

January 12, 2020

Mr. Ross Geller
Applied Planning, Inc.

**SUBJECT: MERRILL COMMERCE CENTER SPECIFIC PLAN CONSTRUCTION HEALTH RISK
ASSESSMENT MEMORANDUM**

Dear Mr. Ross Geller:

Urban Crossroads, Inc. is pleased to submit this construction health risk assessment memorandum to Applied Planning, Inc. for the Merrill Commerce Center Specific Plan ("Project") located in the City of Ontario.

PURPOSE

California Air Resources Board (CARB) has recently been commenting on projects subject to the California Environmental Quality Act (CEQA), requesting that projects that involve construction activity longer than two months should include a construction health risk assessment (HRA). CARB refers to guidance from the Office of Environmental Health Hazard Assessment (OEHHA) to support its claim that construction HRAs should be performed.

BACKGROUND

Urban Crossroads, Inc. has reviewed the referenced OEHHA Guidance Manual¹ to determine applicability of the use of early life exposure adjustments to diesel particulate matter (DPM) emissions resulting from construction activity.

Specifically, the OEHHA Guidance states "Due to the uncertainty in assessing cancer risk from very short-term exposures, we do not recommend assessing cancer risk for projects lasting less than two months at the MEIR. **We recommend that exposure from projects longer than 2 months but less than 6 months be assumed to last 6 months** (e.g., a 2-month project would be evaluated as if it lasted 6 months)." (2015 Guidance Manual p. 8-18 [emphasis added].)

As such, the determination of whether a construction HRA is warranted is dependent on whether or not early life exposure adjustments apply to DPM emissions resulting from construction activity. This memorandum outlines the substantial evidence to support why early life exposure adjustments are *not* applicable to construction DPM and therefore a construction health risk assessment is not required due to the short-term duration of construction activity (long-term exposure e.g. 9 or 30 years of activity are typically used to generate a risk estimates).

For risk assessments conducted under the auspices of The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588), OEHHA applies specific adjustment factors to all carcinogens

¹ http://oehha.ca.gov/air/hot_spots/hotspots2015.html

regardless of purported mechanism of action. Notwithstanding, applicability of AB 2588 is limited to commercial and industrial operations. There are two broad classes of facilities subject to the AB 2588 Program: 1) Core facilities and 2) facilities identified within discrete industry-wide source categories. Core facilities subject to AB 2588 compliance are sources whose criteria pollutant emissions (particulate matter, oxides of sulfur, oxides of nitrogen and volatile organic compounds) are 25 tons per year or more as well as those facilities whose criteria pollutant emissions are 10 tons per year or more but less than 25 tons per year. Industry-wide source facilities are classified as smaller operations with relatively similar emission profiles (e.g., auto body shops, gas stations and dry cleaners using perchloroethylene). The emissions generated from off-road mobile sources are not classified in AB 2588 as core operations nor subject to industry-wide source evaluation.

In comments presented to the South Coast Air Quality Management District (SCAQMD) Governing Board (Meeting Date: June 5, 2015, Agenda No. 28) relating to toxic air contaminant exposures under Rules 1401, 1401.1, 1402 and 212 revisions, use of the OEHHA Guidelines specifically related to the applicability and use of early-life exposure adjustments for projects subject to CEQA, it was reported that²:

“The Proposed Amended Rules are separate from the CEQA significance thresholds. The SCAQMD staff is currently evaluating how to implement the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will evaluate a variety of options on how to evaluate health risks under the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will conduct public workshops to gather input before bringing recommendations to the Governing Board. In the interim, staff will continue to use the previous guidelines for CEQA determinations.”

To date, the SCAQMD, as a commenting agency, has not conducted public workshops nor developed policy relating to the application of early-life exposure adjustments utilizing the OEHHA Guidance Manual for projects prepared by other public/lead agencies subject to CEQA.

As a result, it is recommended that health risk assessments rely upon U.S. EPA documentation when evaluating the use of early life exposure adjustment factors (*Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens*, EPA/630/R-003F) wherein adjustment factors are only considered when carcinogens act “through the mutagenic mode of action.” A mutagen is a physical or chemical agent that changes genetic material, such as DNA, increasing the frequency of mutations to produce carcinogenic effects. The use of adjustment factors is recommended to account for the susceptibility of producing adverse health effects during early life stages from exposure to these mutagenic compounds.

