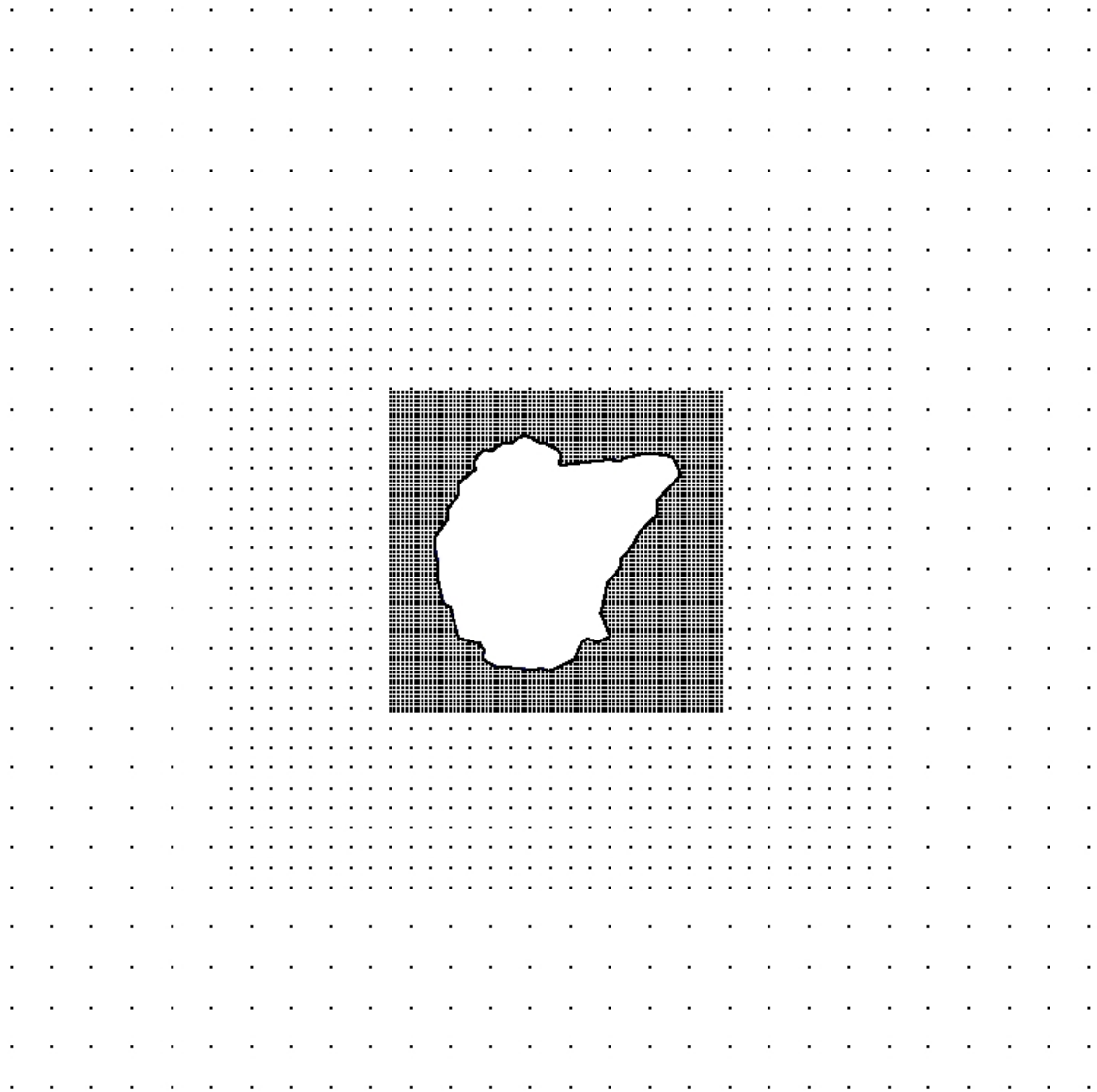
Receptor elevations were determined from National elevation dataset (NED) distributed by the USGS, and were based on North American Datum 1927 (NAD27). This dataset has a resolution of 1/3 arc-second (or approximately 10 meters).

The NED data was processed with AERMAP (*User's Guide for the AERMOD Terrain Preprocessor (AERMAP)*, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions, Monitoring, and Analysis Division, Research Triangle Park, North Carolina, EPA-454/B-03-003, October 2004). AERMAP, like AERMET, is a preprocessor program which was developed to process terrain data in conjunction with a layout of receptors and sources to be used in AERMOD. For complex terrain situations, AERMOD captures the essential physics of dispersion in complex terrain and therefore, needs elevation data that convey the features of the surrounding terrain. In response to this need, AERMAP first determines the base elevation at each receptor. AERMAP then searches for the terrain height and location that has the greatest influence on dispersion for each individual receptor. This height is referred to as the hill height scale. Both the base elevation and hill height scale data are produced by AERMAP as a file or files which are then inserted into an AERMOD input control file. The files produced by AERMAP for the modeling have been provided in the accompanying Modeling Files CD.

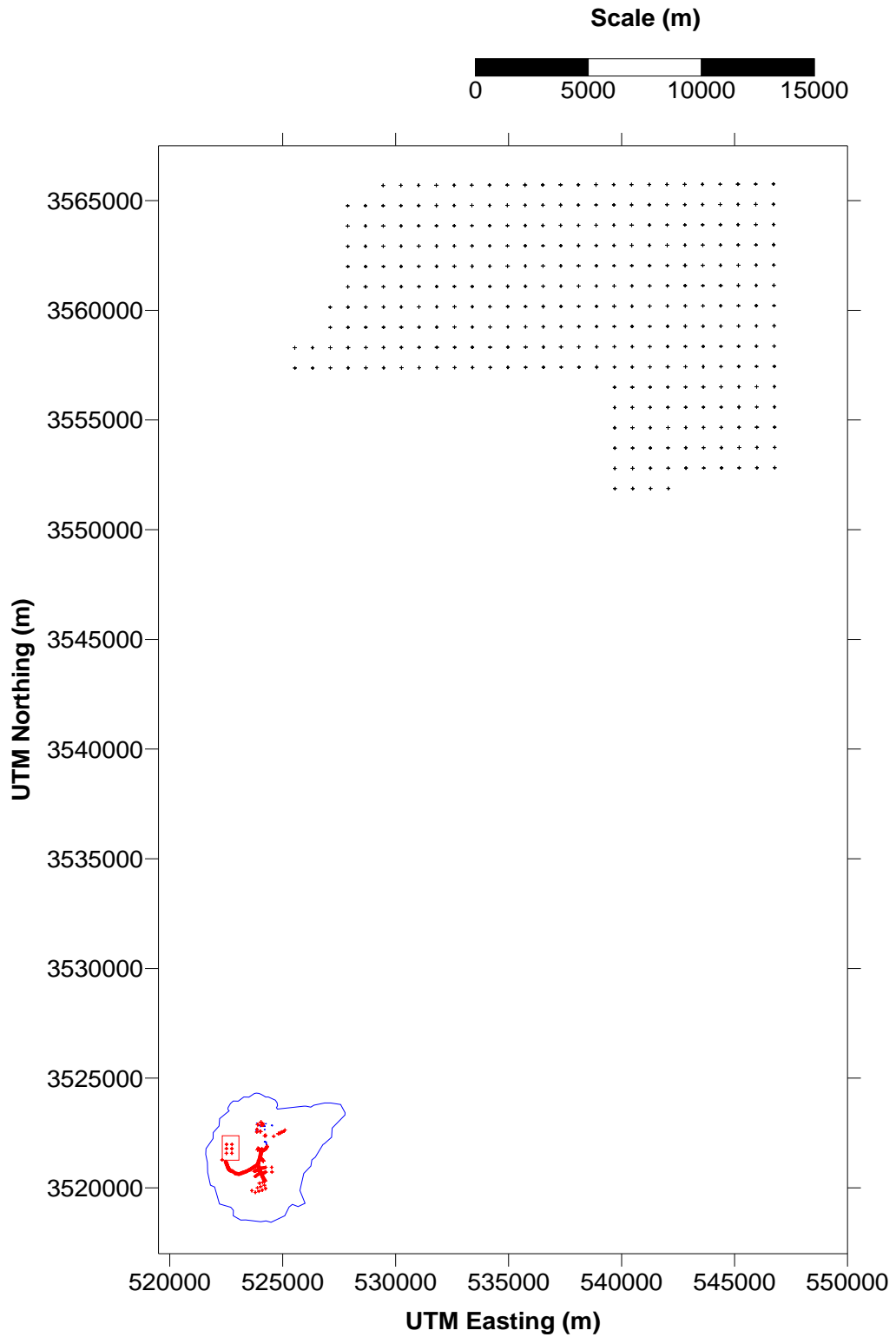
## **5.6 Modeling Domain**

The AERMAP terrain preprocessor requires the user to define a modeling domain. The modeling domain is defined as the area that contains all the receptors and sources being modeled with a buffer to accommodate any significant terrain elevations. Significant terrain elevations include all the terrain that is at or above a 10% slope from each and every receptor.

BEE-Line's software automatically calculates the modeling domain based on the receptor grid being used and identifies each 7.5-minute DEM quadrangle that must be used in AERMAP to meet the 10% slope requirement. Since NED data provides higher resolution, the NED data covering the suggested DEM quadrangles was used for modeling. A listing of the DEM quadrangles defining the modeling domain for the modeling has been provided in Appendix A1.



**Figure 5.1 Receptor Grid Network developed for Rosemont Project modeling Analysis**



**Figure 5.2 Receptor Network for evaluating Impacts at the Saguaro East National Park**

## 5.7 Surface Characteristics

Surface conditions at the measurement site, referred to as the surface characteristics, influence the boundary layer parameter estimates generated by AERMOD. Obstacles to the wind flow, the amount of moisture at the surface, and reflectivity of the surface all affect the boundary layer estimates. These influences are quantified through the surface albedo, Bowen ratio and roughness length, and are introduced into AERMOD through the files generated by AERMET.

The albedo is the fraction of total incident solar radiation reflected by the surface back to space without absorption. Typical values range from 0.1 for thick deciduous forests to 0.90 for fresh snow. The daytime Bowen ratio, an indicator of surface moisture, is the ratio of the sensible heat flux to the latent heat flux and is used for determining planetary boundary layer parameters for convective conditions. While the diurnal variation of the Bowen ratio may be significant, the Bowen ratio usually attains a fairly constant value during the day. Midday values of the Bowen ratio range from 0.1 over water to 10.0 over desert. The surface roughness length is related to the height of obstacles to the wind flow and is, in principle, the height at which the mean horizontal wind speed is zero. Values range from less than 0.001 m over a calm water surface to 1 m or more over a forest or urban area.

The values for surface albedo, Bowen ratio and roughness length can be entered into the AERMET preprocessor based on frequency and sector. The frequency defines how often these characteristics change, or alternatively, the period of time over which these characteristics remain constant. The frequency can be annual, seasonal (winter [December, January, February], spring [March, April, May], summer [June, July, August], fall [September, October, November]), or monthly, corresponding to 1, 4, or 12 periods, respectively.

Sectors refer to the number of non-overlapping sectors into which the 360° compass is divided. A minimum of 1 and a maximum of 12 sectors can be specified (i.e., 1 sector of 360°, up to 12 non-overlapping sectors of 30°). Thus, AERMET allows the values for surface albedo, Bowen ratio and roughness length to be entered annually, seasonally or monthly for each sector, the number of which can range between 1 and 12. As shown in Figure 4.1, the area surrounding the proposed Rosemont Project is undeveloped, pinyon-juniper mountainous terrain in all directions. Consequently, surface characteristics will be entered for a single sector.

The EPA has developed a computer program called AERSURFACE to aid users in obtaining realistic and reproducible surface characteristic values for the albedo, Bowen ratio, and surface roughness length for input to AERMET. The program uses publicly available national land cover datasets and look-up tables of surface characteristics that vary by land cover type and season.

The surface characteristics that were used in the modeling were entered on a seasonal basis and are listed in Table 5.1. The values listed in Table 5.1 were generated by AERSURFACE and these values were used in the modeling analysis.

<b>Table 5.1 Surface Characteristics used in the AERMOD Modeling</b>				
Surface Characteristic *	Spring	Summer	Autumn	Winter
Albedo	0.25	0.25	0.25	0.25
Bowen Ratio	2.88	3.76	5.70	5.70
Surface Roughness	0.153	0.153	0.153	0.152

\* Generated by AERSURFACE, dated 08009  
Center UTM Easting (meters): 522896.0; Center UTM Northing (meters): 3521802.0; UTM Zone: 12, Datum: NAD83  
Study radius (km) for surface roughness: 1.0  
Airport? N, Continuous snow cover? N  
Surface moisture? Average, Arid region? Y, Month/Season assignments? Default  
Late autumn after frost and harvest, or winter with no snow: 12 1 2  
Winter with continuous snow on the ground: 0  
Transitional spring (partial green coverage, short annuals): 3 4 5  
Midsummer with lush vegetation: 6 7 8; Autumn with un-harvested cropland: 9 10 11

## 5.8 Source Characterization

A preliminary description of the planned equipment and emission generating processes at the Rosemont Project can be found in the previously referenced *Mine Plan of Operations*. A plan view map depicting the facility layout by Year 5 is presented in Figure 5.2. A preliminary plan view of the ancillary operations, to include locations of the primary crusher and flotation operations, is presented in Figure 5.3. A detailed listing of all emission sources and their corresponding modeling input release parameters and emission rates is provided in Appendix A2. A general description of how each source type will be treated is presented below.

### 5.8.1 Point Sources

Point sources at the Rosemont Project will include dust collectors, hot water heaters, and emergency generator(s). Emissions from these sources were modeled as individual point sources. Dust Collectors or baghouses were set to ambient exit temperatures and therefore, were modeled using a stack temperature of 0°K per ADEQ guidance, which forces the model to use the ambient temperature as the exit temperature. Stack parameters for the point sources were based on design parameters and/or conservative estimated values. Particulate emissions from the emergency generators were not included in the PM<sub>10</sub> modeling as most other operations would be shut down if the generators are needed. Gaseous emissions from these sources were also not included in the gaseous modeling runs. The Point source emissions were modeled using the particle size distribution shown in Table A.5, Appendix A of the modeling protocol (Oct, 2009).

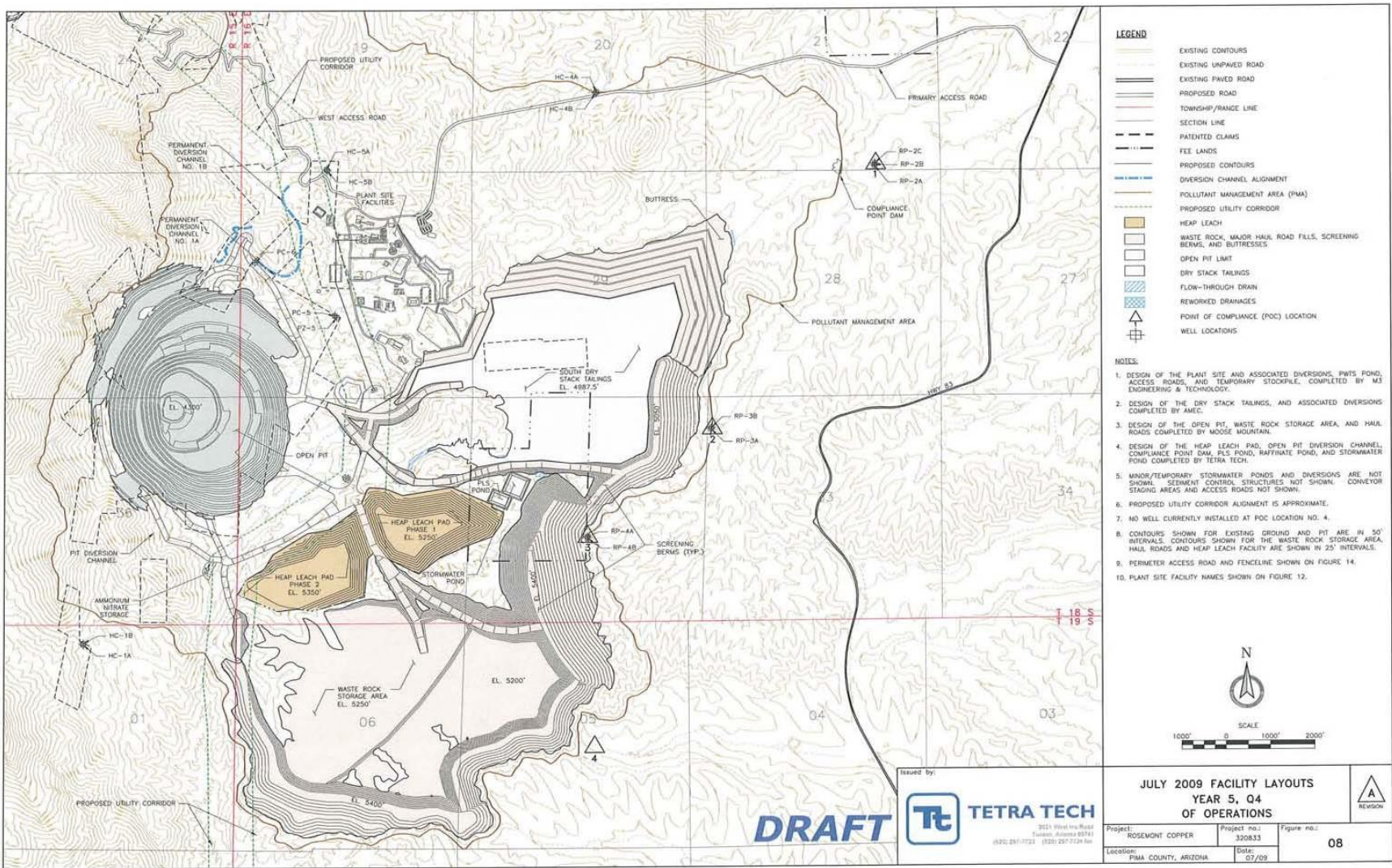


Figure 5.3 Plan view map of Operations depicting facility layout by Year 5.

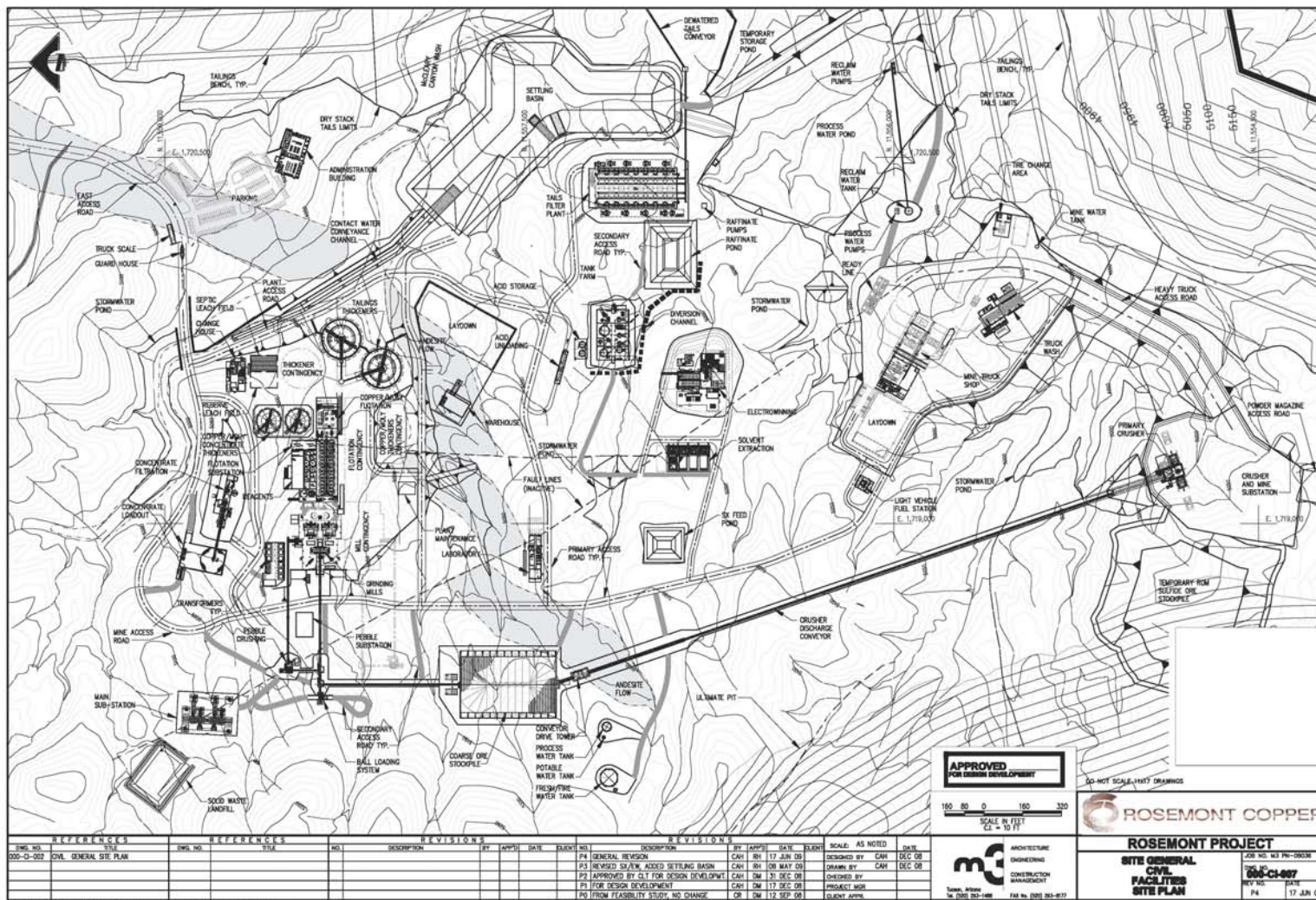


Figure 5.4 Plan view map of Operations showing updated ancillary operation locations for the Rosemont Project.

## 5.8.2 Volume Sources

### 5.8.2.1 Road Sources

A refined road network was developed to depict the anticipated haul truck routes and dumping locations during the year of the mine plan with the estimated greatest emissions, which was the basis of the emissions inventory that was used for all of the modeling. Emissions due to haul road and general plant traffic on the unpaved road network were modeled as volume sources and the modeling parameters were based on guidance from AERMOD User's Guide and recommendations from the Forrest Services. The modeling parameters were set as follows:

- the volume height was set to be equal to twice the height of the vehicles generating the emissions;
- the initial vertical dimension was set to be equal to the volume height divided by 2.15;
- the release height was set to be equal to half of the volume height; and
- the initial lateral dimension was set to the width of the road divided by 2.15. The road was further divided into two lanes representing 2-way traffic.

