



---

**9th Street and Vineyard Avenue  
Warehouse  
MOBILE SOURCE HEALTH RISK ASSESSMENT  
CITY OF RANCHO CUCAMONGA**

PREPARED BY:

Haseeb Qureshi, MES  
[hqureshi@urbanxroads.com](mailto:hqureshi@urbanxroads.com)  
(949) 336-5987

OCTOBER 8, 2019



## **TABLE OF CONTENTS**

<b>TABLE OF CONTENTS.....</b>	<b>I</b>
<b>APPENDICES .....</b>	<b>I</b>
<b>LIST OF EXHIBITS .....</b>	<b>II</b>
<b>LIST OF TABLES .....</b>	<b>II</b>
<b>LIST OF ABBREVIATED TERMS.....</b>	<b>III</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>1     INTRODUCTION.....</b>	<b>3</b>
1.1   Site Location.....	4
1.2   Project Description.....	4
<b>2     BACKGROUND.....</b>	<b>7</b>
2.1   Background on Recommended Methodology.....	7
2.2   Emissions Estimation .....	7
2.3   Exposure Quantification .....	11
2.4   Carcinogenic Chemical Risk.....	13
2.5   Non-carcinogenic Exposures.....	15
2.6   Potential Project-Related DPM Source Cancer and Non-Cancer Risks.....	15
<b>3     REFERENCES.....</b>	<b>19</b>
<b>4     CERTIFICATION.....</b>	<b>21</b>

## **APPENDICES**

**APPENDIX 2.1: AERMOD MODEL INPUT/OUTPUT**

**APPENDIX 2.2: RISK CALCULATIONS**

## **LIST OF EXHIBITS**

EXHIBIT 1-A: LOCATION MAP .....	5
EXHIBIT 1-B: SITE PLAN .....	6
EXHIBIT 2-A: MODELED EMISSION SOURCES .....	10
EXHIBIT 2-B: MODELED RECEPTORS .....	17

## **LIST OF TABLES**

TABLE ES-1: SUMMARY OF CANCER AND NON-CANCER RISKS .....	2
TABLE 2-1: 2020 WEIGHTED AVERAGE DPM EMISSIONS FACTORS .....	9
TABLE 2-3: AERMOD MODEL PARAMETERS.....	11
TABLE 2-2: DPM EMISSIONS FROM PROJECT TRUCKS (2020 ANALYSIS YEAR) .....	12
TABLE 2-4: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (30 YEAR RESIDENTIAL).....	13
TABLE 2-5: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (25 YEAR WORKER).....	13

## **LIST OF ABBREVIATED TERMS**

(1)	Reference
$\mu\text{g}$	Microgram
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
APS	Auxiliary Power System
AQMD	Air Quality Management District
ARB	Air Resources Board
CEQA	California Environmental Quality Act
CPF	Cancer Potency Factor
DPM	Diesel Particulate Matter
EMFAC	Emission Factor Model
EPA	Environmental Protection Agency
HHD	Heavy Heavy-Duty
HI	Hazard Index
HRA	Health Risk Assessment
LHD	Light Heavy-Duty
MATES	Multiple Air Toxics Exposure Study
MEIR	Maximally Exposed Individual Receptor
MEISC	Maximally Exposed Individual School Child
MEIW	Maximally Exposed Individual Worker
MHD	Medium Heavy-Duty
NAD	North American Datum
OEHHA	Office of Environmental Health Hazard Assessment
PCE	Passenger Car Equivalent
PM10	Particulate Matter 10 microns in diameter or less
Project	9th Street and Vineyard Avenue Warehouse
REL	Reference Exposure Level
RM	Recommended Measures
SCAQMD	South Coast Air Quality Management District
SRA	Source Receptor Area
TAC	Toxic Air Contaminant
TIA	Traffic Impact Analysis
URF	Unit Risk Factor
UTM	Universal Transverse Mercator
VMT	Vehicle Miles Traveled

*This page intentionally left blank*

## EXECUTIVE SUMMARY

This report evaluates the potential mobile source health risk impacts to sensitive receptors (residents) and adjacent workers associated with the development of the proposed Project, more specifically, health risk impacts as a result of exposure to diesel particulate matter (DPM) as a result of heavy-duty diesel trucks accessing the site. This section summarizes the significance criteria and Project mobile source health risks.

The results of the health risk assessment of lifetime cancer risk from Project-generated DPM emissions are provided in Table ES-1 below for the Project.

### Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project DPM source emissions is located approximately 18 feet west of the Project site, north of 9<sup>th</sup> street. At the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project DPM source emissions is estimated at 1.15 in one million, which is less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be 0.0004, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent residences.

### Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project DPM source emissions is located immediately adjacent to the south of the Project site which is currently vacant but has could be developed with a land use that would have workers. At the maximally exposed individual worker (MEIW), the maximum incremental cancer risk impact at this location is 0.19 in one million which is less than the threshold of 10 in one million. Maximum non-cancer risks at this same location were estimated to be 0.0006, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent workers. Because they are located farther away than the closest MEIW receptor, all other modeled worker locations in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIW identified herein.

### School Child Exposure Scenario:

There are no schools located within a ¼ mile of the Project site. As such, there would be no significant impacts that would occur to any schools in the vicinity of the Project.

Proximity to sources of toxics is critical to determining the impact. In traffic-related studies, the additional non-cancer health risk attributable to proximity was seen within 1,000 feet and was strongest within 300 feet. California freeway studies show about a 70-percent drop-off in particulate pollution levels at 500 feet. Based on CARB and SCAQMD emissions and modeling analyses, an 80-percent drop-off in pollutant concentrations is expected at approximately 1,000 feet from a distribution center (1).

The 1,000-foot evaluation distance is supported by research-based findings concerning TAC emission dispersion rates from roadways and large sources showing that emissions diminish substantially between 500 and 1,000 feet from emission sources.

For purposes of this assessment, a one-quarter mile radius or 1,320 feet geographic scope is utilized for determining potential impacts to nearby schools. This radius is more robust than, and therefore provides a more health protective scenario for evaluation than the 1,000-foot impact radius identified above.

**TABLE ES-1: SUMMARY OF CANCER AND NON-CANCER RISKS**

Time Period	Location	Maximum Lifetime Cancer Risk (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold
30 Year Exposure	Maximum Exposed Sensitive Receptor	1.15	10	NO
25 Year Exposure	Maximum Exposed Worker Receptor	0.19	10	NO
Time Period	Location	Maximum Hazard Index	Significance Threshold	Exceeds Significance Threshold
Annual Average	Maximum Exposed Sensitive Receptor	0.0004	1.0	NO
Annual Average	Maximum Exposed Worker Receptor	0.0006	1.0	NO

## 1 INTRODUCTION

The purpose of this Health Risk Assessment (HRA) is to evaluate Project-related impacts to sensitive receptors (residential, schools) and adjacent workers as a result of heavy-duty diesel trucks accessing the site.

The South Coast Air Quality Management District (SCAQMD) reviewed the conceptual site plan for the proposed project and provided input to the City on the scope of the air quality analysis. SCAQMD identifies that if a proposed Project is expected to generate/attract heavy-duty diesel trucks, which emit diesel particulate matter (DPM), preparation of a mobile source HRA is recommended. This document serves to meet the SCAQMD's request for preparation of a HRA. The mobile source HRA has been prepared in accordance with the document Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (2) and is comprised of all relevant and appropriate procedures presented by the U.S. EPA, California Environmental Protection Agency and SCAQMD. Cancer risk is expressed in terms of expected incremental incidence per million population. The SCAQMD has established an incidence rate of ten (10) persons per million as the maximum acceptable incremental cancer risk due to DPM exposure. This threshold serves to determine whether or not a given project has a potentially significant development-specific and cumulative impact.

The AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (3). In this report the AQMD clearly states (Page D-3):

*"...the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.*

*Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."*

The SCAQMD has also established non-carcinogenic risk parameters for use in HRAs. Non-carcinogenic risks are quantified by calculating a "hazard index," expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level (REL). An REL is a concentration at or below which health effects are not likely to occur. A hazard index of less than one (1.0) means that adverse health effects are not expected. Within this analysis, non-carcinogenic exposures of less than 1.0 are considered less-than-significant.

## **1.1 SITE LOCATION**

The proposed 9th Street and Vineyard Avenue Warehouse site is located west of Vineyard Avenue and north of 9<sup>th</sup> Street in the City of Rancho Cucamonga, as shown on Exhibit 1-A.

## **1.2 PROJECT DESCRIPTION**

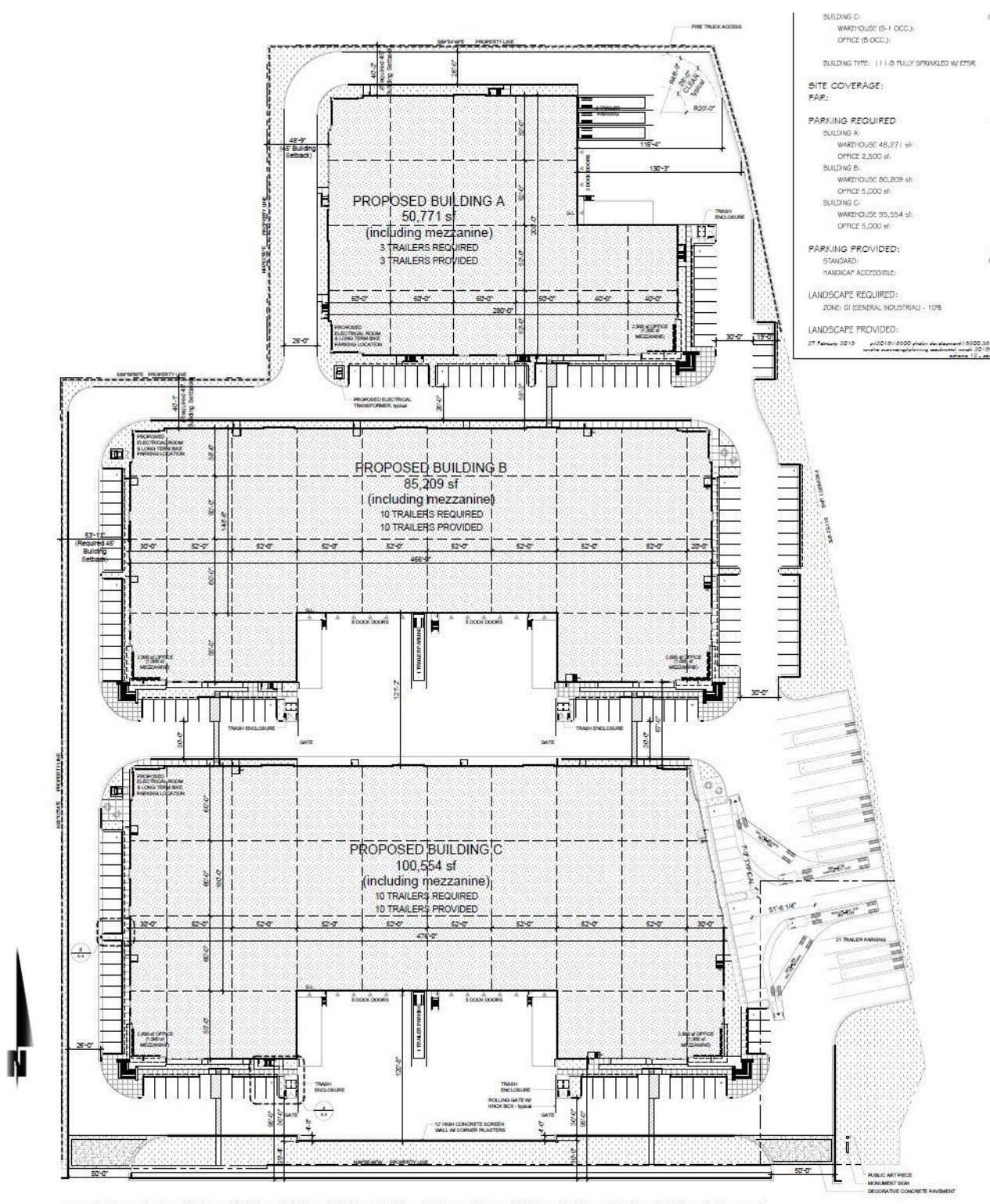
The Project is proposed to consist of up to 236,534 square feet (sf) of warehouse use, as shown on Exhibit 1-B. The Project is anticipated to be constructed in a single phase by the year 2020.

Per the *9th Street and Vineyard Avenue Warehouse, Rancho Cucamonga, California - Trip Generation Analysis* (TG), the Project is expected to generate a total of approximately 414 two-way trips per day (actual vehicles) (4). The Project trip generation includes 86 two-way truck trips per day. The following truck fleet mix was obtained from the TG and utilized for the purposes of estimating the truck trip generation for the site: 16.94% of the total trucks as 2-axle trucks (LHD), 22.7% of the total trucks as 3-axle trucks (MHD), and 60.35% of the total trucks as 4+-axle trucks (HHD).

**EXHIBIT 1-A: LOCATION MAP**



## **EXHIBIT 1-B: SITE PLAN**



## 2 BACKGROUND

### 2.1 BACKGROUND ON RECOMMENDED METHODOLOGY

ARB estimates that the average Californian is exposed to 1.2-1.8  $\mu\text{g}/\text{m}^3$  of DPM annually, this exposure results in an average cancer risk of 360-540 in one million for the average Californian exposed to DPM (5).

As noted above, this HRA is based on SCAQMD guidelines to produce conservative estimates of risk posed by exposure to DPM. The conservative nature of this analysis is due primarily to the following factors:

- The ARB-adopted diesel exhaust Unit Risk Factor (URF) of 300 in one million per  $\mu\text{g}/\text{m}^3$  is based upon the upper 95 percentile of estimated risk for each of the epidemiological studies utilized to develop the URF. Using the 95<sup>th</sup> percentile URF represents a very conservative (health-protective) risk posed by DPM.
- The risk estimates assume sensitive receptors will be subject to DPM for 24 hours a day, 350 days a year.
- The emissions derived assume that every truck accessing the project site will idle for 15 minutes under the unmitigated scenario, this is an overestimation of actual idling times and thus conservative.<sup>1</sup> It should be noted that ARB's anti-idling requirements impose a 5-minute maximum idling time and therefore the analysis conservatively overestimates DPM emissions from idling by a factor of 3.

### 2.2 EMISSIONS ESTIMATION

#### 2.2.1 ON-SITE AND OFF-SITE TRUCK ACTIVITY

Vehicle DPM emissions were estimated using emission factors for particulate matter less than 10 $\mu\text{m}$  in diameter ( $\text{PM}_{10}$ ) generated with the 2014 version of the Emission FACTor model (EMFAC) developed by the ARB. EMFAC 2014<sup>2</sup> is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the ARB to project changes in future emissions from on-road mobile sources (6). The most recent version of this model, EMFAC 2014, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled (VMT) by speed, and number of starts per day.