In 2006, U.S. EPA published a memorandum which provides guidance regarding the preparation of health risk assessments should carcinogenic compounds elicit a mutagenic mode of action

² See Response to Comment #13, Page A-7 and A-8 of the June 5, 2015 board meeting Agenda No. 28. <http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2015/2015-jun1-028>

(USEPA, 2006³). As presented in the technical memorandum, numerous compounds were identified as having a mutagenic mode of action. For diesel particulates, polycyclic aromatic hydrocarbons (PAHs) and their derivatives, which are known to exhibit a mutagenic mode of action, comprise < 1% of the exhaust particulate mass. To date, the U.S. Environmental Protection Agency reports that whole diesel engine exhaust has not been shown to elicit a mutagenic mode of action (USEPA, 2018⁴).

Additionally, the California Department of Toxic Substances Control (DTSC) which is charged with protecting individuals and the environment from the effects of toxic substances and responsible for assessing, investigating and evaluating sensitive receptor populations to ensure that properties are free of contamination or that health protective remediation levels are achieved has adopted the U.S. EPA's policy in the application of early-life exposure adjustments which is consistent with the methodology considered herein. As such, incorporation of early-life exposure adjustments for exposures to DPM emissions in the quantification of carcinogenic risk for construction of the proposed are not considered.

Given that there is no available guidance that has been adopted by SCAQMD for CEQA purposes and the fact that the Project does not emit any pollutants that elicit a primary mutagenic mode of action, the use of the OEHHA guidelines to determine potential construction health risks may not be appropriate and at this time. Notwithstanding, in the abundance of caution, a focused construction health risk assessment has been prepared for the Project to determine the potential construction health risks that could occur if the OEHHA guidelines were utilized.