The majority of emissions on the haul road network were due to large haul trucks. The height of the Haul Trucks obtained from the manufacturers data was 6.6 meters (21.6 feet). Thus, for each road source the volume height was set to 13 meters (twice the height of the vehicles generating the emissions rounded to the nearest meter), the initial vertical dimension was set to 6.05 meters (volume height divided by 2.15), and the release height was set to 6.5 meters (half of the volume height).

The road width was estimated to be 35 meters. Thus, the initial lateral dimension for each volume was set to 16.3 meters (width of 35 meters divided by 2.15). The road sources were placed along the road network at approximately 35 meter intervals. According to the mine plan, during Year 1 of operations, 78% of the haul emissions would be generated outside the pit whereas during Year 5, 58% would be generated outside the pit. These distributions were taken into account while spreading out haul road emissions generated by the haul trucks among the open pit source and the road sources.

The emissions from dumping to the sulfide ore stockpile, waste rock stockpiles and to the leach pad were also modeled as volume sources. The height of the Haul Trucks obtained from the manufacturers data was 6.6 meters (21.6 feet). Thus, for each source representing dumping, the volume height was set to 13 meters (twice the height of the vehicles generating the emissions rounded to the nearest meter), the initial vertical dimension was set to 6.05 meters (volume height divided by 2.15), and the release height was set to 6.5 meters (half of the volume height). The width of the trucks (simulating the dump width) obtained from the manufacturers data was 8.7 meters (28.5 feet). Thus the initial horizontal dimension was set to 4 meters (volume width divided by 2.15). The Haul Road emissions were modeled using the particle size distribution shown in Table A.1, Appendix A of the modeling protocol (Oct, 2009).

### **5.8.2.2 Other Fugitive Particulate Sources**

Other fugitive particulate emission sources that were modeled as volume sources include the following:

- Fugitive emissions from truck unloading at the primary crusher were represented by a single volume source. The side length was set to 12 meters (approximate width of dump pocket) and therefore, the initial horizontal dimension was set to 1.91 meters ( $12/4.3$ ). The vertical length was set to 1 meters (vertical drop of dump pocket). Consequently, the initial vertical dimension was set to 0.47 meters ( $1/2.15$ ) and the release height was set to 0 meters (dump pocket is at grade level).
- Fugitive emissions due to wind erosion from the sulfide ore stockpile were represented by a single volume source. The side length obtained from the map was 318 meters (average width of the stockpile) and therefore the initial horizontal dimension was set to 74 meters ( $318/4.3$ ). The vertical was set to 12 meters (average height of stockpile). Consequently, the initial vertical dimension was set to 5.6 meters ( $12/2.15$ ) and the release height was set to 6 meters (half of the volume height of 12 meters).
- Fugitive emissions from conveyor transfer points were represented by single volume sources. The side length was set to 2 meters (approximate width of the conveyors) and therefore, the initial horizontal dimension was set to 0.5 meters ( $2/4.3$ ). The vertical length was set to 3 meters (approximate height of material drops from the conveyors). Consequently, the initial vertical dimension was set to 0.7 meters ( $3/4.3$ ). The release height was set to 3 meters (assumed height of conveyors, except for the conveyors feeding the coarse ore stockpile). The release heights for these sources, was set to the actual height of the conveyor at the top of the stockpile.

The above material transfer emissions were modeled using the particle size distribution shown in Table A.2, Appendix A of the modeling protocol (Oct, 2009).

### **5.8.2.3 Gaseous Emissions Due to Blasting**

The gaseous emissions due to blasting in the pit were modeled as volume sources. The fugitive gaseous emissions due to blasting in the pit were equally spaced at 250 meter intervals (arbitrarily selected) over the pit area. The side length of each volume source was set at 61.0 meters (represents the average width of a blast) and therefore, the initial horizontal dimension was set to 14.2 meters ( $61.0/4.3$ ).

A typical blast can send emissions 30 meters into the air. Consequently, a conservative vertical dimension of 20 meters was assigned to the volume sources representing the blasting emissions. Thus the initial vertical dimension of each source was set to 9.3 meters ( $20/2.15$ ) and the release height was set to 10 meters (1/2 of the vertical dimension of 20 meters). The base elevation for the volume sources in the pit was set to the average elevation between the lowest and highest elevation of the terrain defining the bottom and top of the pit, based on the assumption that these emissions must rise above the walls of the pit before being dispersed downwind. Since the Rosemont Project

anticipates blasting to occur only between 12 PM and 4 PM, the variable emission rate option HROFDY in AERMOD was used to model the emissions between the above 4 hour interval every day. The PM<sub>10</sub> emissions from blasting were also modeled as volume sources and used the particle size distribution shown in Table A.3, Appendix A of the modeling protocol (Oct, 2009). For evaluating the 1-hr averaged impacts from NO<sub>2</sub>, SO<sub>2</sub> and CO, blasting emissions were set to occur every hour between 12 PM to 4 PM. Test modeling runs indicated that the maximum impact due to blasting emissions occurred at 4 PM every day. Therefore for all impact evaluations greater than the 1-hr averaged impacts, blasting was set to occur at 4 PM every day. The HROFDY variable emissions rate option in AERMOD was used for this.

### **5.8.3 Open Pit Source**

Fugitive particulate emissions from the open pit at the Rosemont Project were modeled using the open pit source model as defined by the AERMOD model (only particulate emissions are considered with the open pit source model). The open pit source parameters, easterly length, northerly length and volume, were based on the length and width dimensions of the rectangle drawn to simulate the pit shape in the model and the anticipated depth of the pit in the worst case year. The release height was set to zero. The Year 5 mine plan (see Figure 5.2), shows a berm developed on the east and south side of the process area boundary. This 150 foot berm essentially covers the waste dump and leach pads on the east and south. Therefore the emissions generated at the Leach Pad and Waste Dump were modeled as a second pit with a depth of 150 feet.

The open pit source option in the AERMOD model requires particle size distribution data in the form of the mass-mean particle diameter, mass weighted size distribution, and particle density. Table A.1, Appendix A of the modeling protocol (Oct, 2009) shows the particle size distribution developed for Haul Road Emissions. This distribution was used for the open pit source since a majority of the emissions in the pit are Haul Road Emissions. A particle density of 2.44 gm/cm<sup>3</sup> was used for the modeling analysis.

### **5.8.4 Plume Depletion**

One other option in the AERMOD model requires particle size data as explained above in Section 5.8.3. This option is known as DDEP, which specifies that dry deposition flux values will be calculated. This option was used to account for the dry removal (deposition) mechanisms. To shorten run-times, the model was initially run with the full receptor network, and only those receptors that exceeded a certain threshold concentration value which when added to background concentrations would equal the applicable standard (117 µg/m<sup>3</sup> for PM<sub>10</sub> and 25 (µg/m<sup>3</sup> for PM<sub>2.5</sub>) were modeled with the DDEP option.

### **5.8.5 Tail Pipe Emissions**

Tail pipe emissions from mobile sources were distributed among road emission sources and the open pit source. The amount of emissions assigned to each individual road segment and to the pit was based on upon an evaluation of the vehicle miles travelled (VMT) along each road segment and inside the pit.

## **5.9        *Building Downwash***

Building downwash effects were evaluated by incorporating the appropriate building/structure dimensions into the AERMOD input files using BEE-Line's commercial version of EPA's Building Profile Input Program for PRIME (BPIPPRM) software. The BPIPPRM program is EPA approved and includes the latest EPA building downwash algorithms. The downwash files generated by BPIPPRM program have been provided in the accompanying Modeling Files CD.

## **6. EMISSIONS INVENTORY**

Emissions from Rosemont operations will result from process equipment and mining operations. Process equipment was modeled at maximum capacity. Emissions from mining were based upon the mining rate and haul truck travel necessary to transport the ore and waste from the pit to the primary crusher and the waste rock storage area. The emission inventories for various years of the mine are provided in Appendix H of the document titled "*Emission Inventory Information for Years 1, 5, 10, 15 and 20*" being submitted along with this report. As stated in the modeling protocol submitted in Oct 2009, Year 1 and Year 5 emission inventories were modeled. Year 5 projects the highest particulate emissions.

### **6.1 Annual Criteria Pollutant Emissions Modeling**

Annual impacts of particulate and gaseous emissions were based upon emissions calculated using the average daily process rates for years 1 and 5.

### **6.2 Short-Term Criteria Pollutant Emissions Modeling**

Short-term impacts (1-hour, 3-hour, 8-hour and 24-hour) were based upon the emissions calculated using the maximum daily process rates for years 1 and 5.

## 7. EVALUATION OF DISPERSION MODELING RESULTS

The dispersion modeling presented herein includes the calculation of ambient concentrations for various averaging periods. Emissions used to calculate such concentrations for the NAAQS analysis correspond to the maximum values of each averaging period.

### 7.1 *Demonstration of Protection of NAAQS at the Fence line and Near Vicinity*

Demonstration of protection of NAAQS was accomplished by comparison of the maximum impacts to the applicable standards. The maximum ambient concentration for short term averaging periods (24-hour or less) is defined as the sum of the 4<sup>th</sup> (for PM10) and 2<sup>nd</sup> (for other pollutants) highest modeled concentration and the respective background concentration. For the annual averaging period, the maximum ambient concentration equals the highest modeled annual concentration plus the measured annual background concentration. The modeling results demonstrating the protection of the NAAQS at the fence line and near vicinity of the Rosemont Project for Year 1 and Year 5 are summarized in Table 7.1 and Table 7.2. The receptor locations of each of the modeled maximum criteria pollutant concentrations are shown in Figures 7.1 and 7.2.

#### 7.1.1 CO Concentrations

For the Year 1 modeling, the predicted highest 2<sup>nd</sup> high 1-hour and 8-hour CO concentrations were 1394.9  $\mu\text{g}/\text{m}^3$  and 375.2  $\mu\text{g}/\text{m}^3$ , respectively. These predicted concentrations added to the 1-hour and 8-hour CO background concentrations of 582.0  $\mu\text{g}/\text{m}^3$  and 582.0  $\mu\text{g}/\text{m}^3$ , yield maximum ambient concentrations of 1976.9  $\mu\text{g}/\text{m}^3$  and 957.2  $\mu\text{g}/\text{m}^3$  respectively. Similarly, for the Year 5 modeling, the maximum 1-hour and 8-hour ambient concentrations were 1782.6  $\mu\text{g}/\text{m}^3$  and 875.8  $\mu\text{g}/\text{m}^3$  respectively. The receptor locations at which these concentrations occurred are shown in Figure 7.1 and 7.2. These concentrations are less than the applicable 1-hour and 8-hour CO NAAQS of 40,000  $\mu\text{g}/\text{m}^3$  and 10,000  $\mu\text{g}/\text{m}^3$  respectively.

#### 7.1.2 NO<sub>2</sub> Concentrations

Although emissions are estimated in terms of total NO<sub>x</sub>, only NO<sub>2</sub> has a NAAQS. NO<sub>x</sub> emissions from fuel combustion sources are primarily NO (nitrous oxide) which gradually converts to NO<sub>2</sub> over time. Comparison of the maximum predicted NO<sub>x</sub> concentrations with the NAAQS for NO<sub>2</sub> thus represents a very conservative method of demonstrating protection of NAAQS.

Modeling for the 1-hr NO<sub>2</sub> standard was conducted under four scenarios:

- Scenario 1 one included emissions from sources subject to the air quality permitting requirements of the Clean Air Act. This included emissions from all process sources such as boilers and blasting and was based on a NO<sub>2</sub>/NO<sub>x</sub> ratio of 0.5.
- Scenarios 2, 3, and 4 included emissions from all sources of NO<sub>x</sub> emissions at NO<sub>2</sub>/NO<sub>x</sub> ratios of 0.5, 0.1, and 0.05 respectively.

Under Scenario 1, the highest predicted annual NO<sub>2</sub> concentration for the Year 1 modeling was 0.54  $\mu\text{g}/\text{m}^3$  whereas the 98<sup>th</sup> percentile 1-hour NO<sub>2</sub> concentration for Scenario 1 was 120.6  $\mu\text{g}/\text{m}^3$ . The

predicted highest annual concentration and 98<sup>th</sup> percentile 1-hour concentration added to the annual background concentration of 4.0 µg/m<sup>3</sup> and 1-hour background concentration of 24.5 µg/m<sup>3</sup> yields a maximum annual and 1-hour ambient concentration of 4.54 µg/m<sup>3</sup> and 145.1 µg/m<sup>3</sup> respectively. Similarly, the Year 5 modeling yields a maximum annual and 1-hour ambient concentration of 43.9 µg/m<sup>3</sup> and 145.1 µg/m<sup>3</sup> respectively. The receptor location at which these concentrations occurred are shown in Figure 7.1 and 7.2. These concentrations are less than the applicable 1-hr and annual NO<sub>2</sub> NAAQS of 188.6 µg/m<sup>3</sup> and 100 µg/m<sup>3</sup>.

The predicted 1-hour 98<sup>th</sup> percentile NO<sub>2</sub> concentrations for Year 1 under Scenarios 2, 3, and 4 were 752.3 µg/m<sup>3</sup>, 232.8 µg/m<sup>3</sup>, and 171.2 µg/m<sup>3</sup> respectively. Year 5 Results under Scenarios 2, 3, and 4 were 630.7 µg/m<sup>3</sup>, 215.4 µg/m<sup>3</sup> and 166.3 µg/m<sup>3</sup> respectively. The predicted annual concentrations for Year 1 under Scenarios 2, 3 and 4 were 49.2 µg/m<sup>3</sup>, 30.8 µg/m<sup>3</sup> and 28.5 µg/m<sup>3</sup> respectively. Year 5 results under scenarios 2, 3 and 4 were 43.9 µg/m<sup>3</sup>, 29.9 µg/m<sup>3</sup> and 27.5 µg/m<sup>3</sup> respectively.

The large differences in predicted 1-hour NO<sub>2</sub> concentrations for different NO<sub>2</sub>/NO<sub>x</sub> ratios demonstrates the necessity of selecting a representative value for this parameter. The evaluation process for this selection is in progress.

### **7.1.3 PM<sub>10</sub> Concentrations**

The predicted highest 4<sup>th</sup> high 24-hour PM<sub>10</sub> concentration for the Year 1 modeling was 111.9 µg/m<sup>3</sup> whereas the highest annual concentration was 26.5 µg/m<sup>3</sup>. These predicted concentrations added to the 24-hour and annual PM<sub>10</sub> background concentrations of 33.0 µg/m<sup>3</sup> and 11.9 µg/m<sup>3</sup>, yield maximum ambient concentrations of 144.9 µg/m<sup>3</sup> and 38.4 µg/m<sup>3</sup>, respectively. Similarly the Year 5 modeling yields a 24-hr and annual maximum ambient concentration of 135.9 µg/m<sup>3</sup> and 35.9 µg/m<sup>3</sup> respectively. The receptor locations at which these concentrations occur are shown in Figure 7.1 and 7.2. These concentrations are less than the applicable 24-hour and annual PM<sub>10</sub> NAAQS of 150 µg/m<sup>3</sup> and 50 µg/m<sup>3</sup> respectively.

### **7.1.4 SO<sub>2</sub> Concentrations**

The highest 2<sup>nd</sup> high 3-hour and 24-hour SO<sub>2</sub> concentrations for the Year 1 modeling were 7.75 µg/m<sup>3</sup> and 1.2 µg/m<sup>3</sup>, respectively. The 99<sup>th</sup> percentile 1-hour SO<sub>2</sub> concentration and highest annual concentration were 17.2 µg/m<sup>3</sup> and 0.1 µg/m<sup>3</sup> respectively. These concentrations added to the 1-hour, 3-hour, 24-hour and annual SO<sub>2</sub> background concentrations of 31.9 µg/m<sup>3</sup>, 43.0 µg/m<sup>3</sup>, 17.0 µg/m<sup>3</sup> and 3.0 µg/m<sup>3</sup>, yield maximum ambient concentrations of 49.1 µg/m<sup>3</sup>, 50.7 µg/m<sup>3</sup>, 18.2 µg/m<sup>3</sup> and 3.1 µg/m<sup>3</sup> respectively. Similarly, the Year 5 modeling yields a 1-hour, 3-hour, 24-hour and annual maximum ambient concentration of 49.1 µg/m<sup>3</sup>, 50.7 µg/m<sup>3</sup>, 18.1 µg/m<sup>3</sup> and 3.1 µg/m<sup>3</sup> respectively. The receptor locations at which these concentrations occurred are shown in Figure 7.1 and 7.2. These concentrations are less than the applicable 1-hour, 3-hour, 24-hour and annual SO<sub>2</sub> NAAQS of 196 µg/m<sup>3</sup>, 1,300 µg/m<sup>3</sup>, 365 µg/m<sup>3</sup>, and 80 µg/m<sup>3</sup> respectively.

### **7.1.5 PM<sub>2.5</sub> Concentrations**

The three year average of the highest high 24-hr and annual concentration for the Year 1 modeling were 18.2  $\mu\text{g}/\text{m}^3$  and 4.3  $\mu\text{g}/\text{m}^3$  respectively. These predicted concentrations added to the 24-hour and annual PM<sub>2.5</sub> background concentrations of 9.7  $\mu\text{g}/\text{m}^3$  and 3.6  $\mu\text{g}/\text{m}^3$ , yield maximum ambient concentrations of 27.9  $\mu\text{g}/\text{m}^3$  and 7.9  $\mu\text{g}/\text{m}^3$  respectively. Similarly the Year 5 modeling yields a 24-hr and annual maximum ambient concentration of 29.2  $\mu\text{g}/\text{m}^3$  and 7.4  $\mu\text{g}/\text{m}^3$  respectively. The receptor locations at which these concentrations occur are shown in Figure 7.1 and 7.2. These concentrations are less than the applicable 24-hour and annual PM<sub>10</sub> NAAQS of 35  $\mu\text{g}/\text{m}^3$  and 15  $\mu\text{g}/\text{m}^3$  respectively.

## **7.2 Demonstration of Protection of NAAQS at the Saguaro East National Park**

The modeling results demonstrating the protection of the NAAQS at the Saguaro East National Park for Year 1 and Year 5 are summarized in Table 7.3 and Table 7.4. The receptor locations of each of the modeled maximum criteria pollutant concentrations are shown in Figures 7.3 and 7.4.

### **7.2.1 CO Concentrations**

For the Year 1 modeling, the predicted highest 2<sup>nd</sup> high 1-hour and 8-hour CO concentrations were 133  $\mu\text{g}/\text{m}^3$  and 17.9  $\mu\text{g}/\text{m}^3$  respectively. These predicted concentrations added to the 1-hour and 8-hour CO background concentrations of 582.0  $\mu\text{g}/\text{m}^3$  and 582.0  $\mu\text{g}/\text{m}^3$ , yield maximum ambient concentrations of 715  $\mu\text{g}/\text{m}^3$  and 599.9  $\mu\text{g}/\text{m}^3$  respectively. Similarly, for the Year 5 modeling, the maximum 1-hour and 8-hour ambient concentrations were 751.7  $\mu\text{g}/\text{m}^3$  and 603.2  $\mu\text{g}/\text{m}^3$  respectively. The receptor locations at which these concentrations occurred are shown in Figure 7.3 and 7.4. These concentrations are less than the applicable 1-hour and 8-hour CO NAAQS of 40,000  $\mu\text{g}/\text{m}^3$  and 10,000  $\mu\text{g}/\text{m}^3$  respectively.

### **7.2.2 NO<sub>2</sub> Concentrations**

Modeling of NO<sub>2</sub> concentrations in the Saguaro National Monument East was based on NO<sub>x</sub> emissions from all sources and a NO<sub>2</sub>/NO<sub>x</sub> ratio of 0.5. The highest predicted 1-hour 98<sup>th</sup> percentile and annual NO<sub>2</sub> concentration for the Year 1 modeling was 78.8  $\mu\text{g}/\text{m}^3$  and 0.45  $\mu\text{g}/\text{m}^3$  respectively. These predicted concentrations added to the 1-hour and annual background concentrations of 24.5  $\mu\text{g}/\text{m}^3$  and 1.7  $\mu\text{g}/\text{m}^3$  yields a maximum ambient concentration of 103.3  $\mu\text{g}/\text{m}^3$  and 2.14  $\mu\text{g}/\text{m}^3$  respectively. Similarly, the Year 5 modeling yields a maximum 1-hour and annual ambient concentration of 117.8  $\mu\text{g}/\text{m}^3$  and 2.14  $\mu\text{g}/\text{m}^3$  respectively. The receptor locations at which these concentrations occurred are shown in Figure 7.3 and 7.4. These concentrations are less than the applicable 1-hr and annual NO<sub>2</sub> NAAQS of 188.6  $\mu\text{g}/\text{m}^3$  and 100  $\mu\text{g}/\text{m}^3$ .

### **7.2.3 PM<sub>10</sub> Concentrations**

The predicted highest 4<sup>th</sup> high 24-hour PM<sub>10</sub> concentration for the Year 1 modeling was 1.8  $\mu\text{g}/\text{m}^3$  whereas the highest annual concentration was 0.14  $\mu\text{g}/\text{m}^3$ . These predicted concentrations added to the 24-hour and annual PM<sub>10</sub> background concentrations of 47.6.0  $\mu\text{g}/\text{m}^3$  and 12.6  $\mu\text{g}/\text{m}^3$ , yield maximum ambient concentrations of 49.4  $\mu\text{g}/\text{m}^3$  and 12.7  $\mu\text{g}/\text{m}^3$  respectively. Similarly the Year 5 modeling yields a 24-hr and annual maximum ambient concentration of 50.0  $\mu\text{g}/\text{m}^3$  and 12.7  $\mu\text{g}/\text{m}^3$

respectively. The receptor locations at which these concentrations occur are shown in Figure 7.3 and 7.4. These concentrations are less than the applicable 24-hour and annual PM<sub>10</sub> NAAQS of 150 µg/m<sup>3</sup> and 50 µg/m<sup>3</sup> respectively.