Several distinct emission processes are included in EMFAC 2014. Emission factors calculated using EMFAC 2014 are expressed in units of grams per vehicle miles traveled (g/VMT) or grams per idle-hour (g/idle-hr), depending on the emission process. The emission processes and

<sup>1</sup> Although the Project is required to comply with ARB's idling limit of 5 minutes, staff at SCAQMD recommends that the on-site idling emissions should be estimated for 15 minutes of truck idling (personal communication, in person, with Jillian Wong, December 22, 2016), which would take into account on-site idling which occurs while the trucks are waiting to pull up to the truck bays, idling at the bays, idling at check-in and check-out, etc.

<sup>2</sup> It should be noted that EMFAC 2014 is utilized herein as it is the latest approved version of EMFAC by US EPA. Although EMFAC 2017 has been released by the State, it is not yet approved for use by US EPA.

corresponding emission factor units associated with diesel particulate exhaust for this Project are presented below.

For this Project, annual average PM<sub>10</sub> emission factors were generated by running EMFAC 2014 in EMFAC Mode for vehicles in the San Bernardino County (South Coast) jurisdiction. The EMFAC Mode generates emission factors in terms of grams of pollutant emitted per vehicle activity and can calculate a matrix of emission factors at specific values of temperature, relative humidity, and vehicle speed. The model was run for speeds traveled in the vicinity of the Project. The vehicle travel speeds for each segment modeled are summarized below.

- Idling – on-site loading/unloading and truck gate
- 5 miles per hour – on-site vehicle movement including driving and maneuvering
- 25 miles per hour – off-site vehicle movement including driving and maneuvering.

Calculated emission factors are shown at Table 2-1. As a conservative measure, a 2020 EMFAC 2014 run was conducted and a static 2020 emissions factor data set was used for the entire duration of analysis herein (e.g., 30 years). Use of 2020 emission factors would overstate potential impacts since this approach assumes that emission factors remain “static” and do not change over time due to fleet turnover or cleaner technology with lower emissions that would be incorporated after 2020. Additionally, based on EMFAC2014, Light-Heavy-Duty Trucks comprise of 43.15% diesel, Medium-Heavy-Duty Trucks comprise of 87.21% diesel, and Heavy-Heavy-Duty Trucks comprise of 99.15% diesel trucks and have been accounted for accordingly in the emissions factor generation.

The vehicle DPM exhaust emissions were calculated for running exhaust emissions. The running exhaust emissions were calculated by applying the running exhaust PM<sub>10</sub> emission factor (g/VMT) from EMFAC over the total distance traveled. The following equation was used to estimate off-site emissions for each of the different vehicle classes comprising the mobile sources (6):

$$\text{Emissions}_{\text{speedA}} \text{ (g/s)} = \text{EF}_{\text{RunExhaust}} \text{ (g/VMT)} * \text{Distance (VMT/trip)} * \text{Number of Trips (trips/day)} / \text{seconds per day}$$

Where:

$\text{Emissions}_{\text{speedA}}$  (g/s): Vehicle emissions at a given speed A;

$\text{EF}_{\text{RunExhaust}}$  (g/VMT): EMFAC running exhaust PM<sub>10</sub> emission factor at speed A;

Distance (VMT/trip): Total distance traveled per trip.

Similar to off-site traffic, on-site vehicle running emissions were calculated by applying the running exhaust PM<sub>10</sub> emission factor (g/VMT) from EMFAC and the total vehicle trip number over the length of the driving path using the same formula presented above for on-site emissions. In addition, on-site vehicle idling exhaust emissions were calculated by applying the idle exhaust PM<sub>10</sub> emission factor (g/idle-hr) from EMFAC and the total truck trip over the total idle time (15 minutes). The following equation was used to estimate the on-site vehicle idling emissions for each of the different vehicle classes (6):

$$\text{Emissions}_{\text{idle}} (\text{g/s}) = \text{EF}_{\text{idle}} (\text{g/hr}) * \text{Number of Trips (trips/day)} * \text{Idling Time (min/trip)} *$$

60 minutes per hour / seconds per day

Where:

$\text{Emissions}_{\text{idle}} (\text{g/s})$ : Vehicle emissions during idling;

$\text{EF}_{\text{idle}} (\text{g/s})$ : EMFAC idle exhaust PM<sub>10</sub> emission factor.

**TABLE 2-1: 2020 WEIGHTED AVERAGE DPM EMISSIONS FACTORS**

Speed	Weighted Average
0 (idling)	0.09637 (g/idle-hr)
5	0.04361 (g/s)
25	0.02456 (g/s)

Each roadway was modeled as a line source (made up of multiple adjacent volume sources). Due to the large number of volume sources modeled for this analysis, the corresponding coordinates of each volume source have not been included in this report but are included in Appendix “2.1”. The DPM emission rate for each volume source was calculated by multiplying the emission factor (based on the average travel speed along the roadway) by the number of trips and the distance traveled along each roadway segment and dividing the result by the number of volume sources along that roadway, as illustrated on Table 2-2. The modeled emission sources are illustrated on Exhibit 2-A. The modeling domain is limited to the Project’s primary truck route and includes off-site sources in the study area for more than 0.4 mile. This modeling domain is more conservative than using only a ¼ mile modeling domain which is supported by substantial evidence since several studies have shown that the greatest potential risks occur within a ¼ mile of the primary source of emissions (1) (in the case of the Project this is the on-site idling, travel, and on-site equipment).

On-site truck idling was estimated to occur as trucks enter and travel through the facility. Although the Project is required to comply with CARB’s idling limit of 5 minutes, staff at SCAQMD recommends that the on-site idling emissions should be estimated for 15 minutes of truck idling (7), which would take into account on-site idling which occurs while the trucks are waiting to pull up to the truck bays, idling at the bays, idling at check-in and check-out, etc. As such, this analysis estimated truck idling at 15 minutes, consistent with SCAQMD’s recommendation.

**EXHIBIT 2-A: MODELED EMISSION SOURCES**



Per the *9th Street and Vineyard Avenue Warehouse, Rancho Cucamonga, California - Trip Generation Analysis* (TG), the Project is expected to generate a total of approximately 414 two-way trips per day (actual vehicles) (4). The Project trip generation includes 86 two-way truck trips per day. The following truck fleet mix was obtained from the TG and utilized for the purposes of estimating the truck trip generation for the site: 16.94% of the total trucks as 2-axle trucks (LHD), 22.7% of the total trucks as 3-axle trucks (MHD), and 60.35% of the total trucks as 4+-axle trucks (HHD).

## 2.3 EXPOSURE QUANTIFICATION

The analysis herein has been conducted in accordance with the guidelines in the Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (2). SCAQMD recommends using the Environmental Protection Agency's (U.S. EPA's) AERMOD model. For purposes of this analysis, the model was used to calculate annual average particulate concentrations associated with site operations.

The model offers additional flexibility by allowing the user to assign an initial release height and vertical dispersion parameters for mobile sources representative of a roadway. For this HRA, the roadways were modeled as adjacent volume sources. Roadways were modeled using the U.S. EPA's haul route methodology for modeling of on-site and off-site truck movement. More specifically, the Haul Road Volume Source Calculator in AERMOD View has been utilized to determine the release height parameters. Based on the US EPA methodology, the Project's modeled sources would result in a release height of 3.49 meters, and an initial lateral dimension of 4.0 meters, and an initial vertical dimension of 3.25 meters.

SCAQMD required model parameters are presented in Table 2-3 (8). The model requires additional input parameters including emission data and local meteorology. Meteorological data from the SCAQMD's Upland monitoring station (SRA 32) was used to represent local weather conditions and prevailing winds (9).

**TABLE 2-3: AERMOD MODEL PARAMETERS**

Dispersion Coefficient	Urban
Terrain	Elevated (Regulatory Default)
Averaging Time	1 year (5-year Meteorological Data Set)
Receptor Height	0 meters (Regulatory Default)

Universal Transverse Mercator (UTM) coordinates for World Geodetic System (WGS) 84 were used to locate the project boundaries, each volume source location, and receptor locations in the project vicinity. The AERMOD dispersion model summary output files for the proposed facility are presented in Appendix "2.1".

Modeled sensitive receptors were placed at residential and non-residential locations. Based on recommendations from SCAQMD staff, a receptor grid with a maximum of 100 meters spacing were placed at residential and worker locations to ensure that the maximum impacts are properly analyzed.

**TABLE 2-2: DPM EMISSIONS FROM PROJECT TRUCKS (2020 ANALYSIS YEAR)**

Truck Emission Rates						
Source	Trucks Per Day	VMT <sup>a</sup> (miles/day)	Truck Emission Rate <sup>b</sup> (grams/mile)	Truck Emission Rate <sup>b</sup> (grams/idle-hour)	Daily Truck Emissions <sup>c</sup> (grams/day)	Modeled Emission Rates (g/second)
On-Site Idling Building A	9			0.0964	0.22	2.510E-06
On-Site Idling Building B	15			0.0964	0.36	4.183E-06
On-Site Idling Building C	19			0.0964	0.46	5.298E-06
On-Site Travel Building A	18	4.98	0.0436		0.22	2.514E-06
On-Site Travel Building B	30	5.01	0.0436		0.22	2.528E-06
On-Site Travel Building C	38	5.14	0.0436		0.22	2.595E-06
Off-Site Travel 100%	86	33.33	0.0246		0.82	9.472E-06

<sup>a</sup> Vehicle miles traveled are for modeled truck route only.  
<sup>b</sup> Emission rates determined using EMFAC 2014. Idle emission rates are expressed in grams per idle hour rather than grams per mile.  
<sup>c</sup> This column includes the total truck travel and truck idle emissions. For idle emissions this column includes emissions based on the assumption that each truck idles for 15 minutes.

Receptors may be placed at applicable structure locations for residential and worker property and not necessarily the boundaries of these uses. It should be noted that the primary purpose of receptor placement is focused on long-term exposure. For example, the HRA evaluates the potential health risks to residential and worker over a period of 30 or 25 years of exposure, respectively. As such, even though it is unlikely to occur in practical terms (because the amount of time spent indoors), this study assumes that a resident or worker would be exposed over a long-period of time for 12 or 24-hours per day at the structure where they reside or work.

Furthermore, worker receptors immediately adjacent to the Project site have been evaluated in the HRA. Any impacts to workers located further away from the Project site than the modeled worker receptors would have a lesser impact than what has already been disclosed in the HRA at the MEIW.

Discrete variants for daily breathing rates, exposure frequency, and exposure duration were obtained from relevant distribution profiles presented in the 2015 OEHHA Guidelines. Tables 2-4 and 2-5 summarize the Exposure Parameters for Residents and Offsite Worker scenarios based on 2015 OEHHA Guidelines. Appendix 2.2 includes the detailed risk calculation.

**TABLE 2-4: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (30 YEAR RESIDENTIAL)**

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Fraction of Time at Home	Exposure Frequency (days/year)	Exposure Time (hours/day)
-0.25 to 0	361	10	0.25	0.85	350	24
0 to 2	1,090	10	2	0.85	350	24
2 to 16	572	3	14	0.72	350	24
16 to 30	261	1	14	0.73	350	24

**TABLE 2-5: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (25 YEAR WORKER)**

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Exposure Frequency (days/year)	Exposure Time (hours/day)
16 to 41	230	1	25	250	12

## 2.4 CARCINOGENIC CHEMICAL RISK

The SCAQMD CEQA Air Quality Handbook (1993) states that emissions of toxic air contaminants (TACs) are considered significant if a HRA shows an increased risk of greater than 10 in one million. Based on guidance from the SCAQMD in the document Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (2), for purposes of this analysis, 10 in one million is used as the cancer risk threshold for the proposed Project.

Excess cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens over a specified exposure duration. The estimated risk is expressed as a unitless probability. The cancer

risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF). A risk level of 10 in one million implies a likelihood that up to 10 people, out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the levels of toxic air contaminants over a specified duration of time. As an example, the risk of dying from accidental drowning is 1,000 in a million which is 100 times more than the SCAQMD's threshold of 10 in one million, the nearest comparison to 10 in one million is the 7 in one million lifetime chance that an individual would be struck by lightning.

Guidance from CARB and the California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA) recommends a refinement to the standard point estimate approach when alternate human body weights and breathing rates are utilized to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose. Once determined, contaminant dose is multiplied by the cancer potency factor (CPF) in units of inverse dose expressed in milligrams per kilogram per day (mg/kg/day)-1 to derive the cancer risk estimate. Therefore, to assess exposures, the following dose algorithm was utilized.

$$\text{DOSEair} = (\text{Cair} \times [\text{BR/BW}] \times \text{A} \times \text{EF}) \times (1 \times 10^{-6})$$

Where:

DOSEair	=	chronic daily intake (mg/kg/day)
Cair	=	concentration of contaminant in air (ug/m <sup>3</sup> )
[BR/BW] BW-day)	=	daily breathing rate normalized to body weight (L/kg
A	=	inhalation absorption factor
EF	=	exposure frequency (days/365 days)
BW	=	body weight (kg)
1 x 10 -6	=	conversion factors (ug to mg, L to m <sup>3</sup> )

$$\text{RISKair} = \text{DOSEair} \times \text{CPF} \times \text{ED/AT}$$

Where:

DOSEair	=	chronic daily intake (mg/kg/day)
CPF	=	cancer potency factor
ED	=	number of years within particular age group
AT	=	averaging time

## 2.5 NON-CARCINOGENIC EXPOSURES

An evaluation of the potential noncarcinogenic effects of chronic exposures was also conducted. Adverse health effects are evaluated by comparing a compound's annual concentration with its toxicity factor or Reference Exposure Level (REL). The REL for diesel particulates was obtained from OEHHA for this analysis. The chronic reference exposure level (REL) for DPM was established by OEHHA as 5  $\mu\text{g}/\text{m}^3$  (OEHHA Toxicity Criteria Database, <http://www.oehha.org/risk/chemicaldb/index.asp>).

The non-cancer hazard index was calculated (consistent with SCAQMD methodology, based on OEHHA guidelines) as follows:

The relationship for the non-cancer health effects of DPM is given by the following equation:

$$\text{HI}_{\text{DPM}} = \text{C}_{\text{DPM}} / \text{REL}_{\text{DPM}}$$

Where:

$\text{HI}_{\text{DPM}}$  = Hazard Index; an expression of the potential for non-cancer health effects.

$\text{C}_{\text{DPM}}$  = Annual average DPM concentration ( $\mu\text{g}/\text{m}^3$ ).

$\text{REL}_{\text{DPM}}$  = Reference exposure level (REL) for DPM; the DPM concentration at which no adverse health effects are anticipated.

For purposes of this analysis the hazard index for the respiratory endpoint totaled less than one for all receptors in the project vicinity, and thus is less than significant.

There are no acute non-cancer health effects associated with DPM and as such, no calculation is necessary.