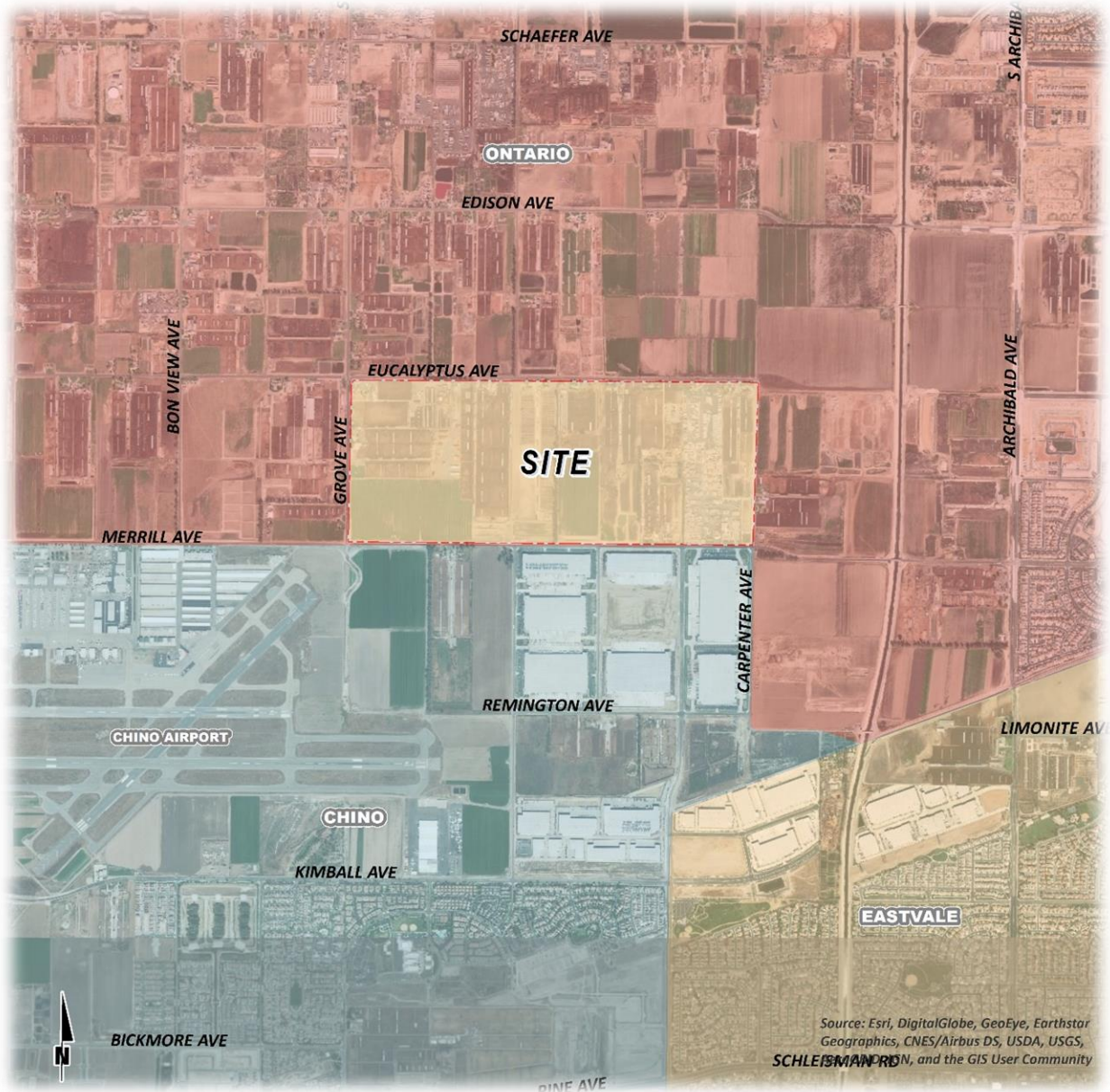
SITE LOCATION

The Project site is located north of Merrill Avenue between Grove Avenue and Carpenter Avenue in the City of Ontario, as shown on Exhibit 1. The Project site is bound by Eucalyptus Avenue and agricultural land uses to the north; Merrill Avenue, agricultural land uses, logistics warehouses, the Chino Airport, and vacant land to the south; Grove Avenue and agricultural land uses to the west; and Carpenter Avenue and a dairy operation to the east. Land uses within the study area comprise of agricultural uses, industrial uses and a few single-family residential homes supporting dairy activities. The Project site is located approximately 1,000 feet northeast of northly most Chino Airport Runway 3-21. The Los Angeles / Ontario International Airport (LA/ONT) is located approximately 4.3 miles northerly of the Project site.

3 United States Environmental Protection Agency, 2006. Memorandum – Implementation of the Cancer Guidelines and Accompanying Supplemental Guidance - Science Policy Council Cancer Guidelines Implementation Workgroup Communication II: Performing Risk Assessments that include Carcinogens Described in the Supplemental Guidance as having a Mutagenic Mode of Action.

4 United States Environmental Protection Agency, National Center for Environmental Assessment, 2018. Integrated Risk Information System (IRIS). Diesel Engine Exhaust.

EXHIBIT 1: LOCATION MAP



PROJECT DESCRIPTION

The Merrill Commerce Center Specific Plan (Project, Specific Plan) proposes development and operation of up to 6,312,000 square feet of high-cube fulfillment center warehouse use, 701,400 square feet of high-cube cold storage warehouse and up to 1,441,000 square feet of business park uses (total of 8,455,000 square feet of development) on approximately 376.3 acres located in the City of Ontario, within San Bernardino County. The Project would also implement off-site infrastructure (roads, potable water, recycled water, sanitary sewer, storm drains, and fiber optic lines) necessary to support the Project. Preliminary studies prepared for the Project indicate that an additional 113.3 acres of off-site areas could be disturbed during construction of off-site infrastructure improvements. Predominantly, off-site areas that would be affected by construction of infrastructure improvements comprise of already-disturbed/developed rights-of-way and easements.

CONSTRUCTION EMISSIONS

The emissions calculations for the construction HRA component are based on an assumed mix of construction equipment and hauling activity as presented in the *Merrill Commerce Center Specific Plan Air Quality Impact Analysis* (“AQIA”) prepared by Urban Crossroads, Inc (1).