#### **7.2.4 SO<sub>2</sub> Concentrations**

The highest 2<sup>nd</sup> high 3-hour and 24-hour SO<sub>2</sub> concentrations for the Year 1 modeling were 0.26 µg/m<sup>3</sup> and 0.04 µg/m<sup>3</sup> respectively. The 99<sup>th</sup> percentile 1-hour SO<sub>2</sub> concentration and highest annual concentration was 0.5 µg/m<sup>3</sup> and 0.0008 µg/m<sup>3</sup> respectively. These concentrations added to the 1-hour, 3-hour, 24-hour and annual SO<sub>2</sub> background concentrations of 0.84 µg/m<sup>3</sup>, 43.0 µg/m<sup>3</sup>, 17.0 µg/m<sup>3</sup> and 3.0 µg/m<sup>3</sup>, yield maximum ambient concentrations of 1.34 µg/m<sup>3</sup>, 128.8 µg/m<sup>3</sup>, 29.5 µg/m<sup>3</sup> and 3.26 µg/m<sup>3</sup> respectively. Similarly, the Year 5 modeling yields a 1-hour 3-hour, 24-hour and annual maximum ambient concentration of 1.25 µg/m<sup>3</sup>, 113.6 µg/m<sup>3</sup>, 27.5 µg/m<sup>3</sup> and 3.26 µg/m<sup>3</sup> respectively. The receptor locations at which these concentrations occurred are shown in Figure 7.3 and 7.4. These concentrations are less than the applicable 3-hour, 24-hour and annual SO<sub>2</sub> NAAQS of 196 µg/m<sup>3</sup>, 1,300 µg/m<sup>3</sup>, 365 µg/m<sup>3</sup>, and 80 µg/m<sup>3</sup> respectively.

#### **7.2.5 PM<sub>2.5</sub> Concentrations**

The three year average of the highest 24-hr and annual concentration for the Year 1 modeling were 0.6 µg/m<sup>3</sup> and 0.02 µg/m<sup>3</sup> respectively. These predicted concentrations added to the 24-hour and annual PM<sub>2.5</sub> background concentrations of 11.4 µg/m<sup>3</sup> and 5.1 µg/m<sup>3</sup>, yield maximum ambient concentrations of 12.0 µg/m<sup>3</sup> and 5.12 µg/m<sup>3</sup> respectively. Similarly the Year 5 modeling yields a 24-hr and annual maximum ambient concentration of 12.0 µg/m<sup>3</sup> and 5.13 µg/m<sup>3</sup> respectively. The receptor locations at which these concentrations occur are shown in Figure 7.3 and 7.4. These concentrations are less than the applicable 24-hour and annual PM<sub>10</sub> NAAQS of 35 µg/m<sup>3</sup> and 15 µg/m<sup>3</sup> respectively.

**Table 7.1 Maximum Ambient Concentrations Due to Emissions for Year 1**

Emission Specie	Averaging Period	Modeled Conc. ( $\mu\text{g}/\text{m}^3$ )	UTM Easting (m)	UTM Northing (m)	Background Conc. ( $\mu\text{g}/\text{m}^3$ )	Maximum Ambient Conc. ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )
CO	1-HR*	1394.9	521928.3	3522468	582.0	1976.9	40,000
	8-HR*	375.2	526000.5	3520727	582.0	957.2	10,000
NO <sub>2</sub>	1-HR <sup>a</sup> (Scen. 1)	120.6	521928.3	3522468	24.5	145.1	188.7
	ANNUAL (Scen. 1)	0.54	521812.6	3522085	4.0	4.54	100
	1-HR <sup>a</sup> (Scen. 2)	727.8	525896.7	3520486	24.5	752.3	188.7
	ANNUAL (Scen. 2)	45.2	526016.9	3520744	4.0	49.2	100
	1-HR <sup>a</sup> (Scen. 3)	208.3	525907.5	3520534	24.5	232.8	188.7
	ANNUAL (Scen. 3)	26.8	525951.0	3520673	4.0	30.8	100
	1-HR <sup>a</sup> (Scen. 4)	146.7	525907.5	3520534	24.5	171.2	188.6
	ANNUAL (Scen. 4)	24.5	525951.0	3520673	4.0	28.5	100
PM <sub>10</sub>	24-HR**	111.9	526066.4	3520798	33.0	144.9	150
	ANNUAL	26.5	526282.1	3521227	11.9	38.4	50
PM <sub>2.5</sub>	24-HR <sup>b</sup>	18.2	526264.9	3521110	9.7	27.9	35
	ANNUAL	4.3	526285.6	3521250	3.6	7.9	15
SO <sub>2</sub>	1-HR <sup>c</sup>	17.2	521977.7	3522573	31.9 <sup>d</sup>	49.1	195
	3-HR*	7.75	521812.6	3522085	43.0	50.8	1,300

**Table 7.1 Maximum Ambient Concentrations Due to Emissions for Year 1**

Emission Specie	Averaging Period	Modeled Conc. ( $\mu\text{g}/\text{m}^3$ )	UTM Easting (m)	UTM Northing (m)	Background Conc. ( $\mu\text{g}/\text{m}^3$ )	Maximum Ambient Conc. ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )
	24-HR*	1.2	521993.6	3522592	17.0	18.2	365
	ANNUAL	0.1	526282.1	3521227	3.0	3.1	80

\* Represents the high 2<sup>nd</sup> high concentration.

\*\* Represents the 4<sup>th</sup> highest concentration over a 3 year period.

<sup>a</sup> Represents the 98<sup>th</sup> percentile concentration over a 3 year period

<sup>b</sup> Represents the average of the highest 24-hr concentrations over a 3 year period

<sup>c</sup> Represents the 99<sup>th</sup> percentile concentration over a 3 year period.

<sup>d</sup> Background Concentration was set equal to the highest modeled impact due to in-availability of appropriate data.

**Table 7.2 Maximum Ambient Concentrations Due to Emissions for Year 5**

Emission Specie	Averaging Period	Modeled Conc. ( $\mu\text{g}/\text{m}^3$ )	UTM Easting (m)	UTM Northing (m)	Background Conc. ( $\mu\text{g}/\text{m}^3$ ) <sup>c</sup>	Maximum Ambient Conc. ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )
CO	1-HR*	1200.63	521750	3522750	582.0	1782.63	40,000
	8-HR*	293.8	525880.4	3520413	582.0	875.8	10,000
NO <sub>2</sub>	1-HR <sup>a</sup> (Scen. 1)	120.6	521928.3	3522468	24.5	145.1	188.7
	ANNUAL (Scen. 1)	0.57	521812.6	3522085	4.0	4.57	100
	1-HR <sup>a</sup> (Scen. 2)	606.2	522000.0	3522750	24.5	630.7	188.7
	ANNUAL (Scen. 2)	39.9	525934.5	3520655	4.0	43.9	100
	1-HR <sup>a</sup> (Scen. 3)	190.9	522000.0	3522750	24.5	215.4	188.7
	ANNUAL (Scen. 3)	25.6	525934.5	3520655	4.0	29.6	100
	1-HR <sup>a</sup> (Scen. 4)	141.8	522000.0	3522750	24.5	166.3	188.7
	ANNUAL (Scen. 4)	23.5	525934.5	3520655	4.0	27.5	100
PM <sub>10</sub>	24-HR**	102.9	525810.2	3520099	33.0	135.9	150
	ANNUAL	24	525934.5	3520655	11.9	35.9	50
PM <sub>2.5</sub>	24-HR <sup>b</sup>	19.5	525230.9	3523641	9.7	29.2	35
	ANNUAL	3.8	525934.5	3520655	3.6	7.4	15
SO <sub>2</sub>	1-HR <sup>c</sup>	17.2	521977.7	3522573	31.9 <sup>d</sup>	49.1	195
	3-HR*	7.75	521812.6	3522085	43.0	50.75	1,300

**Table 7.2 Maximum Ambient Concentrations Due to Emissions for Year 5**

<b>Emission Specie</b>	<b>Averaging Period</b>	<b>Modeled Conc. (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>UTM Easting (m)</b>	<b>UTM Northing (m)</b>	<b>Background Conc. (<math>\mu\text{g}/\text{m}^3</math>)<sup>c</sup></b>	<b>Maximum Ambient Conc. (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>NAAQS (<math>\mu\text{g}/\text{m}^3</math>)</b>
	24-HR*	1.1	521961.7	3522555	17.0	18.1	365
	ANNUAL	0.1	525934.5	3520655	3.0	3.1	80

\* Represents the high 2<sup>nd</sup> high concentration.

\*\* Represents the 4<sup>th</sup> highest concentration over a 3 year period.

<sup>a</sup> Represents the 98<sup>th</sup> percentile concentration over a 3 year period

<sup>b</sup> Represents the average of the highest 24-hr concentrations over a 3 year period

<sup>c</sup> Represents the 99<sup>th</sup> percentile concentration over a 3 year period.

<sup>d</sup> Background Concentration was set equal to the highest modeled impact due to in-availability of appropriate data.

**Table 7.3 Maximum Ambient Concentrations Due to Emissions for Year 1 at the Saguaro East National Forrest**

Emission Specie	Averaging Period	Modeled Conc. ( $\mu\text{g}/\text{m}^3$ )	UTM Easting (m)	UTM Northing (m)	Background Conc. ( $\mu\text{g}/\text{m}^3$ )	Maximum Ambient Conc. ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )
CO	1-HR*	133	546773.8	3553749	582.0	715.0	40,000
	8-HR*	17.9	541274.8	3552801	582.0	599.9	10,000
NO <sub>2</sub>	1-HR <sup>a</sup>	78.8	541274.8	3552801	24.5	103.3	188.7
	ANNUAL	0.45	541274.8	3552801	1.7	2.15	100
PM <sub>10</sub>	24-HR**	1.8	541274.8	3552801	47.6	49.4	150
	ANNUAL	0.13	540492.3	3551875	12.6	12.7	50
PM <sub>2.5</sub>	24-HR <sup>b</sup>	0.6	541274.74	3552801	11.4	12.0	35
	ANNUAL	0.02	540492.3	3551875	5.1	5.12	15
SO <sub>2</sub>	1-HR <sup>c</sup>	0.5	543617.3	3556506	0.84 <sup>d</sup>	1.34	195
	3-HR*	0.26	546773.8	3553749	81.3	81.6	1,300
	24-HR*	0.04	541274.8	3552801	23.6	23.64	365
	ANNUAL	0.0008	541274.8	3552801	1.7	1.7	80

\* Represents the high 2<sup>nd</sup> high concentration.

\*\* Represents the 4<sup>th</sup> highest concentration over a 3 year period.

<sup>a</sup> Represents the 98<sup>th</sup> percentile concentration over a 3 year period

<sup>b</sup> Represents the average of the highest 24-hr concentrations over a 3 year period

<sup>c</sup> Represents the 99<sup>th</sup> percentile concentration over a 3 year period.

<sup>d</sup> Background Concentration was set equal to the highest modeled impact due to in-availability of appropriate data.

**Table 7.4 Maximum Ambient Concentrations Due to Emissions for Year 5 at the Saguaro East National Forrest**

<b>Emission Specie</b>	<b>Averaging Period</b>	<b>Modeled Conc. (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>UTM Easting (m)</b>	<b>UTM Northing (m)</b>	<b>Background Conc. (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Maximum Ambient Conc. (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>NAAQS (<math>\mu\text{g}/\text{m}^3</math>)</b>
CO	1-HR*	169.7	546773.8	3553749	582.0	751.7	40,000
	8-HR*	21.2	546773.8	3553749	582.0	603.2	10,000
NO <sub>2</sub>	1-HR <sup>a</sup>	93.3	541274.8	3552801	24.5	117.8	188.7
	ANNUAL	0.44	541274.8	3552801	1.7	2.1	100
PM <sub>10</sub>	24-HR**	2.4	546773.8	3553749	47.6	50.0	150
	ANNUAL	0.14	540492.3	3551875	12.6	12.7	50
PM <sub>2.5</sub>	24-HR <sup>b</sup>	0.6	541274.74	3552801	11.4	12.0	35
	ANNUAL	0.03	540492.3	3551875	5.1	5.1	15
SO <sub>2</sub>	1-HR <sup>c</sup>	0.43	542057.1	3553728	0.82 <sup>d</sup>	1.25	195
	3-HR*	0.27	546773.8	3553749	81.3	81.7	1,300
	24-HR*	0.04	541274.8	3552801	23.6	23.6	365
	ANNUAL	0.0008	541274.8	3552801	1.7	1.7	80

\* Represents the high 2<sup>nd</sup> high concentration.

\*\* Represents the 4<sup>th</sup> highest concentration over a 3 year period.

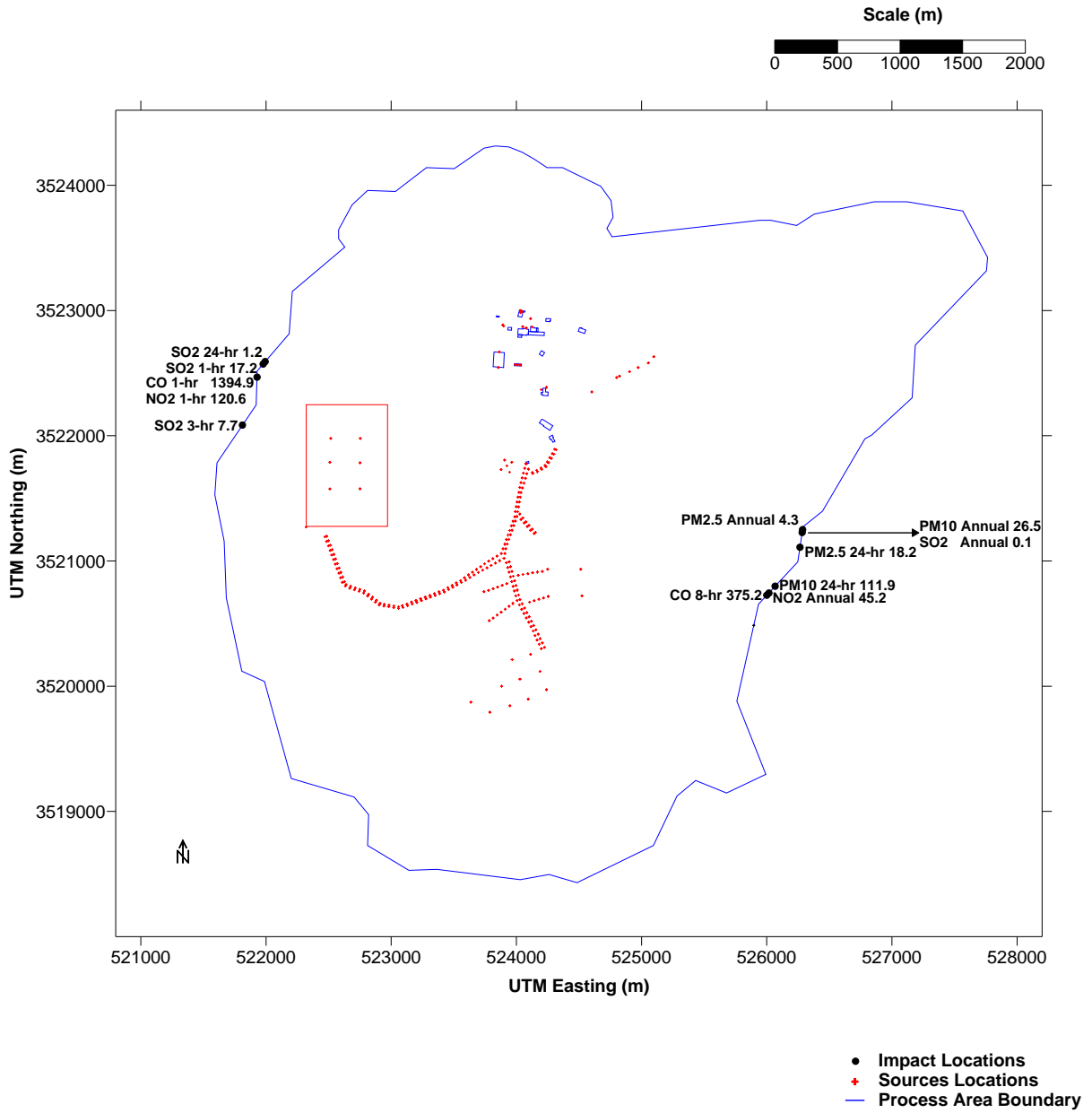
<sup>a</sup> Represents the 98<sup>th</sup> percentile concentration over a 3 year period

<sup>b</sup> Represents the average of the highest 24-hr concentrations over a 3 year period

<sup>c</sup> Represents the 99<sup>th</sup> percentile concentration over a 3 year period.

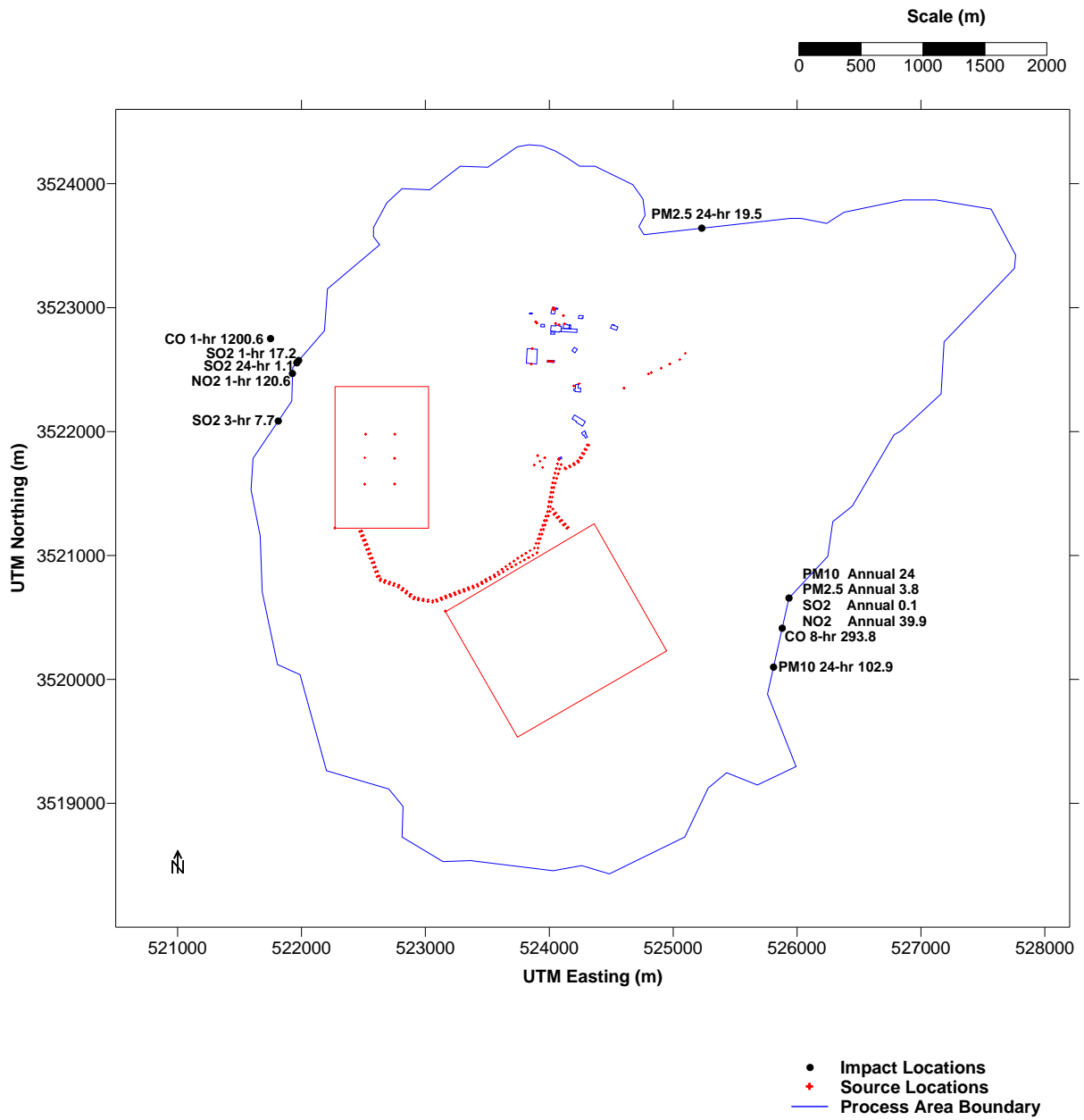
<sup>d</sup> Background Concentration was set equal to the highest modeled impact due to in-availability of appropriate data.