## 2.6 POTENTIAL PROJECT-RELATED DPM SOURCE CANCER AND NON-CANCER RISKS<sup>3</sup>

### Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project DPM source emissions is located approximately 18 feet west of the Project site, north of 9<sup>th</sup> street. At the MEIR, the maximum incremental cancer risk attributable to Project DPM source emissions is estimated at 1.15 in one million, which is less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be 0.0004, which would not exceed the applicable threshold

---

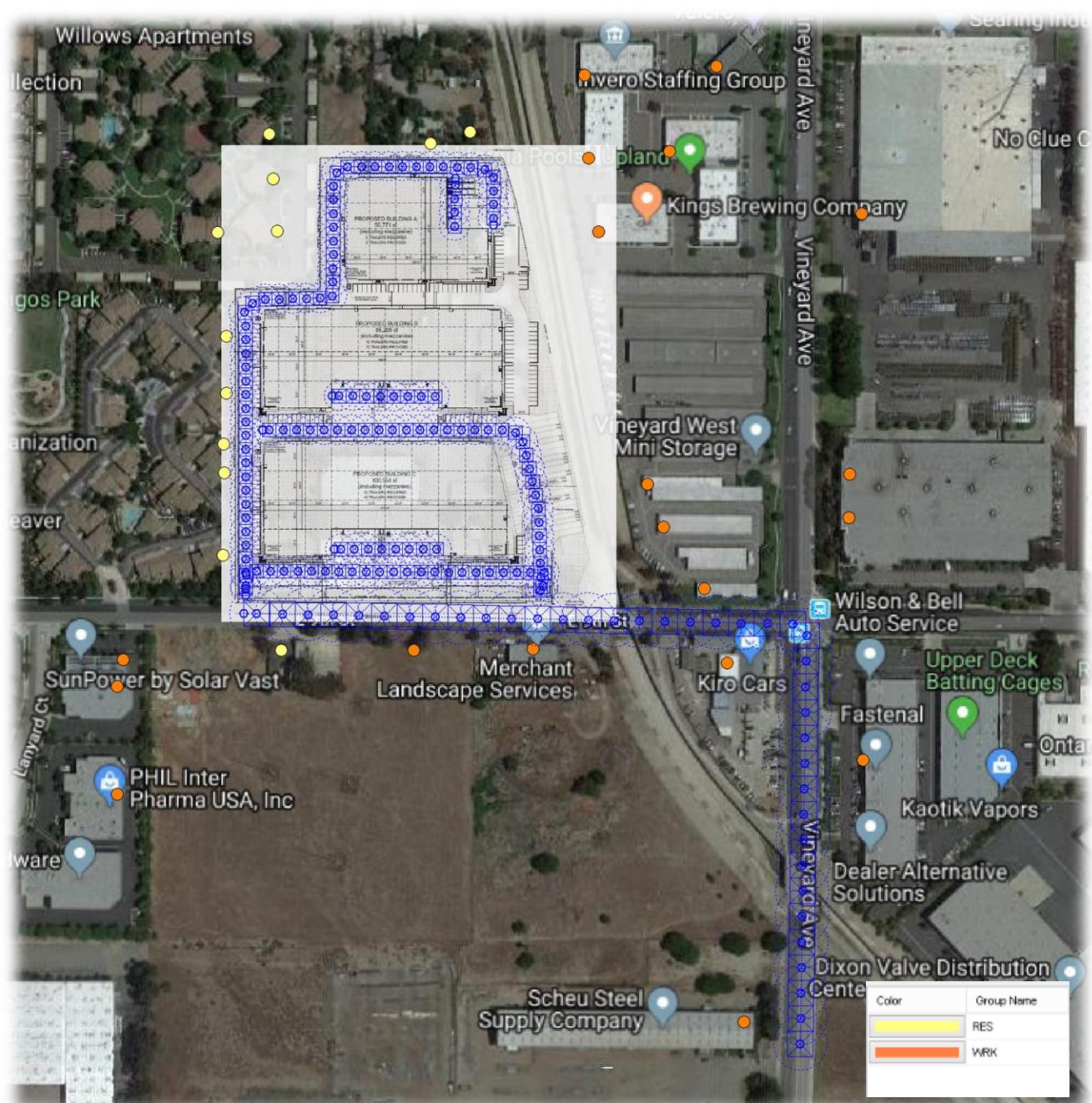
<sup>3</sup> SCAQMD guidance does not require assessment of the potential health risk to on-site workers. Excerpts from the document OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines—The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2003), also indicate that it is not necessary to examine the health effects to on-site workers unless required by RCRA (Resource Conservation and Recovery Act) / CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) or the worker resides on-site.

of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent residences. The nearest modeled receptors are illustrated on Exhibit 2-B.

**Worker Exposure Scenario:**

The worker receptor land use with the greatest potential exposure to Project DPM source emissions is located immediately adjacent to the south of the Project site which is currently vacant but has could be developed with a land use that would have workers. At the MEIW, the maximum incremental cancer risk impact at this location is 0.19 in one million which is less than the threshold of 10 in one million. Maximum non-cancer risks at this same location were estimated to be 0.0006, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent workers. Because they are located farther away than the closest MEIW receptor, all other modeled worker locations in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIW identified herein. The nearest modeled receptors are illustrated on Exhibit 2-B.

**EXHIBIT 2-B: MODELED RECEPTORS**



*This page intentionally left blank*

### **3 REFERENCES**

1. **Air Resources Board.** *Air Quality and Land Use Handbook: A Community Health Perspective.* 2005.
2. **South Coast Air Quality Management District.** Mobile Source Toxics Analysis. [Online] 2003.  
[http://www.aqmd.gov/ceqa/handbook/mobile\\_toxic/mobile\\_toxic.html](http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html).
3. **Goss, Tracy A and Kroeger, Amy.** White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution. [Online] South Coast Air Quality Management District, 2003.  
[http://www.aqmd.gov/rules/ciwg/final\\_white\\_paper.pdf](http://www.aqmd.gov/rules/ciwg/final_white_paper.pdf).
4. **Translations.** *9th Street and Vineyard Avenue Warehouse, Rancho Cucamonga, California - Trip Generation Analysis.* 2019.
5. **South Coast Air Quality Management District.** RULE 403. Fugitive Dust. [Online]  
<http://www.aqmd.gov/rules/reg/reg04/r403.pdf>.
6. **California Department of Transportation.** EMFAC Software. [Online]  
<http://www.dot.ca.gov/hq/env/air/pages/emfac.htm>.
7. **Koizumi, James.** *Planning, Rule Development & Area Sources.* May 6, 2009.
8. **Environmental Protection Agency.** User's Guide for the AMS/EPA Regulatory Model - AERMOD. [Online] September 2004. <http://www.epa.gov/scram001/7thconf/aermod/aermodugb.pdf>.
9. **South Coast Air Quality Management District.** *Air Quality Reporting.* [pdf] Diamond Bar : Sierra Wade Associates, 1999.

*This page intentionally left blank*

## **4 CERTIFICATION**

The contents of this health risk assessment represent an accurate depiction of the impacts to sensitive receptors associated with the proposed 9th Street and Vineyard Avenue Warehouse Project. The information contained in this health risk assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

Haseeb Qureshi  
Senior Associate  
URBAN CROSSROADS, INC.  
260 E. Baker, Suite 200  
Costa Mesa, CA 92626  
(949) 336-5987  
[hqureshi@urbanxroads.com](mailto:hqureshi@urbanxroads.com)

### **EDUCATION**

Master of Science in Environmental Studies  
California State University, Fullerton • May, 2010

Bachelor of Arts in Environmental Analysis and Design  
University of California, Irvine • June, 2006

### **PROFESSIONAL AFFILIATIONS**

AEP – Association of Environmental Planners  
AWMA – Air and Waste Management Association  
ASTM – American Society for Testing and Materials

### **PROFESSIONAL CERTIFICATIONS**

Environmental Site Assessment – American Society for Testing and Materials • June, 2013  
Planned Communities and Urban Infill – Urban Land Institute • June, 2011  
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008  
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007  
AB2588 Regulatory Standards – Trinity Consultants • November, 2006  
Air Dispersion Modeling – Lakes Environmental • June, 2006

*This page intentionally left blank*

**APPENDIX 2.1:**  
**AERMOD MODEL INPUT/OUTPUT**

*This page intentionally left blank*

12376 HRA

```
**
*****
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.6.5
** Lakes Environmental Software Inc.
** Date: 3/22/2019
** File: C:\Lakes\AERMOD View\12376 HRA\12376 HRA.ADI
**
*****
**
**
*****
```

```
** AERMOD Control Pathway
*****
**
**

CO STARTING
    TITLEONE C:\Lakes\AERMOD View\12376 HRA\12376 HRA.isc
    MODELOPT DEFAULT CONC
    AVERTIME ANNUAL
    URBANOPT 2035210
    POLLUTID DPM
    RUNORNOT RUN
    ERRORFIL "12376 HRA.err"
CO FINISHED
**
*****
**
** AERMOD Source Pathway
*****
**
**

SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
** -----
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE1
** DESCRSRC On-Site Idling Building A
** PREFIX
** Length of Side = 8.59
** Configuration = Adjacent
** Emission Rate = 2.51E-06
** Vertical Dimension = 6.99
** SZINIT = 3.25
** Nodes = 2
** 443410.893, 3773215.755, 352.85, 3.49, 4.00
** 443410.535, 3773185.289, 352.57, 3.49, 4.00
```

12376 HRA

```
** -----
LOCATION L0000168      VOLUME   443410.842 3773211.460 352.91
LOCATION L0000169      VOLUME   443410.741 3773202.871 352.83
LOCATION L0000170      VOLUME   443410.640 3773194.281 352.76
LOCATION L0000171      VOLUME   443410.539 3773185.692 352.69
** End of LINE VOLUME Source ID = SLINE1
** -----
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE2
** DESCRSRC On-Site Idling Building B
** PREFIX
** Length of Side = 8.59
** Configuration = Adjacent
** Emission Rate = 4.183E-06
** Vertical Dimension = 6.99
** SZINIT = 3.25
** Nodes = 2
** 443333.833, 3773079.197, 352.05, 3.49, 4.00
** 443399.782, 3773078.838, 350.89, 3.49, 4.00
** -----
LOCATION L0000172      VOLUME   443338.128 3773079.173 351.82
LOCATION L0000173      VOLUME   443346.718 3773079.127 351.65
LOCATION L0000174      VOLUME   443355.307 3773079.080 351.47
LOCATION L0000175      VOLUME   443363.897 3773079.033 351.30
LOCATION L0000176      VOLUME   443372.487 3773078.987 351.12
LOCATION L0000177      VOLUME   443381.077 3773078.940 350.96
LOCATION L0000178      VOLUME   443389.667 3773078.893 350.87
LOCATION L0000179      VOLUME   443398.257 3773078.847 350.79
** End of LINE VOLUME Source ID = SLINE2
** -----
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE3
** DESCRSRC On-Site Idling Building C
** PREFIX
** Length of Side = 8.59
** Configuration = Adjacent
** Emission Rate = 5.298E-06
** Vertical Dimension = 6.99
** SZINIT = 3.25
** Nodes = 2
** 443334.908, 3772983.140, 350.16, 3.49, 4.00
** 443400.499, 3772983.140, 348.97, 3.49, 4.00
** -----
LOCATION L0000180      VOLUME   443339.203 3772983.140 349.85
LOCATION L0000181      VOLUME   443347.793 3772983.140 349.67
LOCATION L0000182      VOLUME   443356.383 3772983.140 349.57
LOCATION L0000183      VOLUME   443364.973 3772983.140 349.48
LOCATION L0000184      VOLUME   443373.563 3772983.140 349.40
```

12376 HRA					
LOCATION L0000185	VOLUME	443382.153	3772983.140	349.30	
LOCATION L0000186	VOLUME	443390.743	3772983.140	349.17	
LOCATION L0000187	VOLUME	443399.333	3772983.140	349.05	
** End of LINE VOLUME Source ID = SLINE3					
** -----					
** Line Source Represented by Adjacent Volume Sources					
** LINE VOLUME Source ID = SLINE4					
** DESCRSRC On-Site Travel Building A					
** PREFIX					
** Length of Side = 8.59					
** Configuration = Adjacent					
** Emission Rate = 2.514E-06					
** Vertical Dimension = 6.99					
** SZINIT = 3.25					
** Nodes = 16					
** 443434.794, 3773186.385, 351.50, 3.49, 4.00					
** 443435.215, 3773214.642, 351.02, 3.49, 4.00					
** 443433.950, 3773220.125, 351.32, 3.49, 4.00					
** 443422.985, 3773222.234, 352.73, 3.49, 4.00					
** 443398.101, 3773223.077, 353.58, 3.49, 4.00					
** 443343.695, 3773223.077, 354.25, 3.49, 4.00					
** 443337.368, 3773220.969, 354.62, 3.49, 4.00					
** 443334.838, 3773214.642, 354.19, 3.49, 4.00					
** 443334.416, 3773204.942, 354.20, 3.49, 4.00					
** 443334.416, 3773165.719, 353.73, 3.49, 4.00					
** 443333.994, 3773143.788, 353.29, 3.49, 4.00					
** 443333.573, 3773140.835, 353.29, 3.49, 4.00					
** 443287.180, 3773139.570, 353.83, 3.49, 4.00					
** 443278.745, 3773134.087, 354.08, 3.49, 4.00					
** 443279.588, 3773120.169, 353.42, 3.49, 4.00					
** 443279.588, 3772956.950, 350.41, 3.49, 4.00					
** -----					
LOCATION L0000188	VOLUME	443434.858	3773190.679	351.40	
LOCATION L0000189	VOLUME	443434.986	3773199.268	351.25	
LOCATION L0000190	VOLUME	443435.114	3773207.857	351.16	
LOCATION L0000191	VOLUME	443434.810	3773216.400	351.34	
LOCATION L0000192	VOLUME	443429.269	3773221.026	351.79	
LOCATION L0000193	VOLUME	443420.795	3773222.308	352.37	
LOCATION L0000194	VOLUME	443412.210	3773222.599	352.94	
LOCATION L0000195	VOLUME	443403.625	3773222.890	353.24	
LOCATION L0000196	VOLUME	443395.038	3773223.077	353.42	
LOCATION L0000197	VOLUME	443386.448	3773223.077	353.59	
LOCATION L0000198	VOLUME	443377.858	3773223.077	353.76	
LOCATION L0000199	VOLUME	443369.268	3773223.077	353.90	
LOCATION L0000200	VOLUME	443360.678	3773223.077	354.03	
LOCATION L0000201	VOLUME	443352.088	3773223.077	354.17	
LOCATION L0000202	VOLUME	443343.508	3773223.015	354.30	
LOCATION L0000203	VOLUME	443336.582	3773219.002	354.34	