The construction equipment and haul truck emissions are based on the California Emissions Estimator Model™ (CalEEMod™) v2016.3.2. Construction activities associated with the Project have the potential to result in diesel exhaust from the following phases:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating
- Off-Site Infrastructure

CONSTRUCTION DURATION

The construction schedule utilized in the analysis, shown in Table 1, represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.⁵ The duration of construction activity and associated

⁵ As shown in the CalEEMod User’s Guide Version 2016.3.2, Section 4.3 “OFFROAD Equipment” as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

equipment represents a reasonable approximation of the expected construction fleet as required per *CEQA Guidelines*. The duration of construction activity was based on the opening years of each phase.

TABLE 1: CONSTRUCTION DURATION

Phase Name	Days
Phase A (2022)	
Demolition	60
Site Preparation	60
Grading	100
Building Construction	450
Paving	110
Architectural Coating	110
Phase B (2025)	
Demolition	80
Site Preparation	80
Grading	140
Building Construction	485
Paving	330
Architectural Coating	330
Phase C (2026)	
Demolition	30
Site Preparation	30
Grading	50
Building Construction	150
Paving	75
Architectural Coating	75
Off-Site Infrastructure Construction	
Off-Site Infrastructure Construction	365

CONSTRUCTION EQUIPMENT

A summary of construction equipment assumptions by phase is provided at Table 2.

TABLE 2: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Activity	Equipment	Amount	Hours Per Day
Phase A (2022)			
Demolition	Concrete/Industrial Saws	1	8
	Excavators	3	8
	Rubber Tired Dozers	2	8
Site Preparation	Crawler Tractors	4	8
	Rubber Tired Dozers	3	8
Grading	Crawler Tractors	2	8
	Excavators	2	8
	Graders	1	8
	Rubber Tired Dozers	1	8
	Scrapers	2	8
Building Construction	Cranes	1	8
	Crawler Tractors	3	8
	Forklifts	3	8
	Generator Sets	1	8
	Welders	1	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8
Phase B (2025)			
Demolition	Concrete/Industrial Saws	1	8
	Excavators	3	8
	Rubber Tired Dozers	2	8
Site Preparation	Crawler Tractors	4	8
	Rubber Tired Dozers	3	8

Activity	Equipment	Amount	Hours Per Day
Grading	Crawler Tractors	2	8
	Excavators	2	8
	Graders	1	8
	Rubber Tired Dozers	1	8
	Scrapers	2	8
Building Construction	Cranes	1	8
	Crawler Tractors	3	8
	Forklifts	3	8
	Generator Sets	1	8
	Welders	1	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8
Phase C (2026)			
Demolition	Concrete/Industrial Saws	1	8
	Excavators	3	8
	Rubber Tired Dozers	2	8
Site Preparation	Crawler Tractors	4	8
	Rubber Tired Dozers	3	8
Grading	Crawler Tractors	2	8
	Excavators	2	8
	Graders	1	8
	Rubber Tired Dozers	1	8
	Scrapers	2	8
Building Construction	Cranes	1	8
	Crawler Tractors	3	8
	Forklifts	3	8
	Generator Sets	1	8
	Welders	1	8

Activity	Equipment	Amount	Hours Per Day
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8
Off-Site Infrastructure			
Off-Site Infrastructure Construction	Bore/Drill Rigs	1	8
	Cranes	1	8
	Crushing/Proc. Equipment	1	8
	Excavators	2	8
	Generator Sets	1	8
	Graders	1	8
	Off-Highway Trucks	1	8
	Pavers	2	8
	Paving Equipment	1	8
	Rollers	1	8
	Rubber Tired Dozers	1	8
	Tractors/Loaders/Backhoes	2	8
	Welders	1	8

Note: In order to account for fugitive dust emissions associated with Site Preparation and Grading activities, Crawler Tractors were used in lieu of Tractors/Loaders/Backhoes.

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 Lakes AERMOD View (Version 9.8.3) was used to calculate annual average particulate concentrations associated with site operations. Lakes AERMOD View was utilized to incorporate the U.S. EPA's latest AERMOD Version 19191 (3).

For this construction HRA, on-site construction activity was modeled as an area source encompassing the construction area. The modeled emission sources for construction activity are illustrated on Exhibit 3.