### Year 1 Emissions - Modeled Impacts



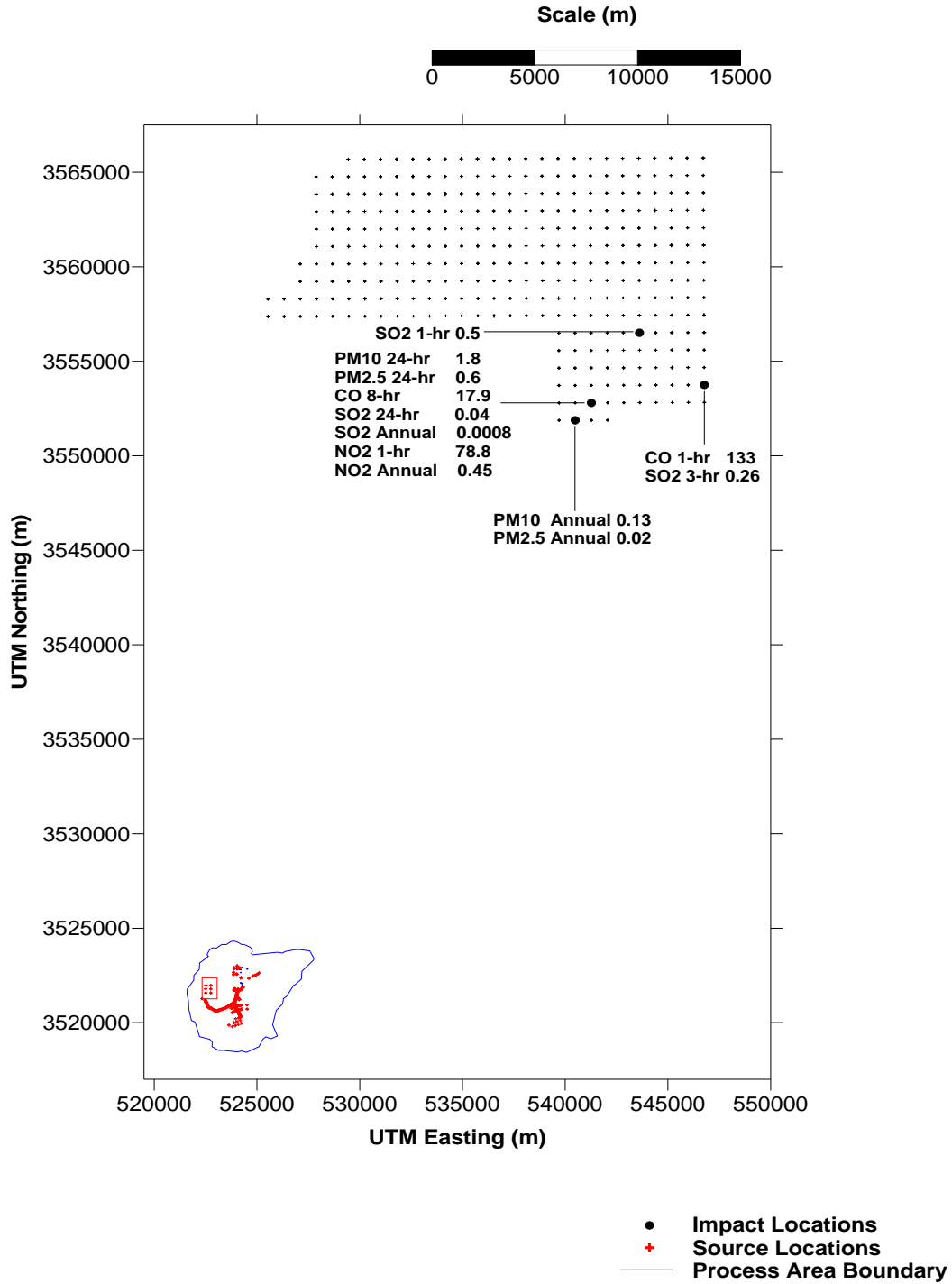
**Figure 7.1 Receptor locations of Modeled Impacts due to emissions for Year 1**

### Year 5 Emissions - Modeled Impacts



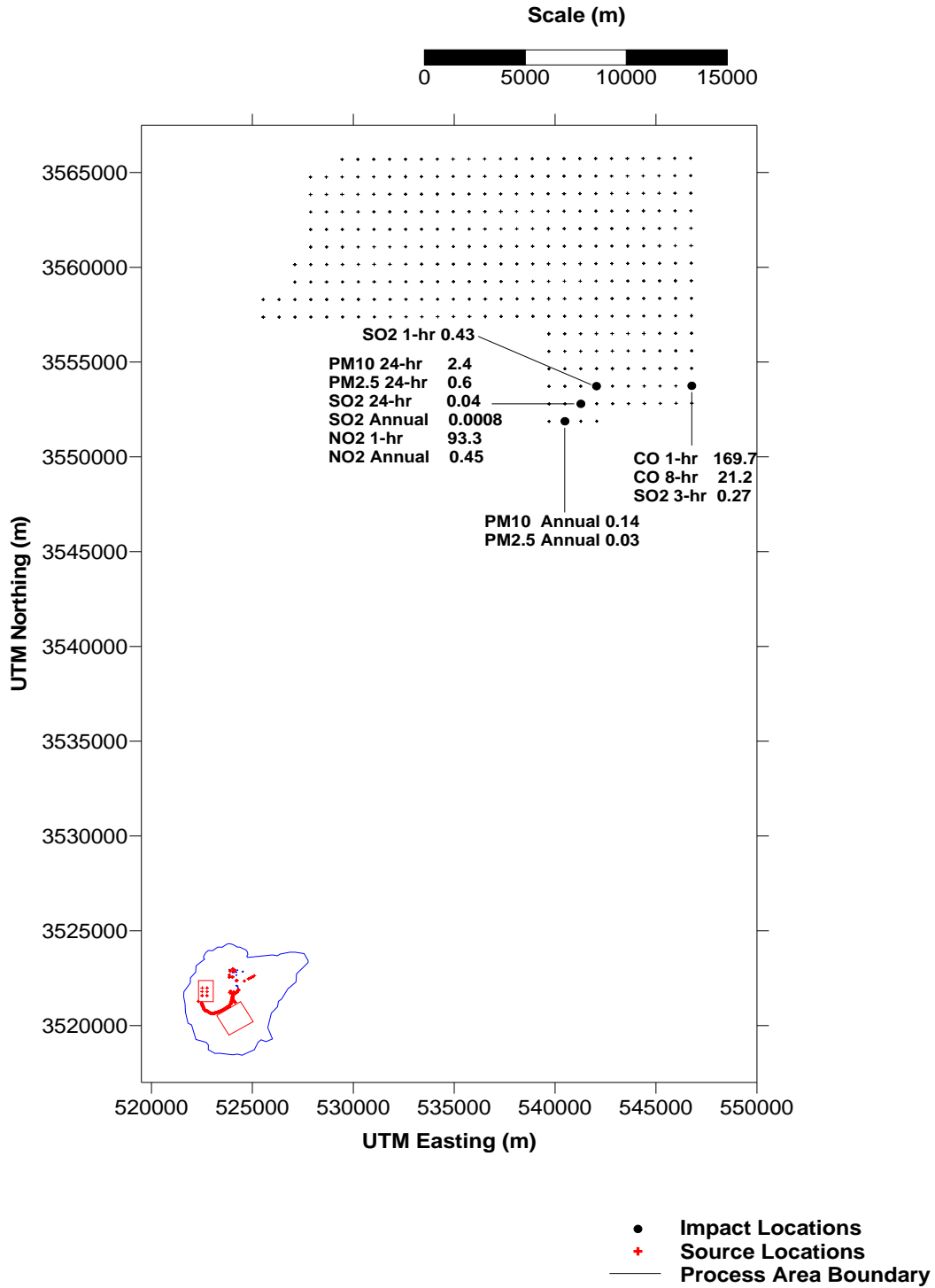
**Figure 7.2 Receptor locations of Modeled Impacts due to emissions for Year 5**

## Year 1 Emissions - Modeled Impacts at Saguaro East NP



**Figure 7.3 Receptor locations of Modeled Impacts at Saguaro East NP due to emissions for Year 1**

## Year 5 Emissions - Modeled Impacts at Saguaro East NP



**Figure 7.4 Receptor locations of Modeled Impacts at Saguaro East NP due to emissions for Year 5**

## **APPENDIX A1**

### **LISTING OF DEM QUADRANGLES DEFINING MODELING DOMAIN**

BEE-Line Software  
Copyright (C) 1996 - 2008  
Info (512) 258-8855  
Support (828) 628-0634  
Fax (512) 258-7522  
info@beeline-software.com

User Slope: 10%

Quads Analyzed and Selected

Selected?	Ref.Num	Max Elevation	Slope	Name
(m)	(ft)	(%)		
	31109C8	1495.0 4904.9	1.01	NACO, AZ
	31110C1	1407.0 4616.1	1.03	STARK, AZ
	31110C2	2236.0 7336.0	2.88	BOB THOMPSON PEAK, AZ
	31110C3	2510.0 8234.9	3.99	MONTEZUMA PASS, AZ
	31110C4	1689.0 5541.3	2.31	CAMPINI MESA, AZ
	31110C5	1584.0 5196.9	2.10	LOCHIEL, AZ
	31110C6	2203.0 7227.7	3.77	DUQUESNE, AZ
	31110C7	1613.0 5292.0	2.18	KINO SPRINGS, AZ
	31110C8	1332.0 4370.1	1.42	NOGALES, AZ
	31111C1	1658.0 5439.6	2.20	PAJARITO PEAK, AZ
	31111C2	1664.0 5459.3	1.97	ALAMO SPRING, AZ
	31109D8	2250.0 7381.9	2.35	BISBEE, AZ
	31110D1	1976.0 6482.9	2.31	HEREFORD, AZ
	31110D2	1867.0 6125.3	2.63	NICKSVILLE, AZ
	31110D3	2887.0 9471.8	6.64	MILLER PEAK, AZ
	31110D4	2563.0 8408.8	7.04	HUACHUCA PEAK, AZ
	31110D5	1880.0 6168.0	4.64	CANELO PASS, AZ
	31110D6	2135.0 7004.6	5.74	HARSHAW, AZ
	31110D7	1980.0 6496.1	5.07	CUMERO CANYON, AZ
	31110D8	1392.0 4566.9	2.52	RIO RICO, AZ
	31111D1	1752.0 5748.0	3.69	PENA BLANCA LAKE, AZ
	31111D2	1955.0 6414.0	3.53	RUBY, AZ
	31111D3	1551.0 5088.6	1.78	BARTLETT MOUNTAIN, AZ
	31111D4	1455.0 4773.6	1.24	CUMERO MOUNTAIN, AZ
	31111D5	1255.0 4117.5	0.71	SASABE, AZ
	31109E8	2042.0 6699.5	2.15	POTTER MOUNTAIN, AZ
	31110E1	1743.0 5718.5	2.04	TOMBSTONE SE, AZ
	31110E2	1404.0 4606.3	1.74	LEWIS SPRINGS, AZ
	31110E3	2213.0 7260.5	6.09	FORT HUACHUCA, AZ

X 31110E4 2456.0 8057.7 12.57 PYEATT RANCH, AZ  
X 31110E5 1866.0 6122.0 11.43 O'DONNELL CANYON, AZ  
X 31110E6 1940.0 6364.8 12.23 MOUNT HUGHES, AZ  
X 31110E7 1968.0 6456.7 12.54 PATAGONIA, AZ  
X 31110E8 1831.0 6007.2 11.05 SAN CAYETANO MOUNTAINS, AZ  
31111E1 1750.0 5741.5 6.55 TUBAC, AZ  
31111E2 1704.0 5590.6 3.63 MURPHY PEAK, AZ  
31111E3 1635.0 5364.2 2.30 ARIVACA, AZ  
31111E4 1461.0 4793.3 1.37 WILBUR CANYON, AZ  
31111E5 1467.0 4813.0 1.11 PRESUMIDO PEAK, AZ  
31111E6 1493.0 4898.3 0.97 CAPONERA PEAK, AZ  
31109F8 1845.0 6053.1 1.83 HAY MOUNTAIN, AZ  
31110F1 1626.0 5334.6 1.82 TOMBSTONE, AZ  
31110F2 1566.0 5137.8 2.30 FAIRBANK, AZ  
31110F3 1397.0 4583.3 2.78 HUACHUCA CITY, AZ  
X 31110F4 1970.0 6463.3 12.52 MUSTANG MOUNTAINS, AZ  
X 31110F5 1619.0 5311.7 31.57 ELGIN, AZ  
X 31110F6 1657.0 5436.4 33.05 SONOITA, AZ  
X 31110F7 2884.0 9461.9 245.87 MOUNT WRIGHTSON, AZ  
X 31110F8 2610.0 8563.0 213.40 MOUNT HOPKINS, AZ  
31111F1 1512.0 4960.6 6.39 AMADO, AZ  
31111F2 1590.0 5216.5 3.42 SAUCITO MOUNTAIN, AZ  
31111F3 1619.0 5311.7 2.34 CERRO COLORADO, AZ  
31111F4 1401.0 4596.5 1.27 LAS GUIJAS, AZ  
31111F5 1765.0 5790.7 1.64 MILDRED PEAK, AZ  
31111F6 1616.0 5301.8 1.15 AGUIRRE PEAK, AZ  
31109G8 2177.0 7142.4 2.42 BLACK DIAMOND PEAK, AZ  
31110G1 1883.0 6177.8 2.40 HABERSTOCK HILL, AZ  
31110G2 1321.0 4334.0 1.56 LAND, AZ  
31110G3 1877.0 6158.1 5.07 MCGREW SPRING, AZ  
X 31110G4 2351.0 7713.3 16.65 APACHE PEAK, AZ  
X 31110G5 1572.0 5157.5 29.78 SPRING WATER CANYON, AZ  
X 31110G6 1770.0 5807.1 In Ext. EMPIRE RANCH, AZ  
X 31110G7 2021.0 6630.6 In Ext. HELVETIA, AZ  
X 31110G8 1380.0 4527.6 67.75 GREEN VALLEY, AZ  
31111G1 1358.0 4455.4 5.00 ESPERANZA MILL, AZ  
31111G2 1872.0 6141.7 4.66 BATAMOTE HILLS, AZ  
31111G3 1435.0 4708.0 1.81 PENITAS HILLS, AZ  
31111G4 1099.0 3605.6 0.62 FRESNO WASH, AZ  
31111G5 2359.0 7739.5 2.66 BABOQUIVARI PEAK, AZ  
31111G6 1600.0 5249.3 1.13 CHIULI SHAIK, AZ  
31109H8 2288.0 7506.6 2.62 COCHISE STRONGHOLD, AZ  
31110H1 2162.0 7093.2 3.02 KNOB HILL, AZ  
31110H2 1369.0 4491.5 1.70 SAINT DAVID, AZ  
31110H3 1590.0 5216.5 3.70 BENSON, AZ  
X 31110H4 1736.0 5695.5 10.01 MESCAL, AZ  
X 31110H5 1654.0 5426.5 32.98 THE NARROWS, AZ  
X 31110H6 1886.0 6187.7 42.04 MOUNT FAGAN, AZ  
X 31110H7 1559.0 5114.8 88.99 CORONA DE TUCSON, AZ  
X 31110H8 978.0 3208.7 20.05 SAHUARITA, AZ

31111H1	1287.0	4222.4	4.35	TWIN BUTTES, AZ
31111H2	1883.0	6177.8	4.71	SAMANIEGO PEAK, AZ
31111H3	1569.0	5147.6	2.19	STEVENS MOUNTAIN, AZ
31111H4	1494.0	4901.6	1.47	PALO ALTO RANCH, AZ
31111H5	2101.0	6893.0	2.22	KITT PEAK, AZ
31111H6	1834.0	6017.1	1.46	SAN JUAN SPRING, AZ
32109A8	1993.0	6538.7	2.09	COCHISE, AZ
32110A1	2052.0	6732.3	2.76	DRAGOON, AZ
32110A2	2042.0	6699.5	3.70	SAN PEDRO RANCH, AZ
32110A3	1416.0	4645.7	2.80	GALLETA FLAT EAST, AZ
X	32110A4	2046.0	6712.6	11.63 GALLETA FLAT WEST, AZ
X	32110A5	2586.0	8484.3	33.82 RINCON PEAK, AZ
32110A6	1306.0	4284.8	9.46	VAIL, AZ
32110A7	992.0	3254.6	3.48	TUCSON SE, AZ
32110A8	870.0	2854.3	1.16	TUCSON SW, AZ
32111A1	1125.0	3690.9	2.60	SAN XAVIER MISSION, AZ
32111A2	1187.0	3894.4	1.62	SAN XAVIER MISSION SW, AZ
32111A3	1054.0	3458.0	0.70	THREE POINTS, AZ
32111A4	1374.0	4507.9	1.21	SAN PEDRO, AZ
32111A5	1989.0	6525.6	2.02	PAN TAK, AZ
32111A6	1165.0	3822.2	0.51	HAIVANA NAKYA, AZ
32109B8	1537.0	5042.7	1.22	RED BIRD HILLS, AZ
32110B1	1801.0	5908.8	2.04	STEELE HILLS, AZ
32110B2	1749.0	5738.2	2.47	DEEPWELL RANCH, AZ
32110B3	1689.0	5541.3	3.10	WILDHORSE MOUNTAIN, AZ
32110B4	2017.0	6617.5	5.69	HAPPY VALLEY, AZ
32110B5	2643.0	8671.3	9.60	MICA MOUNTAIN, AZ
32110B6	2146.0	7040.7	7.00	TANQUE VERDE PEAK, AZ
32110B7	917.0	3008.5	0.57	TUCSON EAST, AZ
32110B8	881.0	2890.4	0.38	TUCSON, AZ
32111B1	1338.0	4389.8	2.40	CAT MOUNTAIN, AZ
32111B2	1107.0	3631.9	1.00	BROWN MOUNTAIN, AZ
32111B3	1106.0	3628.6	0.75	COCORAQUE BUTTE, AZ
32111B4	1139.0	3736.9	0.66	LA TORTUGA BUTTE, AZ
32111B5	776.0	2545.9	0.00	SAN IGNACIO RANCH, AZ
32111B6	892.0	2926.5	0.11	BLACK HILLS, AZ
32109C8	1734.0	5689.0	1.42	SQUARE MOUNTAIN, AZ
32110C1	2260.0	7414.7	2.62	MUSKHOG MOUNTAIN, AZ
32110C2	1991.0	6532.2	2.54	HOOKERS HOT SPRINGS, AZ
32110C3	1601.0	5252.6	2.03	SOZA MESA, AZ
32110C4	1642.0	5387.1	2.43	SOZA CANYON, AZ
32110C5	2007.0	6584.6	3.63	PIETY HILL, AZ
32110C6	2153.0	7063.6	4.08	AGUA CALIENTE HILL, AZ
32110C7	2251.0	7385.2	4.37	SABINO CANYON, AZ
32110C8	2206.0	7237.5	4.24	TUCSON NORTH, AZ
32111C1	1306.0	4284.8	1.43	JAYNES, AZ
32111C2	1428.0	4685.0	1.55	AVRA, AZ
32111C3	766.0	2513.1	0.00	WEST OF AVRA, AZ
32111C4	1166.0	3825.5	0.63	WATERMAN PEAK, AZ
32111C5	876.0	2874.0	0.10	KOHT KOHL HILL, AZ

32111C6	884.0	2900.3	0.10	QUEENS WELL, AZ
32109D8	1428.0	4685.0	0.84	WEST OF GREASEWOOD MOUNTAIN, AZ
32110D1	2328.0	7637.8	2.35	REILEY PEAK, AZ
32110D2	2027.0	6650.3	2.13	THE MESAS, AZ
32110D3	2233.0	7326.1	2.77	CHERRY SPRING PEAK, AZ
32110D4	1284.0	4212.6	1.00	REDINGTON, AZ
32110D5	1613.0	5292.0	1.72	BUEHMAN CANYON, AZ
32110D6	2604.0	8543.3	3.83	MOUNT BIGELOW, AZ
32110D7	2789.0	9150.3	4.23	MOUNT LEMMON, AZ
32110D8	2213.0	7260.5	3.00	ORO VALLEY, AZ
32111D1	1419.0	4655.5	1.27	RUELAS CANYON, AZ
32111D2	995.0	3264.4	0.36	MARANA, AZ
32111D3	672.0	2204.7	0.00	WEST OF MARANA, AZ
32111D4	1304.0	4278.2	0.75	SILVER BELL EAST, AZ
32111D5	1277.0	4189.6	0.63	SILVER BELL WEST, AZ
32111D6	945.0	3100.4	0.16	GAP TANK, AZ
32109E8	1880.0	6168.0	1.29	FORT GRANT, AZ
32110E1	1500.0	4921.3	0.92	SIERRA BONITA RANCH, AZ
32110E2	1914.0	6279.5	1.60	HARRISON CANYON, AZ
32110E3	2323.0	7621.4	2.36	BASSETT PEAK, AZ
32110E4	1955.0	6414.0	1.87	KIELBERG CANYON, AZ
32110E5	1201.0	3940.3	0.65	PEPPERSAUCE WASH, AZ
32110E6	2309.0	7575.5	2.47	CAMPO BONITO, AZ
32110E7	2283.0	7490.2	2.43	ORACLE, AZ
32110E8	1160.0	3805.8	0.58	ORACLE JUNCTION, AZ
32111E1	1430.0	4691.6	1.01	TORTOLITA MOUNTAINS, AZ
32111E2	952.0	3123.4	0.22	DESERT PEAK, AZ
32111E3	687.0	2253.9	0.00	RED ROCK, AZ
32111E4	818.0	2683.7	0.01	SAMANIEGO HILLS, AZ
32111E5	666.0	2185.0	0.00	FRIENDLY CORNERS, AZ
32111E6	897.0	2942.9	0.10	GREENE RESERVOIR, AZ
32109F8	3235.0	10613.5	2.60	WEBB PEAK, AZ
32110F1	2698.0	8851.7	2.18	BLUE JAY PEAK, AZ
32110F2	1685.0	5528.2	1.08	EUREKA RANCH, AZ
32110F3	2297.0	7536.1	1.92	KENNEDY PEAK, AZ
32110F4	2172.0	7126.0	1.81	RHODES PEAK, AZ
32110F5	1291.0	4235.6	0.65	CLARK RANCH, AZ
32110F6	1332.0	4370.1	0.70	MAMMOTH, AZ
32110F7	1334.0	4376.6	0.70	NORTH OF ORACLE, AZ
32110F8	1514.0	4967.2	0.95	FORTIFIED PEAK, AZ
32111F1	1141.0	3743.4	0.44	CHIEF BUTTE, AZ
32111F2	1026.0	3366.1	0.28	DURHAM HILLS, AZ
32111F3	866.0	2841.2	0.07	PICACHO PASS, AZ
32111F4	1368.0	4488.2	0.64	NEWMAN PEAK, AZ
32111F5	512.0	1679.8	0.00	ELOY SOUTH, AZ
32111F6	733.0	2404.9	0.00	ARIZONA CITY, AZ

Quads Required to Cover Domain

File	Name
31110E4.DEM	AZ, PYEATT RANCH
31110E5.DEM	AZ, O'DONNELL CANYON
31110E6.DEM	AZ, MOUNT HUGHES
31110E7.DEM	AZ, PATAGONIA
31110E8.DEM	AZ, SAN CAYETANO MOUNTAINS
31110F4.DEM	AZ, MUSTANG MOUNTAINS
31110F5.DEM	AZ, ELGIN
31110F6.DEM	AZ, SONOITA
31110F7.DEM	AZ, MOUNT WRIGHTSON
31110F8.DEM	AZ, MOUNT HOPKINS
31110G4.DEM	AZ, APACHE PEAK
31110G5.DEM	AZ, SPRING WATER CANYON
31110G6.DEM	AZ, EMPIRE RANCH
31110G7.DEM	AZ, HELVETIA
31110G8.DEM	AZ, GREEN VALLEY
31110H4.DEM	AZ, MESCAL
31110H5.DEM	AZ, THE NARROWS
31110H6.DEM	AZ, MOUNT FAGAN
31110H7.DEM	AZ, CORONA DE TUCSON
31110H8.DEM	AZ, SAHUARITA
32110A4.DEM	AZ, GALLETA FLAT WEST
32110A5.DEM	AZ, RINCON PEAK
32110A6.DEM	AZ, VAIL
32110A7.DEM	AZ, TUCSON SE
32110A8.DEM	AZ, TUCSON SW