		12376 HRA
LOCATION L0000204	VOLUME	443334.669 3773210.752 354.24
LOCATION L0000205	VOLUME	443334.416 3773202.167 354.11
LOCATION L0000206	VOLUME	443334.416 3773193.577 353.98
LOCATION L0000207	VOLUME	443334.416 3773184.987 353.85
LOCATION L0000208	VOLUME	443334.416 3773176.397 353.72
LOCATION L0000209	VOLUME	443334.416 3773167.807 353.59
LOCATION L0000210	VOLUME	443334.291 3773159.218 353.46
LOCATION L0000211	VOLUME	443334.126 3773150.630 353.33
LOCATION L0000212	VOLUME	443333.747 3773142.059 353.19
LOCATION L0000213	VOLUME	443326.221 3773140.635 353.31
LOCATION L0000214	VOLUME	443317.634 3773140.401 353.46
LOCATION L0000215	VOLUME	443309.047 3773140.167 353.55
LOCATION L0000216	VOLUME	443300.461 3773139.932 353.63
LOCATION L0000217	VOLUME	443291.874 3773139.698 353.71
LOCATION L0000218	VOLUME	443283.915 3773137.448 353.80
LOCATION L0000219	VOLUME	443278.891 3773131.668 353.79
LOCATION L0000220	VOLUME	443279.411 3773123.094 353.60
LOCATION L0000221	VOLUME	443279.588 3773114.509 353.43
LOCATION L0000222	VOLUME	443279.588 3773105.919 353.25
LOCATION L0000223	VOLUME	443279.588 3773097.329 353.08
LOCATION L0000224	VOLUME	443279.588 3773088.739 352.90
LOCATION L0000225	VOLUME	443279.588 3773080.149 352.73
LOCATION L0000226	VOLUME	443279.588 3773071.559 352.55
LOCATION L0000227	VOLUME	443279.588 3773062.969 352.38
LOCATION L0000228	VOLUME	443279.588 3773054.379 352.20
LOCATION L0000229	VOLUME	443279.588 3773045.789 352.03
LOCATION L0000230	VOLUME	443279.588 3773037.199 351.85
LOCATION L0000231	VOLUME	443279.588 3773028.609 351.68
LOCATION L0000232	VOLUME	443279.588 3773020.019 351.51
LOCATION L0000233	VOLUME	443279.588 3773011.429 351.33
LOCATION L0000234	VOLUME	443279.588 3773002.839 351.16
LOCATION L0000235	VOLUME	443279.588 3772994.249 350.98
LOCATION L0000236	VOLUME	443279.588 3772985.659 350.81
LOCATION L0000237	VOLUME	443279.588 3772977.069 350.63
LOCATION L0000238	VOLUME	443279.588 3772968.479 350.46
LOCATION L0000239	VOLUME	443279.588 3772959.889 350.33

\*\* End of LINE VOLUME Source ID = SLINE4

\*\* -----

\*\* Line Source Represented by Adjacent Volume Sources

\*\* LINE VOLUME Source ID = SLINE5

\*\* DESCRSRC On-Site Travel Building B

\*\* PREFIX

\*\* Length of Side = 8.59

\*\* Configuration = Adjacent

\*\* Emission Rate = 2.528E-06

\*\* Vertical Dimension = 6.99

\*\* SZINIT = 3.25

\*\* Nodes = 6

12376 HRA

\*\* 443290.017, 3773058.003, 352.04, 3.49, 4.00  
 \*\* 443442.276, 3773058.003, 349.59, 3.49, 4.00  
 \*\* 443452.399, 3773055.050, 348.99, 3.49, 4.00  
 \*\* 443462.943, 3773010.764, 348.05, 3.49, 4.00  
 \*\* 443464.630, 3772963.104, 347.19, 3.49, 4.00  
 \*\* 443464.208, 3772950.451, 347.08, 3.49, 4.00  
 \*\* -----  
 LOCATION L0000240 VOLUME 443294.312 3773058.003 352.03  
 LOCATION L0000241 VOLUME 443302.902 3773058.003 351.94  
 LOCATION L0000242 VOLUME 443311.492 3773058.003 351.85  
 LOCATION L0000243 VOLUME 443320.082 3773058.003 351.76  
 LOCATION L0000244 VOLUME 443328.672 3773058.003 351.58  
 LOCATION L0000245 VOLUME 443337.262 3773058.003 351.41  
 LOCATION L0000246 VOLUME 443345.852 3773058.003 351.24  
 LOCATION L0000247 VOLUME 443354.442 3773058.003 351.06  
 LOCATION L0000248 VOLUME 443363.032 3773058.003 350.89  
 LOCATION L0000249 VOLUME 443371.622 3773058.003 350.71  
 LOCATION L0000250 VOLUME 443380.212 3773058.003 350.55  
 LOCATION L0000251 VOLUME 443388.802 3773058.003 350.46  
 LOCATION L0000252 VOLUME 443397.392 3773058.003 350.37  
 LOCATION L0000253 VOLUME 443405.982 3773058.003 350.28  
 LOCATION L0000254 VOLUME 443414.572 3773058.003 350.15  
 LOCATION L0000255 VOLUME 443423.162 3773058.003 349.98  
 LOCATION L0000256 VOLUME 443431.752 3773058.003 349.81  
 LOCATION L0000257 VOLUME 443440.342 3773058.003 349.59  
 LOCATION L0000258 VOLUME 443448.665 3773056.139 348.95  
 LOCATION L0000259 VOLUME 443453.488 3773050.477 348.63  
 LOCATION L0000260 VOLUME 443455.477 3773042.121 348.55  
 LOCATION L0000261 VOLUME 443457.467 3773033.764 348.51  
 LOCATION L0000262 VOLUME 443459.457 3773025.408 348.47  
 LOCATION L0000263 VOLUME 443461.446 3773017.051 348.26  
 LOCATION L0000264 VOLUME 443463.018 3773008.639 348.08  
 LOCATION L0000265 VOLUME 443463.322 3773000.054 347.95  
 LOCATION L0000266 VOLUME 443463.626 3772991.469 347.79  
 LOCATION L0000267 VOLUME 443463.930 3772982.885 347.61  
 LOCATION L0000268 VOLUME 443464.234 3772974.300 347.43  
 LOCATION L0000269 VOLUME 443464.538 3772965.715 347.26  
 LOCATION L0000270 VOLUME 443464.431 3772957.130 347.17  
 \*\* End of LINE VOLUME Source ID = SLINE5  
 \*\* -----  
 \*\* Line Source Represented by Adjacent Volume Sources  
 \*\* LINE VOLUME Source ID = SLINE6  
 \*\* DESCRSRC On-Site Travel Building C  
 \*\* PREFIX  
 \*\* Length of Side = 8.59  
 \*\* Configuration = Adjacent  
 \*\* Emission Rate = 2.595E-06  
 \*\* Vertical Dimension = 6.99

12376 HRA

\*\* SZINIT = 3.25  
\*\* Nodes = 4  
\*\* 443279.454, 3772954.210, 350.42, 3.49, 4.00  
\*\* 443280.198, 3772969.458, 350.29, 3.49, 4.00  
\*\* 443466.890, 3772968.342, 347.17, 3.49, 4.00  
\*\* 443465.030, 3772952.722, 347.12, 3.49, 4.00  
\*\* -----  
LOCATION L0000271 VOLUME 443279.663 3772958.500 350.31  
LOCATION L0000272 VOLUME 443280.082 3772967.079 350.42  
LOCATION L0000273 VOLUME 443286.407 3772969.420 350.34  
LOCATION L0000274 VOLUME 443294.996 3772969.369 350.22  
LOCATION L0000275 VOLUME 443303.586 3772969.318 350.13  
LOCATION L0000276 VOLUME 443312.176 3772969.266 350.04  
LOCATION L0000277 VOLUME 443320.766 3772969.215 349.94  
LOCATION L0000278 VOLUME 443329.356 3772969.164 349.77  
LOCATION L0000279 VOLUME 443337.946 3772969.112 349.59  
LOCATION L0000280 VOLUME 443346.536 3772969.061 349.41  
LOCATION L0000281 VOLUME 443355.125 3772969.010 349.30  
LOCATION L0000282 VOLUME 443363.715 3772968.958 349.21  
LOCATION L0000283 VOLUME 443372.305 3772968.907 349.12  
LOCATION L0000284 VOLUME 443380.895 3772968.856 349.02  
LOCATION L0000285 VOLUME 443389.485 3772968.804 348.85  
LOCATION L0000286 VOLUME 443398.075 3772968.753 348.68  
LOCATION L0000287 VOLUME 443406.664 3772968.702 348.51  
LOCATION L0000288 VOLUME 443415.254 3772968.650 348.33  
LOCATION L0000289 VOLUME 443423.844 3772968.599 348.15  
LOCATION L0000290 VOLUME 443432.434 3772968.548 347.97  
LOCATION L0000291 VOLUME 443441.024 3772968.496 347.79  
LOCATION L0000292 VOLUME 443449.614 3772968.445 347.61  
LOCATION L0000293 VOLUME 443458.204 3772968.394 347.44  
LOCATION L0000294 VOLUME 443466.793 3772968.342 347.26  
LOCATION L0000295 VOLUME 443465.886 3772959.908 347.17  
\*\* End of LINE VOLUME Source ID = SLINE6  
\*\* -----  
\*\* Line Source Represented by Adjacent Volume Sources  
\*\* LINE VOLUME Source ID = SLINE7  
\*\* DESCRSRC Off-Site Travel  
\*\* PREFIX  
\*\* Length of Side = 16.00  
\*\* Configuration = Adjacent  
\*\* Emission Rate = 9.472E-06  
\*\* Vertical Dimension = 6.99  
\*\* SZINIT = 3.25  
\*\* Nodes = 3  
\*\* 443278.502, 3772943.021, 350.03, 3.49, 7.44  
\*\* 443631.365, 3772935.971, 346.46, 3.49, 7.44  
\*\* 443627.135, 3772665.243, 341.06, 3.49, 7.44  
\*\* -----

12376 HRA

LOCATION L0000296	VOLUME	443286.501	3772942.861	350.01
LOCATION L0000297	VOLUME	443302.497	3772942.542	349.73
LOCATION L0000298	VOLUME	443318.494	3772942.222	349.44
LOCATION L0000299	VOLUME	443334.491	3772941.903	349.23
LOCATION L0000300	VOLUME	443350.488	3772941.583	349.03
LOCATION L0000301	VOLUME	443366.485	3772941.263	348.73
LOCATION L0000302	VOLUME	443382.481	3772940.944	348.44
LOCATION L0000303	VOLUME	443398.478	3772940.624	348.25
LOCATION L0000304	VOLUME	443414.475	3772940.304	348.02
LOCATION L0000305	VOLUME	443430.472	3772939.985	347.69
LOCATION L0000306	VOLUME	443446.469	3772939.665	347.36
LOCATION L0000307	VOLUME	443462.466	3772939.346	347.03
LOCATION L0000308	VOLUME	443478.462	3772939.026	346.72
LOCATION L0000309	VOLUME	443494.459	3772938.706	346.42
LOCATION L0000310	VOLUME	443510.456	3772938.387	345.99
LOCATION L0000311	VOLUME	443526.453	3772938.067	345.51
LOCATION L0000312	VOLUME	443542.450	3772937.748	345.54
LOCATION L0000313	VOLUME	443558.446	3772937.428	345.69
LOCATION L0000314	VOLUME	443574.443	3772937.108	345.97
LOCATION L0000315	VOLUME	443590.440	3772936.789	346.27
LOCATION L0000316	VOLUME	443606.437	3772936.469	346.43
LOCATION L0000317	VOLUME	443622.434	3772936.149	346.55
LOCATION L0000318	VOLUME	443631.254	3772928.905	346.33
LOCATION L0000319	VOLUME	443631.004	3772912.907	345.84
LOCATION L0000320	VOLUME	443630.754	3772896.909	345.41
LOCATION L0000321	VOLUME	443630.505	3772880.911	345.03
LOCATION L0000322	VOLUME	443630.255	3772864.913	344.69
LOCATION L0000323	VOLUME	443630.005	3772848.915	344.37
LOCATION L0000324	VOLUME	443629.755	3772832.917	343.65
LOCATION L0000325	VOLUME	443629.505	3772816.919	342.83
LOCATION L0000326	VOLUME	443629.255	3772800.921	342.32
LOCATION L0000327	VOLUME	443629.005	3772784.922	341.87
LOCATION L0000328	VOLUME	443628.755	3772768.924	341.76
LOCATION L0000329	VOLUME	443628.505	3772752.926	341.73
LOCATION L0000330	VOLUME	443628.255	3772736.928	341.96
LOCATION L0000331	VOLUME	443628.005	3772720.930	342.04
LOCATION L0000332	VOLUME	443627.755	3772704.932	341.81
LOCATION L0000333	VOLUME	443627.505	3772688.934	341.53
LOCATION L0000334	VOLUME	443627.255	3772672.936	341.20

\*\* End of LINE VOLUME Source ID = SLINE1

\*\* Source Parameters \*\*

\*\* LINE VOLUME Source ID = SLINE1

SRCPARAM L0000168	0.0000006275	3.49	4.00	3.25
SRCPARAM L0000169	0.0000006275	3.49	4.00	3.25
SRCPARAM L0000170	0.0000006275	3.49	4.00	3.25
SRCPARAM L0000171	0.0000006275	3.49	4.00	3.25