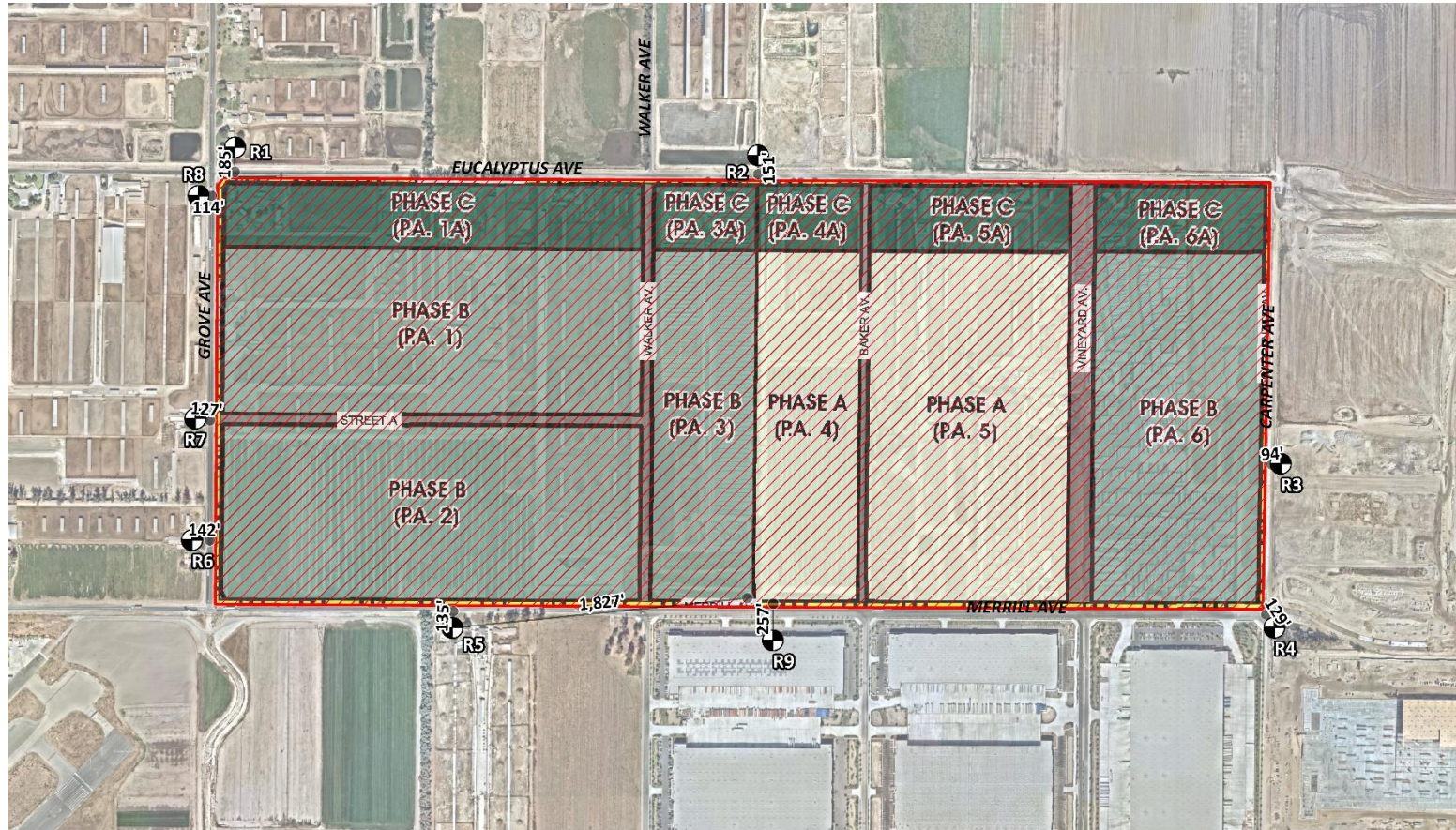
SCAQMD required model parameters are presented in Table 3 (4). The model requires additional input parameters including emission data and local meteorology. Meteorological data from the SCAQMD's Chino Airport monitoring station (SRA 33) was used to represent local weather conditions and prevailing winds (5). A wind rose exhibit of the Perris monitoring station is provided at Exhibit 4.