**APPENDIX A2**

**MODELING INVENTORY**

**Table A2.1 Point Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM 2.5 (lb/hr)
PCL01	Crushing Area Scrubber (PC-CAS)	524076.4	3521780.6	1540.6	7.3	316.5	4.7	1.5	1.2800	0.0000	0.0000	0.0000	0.8064
PCL02	Stockpile Area Scrubber (PC-SAS)	523855.4	3522544.9	1556.0	6.1	316.5	6.6	1.8	2.5900	0.0000	0.0000	0.0000	0.9324
PCL03	Reclaim Tunnel Scrubber (PC-RTS)	523862.1	3522669.4	1549.6	6.1	316.5	3.9	1.8	1.0700	0.0000	0.0000	0.0000	0.3852
PCL04	Pebble Crusher Area Scrubber (PC-PCAS)	523898.7	3522876.4	1543.0	7.3	316.5	5.7	1.5	1.5600	0.0000	0.0000	0.0000	0.6864
PCL05	Copper Concentrate Scrubber 1 (PC-CCS1)	524033.0	3522992.6	1526.6	7.3	316.5	9.0	1.8	3.5500	0.0000	0.0000	0.0000	1.2780
PCL06	Copper Concentrate Scrubber 2 (PC-CCS2)	524043.8	3522990.6	1526.9	7.3	316.5	9.0	1.8	3.5500	0.0000	0.0000	0.0000	1.2780
PCL07	Moly Scrubber (PC-MS) / Electrostatic Precipitator (PC-EP)	524114.0	3522935.8	1540.8	16.8	533.2	3.2	0.3	0.0200	0.0000	0.0000	0.0000	0.0190
PCL08	Moly Dust Collector (PC-MDC)	524034.0	3522999.3	1525.3	6.1	366.5	9.7	0.3	0.1066	0.0000	0.0000	0.0000	0.0160
PCL09	Laboratory Dust Collector 1 (PC-L1)	523991.4	3522567.9	1542.5	6.1	316.5	23.2	0.5	0.3553	0.0000	0.0000	0.0000	0.2345
PCL10	Laboratory Dust Collector 2 (PC-L2)	524009.6	3522566.4	1543.0	6.1	316.5	23.2	0.5	0.3553	0.0000	0.0000	0.0000	0.2345
PCL11	Laboratory Dust Collector 3 (PC-L3)	524029.4	3522565.1	1543.6	6.1	316.5	23.2	0.5	0.3553	0.0000	0.0000	0.0000	0.2345
FB01	Diesel Electrowinning Hot Water Generator (HWG)	524241.0	3522386.3	1527.5	3.7	810.9	39.7	0.1	0.0723	0.2190	0.8759	0.0093	0.0173

**Table A2.2 Volume Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
BLST1	Blasting	522517.6	3521978.6	1558.0	10	14.186	9.3023	28.45	580.67	147.33	17.33	1.64
BLST2	Blasting	522753.4	3521978.6	1558.0	10	14.186	9.3	28.45	580.67	147.33	17.33	1.64
BLST3	Blasting	522510.1	3521788.4	1558.0	10	14.186	9.3023	28.45	580.67	147.33	17.33	1.64
BLST5	Blasting	522510.1	3521575.4	1558.0	10	14.186	9.3	28.45	580.67	147.33	17.33	1.64
BLST4	Blasting	522751.3	3521784.1	1558.0	10	14.1866	9.3	28.45	580.67	147.33	17.33	1.64
BLST6	Blasting	522751.3	3521576.3	1558.0	10	14.186	9.3	28.45	580.67	147.33	17.33	1.64
UNLP1	Unload to Leachpad #1	524514.4	3520933.6	1522.2	6.5	4	6.05	0.2531	0.6443	0.9440	0.0025	0.0643
UNLP2	Unload to Leachpad #2	524523.9	3520721.4	1513.3	6.5	4	6.05	0.2531	0.6443	0.9440	0.0025	0.0643
UNLP3	Unload to Leachpad #3	524255.1	3520716.6	1545.2	6.5	4	6.05	0.2531	0.6443	0.9440	0.0025	0.0643
UNLP4	Unload to Leachpad #4	524250.4	3520933.6	1537.1	6.5	4	6.05	0.2531	0.6443	0.9440	0.0025	0.0643
UNLP5	Unload to Leachpad #5	523740.9	3520754.4	1570.0	6.5	4	6.05	0.2531	0.6443	0.9440	0.0025	0.0643
UNLP6	Unload to Leachpad #6	523783.4	3520523.1	1575.3	6.5	4	6.05	0.2531	0.6443	0.9440	0.0025	0.0643
UNSUL1	Unload to Sulfide Stockpile #1	523945.9	3521709.9	1560.1	6.5	4	6.05	0.3760	0.6443	0.9440	0.0025	0.0829
UNSUL2	Unload to Sulfide Stockpile #2	523878.1	3521730.1	1549.2	6.5	4	6.05	0.3760	0.6443	0.9440	0.0025	0.0829
UNSUL3	Unload to Sulfide Stockpile #3	523906.1	3521805.9	1549.0	6.5	4	6.05	0.3760	0.6443	0.9440	0.0025	0.0829
UNSUL4	Unload to Sulfide Stockpile #4	523963.4	3521788.6	1545.1	6.5	4	6.05	0.3760	0.6443	0.9440	0.0025	0.0829
PC01	Wind Erosion from Sulfide ore Stockpile	523924.1	3521760.1	1552.7	6	74	5.6	0.6200	-	-	-	0.0930
PC02	Primary Crusher	524077.9	3521773.9	1540.8	0	2.79	0.47	0.6836	-	-	-	0.1035
MD04	Moly Concentrate Bin to Hopper	524033.8	3522982.3	1528.5	3	0.47	0.7	0.0003	-	-	-	0.0000
TDS04	Fixed Tailings Conveyor 2 to Fixed Tailings Conveyor 3	524603.0	3522350.1	1515.4	3	0.47	0.7	0.1241	-	-	-	0.0188
TDS05	Fixed Tailings Conveyor 3 to Relocatable Conveyor	524801.3	3522465.1	1546.1	3	0.47	0.7	0.1241	-	-	-	0.0188
TDS06	Relocatable Conveyor to Shiftable Conveyor	524824.4	3522475.9	1540.2	3	0.47	0.7	0.1241	-	-	-	0.0188
TDS07	Shiftable Conveyor to Belt Wagon Conveyor	524903.9	3522511.6	1526.2	3	0.47	0.7	0.9471	-	-	-	0.1434
TDS08	Belt Wagon Conveyor to Spreader Crwaler Mounted Conveyor	524973.1	3522545.4	1506.6	3	0.47	0.7	0.9471	-	-	-	0.1434

**Table A2.2 Volume Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
TDS09	Spreader Crawler Mounted Conveyor to Tailings Storage	525053.9	3522581.1	1486.1	3	0.47	0.7	0.9471	-	-	-	0.1434
TDS10	Wind Erosion from Tailings Storage	525098.2	3522631.3	1478.4	6	573	5.6	3.4508	-	-	-	0.5176
MS01	Transfer of Bulk Pebble Lime to the Bulk Pebble Lime Silo	523891.5	3522885.8	1542.0	3	0.47	0.7	0.3159	-	-	-	0.3159
MS03	Bulk Pebble Lime Silo Screw Conveyor (CV-BPLS) to SAG	524050.8	3522871.3	1539.5	3	0.47	0.7	0.0203	-	-	-	0.0031
MS04	Pneumatic Lime Transfer From Truck to Lime Storage Bin (800-BN-801)	524078.7	3522861.6	1534.1	3	0.47	0.7	0.1579	-	-	-	0.1579
MS0506	Transfer of Flocculant from Supersacks to Flocculant Storage Bin	524123.4	3522869.4	1530.9	3	0.47	0.7	0.0008	-	-	-	0.0001
MS0708	Transfer of Guar from Bags to Guar Feeder (F-Gu) and Transfer of Granular Cobalt Sulfate from Bags to Cobalt	524198.0	3522368.1	1536.9	3	0.47	0.7	0.0001	-	-	-	0.0000
Haul1	Haul Roads	522470.4	3521193.0	1701.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul2	Haul Roads	522484.4	3521156.3	1711.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul3	Haul Roads	522498.6	3521120.5	1702.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul4	Haul Roads	522512.4	3521084.3	1687.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul5	Haul Roads	522525.9	3521047.5	1675.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul6	Haul Roads	522540.4	3521011.3	1674.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul7	Haul Roads	522554.1	3520974.8	1668.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul8	Haul Roads	522567.9	3520938.3	1677.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul9	Haul Roads	522582.1	3520902.5	1677.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul10	Haul Roads	522595.6	3520866.0	1669.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul11	Haul Roads	522610.1	3520829.0	1664.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul12	Haul Roads	522634.4	3520799.3	1660.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul13	Haul Roads	522668.9	3520782.8	1654.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul14	Haul Roads	522706.1	3520770.3	1645.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul15	Haul Roads	522743.1	3520757.3	1636.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul16	Haul Roads	522780.4	3520744.5	1627.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003

**Table A2.2 Volume Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul17	Haul Roads	522811.6	3520720.0	1624.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul18	Haul Roads	522842.9	3520695.8	1622.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul19	Haul Roads	522873.4	3520670.5	1622.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul20	Haul Roads	522905.1	3520649.3	1623.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul21	Haul Roads	522942.4	3520640.5	1616.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul22	Haul Roads	522980.6	3520634.0	1609.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul23	Haul Roads	523019.9	3520627.3	1601.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul24	Haul Roads	523058.1	3520621.3	1596.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul25	Haul Roads	523095.4	3520629.3	1592.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul26	Haul Roads	523131.9	3520643.0	1588.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul27	Haul Roads	523168.4	3520656.8	1587.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul28	Haul Roads	523205.4	3520670.3	1585.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul29	Haul Roads	523241.4	3520684.0	1584.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul30	Haul Roads	523277.9	3520697.8	1585.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul31	Haul Roads	523314.1	3520711.3	1587.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul32	Haul Roads	523350.9	3520724.8	1588.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul33	Haul Roads	523387.4	3520738.5	1588.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul34	Haul Roads	523424.4	3520752.3	1589.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul35	Haul Roads	523457.9	3520772.3	1586.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul36	Haul Roads	523492.1	3520790.8	1585.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul37	Haul Roads	523525.9	3520809.0	1578.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul38	Haul Roads	523560.6	3520827.8	1573.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul39	Haul Roads	523594.9	3520847.0	1567.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul40	Haul Roads	523628.4	3520868.3	1564.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul41	Haul Roads	523662.4	3520888.5	1563.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul42	Haul Roads	523696.6	3520907.8	1564.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul43	Haul Roads	523730.4	3520926.5	1564.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul44	Haul Roads	523765.1	3520945.0	1562.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul45	Haul Roads	523798.6	3520964.3	1553.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul46	Haul Roads	523833.1	3520983.0	1547.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003

**Table A2.2 Volume Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul47	Haul Roads	523866.6	3521002.3	1545.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul48	Haul Roads	523901.1	3521021.3	1542.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul49	Haul Roads	523920.1	3520986.0	1543.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul50	Haul Roads	523931.4	3520947.5	1545.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul51	Haul Roads	523941.9	3520910.8	1547.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul52	Haul Roads	523952.6	3520873.0	1549.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul53	Haul Roads	523963.1	3520834.8	1552.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul54	Haul Roads	523973.4	3520797.5	1551.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul55	Haul Roads	523983.9	3520760.5	1551.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul56	Haul Roads	523995.4	3520722.3	1558.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul57	Haul Roads	524006.4	3520684.0	1561.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul58	Haul Roads	524023.9	3520649.3	1561.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul59	Haul Roads	524042.1	3520613.5	1563.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul60	Haul Roads	524061.1	3520580.3	1570.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul61	Haul Roads	524079.4	3520545.3	1573.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul62	Haul Roads	524098.9	3520511.3	1563.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul63	Haul Roads	524116.6	3520475.3	1557.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul64	Haul Roads	524134.1	3520441.0	1557.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul65	Haul Roads	524149.4	3520404.3	1552.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul66	Haul Roads	524164.9	3520368.5	1549.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul67	Haul Roads	524182.4	3520335.0	1558.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul68	Haul Roads	524199.6	3520300.0	1559.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul69	Haul Roads	523908.1	3521059.5	1540.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul70	Haul Roads	523915.4	3521097.5	1547.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul71	Haul Roads	523926.4	3521135.8	1551.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul72	Haul Roads	523940.4	3521171.5	1561.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul73	Haul Roads	523952.9	3521209.3	1564.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul74	Haul Roads	523965.9	3521245.8	1564.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul75	Haul Roads	523977.9	3521282.5	1554.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul76	Haul Roads	523991.6	3521319.0	1540.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003

**Table A2.2 Volume Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul77	Haul Roads	524004.1	3521355.5	1530.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul78	Haul Roads	524037.1	3521331.8	1540.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul79	Haul Roads	524062.9	3521304.0	1549.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul80	Haul Roads	524087.4	3521275.5	1546.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul81	Haul Roads	524113.9	3521245.5	1539.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul82	Haul Roads	524142.4	3521218.8	1537.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul83	Haul Roads	524010.1	3521393.3	1525.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul84	Haul Roads	524017.4	3521431.8	1525.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul85	Haul Roads	524023.9	3521470.8	1524.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul86	Haul Roads	524030.6	3521509.5	1530.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul87	Haul Roads	524036.9	3521547.0	1540.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul88	Haul Roads	524048.1	3521583.8	1548.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul89	Haul Roads	524060.4	3521621.5	1551.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul90	Haul Roads	524072.1	3521659.5	1540.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul91	Haul Roads	524083.9	3521697.0	1533.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul92	Haul Roads	524095.9	3521733.3	1537.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul93	Haul Roads	524131.6	3521699.0	1527.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul94	Haul Roads	524168.1	3521714.5	1528.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul95	Haul Roads	524202.4	3521732.3	1526.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul96	Haul Roads	524236.4	3521753.3	1520.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul97	Haul Roads	524258.4	3521785.5	1508.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul98	Haul Roads	524279.4	3521819.8	1510.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul99	Haul Roads	524298.9	3521853.3	1521.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul100	Haul Roads	524318.6	3521888.8	1532.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul101	Haul Roads	522485.1	3521197.5	1698.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul102	Haul Roads	522499.4	3521161.8	1707.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul103	Haul Roads	522514.4	3521125.5	1697.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul104	Haul Roads	522528.9	3521090.5	1681.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul105	Haul Roads	522542.6	3521052.5	1670.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul106	Haul Roads	522556.4	3521016.5	1668.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003

**Table A2.2 Volume Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul107	Haul Roads	522570.6	3520979.3	1663.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul108	Haul Roads	522585.1	3520944.3	1669.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul109	Haul Roads	522598.1	3520908.0	1671.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul110	Haul Roads	522613.1	3520872.0	1663.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul111	Haul Roads	522626.4	3520834.3	1658.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul112	Haul Roads	522639.6	3520810.8	1656.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul113	Haul Roads	522676.1	3520797.8	1650.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul114	Haul Roads	522713.4	3520785.5	1642.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul115	Haul Roads	522749.9	3520773.5	1633.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul116	Haul Roads	522786.6	3520760.5	1625.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul117	Haul Roads	522819.9	3520734.8	1622.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul118	Haul Roads	522850.9	3520710.3	1620.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul119	Haul Roads	522881.4	3520686.5	1618.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul120	Haul Roads	522911.9	3520662.3	1619.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul121	Haul Roads	522944.6	3520654.0	1614.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul122	Haul Roads	522982.6	3520647.3	1607.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul123	Haul Roads	523021.1	3520641.0	1600.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul124	Haul Roads	523059.9	3520634.3	1596.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul125	Haul Roads	523088.6	3520643.8	1592.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul126	Haul Roads	523125.9	3520656.8	1586.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul127	Haul Roads	523162.1	3520672.0	1586.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul128	Haul Roads	523197.9	3520684.8	1585.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul129	Haul Roads	523234.9	3520698.5	1583.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul130	Haul Roads	523270.9	3520712.8	1583.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul131	Haul Roads	523308.9	3520725.8	1585.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul132	Haul Roads	523345.4	3520739.0	1585.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul133	Haul Roads	523382.4	3520753.3	1586.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul134	Haul Roads	523418.1	3520766.8	1587.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul135	Haul Roads	523452.4	3520786.5	1586.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul136	Haul Roads	523486.6	3520805.8	1582.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003

**Table A2.2 Volume Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul137	Haul Roads	523520.1	3520824.5	1575.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul138	Haul Roads	523554.6	3520843.0	1570.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul139	Haul Roads	523585.1	3520865.8	1566.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul140	Haul Roads	523617.6	3520889.3	1564.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul141	Haul Roads	523649.1	3520910.8	1564.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul142	Haul Roads	523681.6	3520932.3	1564.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul143	Haul Roads	523714.1	3520954.8	1563.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul144	Haul Roads	523745.6	3520977.5	1553.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul145	Haul Roads	523779.1	3520998.8	1549.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul146	Haul Roads	523811.9	3521018.3	1549.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul147	Haul Roads	523845.4	3521038.8	1549.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul148	Haul Roads	523879.4	3521059.5	1544.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul149	Haul Roads	523942.9	3520992.8	1541.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul150	Haul Roads	523953.6	3520954.8	1546.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul151	Haul Roads	523964.9	3520916.8	1550.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul152	Haul Roads	523974.9	3520878.8	1550.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul153	Haul Roads	523986.1	3520841.5	1551.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul154	Haul Roads	523996.9	3520803.5	1553.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul155	Haul Roads	524007.4	3520767.0	1554.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul156	Haul Roads	524018.4	3520729.0	1561.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul157	Haul Roads	524028.6	3520691.3	1563.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul158	Haul Roads	524046.4	3520657.8	1565.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul159	Haul Roads	524065.1	3520623.8	1568.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul160	Haul Roads	524083.6	3520587.8	1573.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul161	Haul Roads	524102.4	3520554.3	1573.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul162	Haul Roads	524119.9	3520519.0	1563.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul163	Haul Roads	524137.4	3520484.8	1553.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul164	Haul Roads	524155.6	3520449.8	1548.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul165	Haul Roads	524173.9	3520415.0	1549.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul166	Haul Roads	524189.6	3520379.3	1548.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003

**Table A2.2 Volume Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul167	Haul Roads	524207.4	3520345.3	1550.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul168	Haul Roads	524224.9	3520309.8	1554.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul169	Haul Roads	523893.1	3521097.5	1550.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul170	Haul Roads	523907.9	3521134.0	1552.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul171	Haul Roads	523921.1	3521171.3	1562.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul172	Haul Roads	523933.1	3521207.3	1568.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul173	Haul Roads	523947.1	3521243.5	1566.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul174	Haul Roads	523959.9	3521280.8	1556.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul175	Haul Roads	523973.1	3521317.3	1545.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul176	Haul Roads	523986.9	3521353.5	1533.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul177	Haul Roads	524027.9	3521374.8	1524.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul178	Haul Roads	524052.1	3521343.8	1535.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul179	Haul Roads	524076.6	3521313.3	1550.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul180	Haul Roads	524101.1	3521284.5	1546.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul181	Haul Roads	524127.1	3521254.8	1537.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul182	Haul Roads	524152.4	3521228.5	1537.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul183	Haul Roads	523992.4	3521394.0	1527.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul184	Haul Roads	523998.6	3521433.5	1525.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul185	Haul Roads	524006.1	3521471.3	1524.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul186	Haul Roads	524012.9	3521509.5	1530.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul187	Haul Roads	524020.4	3521547.8	1540.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul188	Haul Roads	524027.6	3521587.0	1548.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul189	Haul Roads	524036.4	3521625.5	1551.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul190	Haul Roads	524045.9	3521663.8	1547.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul191	Haul Roads	524056.1	3521701.0	1540.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul192	Haul Roads	524066.1	3521740.3	1537.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul193	Haul Roads	524127.6	3521706.3	1530.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul194	Haul Roads	524161.6	3521724.5	1529.4	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul195	Haul Roads	524196.9	3521741.8	1525.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul196	Haul Roads	524229.1	3521763.3	1518.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003

**Table A2.2 Volume Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul197	Haul Roads	524247.4	3521790.8	1509.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul198	Haul Roads	524266.9	3521825.5	1509.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul199	Haul Roads	524287.4	3521857.8	1519.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul200	Haul Roads	524307.1	3521892.3	1533.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul201	Haul Roads	524014.6	3520885.0	1556.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul202	Haul Roads	524052.6	3520892.0	1549.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul203	Haul Roads	524091.6	3520898.5	1548.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul204	Haul Roads	524129.4	3520905.8	1542.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul205	Haul Roads	524168.1	3520911.8	1537.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul206	Haul Roads	524207.1	3520916.8	1535.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul207	Haul Roads	524216.9	3520704.8	1551.8	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul208	Haul Roads	524179.6	3520694.5	1555.7	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul209	Haul Roads	524141.6	3520683.3	1560.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul210	Haul Roads	524105.4	3520671.0	1564.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul211	Haul Roads	523923.1	3520819.0	1550.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul212	Haul Roads	523886.6	3520805.3	1553.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul213	Haul Roads	523850.1	3520792.0	1561.0	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul214	Haul Roads	523814.4	3520778.3	1565.2	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul215	Haul Roads	523777.4	3520764.8	1569.1	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul216	Haul Roads	523972.1	3520660.8	1558.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul217	Haul Roads	523941.9	3520637.8	1560.6	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul218	Haul Roads	523910.9	3520614.8	1562.5	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul219	Haul Roads	523878.6	3520590.8	1563.9	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul220	Haul Roads	523846.9	3520568.0	1565.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
Haul221	Haul Roads	523814.4	3520544.3	1568.3	6.5	16.3	6.05	0.6749	0.6443	0.9440	0.0025	0.1003
UNWD1	Unload to Waste Dump #1	524113.6	3520254.4	1574.4	6.5	4	6.05	0.4990	0.6443	0.9440	0.0025	0.1015
UNWD2	Unload to Waste Dump #2	524188.9	3520117.6	1554.7	6.5	4	6.05	0.4990	0.6443	0.9440	0.0025	0.1015
UNWD3	Unload to Waste Dump #3	524240.9	3519971.6	1553.6	6.5	4	6.05	0.4990	0.6443	0.9440	0.0025	0.1015
UNWD4	Unload to Waste Dump #4	523967.4	3520212.1	1578.2	6.5	4	6.05	0.4990	0.6443	0.9440	0.0025	0.1015