\*\* -----

\*\* LINE VOLUME Source ID = SLINE2

		12376	HRA	
SRCPARAM	L0000172	0.0000005229	3.49	4.00
SRCPARAM	L0000173	0.0000005229	3.49	4.00
SRCPARAM	L0000174	0.0000005229	3.49	4.00
SRCPARAM	L0000175	0.0000005229	3.49	4.00
SRCPARAM	L0000176	0.0000005229	3.49	4.00
SRCPARAM	L0000177	0.0000005229	3.49	4.00
SRCPARAM	L0000178	0.0000005229	3.49	4.00
SRCPARAM	L0000179	0.0000005229	3.49	4.00
**	<hr/>			
**	LINE VOLUME Source ID = SLINE3			
SRCPARAM	L0000180	0.0000006623	3.49	4.00
SRCPARAM	L0000181	0.0000006623	3.49	4.00
SRCPARAM	L0000182	0.0000006623	3.49	4.00
SRCPARAM	L0000183	0.0000006623	3.49	4.00
SRCPARAM	L0000184	0.0000006623	3.49	4.00
SRCPARAM	L0000185	0.0000006623	3.49	4.00
SRCPARAM	L0000186	0.0000006623	3.49	4.00
SRCPARAM	L0000187	0.0000006623	3.49	4.00
**	<hr/>			
**	LINE VOLUME Source ID = SLINE4			
SRCPARAM	L0000188	0.00000004835	3.49	4.00
SRCPARAM	L0000189	0.00000004835	3.49	4.00
SRCPARAM	L0000190	0.00000004835	3.49	4.00
SRCPARAM	L0000191	0.00000004835	3.49	4.00
SRCPARAM	L0000192	0.00000004835	3.49	4.00
SRCPARAM	L0000193	0.00000004835	3.49	4.00
SRCPARAM	L0000194	0.00000004835	3.49	4.00
SRCPARAM	L0000195	0.00000004835	3.49	4.00
SRCPARAM	L0000196	0.00000004835	3.49	4.00
SRCPARAM	L0000197	0.00000004835	3.49	4.00
SRCPARAM	L0000198	0.00000004835	3.49	4.00
SRCPARAM	L0000199	0.00000004835	3.49	4.00
SRCPARAM	L0000200	0.00000004835	3.49	4.00
SRCPARAM	L0000201	0.00000004835	3.49	4.00
SRCPARAM	L0000202	0.00000004835	3.49	4.00
SRCPARAM	L0000203	0.00000004835	3.49	4.00
SRCPARAM	L0000204	0.00000004835	3.49	4.00
SRCPARAM	L0000205	0.00000004835	3.49	4.00
SRCPARAM	L0000206	0.00000004835	3.49	4.00
SRCPARAM	L0000207	0.00000004835	3.49	4.00
SRCPARAM	L0000208	0.00000004835	3.49	4.00
SRCPARAM	L0000209	0.00000004835	3.49	4.00
SRCPARAM	L0000210	0.00000004835	3.49	4.00
SRCPARAM	L0000211	0.00000004835	3.49	4.00
SRCPARAM	L0000212	0.00000004835	3.49	4.00
SRCPARAM	L0000213	0.00000004835	3.49	4.00
SRCPARAM	L0000214	0.00000004835	3.49	4.00
SRCPARAM	L0000215	0.00000004835	3.49	4.00

		12376 HRA			
SRCPARAM	L0000216	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000217	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000218	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000219	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000220	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000221	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000222	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000223	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000224	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000225	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000226	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000227	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000228	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000229	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000230	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000231	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000232	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000233	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000234	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000235	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000236	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000237	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000238	0.00000004835	3.49	4.00	3.25
SRCPARAM	L0000239	0.00000004835	3.49	4.00	3.25
**					
** LINE VOLUME	Source ID = SLINE5				
SRCPARAM	L0000240	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000241	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000242	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000243	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000244	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000245	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000246	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000247	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000248	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000249	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000250	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000251	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000252	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000253	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000254	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000255	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000256	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000257	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000258	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000259	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000260	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000261	0.00000008155	3.49	4.00	3.25

		12376 HRA			
SRCPARAM	L0000262	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000263	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000264	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000265	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000266	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000267	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000268	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000269	0.00000008155	3.49	4.00	3.25
SRCPARAM	L0000270	0.00000008155	3.49	4.00	3.25
**	-----				
**	LINE VOLUME Source ID = SLINE6				
SRCPARAM	L0000271	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000272	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000273	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000274	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000275	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000276	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000277	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000278	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000279	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000280	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000281	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000282	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000283	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000284	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000285	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000286	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000287	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000288	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000289	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000290	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000291	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000292	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000293	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000294	0.0000001038	3.49	4.00	3.25
SRCPARAM	L0000295	0.0000001038	3.49	4.00	3.25
**	-----				
**	LINE VOLUME Source ID = SLINE7				
SRCPARAM	L0000296	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000297	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000298	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000299	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000300	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000301	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000302	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000303	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000304	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000305	0.0000002429	3.49	7.44	3.25

		12376 HRA			
SRCPARAM	L0000306	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000307	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000308	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000309	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000310	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000311	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000312	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000313	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000314	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000315	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000316	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000317	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000318	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000319	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000320	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000321	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000322	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000323	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000324	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000325	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000326	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000327	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000328	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000329	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000330	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000331	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000332	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000333	0.0000002429	3.49	7.44	3.25
SRCPARAM	L0000334	0.0000002429	3.49	7.44	3.25

\*\* -----

URBANSRC ALL

SRCGROUP ALL

SO FINISHED

\*\*

\*\*\*\*\*

\*\* AERMOD Receptor Pathway

\*\*\*\*\*

\*\*

\*\*

RE STARTING

INCLUDED "12376 HRA.rou"

RE FINISHED

\*\*

\*\*\*\*\*

\*\* AERMOD Meteorology Pathway

\*\*\*\*\*

\*\*

\*\*

12376 HRA

ME STARTING  
SURFFILE UplandsADJU\UPLA\_V9\_ADJU\UPLA\_v9.SFC  
PROFILE UplandsADJU\UPLA\_V9\_ADJU\UPLA\_v9.PFL  
SURFDATA 3102 2012  
UAIRDATA 3190 2012  
SITEDATA 99999 2012  
PROFBASE 379.0 METERS

ME FINISHED

\*\*

\*\*\*\*\*

\*\* AERMOD Output Pathway

\*\*\*\*\*

\*\*

\*\*

OU STARTING

\*\* Auto-Generated Plotfiles

PLOTFILE ANNUAL ALL "12376 HRA.AD\AN00GALL.PLT" 31  
SUMMFILE "12376 HRA.sum"

OU FINISHED

\*\*\* Message Summary For AERMOD Model Setup \*\*\*

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)  
A Total of 2 Warning Message(s)  
A Total of 0 Informational Message(s)

\*\*\*\*\* FATAL ERROR MESSAGES \*\*\*\*\*

\*\*\* NONE \*\*\*

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

ME W186 536 MEOPEN: THRESH\_1MIN 1-min ASOS wind speed threshold used  
0.50  
ME W187 536 MEOPEN: ADJ\_U\* Option for Stable Low Winds used in AERMET

\*\*\*\*\*

\*\*\* SETUP Finishes Successfully \*\*\*

\*\*\*\*\*

▲ \*\*\* AERMOD - VERSION 18081 \*\*\* \*\*\* C:\Lakes\AERMOD View\12376 HRA\12376  
HRA.isc \*\*\* 03/22/19  
\*\*\* AERMET - VERSION 16216 \*\*\* \*\*\*  
\*\*\* 10:39:17

12376 HRA

PAGE 1  
\*\*\* MODELOPTs: RegDEFAULT CONC ELEV URBAN ADJ\_U\*

\*\*\* MODEL SETUP OPTIONS SUMMARY

\*\*\*

-- DEPOSITION LOGIC --  
\*\*NO GAS DEPOSITION Data Provided.  
\*\*NO PARTICLE DEPOSITION Data Provided.  
\*\*Model Uses NO DRY DEPLETION. DRYDPLT = F  
\*\*Model Uses NO WET DEPLETION. WETDPLT = F

\*\*Model Uses URBAN Dispersion Algorithm for the SBL for 167 Source(s),  
for Total of 1 Urban Area(s):  
Urban Population = 2035210.0 ; Urban Roughness Length = 1.000 m

\*\*Model Uses Regulatory DEFAULT Options:

1. Stack-tip Downwash.
2. Model Accounts for ELEVated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.
6. Urban Roughness Length of 1.0 Meter Assumed.

\*\*Other Options Specified:

ADJ\_U\* - Use ADJ\_U\* option for SBL in AERMET  
TEMP\_Sub - Meteorological data includes TEMP substitutions

\*\*Model Assumes No FLAGPOLE Receptor Heights.

\*\*The User Specified a Pollutant Type of: DPM

\*\*Model Calculates ANNUAL Averages Only

\*\*This Run Includes: 167 Source(s); 1 Source Group(s); and 31 Receptor(s)

with: 0 POINT(s), including  
0 POINTCAP(s) and 0 POINTHOR(s)  
and: 167 VOLUME source(s)  
and: 0 AREA type source(s)  
and: 0 LINE source(s)  
and: 0 OPENPIT source(s)

12376 HRA  
and: 0 BUOYANT LINE source(s) with 0 line(s)

\*\*Model Set To Continue RUNning After the Setup Testing.

\*\*The AERMET Input Meteorological Data Version Date: 16216

\*\*Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor  
Model Outputs External File(s) of High Values for Plotting (PLOTFILE

Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE  
Keyword)

\*\*NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours  
Hours

m for Missing

b for Both Calm  
and Missing Hours

\*\*Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 379.00 ; Decay  
Coef. = 0.000 ; Rot. Angle = 0.0  
Emission Units = GRAMS/SEC ;  
Emission Rate Unit Factor = 0.10000E+07  
Output Units = MICROGRAMS/M\*\*3

\*\*Approximate Storage Requirements of Model = 3.6 MB of RAM.

\*\*Input Runstream File: aermod.inp

\*\*Output Print File: aermod.out

\*\*Detailed Error/Message File: 12376 HRA.err

\*\*File for Summary of Results: 12376 HRA.sum

▲ \*\*\* AERMOD - VERSION 18081 \*\*\* \*\*\* C:\Lakes\AERMOD View\12376 HRA\12376  
HRA.isc \*\*\* 03/22/19  
\*\*\* AERMET - VERSION 16216 \*\*\* \*\*\*  
\*\*\* 10:39:17

PAGE 2

\*\*\* MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ\_U\*

\*\*\* VOLUME SOURCE DATA \*\*\*

		12376 HRA				BASE	RELEASE	INIT.	
INIT.	URBAN	NUMBER EMISSION RATE							
SOURCE	SOURCE	EMISSION RATE	PART.	(GRAMS/SEC)	X	Y	ELEV.	HEIGHT	
SZ	ID	SCALAR VARY	CATS.		(METERS)	(METERS)	(METERS)	(METERS)	
	(METERS)	BY							
L0000168	3.25	0	0	0.62750E-06	443410.8	3773211.5	352.9	3.49	4.00
YES									
L0000169	3.25	0	0	0.62750E-06	443410.7	3773202.9	352.8	3.49	4.00
YES									
L0000170	3.25	0	0	0.62750E-06	443410.6	3773194.3	352.8	3.49	4.00
YES									
L0000171	3.25	0	0	0.62750E-06	443410.5	3773185.7	352.7	3.49	4.00
YES									
L0000172	3.25	0	0	0.52290E-06	443338.1	3773079.2	351.8	3.49	4.00
YES									
L0000173	3.25	0	0	0.52290E-06	443346.7	3773079.1	351.7	3.49	4.00
YES									
L0000174	3.25	0	0	0.52290E-06	443355.3	3773079.1	351.5	3.49	4.00
YES									
L0000175	3.25	0	0	0.52290E-06	443363.9	3773079.0	351.3	3.49	4.00
YES									
L0000176	3.25	0	0	0.52290E-06	443372.5	3773079.0	351.1	3.49	4.00
YES									
L0000177	3.25	0	0	0.52290E-06	443381.1	3773078.9	351.0	3.49	4.00
YES									
L0000178	3.25	0	0	0.52290E-06	443389.7	3773078.9	350.9	3.49	4.00
YES									
L0000179	3.25	0	0	0.52290E-06	443398.3	3773078.8	350.8	3.49	4.00
YES									
L0000180	3.25	0	0	0.66230E-06	443339.2	3772983.1	349.9	3.49	4.00
YES									
L0000181	3.25	0	0	0.66230E-06	443347.8	3772983.1	349.7	3.49	4.00
YES									
L0000182	3.25	0	0	0.66230E-06	443356.4	3772983.1	349.6	3.49	4.00
YES									
L0000183	3.25	0	0	0.66230E-06	443365.0	3772983.1	349.5	3.49	4.00
YES									
L0000184	3.25	0	0	0.66230E-06	443373.6	3772983.1	349.4	3.49	4.00
YES									
L0000185	3.25	0	0	0.66230E-06	443382.2	3772983.1	349.3	3.49	4.00
YES									
L0000186	3.25	0	0	0.66230E-06	443390.7	3772983.1	349.2	3.49	4.00
YES									
L0000187	3.25	0	0	0.66230E-06	443399.3	3772983.1	349.1	3.49	4.00

12376 HRA

3.25	YES						
L0000188		0	0.48350E-07	443434.9	3773190.7	351.4	3.49
3.25	YES						
L0000189		0	0.48350E-07	443435.0	3773199.3	351.2	3.49
3.25	YES						
L0000190		0	0.48350E-07	443435.1	3773207.9	351.2	3.49
3.25	YES						
L0000191		0	0.48350E-07	443434.8	3773216.4	351.3	3.49
3.25	YES						
L0000192		0	0.48350E-07	443429.3	3773221.0	351.8	3.49
3.25	YES						
L0000193		0	0.48350E-07	443420.8	3773222.3	352.4	3.49
3.25	YES						
L0000194		0	0.48350E-07	443412.2	3773222.6	352.9	3.49
3.25	YES						
L0000195		0	0.48350E-07	443403.6	3773222.9	353.2	3.49
3.25	YES						
L0000196		0	0.48350E-07	443395.0	3773223.1	353.4	3.49
3.25	YES						
L0000197		0	0.48350E-07	443386.4	3773223.1	353.6	3.49
3.25	YES						
L0000198		0	0.48350E-07	443377.9	3773223.1	353.8	3.49
3.25	YES						
L0000199		0	0.48350E-07	443369.3	3773223.1	353.9	3.49
3.25	YES						
L0000200		0	0.48350E-07	443360.7	3773223.1	354.0	3.49
3.25	YES						
L0000201		0	0.48350E-07	443352.1	3773223.1	354.2	3.49
3.25	YES						
L0000202		0	0.48350E-07	443343.5	3773223.0	354.3	3.49
3.25	YES						
L0000203		0	0.48350E-07	443336.6	3773219.0	354.3	3.49
3.25	YES						
L0000204		0	0.48350E-07	443334.7	3773210.8	354.2	3.49
3.25	YES						
L0000205		0	0.48350E-07	443334.4	3773202.2	354.1	3.49
3.25	YES						
L0000206		0	0.48350E-07	443334.4	3773193.6	354.0	3.49
3.25	YES						
L0000207		0	0.48350E-07	443334.4	3773185.0	353.9	3.49
3.25	YES						
▲ *** AERMOD - VERSION	18081	***	***	C:\Lakes\AERMOD	View\12376 HRA\12376		
HRA.isc		***	***	03/22/19			
*** AERMET - VERSION	16216	***	***				
	***	***	10:39:17				