TABLE 3: AERMOD MODEL PARAMETERS

Dispersion Coefficient	Urban
County Population	2,035,210
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 source location, and receptor locations in the project vicinity. The AERMOD dispersion model summary output files for the proposed facility are presented in Attachment "A". Modeled sensitive receptors were placed at residential and non-residential locations as illustrated on Exhibit 3.

EXHIBIT 3: MODELED CONSTRUCTION SOURCES






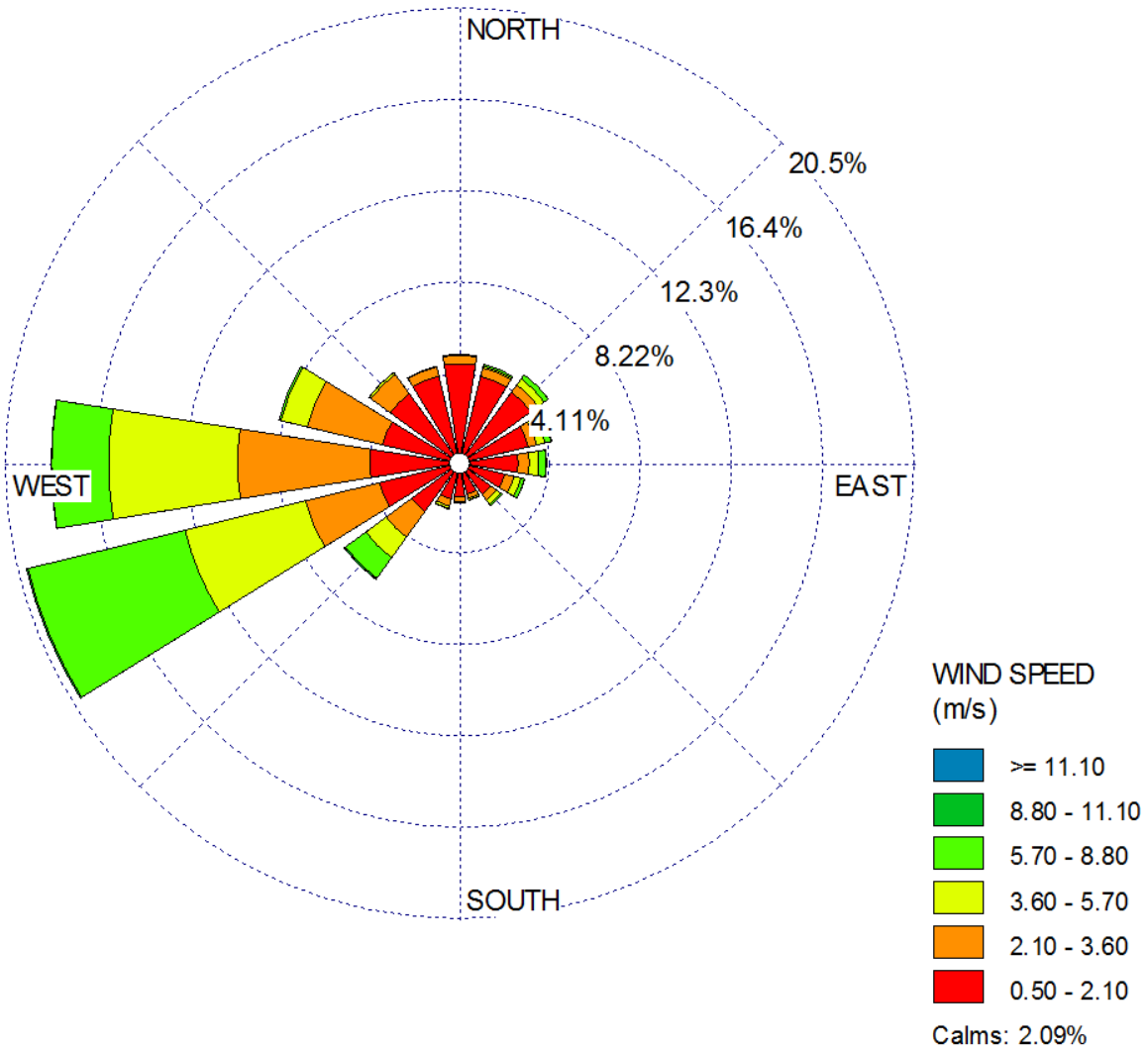
- LEGEND:**
-  Receptor Locations
 -  Construction Activity
 -  Distance from receptor to Project site boundary (in feet)