**Table A2.2 Volume Sources – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
UNWD5	Unload to Waste Dump #5	524028.6	3520056.4	1588.5	6.5	4	6.05	0.4990	0.6443	0.9440	0.0025	0.1015
UNWD6	Unload to Waste Dump #6	524094.6	3519896.1	1561.5	6.5	4	6.05	0.4990	0.6443	0.9440	0.0025	0.1015
UNWD7	Unload to Waste Dump #7	523882.4	3519999.9	1588.3	6.5	4	6.05	0.4990	0.6443	0.9440	0.0025	0.1015
UNWD8	Unload to Waste Dump #8	523948.4	3519844.1	1593.7	6.5	4	6.05	0.4990	0.6443	0.9440	0.0025	0.1015
UNWD9	Unload to Waste Dump #9	523788.1	3519792.4	1567.3	6.5	4	6.05	0.4990	0.6443	0.9440	0.0025	0.1015
UNWD10	Unload to Waste Dump #10	523637.1	3519872.4	1591.0	6.5	4	6.05	0.4990	0.6443	0.9440	0.0025	0.1015

**Table A2.3 Open Pit Source – Year 1 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Easterly Length (m)	Northerly Length (m)	Pit Volume (m <sup>3</sup> )	Angle from North	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM 2.5 (lb/hr)
PIT	Open Pit Mine	522319.9	3521271.1	1667.6	0	700	1000	152600000	0	63.74	76.43	87.01	0.46	9.36

**Table A2.4 Point Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM 2.5 (lb/hr)
PCL01	Crushing Area Scrubber (PC-CAS)	524076.4	3521780.6	1540.6	7.3	316.5	4.7	1.5	1.2800	-	-	-	0.8064
PCL02	Stockpile Area Scrubber (PC-SAS)	523855.4	3522544.9	1556.0	6.1	316.5	6.6	1.8	2.5900	-	-	-	0.9324
PCL03	Reclaim Tunnel Scrubber (PC-RTS)	523862.1	3522669.4	1549.6	6.1	316.5	3.9	1.8	1.0700	-	-	-	0.3852
PCL04	Pebble Crusher Area Scrubber (PC-PCAS)	523898.7	3522876.4	1543.0	7.3	316.5	5.7	1.5	1.5600	-	-	-	0.6864
PCL05	Copper Concentrate Scrubber 1 (PC-CCS1)	524033.0	3522992.6	1526.6	7.3	316.5	9.0	1.8	3.5500	-	-	-	1.2780
PCL06	Copper Concentrate Scrubber 2 (PC-CCS2)	524043.8	3522990.6	1526.9	7.3	316.5	9.0	1.8	3.5500	-	-	-	1.2780
PCL07	Moly Scrubber (PC-MS) / Electrostatic Precipitator (PC-EP)	524114.0	3522935.8	1540.8	16.8	533.2	3.2	0.3	0.0200	-	-	-	0.0190
PCL08	Moly Dust Collector (PC-MDC)	524034.0	3522999.3	1525.3	6.1	366.5	9.7	0.3	0.1066	-	-	-	0.0160
PCL09	Laboratory Dust Collector 1 (PC-L1)	523991.4	3522567.9	1542.5	6.1	316.5	23.2	0.5	0.2369	-	-	-	0.1563
PCL10	Laboratory Dust Collector 2 (PC-L2)	524009.6	3522566.4	1543.0	6.1	316.5	23.2	0.5	0.2369	-	-	-	0.1563
PCL11	Laboratory Dust Collector 3 (PC-L3)	524029.4	3522565.1	1543.6	6.1	316.5	23.2	0.5	0.2369	-	-	-	0.1563
FB01	Diesel Electrowinning Hot Water Generator (HWG)	524241.0	3522386.3	1527.5	3.7	810.9	39.7	0.1	0.0723	0.2190	0.8759	0.0093	0.0173

**Table A2.5 Volume Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
BLST1	Blasting	522517.6	3521978.6	1558.0	10	14.186	9.3023	28.45	580.67	147.33	17.33	1.64
BLST2	Blasting	522753.4	3521978.6	1558.0	10	14.186	9.3	28.45	580.67	147.33	17.33	1.64
BLST3	Blasting	522510.1	3521788.4	1558.0	10	14.186	9.3023	28.45	580.67	147.33	17.33	1.64
BLST5	Blasting	522510.1	3521575.4	1558.0	10	14.186	9.3	28.45	580.67	147.33	17.33	1.64
BLST4	Blasting	522751.3	3521784.1	1558.0	10	14.1866	9.3	28.45	580.67	147.33	17.33	1.64
BLST6	Blasting	522751.3	3521576.3	1558.0	10	14.186	9.3	28.45	580.67	147.33	17.33	1.64
UNLP1	Unload to Leachpad #1	524514.4	3520933.6	1522.2	6.5	4	6.05	0.2460	0.5144	0.7312	0.0010	0.0572
UNLP2	Unload to Leachpad #2	524523.9	3520721.4	1513.3	6.5	4	6.05	0.2460	0.5144	0.7312	0.0010	0.0572
UNLP3	Unload to Leachpad #3	524255.1	3520716.6	1545.2	6.5	4	6.05	0.2460	0.5144	0.7312	0.0010	0.0572
UNLP4	Unload to Leachpad #4	524250.4	3520933.6	1537.1	6.5	4	6.05	0.2460	0.5144	0.7312	0.0010	0.0572
UNLP5	Unload to Leachpad #5	523740.9	3520754.4	1570.0	6.5	4	6.05	0.2460	0.5144	0.7312	0.0010	0.0572
UNLP6	Unload to Leachpad #6	523783.4	3520523.1	1575.3	6.5	4	6.05	0.2460	0.5144	0.7312	0.0010	0.0572
UNSUL1	Unload to Sulfide Stockpile #1	523945.9	3521709.9	1560.1	6.5	4	6.05	0.0580	0.5144	0.7312	0.0010	0.0287
UNSUL2	Unload to Sulfide Stockpile #2	523878.1	3521730.1	1549.2	6.5	4	6.05	0.0580	0.5144	0.7312	0.0010	0.0287
UNSUL3	Unload to Sulfide Stockpile #3	523906.1	3521805.9	1549.0	6.5	4	6.05	0.0580	0.5144	0.7312	0.0010	0.0287
UNSUL4	Unload to Sulfide Stockpile #4	523963.4	3521788.6	1545.1	6.5	4	6.05	0.0580	0.5144	0.7312	0.0010	0.0287
PC01	Wind Erosion from Sulfide ore Stockpile	523924.1	3521760.1	1552.7	6	74	5.6	0.6200	-	-	-	0.0930
PC02	Primary Crusher	524077.9	3521773.9	1540.8	0	2.79	0.47	0.2418	-	-	-	0.0366
MD04	Moly Concentrate Bin to Hopper	524033.8	3522982.3	1528.5	3	0.47	0.7	0.0001	-	-	-	0.0000
TDS04	Fixed Tailings Conveyor 2 to Fixed Tailings Conveyor 3	524603.0	3522350.1	1515.4	3	0.47	0.7	0.0352	-	-	-	0.0053
TDS05	Fixed Tailings Conveyor 3 to Relocatable Conveyor	524801.3	3522465.1	1546.1	3	0.47	0.7	0.0352	-	-	-	0.0053
TDS06	Relocatable Conveyor to Shiftable Conveyor	524824.4	3522475.9	1540.2	3	0.47	0.7	0.0352	-	-	-	0.0053
TDS07	Shiftable Conveyor to Belt Wagon Conveyor	524903.9	3522511.6	1526.2	3	0.47	0.7	0.2682	-	-	-	0.0406
TDS08	Belt Wagon Conveyor to	524973.1	3522545.4	1506.6	3	0.47	0.7	0.2682	-	-	-	0.0406

**Table A2.5 Volume Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
	Spreader Crawler Mounted Conveyor											
TDS09	Spreader Crawler Mounted Conveyor to Tailings Storage	525053.9	3522581.1	1486.1	3	0.47	0.7	0.2682	-	-	-	0.0406
TDS10	Wind Erosion from Tailings Storage	525098.2	3522631.3	1478.4	6	573	5.6	3.4508	-	-	-	0.5176
MS01	Transfer of Bulk Pebble Lime to the Bulk Pebble Lime Silo	523891.5	3522885.8	1542.0	3	0.47	0.7	0.2632	-	-	-	0.2632
MS03	Bulk Pebble Lime Silo Screw Conveyor (CV-BPLS) to SAG	524050.8	3522871.3	1539.5	3	0.47	0.7	0.0169	-	-	-	0.0026
MS04	Pneumatic Lime Transfer From Truck to Lime Storage Bin (800-BN-801)	524078.7	3522861.6	1534.1	3	0.47	0.7	0.1316	-	-	-	0.1316
MS0506	Transfer of Flocculant from Supersacks to Flocculant Storage Bin	524123.4	3522869.4	1530.9	3	0.47	0.7	0.0006	-	-	-	0.0001
MS0708	Transfer of Guar from Bags to Guar Feeder (F-Gu) and Transfer of Granular Cobalt Sulfate from Bags to Cobalt	524198.0	3522368.1	1536.9	3	0.47	0.7	0.0001	-	-	-	0.0000
Haul1	Haul Roads	522470.4	3521193.0	1701.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul2	Haul Roads	522484.4	3521156.3	1711.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul3	Haul Roads	522498.6	3521120.5	1702.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul4	Haul Roads	522512.4	3521084.3	1687.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul5	Haul Roads	522525.9	3521047.5	1675.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul6	Haul Roads	522540.4	3521011.3	1674.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul7	Haul Roads	522554.1	3520974.8	1668.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul8	Haul Roads	522567.9	3520938.3	1677.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul9	Haul Roads	522582.1	3520902.5	1677.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul10	Haul Roads	522595.6	3520866.0	1669.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul11	Haul Roads	522610.1	3520829.0	1664.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul12	Haul Roads	522634.4	3520799.3	1660.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul13	Haul Roads	522668.9	3520782.8	1654.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul14	Haul Roads	522706.1	3520770.3	1645.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul15	Haul Roads	522743.1	3520757.3	1636.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797

**Table A2.5 Volume Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul16	Haul Roads	522780.4	3520744.5	1627.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul17	Haul Roads	522811.6	3520720.0	1624.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul18	Haul Roads	522842.9	3520695.8	1622.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul19	Haul Roads	522873.4	3520670.5	1622.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul20	Haul Roads	522905.1	3520649.3	1623.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul21	Haul Roads	522942.4	3520640.5	1616.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul22	Haul Roads	522980.6	3520634.0	1609.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul23	Haul Roads	523019.9	3520627.3	1601.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul24	Haul Roads	523058.1	3520621.3	1596.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul25	Haul Roads	523095.4	3520629.3	1592.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul26	Haul Roads	523131.9	3520643.0	1588.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul27	Haul Roads	523168.4	3520656.8	1587.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul28	Haul Roads	523205.4	3520670.3	1585.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul29	Haul Roads	523241.4	3520684.0	1584.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul30	Haul Roads	523277.9	3520697.8	1585.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul31	Haul Roads	523314.1	3520711.3	1587.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul32	Haul Roads	523350.9	3520724.8	1588.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul33	Haul Roads	523387.4	3520738.5	1588.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul34	Haul Roads	523424.4	3520752.3	1589.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul35	Haul Roads	523457.9	3520772.3	1586.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul36	Haul Roads	523492.1	3520790.8	1585.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul37	Haul Roads	523525.9	3520809.0	1578.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul38	Haul Roads	523560.6	3520827.8	1573.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul39	Haul Roads	523594.9	3520847.0	1567.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul40	Haul Roads	523628.4	3520868.3	1564.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul41	Haul Roads	523662.4	3520888.5	1563.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul42	Haul Roads	523696.6	3520907.8	1564.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul43	Haul Roads	523730.4	3520926.5	1564.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul44	Haul Roads	523765.1	3520945.0	1562.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul45	Haul Roads	523798.6	3520964.3	1553.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797

**Table A2.5 Volume Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul46	Haul Roads	523833.1	3520983.0	1547.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul47	Haul Roads	523866.6	3521002.3	1545.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul48	Haul Roads	523901.1	3521021.3	1542.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul49	Haul Roads	523920.1	3520986.0	1543.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul50	Haul Roads	523931.4	3520947.5	1545.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul51	Haul Roads	523941.9	3520910.8	1547.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul52	Haul Roads	523952.6	3520873.0	1549.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul53	Haul Roads	523963.1	3520834.8	1552.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul54	Haul Roads	523973.4	3520797.5	1551.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul55	Haul Roads	523983.9	3520760.5	1551.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul56	Haul Roads	523995.4	3520722.3	1558.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul57	Haul Roads	524006.4	3520684.0	1561.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul58	Haul Roads	524023.9	3520649.3	1561.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul59	Haul Roads	524042.1	3520613.5	1563.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul60	Haul Roads	524061.1	3520580.3	1570.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul61	Haul Roads	524079.4	3520545.3	1573.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul62	Haul Roads	524098.9	3520511.3	1563.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul63	Haul Roads	524116.6	3520475.3	1557.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul64	Haul Roads	524134.1	3520441.0	1557.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul65	Haul Roads	524149.4	3520404.3	1552.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul66	Haul Roads	524164.9	3520368.5	1549.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul67	Haul Roads	524182.4	3520335.0	1558.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul68	Haul Roads	524199.6	3520300.0	1559.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul69	Haul Roads	523908.1	3521059.5	1540.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul70	Haul Roads	523915.4	3521097.5	1547.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul71	Haul Roads	523926.4	3521135.8	1551.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul72	Haul Roads	523940.4	3521171.5	1561.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul73	Haul Roads	523952.9	3521209.3	1564.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul74	Haul Roads	523965.9	3521245.8	1564.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul75	Haul Roads	523977.9	3521282.5	1554.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797

**Table A2.5 Volume Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul76	Haul Roads	523991.6	3521319.0	1540.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul77	Haul Roads	524004.1	3521355.5	1530.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul78	Haul Roads	524037.1	3521331.8	1540.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul79	Haul Roads	524062.9	3521304.0	1549.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul80	Haul Roads	524087.4	3521275.5	1546.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul81	Haul Roads	524113.9	3521245.5	1539.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul82	Haul Roads	524142.4	3521218.8	1537.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul83	Haul Roads	524010.1	3521393.3	1525.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul84	Haul Roads	524017.4	3521431.8	1525.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul85	Haul Roads	524023.9	3521470.8	1524.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul86	Haul Roads	524030.6	3521509.5	1530.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul87	Haul Roads	524036.9	3521547.0	1540.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul88	Haul Roads	524048.1	3521583.8	1548.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul89	Haul Roads	524060.4	3521621.5	1551.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul90	Haul Roads	524072.1	3521659.5	1540.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul91	Haul Roads	524083.9	3521697.0	1533.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul92	Haul Roads	524095.9	3521733.3	1537.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul93	Haul Roads	524131.6	3521699.0	1527.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul94	Haul Roads	524168.1	3521714.5	1528.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul95	Haul Roads	524202.4	3521732.3	1526.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul96	Haul Roads	524236.4	3521753.3	1520.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul97	Haul Roads	524258.4	3521785.5	1508.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul98	Haul Roads	524279.4	3521819.8	1510.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul99	Haul Roads	524298.9	3521853.3	1521.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul100	Haul Roads	524318.6	3521888.8	1532.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul101	Haul Roads	522485.1	3521197.5	1698.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul102	Haul Roads	522499.4	3521161.8	1707.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul103	Haul Roads	522514.4	3521125.5	1697.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul104	Haul Roads	522528.9	3521090.5	1681.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul105	Haul Roads	522542.6	3521052.5	1670.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797

**Table A2.5 Volume Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul106	Haul Roads	522556.4	3521016.5	1668.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul107	Haul Roads	522570.6	3520979.3	1663.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul108	Haul Roads	522585.1	3520944.3	1669.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul109	Haul Roads	522598.1	3520908.0	1671.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul110	Haul Roads	522613.1	3520872.0	1663.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul111	Haul Roads	522626.4	3520834.3	1658.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul112	Haul Roads	522639.6	3520810.8	1656.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul113	Haul Roads	522676.1	3520797.8	1650.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul114	Haul Roads	522713.4	3520785.5	1642.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul115	Haul Roads	522749.9	3520773.5	1633.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul116	Haul Roads	522786.6	3520760.5	1625.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul117	Haul Roads	522819.9	3520734.8	1622.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul118	Haul Roads	522850.9	3520710.3	1620.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul119	Haul Roads	522881.4	3520686.5	1618.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul120	Haul Roads	522911.9	3520662.3	1619.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul121	Haul Roads	522944.6	3520654.0	1614.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul122	Haul Roads	522982.6	3520647.3	1607.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul123	Haul Roads	523021.1	3520641.0	1600.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul124	Haul Roads	523059.9	3520634.3	1596.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul125	Haul Roads	523088.6	3520643.8	1592.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul126	Haul Roads	523125.9	3520656.8	1586.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul127	Haul Roads	523162.1	3520672.0	1586.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul128	Haul Roads	523197.9	3520684.8	1585.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul129	Haul Roads	523234.9	3520698.5	1583.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul130	Haul Roads	523270.9	3520712.8	1583.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul131	Haul Roads	523308.9	3520725.8	1585.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul132	Haul Roads	523345.4	3520739.0	1585.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul133	Haul Roads	523382.4	3520753.3	1586.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul134	Haul Roads	523418.1	3520766.8	1587.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul135	Haul Roads	523452.4	3520786.5	1586.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797

**Table A2.5 Volume Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul136	Haul Roads	523486.6	3520805.8	1582.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul137	Haul Roads	523520.1	3520824.5	1575.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul138	Haul Roads	523554.6	3520843.0	1570.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul139	Haul Roads	523585.1	3520865.8	1566.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul140	Haul Roads	523617.6	3520889.3	1564.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul141	Haul Roads	523649.1	3520910.8	1564.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul142	Haul Roads	523681.6	3520932.3	1564.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul143	Haul Roads	523714.1	3520954.8	1563.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul144	Haul Roads	523745.6	3520977.5	1553.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul145	Haul Roads	523779.1	3520998.8	1549.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul146	Haul Roads	523811.9	3521018.3	1549.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul147	Haul Roads	523845.4	3521038.8	1549.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul148	Haul Roads	523879.4	3521059.5	1544.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul149	Haul Roads	523942.9	3520992.8	1541.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul150	Haul Roads	523953.6	3520954.8	1546.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul151	Haul Roads	523964.9	3520916.8	1550.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul152	Haul Roads	523974.9	3520878.8	1550.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul153	Haul Roads	523986.1	3520841.5	1551.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul154	Haul Roads	523996.9	3520803.5	1553.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul155	Haul Roads	524007.4	3520767.0	1554.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul156	Haul Roads	524018.4	3520729.0	1561.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul157	Haul Roads	524028.6	3520691.3	1563.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul158	Haul Roads	524046.4	3520657.8	1565.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul159	Haul Roads	524065.1	3520623.8	1568.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul160	Haul Roads	524083.6	3520587.8	1573.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul161	Haul Roads	524102.4	3520554.3	1573.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul162	Haul Roads	524119.9	3520519.0	1563.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul163	Haul Roads	524137.4	3520484.8	1553.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul164	Haul Roads	524155.6	3520449.8	1548.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul165	Haul Roads	524173.9	3520415.0	1549.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797

**Table A2.5 Volume Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul166	Haul Roads	524189.6	3520379.3	1548.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul167	Haul Roads	524207.4	3520345.3	1550.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul168	Haul Roads	524224.9	3520309.8	1554.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul169	Haul Roads	523893.1	3521097.5	1550.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul170	Haul Roads	523907.9	3521134.0	1552.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul171	Haul Roads	523921.1	3521171.3	1562.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul172	Haul Roads	523933.1	3521207.3	1568.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul173	Haul Roads	523947.1	3521243.5	1566.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul174	Haul Roads	523959.9	3521280.8	1556.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul175	Haul Roads	523973.1	3521317.3	1545.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul176	Haul Roads	523986.9	3521353.5	1533.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul177	Haul Roads	524027.9	3521374.8	1524.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul178	Haul Roads	524052.1	3521343.8	1535.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul179	Haul Roads	524076.6	3521313.3	1550.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul180	Haul Roads	524101.1	3521284.5	1546.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul181	Haul Roads	524127.1	3521254.8	1537.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul182	Haul Roads	524152.4	3521228.5	1537.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul183	Haul Roads	523992.4	3521394.0	1527.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul184	Haul Roads	523998.6	3521433.5	1525.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul185	Haul Roads	524006.1	3521471.3	1524.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul186	Haul Roads	524012.9	3521509.5	1530.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul187	Haul Roads	524020.4	3521547.8	1540.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul188	Haul Roads	524027.6	3521587.0	1548.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul189	Haul Roads	524036.4	3521625.5	1551.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul190	Haul Roads	524045.9	3521663.8	1547.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul191	Haul Roads	524056.1	3521701.0	1540.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul192	Haul Roads	524066.1	3521740.3	1537.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul193	Haul Roads	524127.6	3521706.3	1530.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul194	Haul Roads	524161.6	3521724.5	1529.4	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul195	Haul Roads	524196.9	3521741.8	1525.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797