PAGE 3

\*\*\* MODELOPTs: RegDEFAULT CONC ELEV URBAN ADJ\_U\*

## 12376 HRA

\*\*\* VOLUME SOURCE DATA \*\*\*

INIT.	URBAN	NUMBER	EMISSION RATE		BASE	RELEASE	INIT.	
SOURCE	SOURCE	EMISSION RATE	PART. (GRAMS/SEC)	X	Y	ELEV.	HEIGHT	SY
SZ	ID	SCALAR VARY	CATS.	(METERS)	(METERS)	(METERS)	(METERS)	(METERS)
	(METERS)	BY						
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
L0000208	3.25 YES	0	0.48350E-07	443334.4	3773176.4	353.7	3.49	4.00
L0000209	3.25 YES	0	0.48350E-07	443334.4	3773167.8	353.6	3.49	4.00
L0000210	3.25 YES	0	0.48350E-07	443334.3	3773159.2	353.5	3.49	4.00
L0000211	3.25 YES	0	0.48350E-07	443334.1	3773150.6	353.3	3.49	4.00
L0000212	3.25 YES	0	0.48350E-07	443333.7	3773142.1	353.2	3.49	4.00
L0000213	3.25 YES	0	0.48350E-07	443326.2	3773140.6	353.3	3.49	4.00
L0000214	3.25 YES	0	0.48350E-07	443317.6	3773140.4	353.5	3.49	4.00
L0000215	3.25 YES	0	0.48350E-07	443309.0	3773140.2	353.6	3.49	4.00
L0000216	3.25 YES	0	0.48350E-07	443300.5	3773139.9	353.6	3.49	4.00
L0000217	3.25 YES	0	0.48350E-07	443291.9	3773139.7	353.7	3.49	4.00
L0000218	3.25 YES	0	0.48350E-07	443283.9	3773137.4	353.8	3.49	4.00
L0000219	3.25 YES	0	0.48350E-07	443278.9	3773131.7	353.8	3.49	4.00
L0000220	3.25 YES	0	0.48350E-07	443279.4	3773123.1	353.6	3.49	4.00
L0000221	3.25 YES	0	0.48350E-07	443279.6	3773114.5	353.4	3.49	4.00
L0000222	3.25 YES	0	0.48350E-07	443279.6	3773105.9	353.2	3.49	4.00
L0000223	3.25 YES	0	0.48350E-07	443279.6	3773097.3	353.1	3.49	4.00
L0000224	3.25 YES	0	0.48350E-07	443279.6	3773088.7	352.9	3.49	4.00
L0000225	3.25 YES	0	0.48350E-07	443279.6	3773080.1	352.7	3.49	4.00



12376 HRA  
\*\*\* 10:39:17

PAGE 4

\*\*\* MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ\_U\*

\*\*\* VOLUME SOURCE DATA \*\*\*

INIT.	URBAN	NUMBER	EMISSION RATE		BASE	RELEASE	INIT.		
SZ	SOURCE	EMISSION RATE	PART.	(GRAMS/SEC)	X	Y	ELEV.	HEIGHT	SY
		SCALAR	VARY						
	ID	CATS.			(METERS)	(METERS)	(METERS)	(METERS)	(METERS)
	(METERS)	BY							
L0000248	3.25	0	0.81550E-07	443363.0	3773058.0	350.9	3.49	4.00	YES
L0000249	3.25	0	0.81550E-07	443371.6	3773058.0	350.7	3.49	4.00	YES
L0000250	3.25	0	0.81550E-07	443380.2	3773058.0	350.6	3.49	4.00	YES
L0000251	3.25	0	0.81550E-07	443388.8	3773058.0	350.5	3.49	4.00	YES
L0000252	3.25	0	0.81550E-07	443397.4	3773058.0	350.4	3.49	4.00	YES
L0000253	3.25	0	0.81550E-07	443406.0	3773058.0	350.3	3.49	4.00	YES
L0000254	3.25	0	0.81550E-07	443414.6	3773058.0	350.2	3.49	4.00	YES
L0000255	3.25	0	0.81550E-07	443423.2	3773058.0	350.0	3.49	4.00	YES
L0000256	3.25	0	0.81550E-07	443431.8	3773058.0	349.8	3.49	4.00	YES
L0000257	3.25	0	0.81550E-07	443440.3	3773058.0	349.6	3.49	4.00	YES
L0000258	3.25	0	0.81550E-07	443448.7	3773056.1	348.9	3.49	4.00	YES
L0000259	3.25	0	0.81550E-07	443453.5	3773050.5	348.6	3.49	4.00	YES
L0000260	3.25	0	0.81550E-07	443455.5	3773042.1	348.6	3.49	4.00	YES
L0000261	3.25	0	0.81550E-07	443457.5	3773033.8	348.5	3.49	4.00	YES
L0000262	3.25	0	0.81550E-07	443459.5	3773025.4	348.5	3.49	4.00	YES
L0000263	3.25	0	0.81550E-07	443461.4	3773017.1	348.3	3.49	4.00	YES

## 12376 HRA

3.25	YES							
L0000264		0	0.81550E-07	443463.0	3773008.6	348.1	3.49	4.00
3.25	YES							
L0000265		0	0.81550E-07	443463.3	3773000.1	347.9	3.49	4.00
3.25	YES							
L0000266		0	0.81550E-07	443463.6	3772991.5	347.8	3.49	4.00
3.25	YES							
L0000267		0	0.81550E-07	443463.9	3772982.9	347.6	3.49	4.00
3.25	YES							
L0000268		0	0.81550E-07	443464.2	3772974.3	347.4	3.49	4.00
3.25	YES							
L0000269		0	0.81550E-07	443464.5	3772965.7	347.3	3.49	4.00
3.25	YES							
L0000270		0	0.81550E-07	443464.4	3772957.1	347.2	3.49	4.00
3.25	YES							
L0000271		0	0.10380E-06	443279.7	3772958.5	350.3	3.49	4.00
3.25	YES							
L0000272		0	0.10380E-06	443280.1	3772967.1	350.4	3.49	4.00
3.25	YES							
L0000273		0	0.10380E-06	443286.4	3772969.4	350.3	3.49	4.00
3.25	YES							
L0000274		0	0.10380E-06	443295.0	3772969.4	350.2	3.49	4.00
3.25	YES							
L0000275		0	0.10380E-06	443303.6	3772969.3	350.1	3.49	4.00
3.25	YES							
L0000276		0	0.10380E-06	443312.2	3772969.3	350.0	3.49	4.00
3.25	YES							
L0000277		0	0.10380E-06	443320.8	3772969.2	349.9	3.49	4.00
3.25	YES							
L0000278		0	0.10380E-06	443329.4	3772969.2	349.8	3.49	4.00
3.25	YES							
L0000279		0	0.10380E-06	443337.9	3772969.1	349.6	3.49	4.00
3.25	YES							
L0000280		0	0.10380E-06	443346.5	3772969.1	349.4	3.49	4.00
3.25	YES							
L0000281		0	0.10380E-06	443355.1	3772969.0	349.3	3.49	4.00
3.25	YES							
L0000282		0	0.10380E-06	443363.7	3772969.0	349.2	3.49	4.00
3.25	YES							
L0000283		0	0.10380E-06	443372.3	3772968.9	349.1	3.49	4.00
3.25	YES							
L0000284		0	0.10380E-06	443380.9	3772968.9	349.0	3.49	4.00
3.25	YES							
L0000285		0	0.10380E-06	443389.5	3772968.8	348.9	3.49	4.00
3.25	YES							
L0000286		0	0.10380E-06	443398.1	3772968.8	348.7	3.49	4.00
3.25	YES							
L0000287		0	0.10380E-06	443406.7	3772968.7	348.5	3.49	4.00

12376 HRA

3.25 YES

▲ \*\*\* AERMOD - VERSION 18081 \*\*\* \*\*\* C:\Lakes\AERMOD View\12376 HRA\12376  
HRA.isc \*\*\* 03/22/19

\*\*\* AERMET - VERSION 16216 \*\*\* \*\*\*  
\*\*\* 10:39:17

PAGE 5

\*\*\* MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ\_U\*

\*\*\* VOLUME SOURCE DATA \*\*\*

INIT.	URBAN	NUMBER EMISSION RATE	BASE	RELEASE	INIT.		
	SOURCE	EMISSION RATE					
SZ	SOURCE	PART. (GRAMS/SEC)	X	Y	ELEV.		
	ID	SCALAR VARY			HEIGHT		
(METERS)		CATS.	(METERS)	(METERS)	(METERS)		
		BY					
-	-	-	-	-	-		
-	-	-	-	-	-		
L0000288	0	0.10380E-06	443415.3	3772968.6	348.3	3.49	4.00
3.25 YES							
L0000289	0	0.10380E-06	443423.8	3772968.6	348.2	3.49	4.00
3.25 YES							
L0000290	0	0.10380E-06	443432.4	3772968.5	348.0	3.49	4.00
3.25 YES							
L0000291	0	0.10380E-06	443441.0	3772968.5	347.8	3.49	4.00
3.25 YES							
L0000292	0	0.10380E-06	443449.6	3772968.4	347.6	3.49	4.00
3.25 YES							
L0000293	0	0.10380E-06	443458.2	3772968.4	347.4	3.49	4.00
3.25 YES							
L0000294	0	0.10380E-06	443466.8	3772968.3	347.3	3.49	4.00
3.25 YES							
L0000295	0	0.10380E-06	443465.9	3772959.9	347.2	3.49	4.00
3.25 YES							
L0000296	0	0.24290E-06	443286.5	3772942.9	350.0	3.49	7.44
3.25 YES							
L0000297	0	0.24290E-06	443302.5	3772942.5	349.7	3.49	7.44
3.25 YES							
L0000298	0	0.24290E-06	443318.5	3772942.2	349.4	3.49	7.44
3.25 YES							
L0000299	0	0.24290E-06	443334.5	3772941.9	349.2	3.49	7.44
3.25 YES							
L0000300	0	0.24290E-06	443350.5	3772941.6	349.0	3.49	7.44
3.25 YES							
L0000301	0	0.24290E-06	443366.5	3772941.3	348.7	3.49	7.44

## 12376 HRA

3.25	YES							
L0000302		0	0.24290E-06	443382.5	3772940.9	348.4	3.49	7.44
3.25	YES							
L0000303		0	0.24290E-06	443398.5	3772940.6	348.2	3.49	7.44
3.25	YES							
L0000304		0	0.24290E-06	443414.5	3772940.3	348.0	3.49	7.44
3.25	YES							
L0000305		0	0.24290E-06	443430.5	3772940.0	347.7	3.49	7.44
3.25	YES							
L0000306		0	0.24290E-06	443446.5	3772939.7	347.4	3.49	7.44
3.25	YES							
L0000307		0	0.24290E-06	443462.5	3772939.3	347.0	3.49	7.44
3.25	YES							
L0000308		0	0.24290E-06	443478.5	3772939.0	346.7	3.49	7.44
3.25	YES							
L0000309		0	0.24290E-06	443494.5	3772938.7	346.4	3.49	7.44
3.25	YES							
L0000310		0	0.24290E-06	443510.5	3772938.4	346.0	3.49	7.44
3.25	YES							
L0000311		0	0.24290E-06	443526.5	3772938.1	345.5	3.49	7.44
3.25	YES							
L0000312		0	0.24290E-06	443542.5	3772937.7	345.5	3.49	7.44
3.25	YES							
L0000313		0	0.24290E-06	443558.4	3772937.4	345.7	3.49	7.44
3.25	YES							
L0000314		0	0.24290E-06	443574.4	3772937.1	346.0	3.49	7.44
3.25	YES							
L0000315		0	0.24290E-06	443590.4	3772936.8	346.3	3.49	7.44
3.25	YES							
L0000316		0	0.24290E-06	443606.4	3772936.5	346.4	3.49	7.44
3.25	YES							
L0000317		0	0.24290E-06	443622.4	3772936.1	346.6	3.49	7.44
3.25	YES							
L0000318		0	0.24290E-06	443631.3	3772928.9	346.3	3.49	7.44
3.25	YES							
L0000319		0	0.24290E-06	443631.0	3772912.9	345.8	3.49	7.44
3.25	YES							
L0000320		0	0.24290E-06	443630.8	3772896.9	345.4	3.49	7.44
3.25	YES							
L0000321		0	0.24290E-06	443630.5	3772880.9	345.0	3.49	7.44
3.25	YES							
L0000322		0	0.24290E-06	443630.3	3772864.9	344.7	3.49	7.44
3.25	YES							
L0000323		0	0.24290E-06	443630.0	3772848.9	344.4	3.49	7.44
3.25	YES							
L0000324		0	0.24290E-06	443629.8	3772832.9	343.7	3.49	7.44
3.25	YES							
L0000325		0	0.24290E-06	443629.5	3772816.9	342.8	3.49	7.44

12376 HRA

3.25	YES							
L0000326		0	0.24290E-06	443629.3	3772800.9	342.3	3.49	7.44
3.25	YES							
L0000327		0	0.24290E-06	443629.0	3772784.9	341.9	3.49	7.44
3.25	YES							
↑ *** AERMOD - VERSION 18081 *** *** C:\Lakes\AERMOD View\12376 HRA\12376								
HRA.isc *** 03/22/19								
*** AERMET - VERSION 16216 *** ***								
*** 10:39:17								

PAGE 6

\*\*\* MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ\_U\*

\*\*\* VOLUME SOURCE DATA \*\*\*

INIT.	URBAN	NUMBER EMISSION RATE			BASE	RELEASE	INIT.		
SZ	SOURCE	EMISSION RATE	PART.	(GRAMS/SEC)	X	Y	ELEV.	HEIGHT	SY
	ID	SCALAR	VARY	CATS.	(METERS)	(METERS)	(METERS)	(METERS)	(METERS)
				BY					
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -

L0000328		0	0.24290E-06	443628.8	3772768.9	341.8	3.49	7.44
3.25	YES							
L0000329		0	0.24290E-06	443628.5	3772752.9	341.7	3.49	7.44
3.25	YES							
L0000330		0	0.24290E-06	443628.3	3772736.9	342.0	3.49	7.44
3.25	YES							
L0000331		0	0.24290E-06	443628.0	3772720.9	342.0	3.49	7.44
3.25	YES							
L0000332		0	0.24290E-06	443627.8	3772704.9	341.8	3.49	7.44
3.25	YES							
L0000333		0	0.24290E-06	443627.5	3772688.9	341.5	3.49	7.44
3.25	YES							
L0000334		0	0.24290E-06	443627.3	3772672.9	341.2	3.49	7.44
3.25	YES							
↑ *** AERMOD - VERSION 18081 *** *** C:\Lakes\AERMOD View\12376 HRA\12376								
HRA.isc *** 03/22/19								
*** AERMET - VERSION 16216 *** ***								
*** 10:39:17								