EXHIBIT 4: WIND ROSE (SRA 33)



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Discrete variants for daily breathing rates, exposure frequency, and exposure duration were obtained from relevant distribution profiles presented in the 2015 OEHHA Guidelines as summarized in the *Merrill Commerce Center Specific Plan Mobile Source Health Risk Assessment* (“HRA”) prepared by Urban Crossroads, Inc (6). Attachment “B” includes the detailed risk calculation.

POTENTIAL CONSTRUCTION-RELATED DPM SOURCE CANCER AND NON-CANCER RISKS

Residential Exposure Scenario:

Based on an approximate 6-year construction exposure duration, the residential land use with the greatest potential exposure to Project construction DPM source emissions is located approximately 106 feet east of Planning Area 6 at location R3 as illustrated on Exhibit 3. At the MEIR, the maximum incremental cancer risk attributable to Project DPM source emissions is estimated at 2.92 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 0.001, 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. Because all other modeled residential receptors are located at a greater distance than the scenario analyze herein, all other residential receptors in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIR identified herein.

Worker Exposure Scenario:

Based on an approximate 6-year construction exposure duration, the worker receptor land use with the greatest potential exposure to Project construction DPM source emissions is located approximately 257 feet south of the Project at location R9 as illustrated on Exhibit 3. At the MEIW, the maximum incremental cancer risk impact at this location is 0.28 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 0.001, 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 all other modeled worker receptors are located at a greater distance than the scenario analyze herein, all other worker receptors in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIW identified herein.

Respectfully submitted,

URBAN CROSSROADS, INC.



Haseeb Qureshi,
Associate Principal

REFERENCES

1. **Urban Crossroads, Inc.** *Merrill Commerce Center Specific Plan Air Quality Impact Analysis*. 2020.
2. **South Coast Air Quality Management District.** Mobile Source Toxics Analysis. [Online] 2003. http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html.
3. **Environmental Protection Agency.** User's Guide for the AMS/EPA Regulatory Model (AERMOD). [Online] 2019. https://www3.epa.gov/ttn/scram/models/aermod/aermod_userguide.pdf.
4. **South Coast Air Quality Management District.** South Coast AQMD Modeling Guidance for AERMOD. [Online] [Cited: September 18, 2019.] <http://www.aqmd.gov/home/air-quality/meteorological-data/modeling-guidance>.
5. —. Data for AERMOD. [Online] [Cited: June 10, 2019.] <https://www.aqmd.gov/home/air-quality/air-quality-data-studies/meteorological-data/data-for-aermod>.
6. **Urban Crossroads, Inc.** *Merrill Commerce Center Specific Plan Mobile Source Health Risk Assessment*. 2020.

ATTACHMENT A: AERMOD INPUT/OUTPUTS

ConSHRA

** Lakes Environmental AERMOD MPI

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** AERMOD INPUT PRODUCED BY:

** AERMOD VIEW VER. 9.8.3

** LAKES ENVIRONMENTAL SOFTWARE INC.

** DATE: 1/22/2020

** FILE: C:\LAKES\AERMOD VIEW\12004 HRA - (01-10-20)\CONSHRA\CONSHRA.ADI

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** AERMOD CONTROL PATHWAY

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CO STARTING

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AVERTIME ANNUAL

URBANOPT 2035210

POLLUTID DPM

RUNORNOT RUN

ERRORFIL CONSHRA.ERR

CO FINISHED

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** AERMOD SOURCE PATHWAY

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SO STARTING

** SOURCE LOCATION **

** SOURCE ID - TYPE - X COORD. - Y COORD. **

LOCATION AREA1	AREA	442991.180	3760482.300	204.000
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** DESCRSRC PHASE A CONSTRUCTION