**Table A2.5 Volume Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul196	Haul Roads	524229.1	3521763.3	1518.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul197	Haul Roads	524247.4	3521790.8	1509.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul198	Haul Roads	524266.9	3521825.5	1509.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul199	Haul Roads	524287.4	3521857.8	1519.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul200	Haul Roads	524307.1	3521892.3	1533.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul201	Haul Roads	524014.6	3520885.0	1556.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul202	Haul Roads	524052.6	3520892.0	1549.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul203	Haul Roads	524091.6	3520898.5	1548.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul204	Haul Roads	524129.4	3520905.8	1542.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul205	Haul Roads	524168.1	3520911.8	1537.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul206	Haul Roads	524207.1	3520916.8	1535.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul207	Haul Roads	524216.9	3520704.8	1551.8	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul208	Haul Roads	524179.6	3520694.5	1555.7	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul209	Haul Roads	524141.6	3520683.3	1560.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul210	Haul Roads	524105.4	3520671.0	1564.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul211	Haul Roads	523923.1	3520819.0	1550.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul212	Haul Roads	523886.6	3520805.3	1553.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul213	Haul Roads	523850.1	3520792.0	1561.0	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul214	Haul Roads	523814.4	3520778.3	1565.2	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul215	Haul Roads	523777.4	3520764.8	1569.1	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul216	Haul Roads	523972.1	3520660.8	1558.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul217	Haul Roads	523941.9	3520637.8	1560.6	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul218	Haul Roads	523910.9	3520614.8	1562.5	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul219	Haul Roads	523878.6	3520590.8	1563.9	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul220	Haul Roads	523846.9	3520568.0	1565.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
Haul221	Haul Roads	523814.4	3520544.3	1568.3	6.5	16.3	6.05	0.5324	0.5144	0.7312	0.0010	0.0797
UNWD1	Unload to Waste Dump #1	524113.6	3520254.4	1574.4	6.5	4	6.05	0.4919	0.5144	0.7312	0.0010	0.0944
UNWD2	Unload to Waste Dump #2	524188.9	3520117.6	1554.7	6.5	4	6.05	0.4919	0.5144	0.7312	0.0010	0.0944
UNWD3	Unload to Waste Dump #3	524240.9	3519971.6	1553.6	6.5	4	6.05	0.4919	0.5144	0.7312	0.0010	0.0944

**Table A2.5 Volume Sources – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
UNWD4	Unload to Waste Dump #4	523967.4	3520212.1	1578.2	6.5	4	6.05	0.4919	0.5144	0.7312	0.0010	0.0944
UNWD5	Unload to Waste Dump #5	524028.6	3520056.4	1588.5	6.5	4	6.05	0.4919	0.5144	0.7312	0.0010	0.0944
UNWD6	Unload to Waste Dump #6	524094.6	3519896.1	1561.5	6.5	4	6.05	0.4919	0.5144	0.7312	0.0010	0.0944
UNWD7	Unload to Waste Dump #7	523882.4	3519999.9	1588.3	6.5	4	6.05	0.4919	0.5144	0.7312	0.0010	0.0944
UNWD8	Unload to Waste Dump #8	523948.4	3519844.1	1593.7	6.5	4	6.05	0.4919	0.5144	0.7312	0.0010	0.0944
UNWD9	Unload to Waste Dump #9	523788.1	3519792.4	1567.3	6.5	4	6.05	0.4919	0.5144	0.7312	0.0010	0.0944
UNWD10	Unload to Waste Dump #10	523637.1	3519872.4	1591.0	6.5	4	6.05	0.4919	0.5144	0.7312	0.0010	0.0944

**Table A2.6 Open Pit Source – Year 1 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Easterly Length (m)	Northerly Length (m)	Pit Volume (m³)	Angle from North	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM 2.5 (lb/hr)
PIT	Open Pit Mine	522319.8	3521271.1	1667.6	0	700	1000	1.53E+08	0	46.27	65.94	71.74	0.11	7.16

**Table A2.7 Point Sources – Year 5 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM 2.5 (lb/hr)
PCL01	Crushing Area Scrubber (PC-CAS)	524076.4	3521780.6	1540.6	7.3	316.5	4.7	1.5	1.2800	-	-	-	0.8064
PCL02	Stockpile Area Scrubber (PC-SAS)	523855.4	3522544.9	1556.0	6.1	316.5	6.6	1.8	2.5900	-	-	-	0.9324
PCL03	Reclaim Tunnel Scrubber (PC-RTS)	523862.1	3522669.4	1549.6	6.1	316.5	3.9	1.8	1.0700	-	-	-	0.3852
PCL04	Pebble Crusher Area Scrubber (PC-PCAS)	523898.7	3522876.4	1543.0	7.3	316.5	5.7	1.5	1.5600	-	-	-	0.6864
PCL05	Copper Concentrate Scrubber 1 (PC-CCS1)	524033.0	3522992.6	1526.6	7.3	316.5	9.0	1.8	3.5500	-	-	-	1.2780
PCL06	Copper Concentrate Scrubber 2 (PC-CCS2)	524043.8	3522990.6	1526.9	7.3	316.5	9.0	1.8	3.5500	-	-	-	1.2780
PCL07	Moly Scrubber (PC-MS) / Electrostatic Precipitator (PC-EP)	524114.0	3522935.8	1540.8	16.8	533.2	3.2	0.3	0.0200	-	-	-	0.0190
PCL08	Moly Dust Collector (PC-MDC)	524034.0	3522999.3	1525.3	6.1	366.5	9.7	0.3	0.1066	-	-	-	0.0160
PCL09	Laboratory Dust Collector 1 (PC-L1)	523991.4	3522567.9	1542.5	6.1	316.5	23.2	0.5	0.3553	-	-	-	0.2345
PCL10	Laboratory Dust Collector 2 (PC-L2)	524009.6	3522566.4	1543.0	6.1	316.5	23.2	0.5	0.3553	-	-	-	0.2345
PCL11	Laboratory Dust Collector 3 (PC-L3)	524029.4	3522565.1	1543.6	6.1	316.5	23.2	0.5	0.3553	-	-	-	0.2345
FB01	Diesel Electrowinning Hot Water Generator (HWG)	524241.0	3522386.3	1527.5	3.7	810.9	39.7	0.1	0.0723	0.2190	0.8759	0.0093	0.0173

**Table A2.8 Volume Sources - Year 5 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
BLST1	Blasting	522517.6	3521978.6	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
BLST2	Blasting	522753.4	3521978.6	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
BLST3	Blasting	522510.1	3521788.4	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
BLST5	Blasting	522510.1	3521575.4	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
BLST4	Blasting	522751.3	3521784.1	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
BLST6	Blasting	522751.3	3521576.3	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
UNSUL1	Unload to Sulfide Stockpile #1	523945.9	3521709.9	1560.1	6.5	4.00	6.05	0.5503	0.5196	0.7291	0.0023	0.1071
UNSUL2	Unload to Sulfide Stockpile #2	523878.1	3521730.1	1549.2	6.5	4.00	6.05	0.5503	0.5196	0.7291	0.0023	0.1071
UNSUL3	Unload to Sulfide Stockpile #3	523906.1	3521805.9	1549.0	6.5	4.00	6.05	0.5503	0.5196	0.7291	0.0023	0.1071
UNSUL4	Unload to Sulfide Stockpile #4	523963.4	3521788.6	1545.1	6.5	4.00	6.05	0.5503	0.5196	0.7291	0.0023	0.1071
PC01	Wind Erosion from Sulfide ore Stockpile	523924.1	3521760.1	1552.7	6.0	74.00	5.60	0.6200	-	-	-	0.6200
PC02	Primary Crusher	524077.9	3521773.9	1540.8	0.0	2.79	0.47	0.6836	-	-	-	0.6836
MD04	Moly Concentrate Bin to Hopper	524033.8	3522982.3	1528.5	3.0	0.47	0.70	0.0003	-	-	-	0.0003
TDS04	Fixed Tailings Conveyor 2 to Fixed Tailings Conveyor 3	524603.0	3522350.1	1515.4	3.0	0.47	0.70	0.1241	-	-	-	0.1241
TDS05	Fixed Tailings Conveyor 3 to Relocatable Conveyor	524801.3	3522465.1	1546.1	3.0	0.47	0.70	0.1241	-	-	-	0.1241
TDS06	Relocatable Conveyor to Shiftable Conveyor	524824.4	3522475.9	1540.2	3.0	0.47	0.70	0.1241	-	-	-	0.1241
TDS07	Shiftable Conveyor to Belt Wagon Conveyor	524903.9	3522511.6	1526.2	3.0	0.47	0.70	0.9471	-	-	-	0.9471
TDS08	Belt Wagon Conveyor to Spreader Crawler Mounted Conveyor	524973.1	3522545.4	1506.6	3.0	0.47	0.70	0.9471	-	-	-	0.9471
TDS09	Spreader Crawler Mounted Conveyor to Tailings Storage	525053.9	3522581.1	1486.1	3.0	0.47	0.70	0.9471	-	-	-	0.9471
TDS10	Wind Erosion from Tailings Storage	525098.2	3522631.3	1478.4	6.0	573.00	5.60	3.4508	-	-	-	3.4508
MS01	Transfer of Bulk Pebble Lime to the Bulk Pebble Lime Silo	523891.5	3522885.8	1542.0	3.0	0.47	0.70	0.3159	-	-	-	0.3159
MS03	Bulk Pebble Lime Silo	524050.8	3522871.3	1539.5	3.0	0.47	0.70	0.0203	-	-	-	0.0203

**Table A2.8 Volume Sources - Year 5 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
	Screw Conveyor (CV-BPLS) to SAG											
MS04	Pneumatic Lime Transfer From Truck to Lime Storage Bin (800-BN-801)	524078.7	3522861.6	1534.1	3.0	0.47	0.70	0.1579	-	-	-	0.1579
MS0506	Transfer of Flocculant from Supersacks to Flocculant Storage Bin	524123.4	3522869.4	1530.9	3.0	0.47	0.70	0.0008	-	-	-	0.0008
MS0708	Transfer of Guar from Bags to Guar Feeder (F-Gu) and Transfer of Granular Cobalt Sulfate from Bags to Cobalt	524198.0	3522368.1	1536.9	3.0	0.47	0.70	0.0001	-	-	-	0.0001
Haul1	Haul Roads	522470.4	3521193.0	1701.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul2	Haul Roads	522484.4	3521156.3	1711.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul3	Haul Roads	522498.6	3521120.5	1702.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul4	Haul Roads	522512.4	3521084.3	1687.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul5	Haul Roads	522525.9	3521047.5	1675.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul6	Haul Roads	522540.4	3521011.3	1674.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul7	Haul Roads	522554.1	3520974.8	1668.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul8	Haul Roads	522567.9	3520938.3	1677.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul9	Haul Roads	522582.1	3520902.5	1677.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul10	Haul Roads	522595.6	3520866.0	1669.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul11	Haul Roads	522610.1	3520829.0	1664.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul12	Haul Roads	522634.4	3520799.3	1660.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul13	Haul Roads	522668.9	3520782.8	1654.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul14	Haul Roads	522706.1	3520770.3	1645.7	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul15	Haul Roads	522743.1	3520757.3	1636.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul16	Haul Roads	522780.4	3520744.5	1627.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul17	Haul Roads	522811.6	3520720.0	1624.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul18	Haul Roads	522842.9	3520695.8	1622.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul19	Haul Roads	522873.4	3520670.5	1622.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul20	Haul Roads	522905.1	3520649.3	1623.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul21	Haul Roads	522942.4	3520640.5	1616.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994

**Table A2.8 Volume Sources - Year 5 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul22	Haul Roads	522980.6	3520634.0	1609.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul23	Haul Roads	523019.9	3520627.3	1601.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul24	Haul Roads	523058.1	3520621.3	1596.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul25	Haul Roads	523095.4	3520629.3	1592.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul26	Haul Roads	523131.9	3520643.0	1588.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul27	Haul Roads	523168.4	3520656.8	1587.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul28	Haul Roads	523205.4	3520670.3	1585.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul29	Haul Roads	523241.4	3520684.0	1584.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul30	Haul Roads	523277.9	3520697.8	1585.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul31	Haul Roads	523314.1	3520711.3	1587.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul32	Haul Roads	523350.9	3520724.8	1588.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul33	Haul Roads	523387.4	3520738.5	1588.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul34	Haul Roads	523424.4	3520752.3	1589.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul35	Haul Roads	523457.9	3520772.3	1586.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul36	Haul Roads	523492.1	3520790.8	1585.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul37	Haul Roads	523525.9	3520809.0	1578.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul38	Haul Roads	523560.6	3520827.8	1573.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul39	Haul Roads	523594.9	3520847.0	1567.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul40	Haul Roads	523628.4	3520868.3	1564.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul41	Haul Roads	523662.4	3520888.5	1563.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul42	Haul Roads	523696.6	3520907.8	1564.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul43	Haul Roads	523730.4	3520926.5	1564.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul44	Haul Roads	523765.1	3520945.0	1562.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul45	Haul Roads	523798.6	3520964.3	1553.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul46	Haul Roads	523833.1	3520983.0	1547.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul47	Haul Roads	523866.6	3521002.3	1545.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul48	Haul Roads	523901.1	3521021.3	1542.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul49	Haul Roads	523908.1	3521059.5	1543.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul50	Haul Roads	523915.4	3521097.5	1545.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994

**Table A2.8 Volume Sources - Year 5 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul51	Haul Roads	523926.4	3521135.8	1547.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul52	Haul Roads	523940.4	3521171.5	1549.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul53	Haul Roads	523952.9	3521209.3	1552.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul54	Haul Roads	523965.9	3521245.8	1551.7	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul55	Haul Roads	523977.9	3521282.5	1551.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul56	Haul Roads	523991.6	3521319.0	1558.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul57	Haul Roads	524004.1	3521355.5	1561.7	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul58	Haul Roads	524037.1	3521331.8	1561.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul59	Haul Roads	524062.9	3521304.0	1563.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul60	Haul Roads	524087.4	3521275.5	1570.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul61	Haul Roads	524113.9	3521245.5	1573.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul62	Haul Roads	524142.4	3521218.8	1563.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul63	Haul Roads	524010.1	3521393.3	1557.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul64	Haul Roads	524017.4	3521431.8	1557.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul65	Haul Roads	524023.9	3521470.8	1552.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul66	Haul Roads	524030.6	3521509.5	1549.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul67	Haul Roads	524036.9	3521547.0	1558.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul68	Haul Roads	524048.1	3521583.8	1559.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul69	Haul Roads	524060.4	3521621.5	1540.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul70	Haul Roads	524072.1	3521659.5	1547.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul71	Haul Roads	524083.9	3521697.0	1551.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul72	Haul Roads	524095.9	3521733.3	1561.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul73	Haul Roads	524131.6	3521699.0	1564.7	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul74	Haul Roads	524168.1	3521714.5	1564.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul75	Haul Roads	524202.4	3521732.3	1554.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul76	Haul Roads	524236.4	3521753.3	1540.7	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul77	Haul Roads	524258.4	3521785.5	1530.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul78	Haul Roads	524279.4	3521819.8	1540.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul79	Haul Roads	524298.9	3521853.3	1549.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994

**Table A2.8 Volume Sources - Year 5 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul80	Haul Roads	524318.6	3521888.8	1546.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul81	Haul Roads	522485.1	3521197.5	1539.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul82	Haul Roads	522499.4	3521161.8	1537.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul83	Haul Roads	522514.4	3521125.5	1525.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul84	Haul Roads	522528.9	3521090.5	1525.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul85	Haul Roads	522542.6	3521052.5	1524.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul86	Haul Roads	522556.4	3521016.5	1530.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul87	Haul Roads	522570.6	3520979.3	1540.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul88	Haul Roads	522585.1	3520944.3	1548.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul89	Haul Roads	522598.1	3520908.0	1551.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul90	Haul Roads	522613.1	3520872.0	1540.7	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul91	Haul Roads	522626.4	3520834.3	1533.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul92	Haul Roads	522639.6	3520810.8	1537.7	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul93	Haul Roads	522676.1	3520797.8	1527.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul94	Haul Roads	522713.4	3520785.5	1528.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul95	Haul Roads	522749.9	3520773.5	1526.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul96	Haul Roads	522786.6	3520760.5	1520.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul97	Haul Roads	522819.9	3520734.8	1508.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul98	Haul Roads	522850.9	3520710.3	1510.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul99	Haul Roads	522881.4	3520686.5	1521.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul100	Haul Roads	522911.9	3520662.3	1532.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul101	Haul Roads	522944.6	3520654.0	1698.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul102	Haul Roads	522982.6	3520647.3	1707.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul103	Haul Roads	523021.1	3520641.0	1697.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul104	Haul Roads	523059.9	3520634.3	1681.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul105	Haul Roads	523088.6	3520643.8	1670.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul106	Haul Roads	523125.9	3520656.8	1668.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul107	Haul Roads	523162.1	3520672.0	1663.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul108	Haul Roads	523197.9	3520684.8	1669.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994

**Table A2.8 Volume Sources - Year 5 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul109	Haul Roads	523234.9	3520698.5	1671.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul110	Haul Roads	523270.9	3520712.8	1663.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul111	Haul Roads	523308.9	3520725.8	1658.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul112	Haul Roads	523345.4	3520739.0	1656.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul113	Haul Roads	523382.4	3520753.3	1650.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul114	Haul Roads	523418.1	3520766.8	1642.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul115	Haul Roads	523452.4	3520786.5	1633.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul116	Haul Roads	523486.6	3520805.8	1625.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul117	Haul Roads	523520.1	3520824.5	1622.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul118	Haul Roads	523554.6	3520843.0	1620.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul119	Haul Roads	523585.1	3520865.8	1618.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul120	Haul Roads	523617.6	3520889.3	1619.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul121	Haul Roads	523649.1	3520910.8	1614.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul122	Haul Roads	523681.6	3520932.3	1607.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul123	Haul Roads	523714.1	3520954.8	1600.7	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul124	Haul Roads	523745.6	3520977.5	1596.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul125	Haul Roads	523779.1	3520998.8	1592.7	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul126	Haul Roads	523811.9	3521018.3	1586.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul127	Haul Roads	523845.4	3521038.8	1586.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul128	Haul Roads	523879.4	3521059.5	1585.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul129	Haul Roads	523893.1	3521097.5	1583.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul130	Haul Roads	523907.9	3521134.0	1583.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul131	Haul Roads	523921.1	3521171.3	1585.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul132	Haul Roads	523933.1	3521207.3	1585.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul133	Haul Roads	523947.1	3521243.5	1586.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul134	Haul Roads	523959.9	3521280.8	1587.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul135	Haul Roads	523973.1	3521317.3	1586.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul136	Haul Roads	523986.9	3521353.5	1582.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul137	Haul Roads	524027.9	3521374.8	1575.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994

**Table A2.8 Volume Sources - Year 5 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul138	Haul Roads	524052.1	3521343.8	1570.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul139	Haul Roads	524076.6	3521313.3	1566.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul140	Haul Roads	524101.1	3521284.5	1564.9	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul141	Haul Roads	524127.1	3521254.8	1564.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul142	Haul Roads	524152.4	3521228.5	1564.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul143	Haul Roads	523992.4	3521394.0	1563.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul144	Haul Roads	523998.6	3521433.5	1553.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul145	Haul Roads	524006.1	3521471.3	1549.8	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul146	Haul Roads	524012.9	3521509.5	1549.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul147	Haul Roads	524020.4	3521547.8	1549.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul148	Haul Roads	524027.6	3521587.0	1544.5	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul149	Haul Roads	524036.4	3521625.5	1541.3	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul150	Haul Roads	524045.9	3521663.8	1546.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul151	Haul Roads	524056.1	3521701.0	1550.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul152	Haul Roads	524066.1	3521740.3	1550.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul153	Haul Roads	524127.6	3521706.3	1551.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul154	Haul Roads	524161.6	3521724.5	1553.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul155	Haul Roads	524196.9	3521741.8	1554.6	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul156	Haul Roads	524229.1	3521763.3	1561.0	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul157	Haul Roads	524247.4	3521790.8	1563.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul158	Haul Roads	524266.9	3521825.5	1565.4	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul159	Haul Roads	524287.4	3521857.8	1568.1	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
Haul160	Haul Roads	524307.1	3521892.3	1573.2	6.5	16.28	6.05	0.7046	0.5196	0.7291	0.0023	0.0994
UNWD1	Unload to Waste Dump #1	524113.6	3520254.4	1574.4	7.0	4.00	6.51	0.6416	0.5196	0.7291	0.0023	0.1209
UNWD2	Unload to Waste Dump #2	524188.9	3520117.6	1554.7	7.0	4.00	6.51	0.6416	0.5196	0.7291	0.0023	0.1209
UNWD3	Unload to Waste Dump #3	524240.9	3519971.6	1553.6	7.0	4.00	6.51	0.6416	0.5196	0.7291	0.0023	0.1209
UNWD4	Unload to Waste Dump #4	523967.4	3520212.1	1578.2	7.0	4.00	6.51	0.6416	0.5196	0.7291	0.0023	0.1209
UNWD5	Unload to Waste Dump #5	524028.6	3520056.4	1588.5	7.0	4.00	6.51	0.6416	0.5196	0.7291	0.0023	0.1209