PAGE 7

\*\*\* MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ\_U\*

12376 HRA

\*\*\* SOURCE IDs DEFINING SOURCE GROUPS

\*\*\*

SRCGROUP ID	SOURCE IDs
ALL	-----
L0000173	L0000168 , L0000174 , L0000169 , L0000175 , L0000170 , L0000171 , L0000172 ,
L0000181	L0000176 , L0000182 , L0000177 , L0000183 , L0000178 , L0000179 , L0000180 ,
L0000189	L0000184 , L0000190 , L0000185 , L0000191 , L0000186 , L0000187 , L0000188 ,
L0000197	L0000192 , L0000198 , L0000193 , L0000199 , L0000194 , L0000195 , L0000196 ,
L0000205	L0000200 , L0000206 , L0000201 , L0000202 , L0000203 , L0000204 ,
L0000213	L0000208 , L0000214 , L0000209 , L0000215 , L0000210 , L0000211 , L0000212 ,
L0000221	L0000216 , L0000222 , L0000217 , L0000223 , L0000218 , L0000219 , L0000220 ,
L0000229	L0000224 , L0000230 , L0000225 , L0000231 , L0000226 , L0000227 , L0000228 ,
L0000237	L0000232 , L0000238 , L0000233 , L0000239 , L0000234 , L0000235 , L0000236 ,
L0000245	L0000240 , L0000246 , L0000241 , L0000247 , L0000242 , L0000243 , L0000244 ,
L0000253	L0000248 , L0000254 , L0000249 , L0000255 , L0000250 , L0000251 , L0000252 ,
L0000261	L0000256 , L0000262 , L0000257 , L0000263 , L0000258 , L0000259 , L0000260 ,
L0000269	L0000264 , L0000270 , L0000265 , L0000271 , L0000266 , L0000267 , L0000268 ,
L0000277	L0000272 , L0000278 , L0000273 , L0000279 , L0000274 , L0000275 , L0000276 ,

## 12376 HRA

L0000285	L0000280 , L0000286	, L0000281 , L0000287	, L0000282 ,	, L0000283	, L0000284 ,
L0000293	L0000288 , L0000294	, L0000289 , L0000295	, L0000290 ,	, L0000291	, L0000292 ,
L0000301	L0000296 , L0000302	, L0000297 , L0000303	, L0000298 ,	, L0000299	, L0000300 ,
L0000309	L0000304 , L0000310	, L0000305 , L0000311	, L0000306 ,	, L0000307	, L0000308 ,
L0000317	L0000312 , L0000318	, L0000313 , L0000319	, L0000314 ,	, L0000315	, L0000316 ,
L0000325	L0000320 , L0000326	, L0000321 , L0000327	, L0000322 ,	, L0000323	, L0000324 ,
<b>↑ *** AERMOD - VERSION HRA.isc</b>		<b>18081 ***</b>	<b>***</b>	<b>C:\Lakes\AERMOD View\12376 HRA\12376</b>	
			<b>***</b>	<b>03/22/19</b>	
<b>*** AERMET - VERSION HRA.isc</b>		<b>16216 ***</b>	<b>***</b>		
			<b>***</b>	<b>10:39:17</b>	

PAGE 8

\*\*\* MODELOPTs: RegDEFAULT CONC ELEV URBAN ADJ\_U\*

## \*\*\* SOURCE IDs DEFINING SOURCE GROUPS

\*\*\*

SRCGROUP ID SOURCE IDs

----- -----

L0000333	L0000328 , L0000334	, L0000329 ,	, L0000330 ,	, L0000331 ,	, L0000332 ,
<b>↑ *** AERMOD - VERSION HRA.isc</b>		<b>18081 ***</b>	<b>***</b>	<b>C:\Lakes\AERMOD View\12376 HRA\12376</b>	
			<b>***</b>	<b>03/22/19</b>	
<b>*** AERMET - VERSION HRA.isc</b>		<b>16216 ***</b>	<b>***</b>		
			<b>***</b>	<b>10:39:17</b>	

PAGE 9

\*\*\* MODELOPTs: RegDEFAULT CONC ELEV URBAN ADJ\_U\*

## \*\*\* SOURCE IDs DEFINED AS URBAN SOURCES

\*\*\*

## 12376 HRA

URBAN ID	URBAN POP	SOURCE IDs
L0000172	2035210.	L0000168 , L0000170 , L0000171 ,
L0000173	, L0000173	, L0000174 , ,
L0000175	,	,
L0000181	L0000176 , L0000182	, L0000177 , L0000178 , L0000179 , L0000180 ,
L0000189	L0000184 , L0000190	, L0000185 , L0000186 , L0000187 , L0000188 ,
L0000197	L0000192 , L0000198	, L0000193 , L0000194 , L0000195 , L0000196 ,
L0000205	L0000200 , L0000206	, L0000201 , L0000202 , L0000203 , L0000204 ,
L0000213	L0000208 , L0000214	, L0000209 , L0000210 , L0000211 , L0000212 ,
L0000221	L0000216 , L0000222	, L0000217 , L0000218 , L0000219 , L0000220 ,
L0000229	L0000224 , L0000230	, L0000225 , L0000226 , L0000227 , L0000228 ,
L0000237	L0000232 , L0000238	, L0000233 , L0000234 , L0000235 , L0000236 ,
L0000245	L0000240 , L0000246	, L0000241 , L0000242 , L0000243 , L0000244 ,
L0000253	L0000248 , L0000254	, L0000249 , L0000250 , L0000251 , L0000252 ,
L0000261	L0000256 , L0000262	, L0000257 , L0000258 , L0000259 , L0000260 ,
L0000269	L0000264 , L0000270	, L0000265 , L0000266 , L0000267 , L0000268 ,
L0000277	L0000272 , L0000278	, L0000273 , L0000274 , L0000275 , L0000276 ,
	L0000280	, L0000281 , L0000282 , L0000283 , L0000284 ,

12376 HRA

L0000285	, L0000286	, L0000287	,						
L0000293	, L0000288 L0000294	, L0000289 L0000295	, L0000290 ,	, L0000291	, L0000292	,			
L0000301	, L0000302	, L0000303	,	, L0000297	, L0000298	, L0000299	, L0000300	,	
L0000309	, L0000310	, L0000311	,	, L0000304	, L0000305	, L0000306	, L0000307	, L0000308	,
L0000317	, L0000318	, L0000319	,	, L0000312	, L0000313	, L0000314	, L0000315	, L0000316	,
L0000325	, L0000326	, L0000327	,	, L0000320	, L0000321	, L0000322	, L0000323	, L0000324	,

▲ \*\*\* AERMOD - VERSION 18081 \*\*\* \*\*\* C:\Lakes\AERMOD View\12376 HRA\12376  
HRA.isc \*\*\* 03/22/19

\*\*\* AERMET - VERSION 16216 \*\*\* \*\*\*  
\*\*\* 10:39:17

PAGE 10  
\*\*\* MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ\_U\*

\*\*\* SOURCE IDs DEFINED AS URBAN SOURCES  
\*\*\*

URBAN ID	URBAN POP	SOURCE IDs
-----	-----	-----
L0000333	, L0000334	, L0000328 L0000329 L0000330 L0000331 L0000332

▲ \*\*\* AERMOD - VERSION 18081 \*\*\* \*\*\* C:\Lakes\AERMOD View\12376 HRA\12376  
HRA.isc \*\*\* 03/22/19

\*\*\* AERMET - VERSION 16216 \*\*\* \*\*\*  
\*\*\* 10:39:17

PAGE 11  
\*\*\* MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ\_U\*

\*\*\* DISCRETE CARTESIAN RECEPTORS \*\*\*  
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)  
(METERS)

( 443420.0, 3773244.7, 352.9, 352.9, 0.0); ( 443395.6,  
3773237.4, 353.6, 353.6, 0.0);

12376 HRA				
( 443296.7, 3773215.6,	354.9,	354.9,	0.0);	( 443294.2,
3773243.5, 355.4,	355.4,	0.0);		( 443267.2,
( 443299.3, 3773182.8,	354.4,	354.4,	0.0);	
3773116.7, 353.7,	353.7,	0.0);		( 443266.0,
( 443267.2, 3773081.1,	353.0,	353.0,	0.0);	
3773030.9, 352.0,	352.0,	0.0);		( 443265.7,
( 443265.3, 3772979.3,	351.0,	351.0,	0.0);	
3773049.2, 352.4,	352.4,	0.0);		( 443459.7,
( 443301.9, 3772919.8,	349.3,	349.3,	0.0);	
3772920.5, 346.8,	346.8,	0.0);		( 443501.0,
( 443494.7, 3773228.4,	352.9,	352.9,	0.0);	
3773182.3, 351.8,	351.8,	0.0);		( 443531.5,
( 443492.1, 3773280.4,	353.9,	353.9,	0.0);	
3773023.8, 347.8,	347.8,	0.0);		( 443581.3,
( 443541.6, 3772997.1,	347.6,	347.6,	0.0);	
3772911.8, 345.4,	345.4,	0.0);		( 443657.9,
( 443567.3, 3772958.6,	346.8,	346.8,	0.0);	
3773002.8, 347.9,	347.9,	0.0);		( 443574.7,
( 443658.4, 3773030.2,	348.4,	348.4,	0.0);	
3773285.8, 354.6,	354.6,	0.0);		( 443665.6,
( 443545.2, 3773232.6,	353.6,	353.6,	0.0);	
3773193.5, 352.1,	352.1,	0.0);		( 443198.8,
( 443591.9, 3772686.9,	341.8,	341.8,	0.0);	
3772897.3, 350.3,	350.3,	0.0);		( 443666.6,
( 443198.8, 3772829.7,	348.5,	348.5,	0.0);	
3772851.1, 344.2,	344.2,	0.0);		( 443261.9,
( 443385.1, 3772919.8,	348.1,	348.1,	0.0);	
3773181.6, 354.9,	354.9,	0.0);		
( 443202.7, 3772914.0,	350.7,	350.7,	0.0);	

\*\*\* AERMOD - VERSION 18081 \*\*\*    \*\*\* C:\Lakes\AERMOD View\12376 HRA\12376

HRA.isc \*\*\* 03/22/19

\*\*\* AERMET - VERSION 16216 \*\*\*

\*\*\* 10·39·17

PAGE 12

PAGE 12

\*\*\* METEOROLOGICAL DAYS SELECTED FOR  
PROCESSING \*\*\*

( 1=YES ; 0=NO )

$$\begin{array}{ccccccccc}
 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\
 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\
 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\
 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\
 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\
 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\
 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\
 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1
 \end{array}$$

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON  
WHAT IS INCLUDED IN THE DATA FILE.

1.54, 3.09, 5.14, 8.23,  
10.80,  
▲ \*\*\* AERMOD - VERSION 18081 \*\*\* \*\*\* C:\Lakes\AERMOD View\12376 HRA\12376  
HRA.isc \*\*\* 03/22/19  
\*\*\* AERMET - VERSION 16216 \*\*\* \*\*\*  
\*\*\* 10:39:17

PAGE 13

\*\*\* UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA \*\*\*

Surface file: UplandsADJU\UPLA\_V9\_ADJU\UPLA\_v9.SFC  
Met Version: 16216  
Profile file: UplandsADJU\UPLA\_V9\_ADJU\UPLA\_v9.PFL

Surface format: EREE

## Profile format: EREF

Surface station no.: 3102  
Name: UNKNOWN

Upper air station no.: 3190  
Name: UNKNOWN

Year: 2012

Year: 2012

First 24 hours of scalar data  
 YR MO DY JDY HR H0 U\* W\* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN  
 ALBEDO REF WS WD HT REF TA HT

## 12376 HRA

12 01 01 1 01 -21.0 0.218 -9.000 -9.000 -999. 245. 52.4 0.34 1.15  
 1.00 1.80 351. 9.1 284.2 5.5  
 12 01 01 1 02 -21.0 0.218 -9.000 -9.000 -999. 245. 52.4 0.34 1.15  
 1.00 1.80 347. 9.1 284.2 5.5  
 12 01 01 1 03 -25.9 0.270 -9.000 -9.000 -999. 336. 79.9 0.34 1.15  
 1.00 2.20 340. 9.1 284.2 5.5  
 12 01 01 1 04 -20.9 0.218 -9.000 -9.000 -999. 246. 52.4 0.34 1.15  
 1.00 1.80 337. 9.1 285.4 5.5  
 12 01 01 1 05 -5.4 0.105 -9.000 -9.000 -999. 89. 18.5 0.34 1.15  
 1.00 0.90 344. 9.1 284.9 5.5  
 12 01 01 1 06 -11.5 0.154 -9.000 -9.000 -999. 145. 27.6 0.34 1.15  
 1.00 1.30 17. 9.1 283.1 5.5  
 12 01 01 1 07 -11.5 0.154 -9.000 -9.000 -999. 145. 27.6 0.34 1.15  
 1.00 1.30 326. 9.1 282.0 5.5  
 12 01 01 1 08 -10.1 0.156 -9.000 -9.000 -999. 147. 32.6 0.34 1.15  
 0.53 1.30 337. 9.1 284.9 5.5  
 12 01 01 1 09 42.1 0.096 0.369 0.015 42. 72. -1.8 0.34 1.15  
 0.31 0.40 347. 9.1 291.4 5.5  
 12 01 01 1 10 102.2 0.280 0.715 0.005 125. 356. -18.8 0.34 1.15  
 0.24 1.80 320. 9.1 296.4 5.5  
 12 01 01 1 11 143.5 0.233 1.110 0.005 333. 271. -7.7 0.34 1.15  
 0.21 1.30 185. 9.1 297.5 5.5  
 12 01 01 1 12 162.2 0.188 1.407 0.005 600. 196. -3.6 0.34 1.15  
 0.20 0.90 199. 9.1 298.1 5.5  
 12 01 01 1 13 158.3 0.187 1.641 0.005 974. 195. -3.6 0.34 1.15  
 0.20 0.90 152. 9.1 299.9 5.5  
 12 01 01 1 14 131.9 0.288 1.687 0.005 1270. 370. -15.7 0.34 1.15  
 0.22 1.80 107. 9.1 301.4 5.5  
 12 01 01 1 15 84.3 0.106 1.511 0.005 1427. 119. -1.2 0.34 1.15  
 0.25 0.40 107. 9.1 302.0 5.5  
 12 01 01 1 16 32.1 0.154 1.105 0.005 1463. 146. -10.0 0.34 1.15  
 0.34 0.90 124. 9.1 302.0 5.5  
 12 01 01 1 17 -10.6 0.155 -9.000 -9.000 -999. 146. 30.5 0.34 1.15  
 0.62 1.30 138. 9.1 299.9 5.5  
 12 01 01 1 18 -20.4 0.219 -9.000 -9.000 -999. 245. 52.5 0.34 1.15  
 1.00 1.80 353. 9.1 293.1 5.5  
 12 01 01 1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0 0.34 1.15  
 1.00 999.00 999. -9.0 291.2 5.5  
 12 01 01 1 20 -5.4 0.105 -9.000 -9.000 -999. 81. 18.6 0.34 1.15  
 1.00 0.90 308. 9.1 289.2 5.5  
 12 01 01 1 21 -11.4 0.154 -9.000 -9.000 -999. 145. 27.9 0.34 1.15  
 1.00 1.30 339. 9.1 287.0 5.5  
 12 01 01 1 22 -11.5 0.154 -9.000 -9.000 -999. 145. 27.8 0.34 1.15  
 1.00 1.30 339. 9.1 286.4 5.5  
 12 01 01 1 23 -5.4 0.105 -9.000 -9.000 -999. 81. 18.5 0.34 1.15  
 1.00 0.90 336. 9.1 285.4 5.5

12376 HRA

12 01 01	1 24	-11.5	0.154	-9.000	-9.000	-999.	145.	27.7	0.34	1.15
1.00	1.30	338.	9.1	284.9		5.5				

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
12	01	01	01	5.5	0	-999.	-99.00	284.3	99.0	-99.00	-99.00
12	01	01	01	9.1	1	351.	1.80	-999.0	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

▲ \*\*\* AERMOD - VERSION 18081 \*\*\* \*\*\* C:\Lakes\AERMOD View\12376 HRA\12376  
HRA.isc \*\*\* 03/22/19  
\*\*\* AERMET - VERSION 16216 \*\*\* \*\*\*  
\*\*\* 10:39:17

PAGE 14

\*\*\* MODELOPTs: RegDEFAULT CONC ELEV URBAN ADJ\_U\*

*** THE ANNUAL AVERAGE CONCENTRATION				VALUES AVERAGED OVER	5
YEARS FOR SOURCE GROUP: ALL ***					
INCLUDING SOURCE(S):				L0000168	, L0000169
, L0000170	, L0000171	, L0000172	,		
		, L0000173	, L0000174	, L0000175	, L0000176 , L0000177
, L0000178	, L0000179	, L0000180	,		
		, L0000181	, L0000182	, L0000183	, L0000184 , L0000185
, L0000186	, L0000187	, L0000188	,		
		, L0000189	, L0000190	, L0000191	, L0000192 , L0000193
, L0000194	, L0000195	, . . .	,		

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS

\*\*\*

\*\* CONC OF DPM IN MICROGRAMS/M\*\*3

X-COORD (M) Y-COORD (M)	Y-COORD (M) CONC	CONC	X-COORD (M)
-----	-----	-----	-----
443420.03	3773244.69	0.00149	443395.63
3773237.43	0.00187		
443296.74	3773215.56	0.00075	443294.20
3773243.53	0.00057		
443299.35	3773182.75	0.00100	443267.24
3773116.66	0.00144		
443267.24	3773081.12	0.00164	443265.99
3773030.90	0.00173		
443265.26	3772979.33	0.00203	443265.70

12376 HRA			
3773049.25	0.00170		
443301.94	3772919.82	0.00197	443459.69
3772920.47	0.00234		
443494.69	3773228.39	0.00072	443501.03
3773182.31	0.00079		
443492.15	3773280.39	0.00049	443531.47
3773023.77	0.00111		
443541.61	3772997.14	0.00119	443581.27
3772911.83	0.00160		
443567.34	3772958.59	0.00175	443657.86
3773002.85	0.00060		
443658.36	3773030.21	0.00052	443574.72
3773285.83	0.00031		
443545.25	3773232.64	0.00046	443665.64
3773193.47	0.00030		
443591.89	3772686.95	0.00070	443198.82
3772897.33	0.00050		
443198.82	3772829.68	0.00036	443666.58
3772851.13	0.00100		
443385.10	3772919.85	0.00264	443261.87
3773181.61	0.00068		
443202.71	3772914.00	0.00056	

↑ \*\*\* AERMOD - VERSION 18081 \*\*\* \*\*\* C:\Lakes\AERMOD View\12376 HRA\12376  
HRA.isc \*\*\* 03/22/19  
\*\*\* AERMET - VERSION 16216 \*\*\* \*\*\*  
\*\*\* 10:39:17

PAGE 15

\*\*\* THE SUMMARY OF MAXIMUM ANNUAL RESULTS  
AVERAGED OVER 5 YEARS \*\*\*

\*\* CONC OF DPM                  IN MICROGRAMS/M\*\*3

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR,  
ZELEV, ZHTL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00264 AT ( 443385.10, 3772919.85,  
348.13, 348.13, 0.00) DC  
2ND HTGHEST VALUE IS 0.00234 AT ( 443459.69, 3772920.47,

			12376 HRA
346.79,	346.79, 0.00) DC	3RD HIGHEST VALUE IS	0.00203 AT ( 443265.26, 3772979.33,
350.97,	350.97, 0.00) DC	4TH HIGHEST VALUE IS	0.00197 AT ( 443301.94, 3772919.82,
349.32,	349.32, 0.00) DC	5TH HIGHEST VALUE IS	0.00187 AT ( 443395.63, 3773237.43,
353.56,	353.56, 0.00) DC	6TH HIGHEST VALUE IS	0.00175 AT ( 443567.34, 3772958.59,
346.75,	346.75, 0.00) DC	7TH HIGHEST VALUE IS	0.00173 AT ( 443265.99, 3773030.90,
352.00,	352.00, 0.00) DC	8TH HIGHEST VALUE IS	0.00170 AT ( 443265.70, 3773049.25,
352.38,	352.38, 0.00) DC	9TH HIGHEST VALUE IS	0.00164 AT ( 443267.24, 3773081.12,
353.00,	353.00, 0.00) DC	10TH HIGHEST VALUE IS	0.00160 AT ( 443581.27, 3772911.83,
345.41,	345.41, 0.00) DC		

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

PAGE 16

\*\*\* MODELOPTs: RegDEFAULT CONC ELEV URBAN ADJ U\*

\*\*\* Message Summary : AERMOD Model Execution \*\*\*

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)  
A Total of 2 Warning Message(s)  
A Total of 956 Informational Message(s)

A Total of 43848 Hours Were Processed

A Total of 49 Calm Hours Identified

A Total of 907 Missing Hours Identified ( 2.07 Percent )

\*\*\*\*\* FATAL ERROR MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

12376 HRA

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

ME W186 536 MEOPEN: THRESH\_1MIN 1-min ASOS wind speed threshold used  
0.50  
ME W187 536 MEOPEN: ADJ\_U\* Option for Stable Low Winds used in AERMET

\*\*\*\*\*

\*\*\* AERMOD Finishes Successfully \*\*\*

**AVERAGE EMISSION FACTOR  
SCAQMD 2020**

Speed	LHD1	MHD	HHD
0	0.33638	0.114169	0.02232
5	0.043455	0.049996	0.04126
25	0.01480	0.034737	0.02346

Speed	Weighted Average Emissions
0	<b>0.09637</b>
5	<b>0.04361</b>
25	<b>0.02456</b>

---

---

Emission Rates - 2020 Emission Factors

Truck Emission Rates						
Source	Trucks Per Day	VMT <sup>a</sup> (miles/day)	Truck Emission Rate <sup>b</sup> (grams/mile)	Truck Emission Rate <sup>b</sup> (grams/idle-hour)	Daily Truck Emissions <sup>c</sup> (grams/day)	Modeled Emission Rates (g/second)
On-Site Idling Building A	9			0.0964	0.22	2.510E-06
On-Site Idling Building B	15			0.0964	0.36	4.183E-06
On-Site Idling Building C	19			0.0964	0.46	5.298E-06
On-Site Travel Building A	18	4.98	0.0436		0.22	2.514E-06
On-Site Travel Building B	30	5.01	0.0436		0.22	2.528E-06
On-Site Travel Building C	38	5.14	0.0436		0.22	2.595E-06
Off-Site Travel 100%	86	33.33	0.0246		0.82	9.472E-06

<sup>a</sup> Vehicle miles traveled are for modeled truck route only.  
<sup>b</sup> Emission rates determined using EMFAC 2014. Idle emission rates are expressed in grams per idle hour rather than grams per mile.  
<sup>c</sup> This column includes the total truck travel and truck idle emissions. For idle emissions this column includes emissions based on the assumption that each truck idles for 15 minutes.

## **APPENDIX 2.2:**

### **RISK CALCULATIONS**

**Table 1**  
**Quantification of Carcinogenic Risks and Noncarcinogenic Hazards**  
**-0.25 to 0 Age Bin Exposure Scenario**

Source ( a )	Mass GLC		Weight Fraction ( d )	Contaminant ( e )	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints**									
	( ug/m <sup>3</sup> ) ( b )	( mg/m <sup>3</sup> ) ( c )			URF ( ug/m <sup>3</sup> ) <sup>-1</sup> ( f )	CPF ( mg/kg/day) <sup>-1</sup> ( g )	DOSE ( mg/kg-day) <sup>-1</sup> ( h )	RISK ( i )	REL ( ug/m <sup>3</sup> ) ( j )	RfD ( mg/kg/day) ( k )	RESP ( l )	CNS/PNS ( m )	CV/BL ( n )	IMMUN ( o )	KIDN ( p )	GI/LV ( q )	REPRO ( r )	EYES ( s )
	0.00203	2.03E-06			3.0E-04	1.1E+00	7.0E-07	2.2E-08	5.0E+00	1.4E-03	4.1E-04							
TOTAL								2.2E-08			4.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	

\*\* Key to Toxicological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
GI/LV	Gastrointestinal System/Liver
REPRO	Reproductive System (e.g. teratogenic and developmental effects)
EYES	Eye irritation and/or other effects

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	350
exposure duration (years)	0.25
inhalation rate (L/kg-day))	361
inhalation absorption factor	1
averaging time (years)	70
fraction of time at home	0.85
age sensitivity factor (age third trimester)	10

**Table 2**  
**Quantification of Carcinogenic Risks and Noncarcinogenic Hazards**  
**0-2 Age Bin Exposure Scenario**

Source ( a )	Mass GLC		Weight Fraction ( d )	Contaminant ( e )	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints**								
					URF (ug/m <sup>3</sup> ) ( f )	CPF (mg/kg/day) <sup>-1</sup> ( g )	DOSE (mg/kg-day) <sup>-1</sup> ( h )	RISK ( i )	REL (ug/m <sup>3</sup> ) ( j )	RfD (mg/kg/day) ( k )	RESP ( l )	CNS/PNS ( m )	CV/BL ( n )	IMMUN ( o )	KIDN ( p )	GI/LV ( q )	REPRO ( r )
	(ug/m <sup>3</sup> ) ( b )	(mg/m <sup>3</sup> ) ( c )															
0.00203	2.03E-06	1.00E+00	Diesel Particulate		3.0E-04	1.1E+00	2.1E-06	5.4E-07	5.0E+00	1.4E-03	4.1E-04						
<b>TOTAL</b>																	
								5.4E-07			4.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

\*\* Key to Toxicological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
GI/LV	Gastrointestinal System/Liver
REPRO	Reproductive System (e.g. teratogenic and developmental effects)
EYES	Eye irritation and/or other effects

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	350
exposure duration (years)	2
inhalation rate (L/kg-day))	1090
inhalation absorption factor	1
averaging time (years)	70
fraction of time at home	0.85
age sensitivity factor (0 to 2 years old)	10

**Table 3**  
**Quantification of Carcinogenic Risks and Noncarcinogenic Hazards**  
**2-16 Age Bin Exposure Scenario**

Source ( a )	Mass GLC		Weight Fraction ( d )	Contaminant ( e )	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints**									
	( ug/m <sup>3</sup> ) ( b )	( mg/m <sup>3</sup> ) ( c )			URF ( ug/m <sup>3</sup> ) <sup>-1</sup> ( f )	CPF ( mg/kg/day) <sup>-1</sup> ( g )	DOSE ( mg/kg-day) <sup>-1</sup> ( h )	RISK ( i )	REL ( ug/m <sup>3</sup> ) ( j )	RfD ( mg/kg/day) ( k )	RESP ( l )	CNS/PNS ( m )	CV/BL ( n )	IMMUN ( o )	KIDN ( p )	GI/LV ( q )	REPRO ( r )	EYES ( s )
	0.00203	2.03E-06			3.0E-04	1.1E+00	1.1E-06	5.1E-07	5.0E+00	1.4E-03	4.1E-04							
<b>TOTAL</b>																		

\*\* Key to Toxicological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
GI/LV	Gastrointestinal System/Liver
REPRO	Reproductive System (e.g. teratogenic and developmental effects)
EYES	Eye irritation and/or other effects

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	350
exposure duration (years)	14
inhalation rate (L/kg-day))	572
inhalation absorption factor	1
averaging time (years)	70
fraction of time at home	0.72
age sensitivity factor (ages 2 to 16 years	3

**Table 4**  
**Quantification of Carcinogenic Risks and Noncarcinogenic Hazards**  
**16-30 Age Bin Exposure Scenario**

Source	Mass GLC		Weight Fraction	Contaminant	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints**									
					URF (ug/m <sup>3</sup> ) (f)	CPF (ug/m <sup>3</sup> ) <sup>-1</sup> (g)	DOSE (mg/kg/day) <sup>1</sup> (h)	RISK (i)	REL (ug/m <sup>3</sup> ) (j)	RfD (mg/kg/day) (k)	RESP (l)	CNS/PNS (m)	CV/BL (n)	IMMUN (o)	KIDN (p)	GI/LV (q)	REPRO (r)	EYES (s)
	(a)	(b)	(c)	(d)	(e)													
	0.00203	2.03E-06	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	5.1E-07	7.8E-08	5.0E+00	1.4E-03	4.1E-04							
TOTAL								7.8E-08				4.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

\*\* Key to Toxicological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
GI/LV	Gastrointestinal System/Liver
REPRO	Reproductive System (e.g. teratogenic and developmental effects)
EYES	Eye irritation and/or other effects

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	350
exposure duration (years)	14
inhalation rate (L/kg-day)	261
inhalation absorption factor	1
averaging time (years)	70
fraction of time at home	0.73
age sensitivity factor (ages 16 to 30 years old)	1

Total Risk for All Age Bins (per million)      **1.15**

**Table 5**  
**Quantification of Carcinogenic Risks and Noncarcinogenic Risks**  
**25-Year Worker Exposure Scenario**

	Source	Mass GLC		Weight Fraction	Contaminant	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints**									
		(a) (ug/m <sup>3</sup> )	(b) (mg/m <sup>3</sup> )			(d)	(e)	(c)	(i)	REL (ug/m <sup>3</sup> ) <sup>1</sup>	RfD (j)	RESP (k)	CNS/PNS (l)	CV/BL (m)	IMMUN (n)	KIDN (o)	GI/LV (p)	REPRO (q)	EYES (r)
1	Diesel Particulates	2.64E-03	2.64E-06	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	4.7E-07	1.8E-07	5.0E+00	1.4E-03	5.3E-04	1.9E-07 0.19	5.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	TOTAL																		

\*\* Key to Toxicological Endpoints

Note: Exposure factors used to calculate contaminant intake

RESP	Respiratory System	exposure frequency (days/year)	240
CNS/PNS	Central/Peripheral Nervous System	exposure duration (years)	25
CV/BL	Cardiovascular/Blood System	inhalation rate (L/kg-day)	271
IMMUN	Immune System	inhalation absorption factor	1
KIDN	Kidney	averaging time (years)	70
GI/LV	Gastrointestinal System/Liver		
REPRO	Reproductive System (e.g. teratogenic and developmental effects)		
EYES	Eye irritation and/or other effects		