**Table A2.8 Volume Sources - Year 5 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
UNWD6	Unload to Waste Dump #6	524094.6	3519896.1	1561.5	7.0	4.00	6.51	0.6416	0.5196	0.7291	0.0023	0.1209
UNWD7	Unload to Waste Dump #7	523882.4	3519999.9	1588.3	7.0	4.00	6.51	0.6416	0.5196	0.7291	0.0023	0.1209
UNWD8	Unload to Waste Dump #8	523948.4	3519844.1	1593.7	7.0	4.00	6.51	0.6416	0.5196	0.7291	0.0023	0.1209
UNWD9	Unload to Waste Dump #9	523788.1	3519792.4	1567.3	7.0	4.00	6.51	0.6416	0.5196	0.7291	0.0023	0.1209
UNWD10	Unload to Waste Dump #10	523637.1	3519872.4	1591.0	7.0	4.00	6.51	0.6416	0.5196	0.7291	0.0023	0.1209
UNLP1	Unload to Leachpad #1	524514.4	3520933.6	1522.2	7.0	4.00	6.51	0.0468	0.5196	0.7291	0.0023	0.0308
UNLP2	Unload to Leachpad #2	524523.9	3520721.4	1513.3	7.0	4.00	6.51	0.0468	0.5196	0.7291	0.0023	0.0308
UNLP3	Unload to Leachpad #3	524255.1	3520716.6	1545.2	7.0	4.00	6.51	0.0468	0.5196	0.7291	0.0023	0.0308
UNLP4	Unload to Leachpad #4	524250.4	3520933.6	1537.1	7.0	4.00	6.51	0.0468	0.5196	0.7291	0.0023	0.0308
UNLP5	Unload to Leachpad #5	523740.9	3520754.4	1570.0	7.0	4.00	6.51	0.0468	0.5196	0.7291	0.0023	0.0308
UNLP6	Unload to Leachpad #6	523783.4	3520523.1	1575.3	7.0	4.00	6.51	0.0468	0.5196	0.7291	0.0023	0.0308

**Table A2.9 Open Pit Source – Year 5 Hourly Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Easterly Length (m)	Northerly Length (m)	Pit Volume (m³)	Angle from North	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM 2.5 (lb/hr)
PIT	Open Pit Mine	522269.9	3521221.1	1667.6	0	750	1050	279562500	0	125.58	106.65	139.54	0.51	24.31
PIT2	Open Pit	523161.4	3520551.6	1595.8	0	1200	1400	77280000	60	49.67	40.01	56.14	0.18	7.46

**Table A2.10 Point Sources – Year 5 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM 2.5 (lb/hr)
PCL01	Crushing Area Scrubber (PC-CAS)	524076.4	3521780.6	1540.6	7.3	316.5	4.7	1.5	1.2800	-	-	-	0.8064
PCL02	Stockpile Area Scrubber (PC-SAS)	523855.4	3522544.9	1556.0	6.1	316.5	6.6	1.8	2.5900	-	-	-	0.9324
PCL03	Reclaim Tunnel Scrubber (PC-RTS)	523862.1	3522669.4	1549.6	6.1	316.5	3.9	1.8	1.0700	-	-	-	0.3852
PCL04	Pebble Crusher Area Scrubber (PC-PCAS)	523898.7	3522876.4	1543.0	7.3	316.5	5.7	1.5	1.5600	-	-	-	0.6864
PCL05	Copper Concentrate Scrubber 1 (PC-CCS1)	524033.0	3522992.6	1526.6	7.3	316.5	9.0	1.8	3.5500	-	-	-	1.2780
PCL06	Copper Concentrate Scrubber 2 (PC-CCS2)	524043.8	3522990.6	1526.9	7.3	316.5	9.0	1.8	3.5500	-	-	-	1.2780
PCL07	Moly Scrubber (PC-MS) / Electrostatic Precipitator (PC-EP)	524114.0	3522935.8	1540.8	16.8	533.2	3.2	0.3	0.0200	-	-	-	0.0190
PCL08	Moly Dust Collector (PC-MDC)	524034.0	3522999.3	1525.3	6.1	366.5	9.7	0.3	0.1066	-	-	-	0.0160
PCL09	Laboratory Dust Collector 1 (PC-L1)	523991.4	3522567.9	1542.5	6.1	316.5	23.2	0.5	0.2369	-	-	-	0.1563
PCL10	Laboratory Dust Collector 2 (PC-L2)	524009.6	3522566.4	1543.0	6.1	316.5	23.2	0.5	0.2369	-	-	-	0.1563
PCL11	Laboratory Dust Collector 3 (PC-L3)	524029.4	3522565.1	1543.6	6.1	316.5	23.2	0.5	0.2369	-	-	-	0.1563
FB01	Diesel Electrowinning Hot Water Generator (HWG)	524241.0	3522386.3	1527.5	3.7	810.9	39.7	0.1	0.0723	0.2190	0.8759	0.0093	0.0173

**Table A2.8 Volume Sources - Year 5 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
BLST1	Blasting	522517.6	3521978.6	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
BLST2	Blasting	522753.4	3521978.6	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
BLST3	Blasting	522510.1	3521788.4	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
BLST5	Blasting	522510.1	3521575.4	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
BLST4	Blasting	522751.3	3521784.1	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
BLST6	Blasting	522751.3	3521576.3	1558.0	10.0	14.19	9.30	28.45	580.67	147.33	17.33	1.64
UNSUL1	Unload to Sulfide Stockpile #1	523945.9	3521709.9	1560.1	6.5	4.00	6.05	0.0620	0.4189	0.5681	0.0008	0.0247
UNSUL2	Unload to Sulfide Stockpile #2	523878.1	3521730.1	1549.2	6.5	4.00	6.05	0.0620	0.4189	0.5681	0.0008	0.0247
UNSUL3	Unload to Sulfide Stockpile #3	523906.1	3521805.9	1549.0	6.5	4.00	6.05	0.0620	0.4189	0.5681	0.0008	0.0247
UNSUL4	Unload to Sulfide Stockpile #4	523963.4	3521788.6	1545.1	6.5	4.00	6.05	0.0620	0.4189	0.5681	0.0008	0.0247
PC01	Wind Erosion from Sulfide ore Stockpile	523924.1	3521760.1	1552.7	6.0	74.00	5.60	0.6200	-	-	-	0.0930
PC02	Primary Crusher	524077.9	3521773.9	1540.8	0.0	2.79	0.47	0.3074	-	-	-	0.0465
MD04	Moly Concentrate Bin to Hopper	524033.8	3522982.3	1528.5	3.0	0.47	0.70	0.0001	-	-	-	0.0000
TDS04	Fixed Tailings Conveyor 2 to Fixed Tailings Conveyor 3	524603.0	3522350.1	1515.4	3.0	0.47	0.70	0.0447	-	-	-	0.0068
TDS05	Fixed Tailings Conveyor 3 to Relocatable Conveyor	524801.3	3522465.1	1546.1	3.0	0.47	0.70	0.0447	-	-	-	0.0068
TDS06	Relocatable Conveyor to Shiftable Conveyor	524824.4	3522475.9	1540.2	3.0	0.47	0.70	0.0447	-	-	-	0.0068
TDS07	Shiftable Conveyor to Belt Wagon Conveyor	524903.9	3522511.6	1526.2	3.0	0.47	0.70	0.3410	-	-	-	0.0516
TDS08	Belt Wagon Conveyor to Spreader Crawler Mounted Conveyor	524973.1	3522545.4	1506.6	3.0	0.47	0.70	0.3410	-	-	-	0.0516
TDS09	Spreader Crawler Mounted Conveyor to Tailings Storage	525053.9	3522581.1	1486.1	3.0	0.47	0.70	0.3410	-	-	-	0.0516
TDS10	Wind Erosion from Tailings Storage	525098.2	3522631.3	1478.4	6.0	573.00	5.60	3.4508	-	-	-	0.5176
MS01	Transfer of Bulk Pebble Lime to the Bulk Pebble Lime Silo	523891.5	3522885.8	1542.0	3.0	0.47	0.70	0.2632	-	-	-	0.2632
MS03	Bulk Pebble Lime Silo Screw Conveyor (CV-BPLS) to SAG	524050.8	3522871.3	1539.5	3.0	0.47	0.70	0.0169	-	-	-	0.0026

**Table A2.8 Volume Sources - Year 5 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
MS04	Pneumatic Lime Transfer From Truck to Lime Storage Bin (800-BN-801)	524078.7	3522861.6	1534.1	3.0	0.47	0.70	0.1316	-	-	-	0.1316
MS0506	Transfer of Flocculant from Supersacks to Flocculant Storage Bin	524123.4	3522869.4	1530.9	3.0	0.47	0.70	0.0006	-	-	-	0.0001
MS0708	Transfer of Guar from Bags to Guar Feeder (F-Gu) and Transfer of Granular Cobalt Sulfate from Bags to Cobalt	524198.0	3522368.1	1536.9	3.0	0.47	0.70	0.0001	-	-	-	0.0000
Haul1	Haul Roads	522470.4	3521193.0	1701.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul2	Haul Roads	522484.4	3521156.3	1711.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul3	Haul Roads	522498.6	3521120.5	1702.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul4	Haul Roads	522512.4	3521084.3	1687.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul5	Haul Roads	522525.9	3521047.5	1675.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul6	Haul Roads	522540.4	3521011.3	1674.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul7	Haul Roads	522554.1	3520974.8	1668.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul8	Haul Roads	522567.9	3520938.3	1677.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul9	Haul Roads	522582.1	3520902.5	1677.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul10	Haul Roads	522595.6	3520866.0	1669.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul11	Haul Roads	522610.1	3520829.0	1664.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul12	Haul Roads	522634.4	3520799.3	1660.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul13	Haul Roads	522668.9	3520782.8	1654.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul14	Haul Roads	522706.1	3520770.3	1645.7	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul15	Haul Roads	522743.1	3520757.3	1636.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul16	Haul Roads	522780.4	3520744.5	1627.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul17	Haul Roads	522811.6	3520720.0	1624.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul18	Haul Roads	522842.9	3520695.8	1622.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul19	Haul Roads	522873.4	3520670.5	1622.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul20	Haul Roads	522905.1	3520649.3	1623.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul21	Haul Roads	522942.4	3520640.5	1616.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul22	Haul Roads	522980.6	3520634.0	1609.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679

**Table A2.8 Volume Sources - Year 5 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul23	Haul Roads	523019.9	3520627.3	1601.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul24	Haul Roads	523058.1	3520621.3	1596.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul25	Haul Roads	523095.4	3520629.3	1592.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul26	Haul Roads	523131.9	3520643.0	1588.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul27	Haul Roads	523168.4	3520656.8	1587.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul28	Haul Roads	523205.4	3520670.3	1585.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul29	Haul Roads	523241.4	3520684.0	1584.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul30	Haul Roads	523277.9	3520697.8	1585.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul31	Haul Roads	523314.1	3520711.3	1587.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul32	Haul Roads	523350.9	3520724.8	1588.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul33	Haul Roads	523387.4	3520738.5	1588.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul34	Haul Roads	523424.4	3520752.3	1589.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul35	Haul Roads	523457.9	3520772.3	1586.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul36	Haul Roads	523492.1	3520790.8	1585.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul37	Haul Roads	523525.9	3520809.0	1578.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul38	Haul Roads	523560.6	3520827.8	1573.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul39	Haul Roads	523594.9	3520847.0	1567.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul40	Haul Roads	523628.4	3520868.3	1564.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul41	Haul Roads	523662.4	3520888.5	1563.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul42	Haul Roads	523696.6	3520907.8	1564.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul43	Haul Roads	523730.4	3520926.5	1564.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul44	Haul Roads	523765.1	3520945.0	1562.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul45	Haul Roads	523798.6	3520964.3	1553.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul46	Haul Roads	523833.1	3520983.0	1547.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul47	Haul Roads	523866.6	3521002.3	1545.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul48	Haul Roads	523901.1	3521021.3	1542.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul49	Haul Roads	523908.1	3521059.5	1543.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul50	Haul Roads	523915.4	3521097.5	1545.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul51	Haul Roads	523926.4	3521135.8	1547.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679

**Table A2.8 Volume Sources - Year 5 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul52	Haul Roads	523940.4	3521171.5	1549.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul53	Haul Roads	523952.9	3521209.3	1552.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul54	Haul Roads	523965.9	3521245.8	1551.7	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul55	Haul Roads	523977.9	3521282.5	1551.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul56	Haul Roads	523991.6	3521319.0	1558.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul57	Haul Roads	524004.1	3521355.5	1561.7	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul58	Haul Roads	524037.1	3521331.8	1561.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul59	Haul Roads	524062.9	3521304.0	1563.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul60	Haul Roads	524087.4	3521275.5	1570.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul61	Haul Roads	524113.9	3521245.5	1573.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul62	Haul Roads	524142.4	3521218.8	1563.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul63	Haul Roads	524010.1	3521393.3	1557.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul64	Haul Roads	524017.4	3521431.8	1557.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul65	Haul Roads	524023.9	3521470.8	1552.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul66	Haul Roads	524030.6	3521509.5	1549.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul67	Haul Roads	524036.9	3521547.0	1558.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul68	Haul Roads	524048.1	3521583.8	1559.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul69	Haul Roads	524060.4	3521621.5	1540.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul70	Haul Roads	524072.1	3521659.5	1547.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul71	Haul Roads	524083.9	3521697.0	1551.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul72	Haul Roads	524095.9	3521733.3	1561.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul73	Haul Roads	524131.6	3521699.0	1564.7	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul74	Haul Roads	524168.1	3521714.5	1564.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul75	Haul Roads	524202.4	3521732.3	1554.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul76	Haul Roads	524236.4	3521753.3	1540.7	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul77	Haul Roads	524258.4	3521785.5	1530.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul78	Haul Roads	524279.4	3521819.8	1540.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul79	Haul Roads	524298.9	3521853.3	1549.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul80	Haul Roads	524318.6	3521888.8	1546.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679

**Table A2.8 Volume Sources - Year 5 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul81	Haul Roads	522485.1	3521197.5	1539.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul82	Haul Roads	522499.4	3521161.8	1537.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul83	Haul Roads	522514.4	3521125.5	1525.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul84	Haul Roads	522528.9	3521090.5	1525.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul85	Haul Roads	522542.6	3521052.5	1524.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul86	Haul Roads	522556.4	3521016.5	1530.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul87	Haul Roads	522570.6	3520979.3	1540.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul88	Haul Roads	522585.1	3520944.3	1548.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul89	Haul Roads	522598.1	3520908.0	1551.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul90	Haul Roads	522613.1	3520872.0	1540.7	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul91	Haul Roads	522626.4	3520834.3	1533.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul92	Haul Roads	522639.6	3520810.8	1537.7	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul93	Haul Roads	522676.1	3520797.8	1527.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul94	Haul Roads	522713.4	3520785.5	1528.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul95	Haul Roads	522749.9	3520773.5	1526.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul96	Haul Roads	522786.6	3520760.5	1520.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul97	Haul Roads	522819.9	3520734.8	1508.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul98	Haul Roads	522850.9	3520710.3	1510.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul99	Haul Roads	522881.4	3520686.5	1521.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul100	Haul Roads	522911.9	3520662.3	1532.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul101	Haul Roads	522944.6	3520654.0	1698.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul102	Haul Roads	522982.6	3520647.3	1707.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul103	Haul Roads	523021.1	3520641.0	1697.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul104	Haul Roads	523059.9	3520634.3	1681.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul105	Haul Roads	523088.6	3520643.8	1670.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul106	Haul Roads	523125.9	3520656.8	1668.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul107	Haul Roads	523162.1	3520672.0	1663.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul108	Haul Roads	523197.9	3520684.8	1669.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul109	Haul Roads	523234.9	3520698.5	1671.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679

**Table A2.8 Volume Sources - Year 5 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul110	Haul Roads	523270.9	3520712.8	1663.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul111	Haul Roads	523308.9	3520725.8	1658.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul112	Haul Roads	523345.4	3520739.0	1656.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul113	Haul Roads	523382.4	3520753.3	1650.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul114	Haul Roads	523418.1	3520766.8	1642.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul115	Haul Roads	523452.4	3520786.5	1633.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul116	Haul Roads	523486.6	3520805.8	1625.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul117	Haul Roads	523520.1	3520824.5	1622.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul118	Haul Roads	523554.6	3520843.0	1620.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul119	Haul Roads	523585.1	3520865.8	1618.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul120	Haul Roads	523617.6	3520889.3	1619.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul121	Haul Roads	523649.1	3520910.8	1614.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul122	Haul Roads	523681.6	3520932.3	1607.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul123	Haul Roads	523714.1	3520954.8	1600.7	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul124	Haul Roads	523745.6	3520977.5	1596.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul125	Haul Roads	523779.1	3520998.8	1592.7	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul126	Haul Roads	523811.9	3521018.3	1586.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul127	Haul Roads	523845.4	3521038.8	1586.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul128	Haul Roads	523879.4	3521059.5	1585.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul129	Haul Roads	523893.1	3521097.5	1583.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul130	Haul Roads	523907.9	3521134.0	1583.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul131	Haul Roads	523921.1	3521171.3	1585.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul132	Haul Roads	523933.1	3521207.3	1585.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul133	Haul Roads	523947.1	3521243.5	1586.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul134	Haul Roads	523959.9	3521280.8	1587.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul135	Haul Roads	523973.1	3521317.3	1586.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul136	Haul Roads	523986.9	3521353.5	1582.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul137	Haul Roads	524027.9	3521374.8	1575.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul138	Haul Roads	524052.1	3521343.8	1570.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679

**Table A2.8 Volume Sources - Year 5 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
Haul139	Haul Roads	524076.6	3521313.3	1566.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul140	Haul Roads	524101.1	3521284.5	1564.9	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul141	Haul Roads	524127.1	3521254.8	1564.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul142	Haul Roads	524152.4	3521228.5	1564.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul143	Haul Roads	523992.4	3521394.0	1563.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul144	Haul Roads	523998.6	3521433.5	1553.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul145	Haul Roads	524006.1	3521471.3	1549.8	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul146	Haul Roads	524012.9	3521509.5	1549.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul147	Haul Roads	524020.4	3521547.8	1549.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul148	Haul Roads	524027.6	3521587.0	1544.5	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul149	Haul Roads	524036.4	3521625.5	1541.3	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul150	Haul Roads	524045.9	3521663.8	1546.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul151	Haul Roads	524056.1	3521701.0	1550.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul152	Haul Roads	524066.1	3521740.3	1550.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul153	Haul Roads	524127.6	3521706.3	1551.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul154	Haul Roads	524161.6	3521724.5	1553.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul155	Haul Roads	524196.9	3521741.8	1554.6	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul156	Haul Roads	524229.1	3521763.3	1561.0	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul157	Haul Roads	524247.4	3521790.8	1563.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul158	Haul Roads	524266.9	3521825.5	1565.4	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul159	Haul Roads	524287.4	3521857.8	1568.1	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
Haul160	Haul Roads	524307.1	3521892.3	1573.2	6.5	16.28	6.05	0.4760	0.4189	0.5681	0.0008	0.0679
UNWD1	Unload to Waste Dump #1	524113.6	3520254.4	1574.4	7.0	4.00	6.51	0.5333	0.4189	0.5681	0.0008	0.0961
UNWD2	Unload to Waste Dump #2	524188.9	3520117.6	1554.7	7.0	4.00	6.51	0.5333	0.4189	0.5681	0.0008	0.0961
UNWD3	Unload to Waste Dump #3	524240.9	3519971.6	1553.6	7.0	4.00	6.51	0.5333	0.4189	0.5681	0.0008	0.0961
UNWD4	Unload to Waste Dump #4	523967.4	3520212.1	1578.2	7.0	4.00	6.51	0.5333	0.4189	0.5681	0.0008	0.0961
UNWD5	Unload to Waste Dump #5	524028.6	3520056.4	1588.5	7.0	4.00	6.51	0.5333	0.4189	0.5681	0.0008	0.0961
UNWD6	Unload to Waste Dump #6	524094.6	3519896.1	1561.5	7.0	4.00	6.51	0.5333	0.4189	0.5681	0.0008	0.0961

**Table A2.8 Volume Sources - Year 5 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM2P5 (lb/hr)
UNWD7	Unload to Waste Dump #7	523882.4	3519999.9	1588.3	7.0	4.00	6.51	0.5333	0.4189	0.5681	0.0008	0.0961
UNWD8	Unload to Waste Dump #8	523948.4	3519844.1	1593.7	7.0	4.00	6.51	0.5333	0.4189	0.5681	0.0008	0.0961
UNWD9	Unload to Waste Dump #9	523788.1	3519792.4	1567.3	7.0	4.00	6.51	0.5333	0.4189	0.5681	0.0008	0.0961
UNWD10	Unload to Waste Dump #10	523637.1	3519872.4	1591.0	7.0	4.00	6.51	0.5333	0.4189	0.5681	0.0008	0.0961
UNLP1	Unload to Leachpad #1	524514.4	3520933.6	1522.2	7.0	4.00	6.51	0.0376	0.4189	0.5681	0.0008	0.0210
UNLP2	Unload to Leachpad #2	524523.9	3520721.4	1513.3	7.0	4.00	6.51	0.0376	0.4189	0.5681	0.0008	0.0210
UNLP3	Unload to Leachpad #3	524255.1	3520716.6	1545.2	7.0	4.00	6.51	0.0376	0.4189	0.5681	0.0008	0.0210
UNLP4	Unload to Leachpad #4	524250.4	3520933.6	1537.1	7.0	4.00	6.51	0.0376	0.4189	0.5681	0.0008	0.0210
UNLP5	Unload to Leachpad #5	523740.9	3520754.4	1570.0	7.0	4.00	6.51	0.0376	0.4189	0.5681	0.0008	0.0210
UNLP6	Unload to Leachpad #6	523783.4	3520523.1	1575.3	7.0	4.00	6.51	0.0376	0.4189	0.5681	0.0008	0.0210

**Table A2.12 Open Pit Source – Year 5 Annual Emissions Modeling Inventory**

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Easterly Length (m)	Northerly Length (m)	Pit Volume (m³)	Angle from North	PM10 (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SO2 (lb/hr)	PM 2.5 (lb/hr)
PIT	Open Pit Mine	522269.9	3521221.1	1667.6	0	750	1050	279562500	0	84.87	88.34	111.03	0.16	17.53
PIT2	Open Pit	523161.4	3520551.6	1595.8	0	1200	1400	77280000	60	34.60	32.26	43.75	0.06	5.23