LOCATION AREA2	AREA	441998.990	3760466.850	199.770
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** DESCRSRC PHASE B CONSTRUCTION (PA 1, PA2, PA3)

LOCATION AREA3	AREA	443593.910	3760482.300	204.000
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** DESCRSRC PHASE B CONSTRUCTION (PA6)

LOCATION PAREA1	AREAPOLY	441994.414	3761243.741	204.940
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** DESCRSRC PHASE C CONSTRUCTION

** SOURCE PARAMETERS **

SRCPARAM AREA1	5.1832E-08	5.000	593.460	650.640	0.000
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SRCPARAM AREA2	2.5992E-08	5.000	998.370	661.460	0.000
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SRCPARAM AREA3	3.0768E-08	5.000	335.370	656.820	0.000
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		ConSHRA			
SRCPARAM	PAREA1	9.0093E-08	5.000	4	
AREAVERT	PAREA1	441994.414	3761243.741	443937.510	3761266.075
AREAVERT	PAREA1	443938.627	3761142.119	441994.414	3761130.952
URBANSRC	ALL				

** VARIABLE EMISSIONS TYPE: "BY HOUR / SEVEN DAYS (HRDOW7)"

** VARIABLE EMISSION SCENARIO: "CONSTRUCTION"

EMISFACT	AREA1	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
EMISFACT	AREA1	HRDOW7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
EMISFACT	AREA1	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EMISFACT	AREA1	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
EMISFACT	AREA1	HRDOW7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
EMISFACT	AREA1	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EMISFACT	AREA1	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
EMISFACT	AREA1	HRDOW7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
EMISFACT	AREA1	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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EMISFACT	AREA1	HRDOW7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
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EMISFACT	AREA1	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
EMISFACT	AREA1	HRDOW7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
EMISFACT	AREA1	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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EMISFACT	AREA2	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EMISFACT	AREA2	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
EMISFACT	AREA2	HRDOW7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
EMISFACT	AREA2	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EMISFACT	AREA2	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
EMISFACT	AREA2	HRDOW7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
EMISFACT	AREA2	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EMISFACT	AREA2	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
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EMISFACT	AREA2	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EMISFACT	AREA2	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EMISFACT	AREA2	HRDOW7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ConSHRA

** AERMOD RECEPTOR PATHWAY

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RE STARTING
INCLUDED CONSHRA.ROU
RE FINISHED

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** AERMOD METEOROLOGY PATHWAY

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ME STARTING
SURFFILE KCNO_V9_ADJU\KCNO_V9.SFC
PROFFILE KCNO_V9_ADJU\KCNO_V9.PFL
SURFDATA 3179 2012
UAIRDATA 3190 2012
PROFBASE 198.0 METERS

ME FINISHED

**

** AERMOD OUTPUT PATHWAY

**
**

OU STARTING
** AUTO-GENERATED PLOTFILES
PLOTFILE ANNUAL PHASEA CONSHRA.AD\AN00G001.PLT 31
PLOTFILE ANNUAL PHASEB CONSHRA.AD\AN00G002.PLT 32
PLOTFILE ANNUAL PHASEC CONSHRA.AD\AN00G003.PLT 33
SUMMFILE CONSHRA.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 ***

ConSHRA

***** WARNING MESSAGES *****

ME W186 164 MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
0.50
ME W187 164 MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

*** SETUP Finishes Successfully ***

▲ *** AERMOD - VERSION 19191 *** *** C:\LAKES\AERMOD VIEW\12004
HRA\CONSHRA\CONSHRA.ISC *** 01/22/20
*** AERMET - VERSION 16216 *** ***
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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY

**Model Is Setup For Calculation of Average CONCentration Values.

-- 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 4 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
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

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**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: DPM

**Model Calculates ANNUAL Averages Only

**This Run Includes: 4 Source(s); 3 Source Group(s); and 21
Receptor(s)

with: 0 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 4 AREA type source(s)
and: 0 LINE source(s)
and: 0 RLINE/RLINEXT source(s)
and: 0 OPENPIT source(s)
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
m for Missing

Hours

b for Both Calm

and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 198.00 ; 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 = 3.5 MB of RAM.

**Input Runstream File: aermod.inp

**Output Print File: aermod.out

ConSHRA

**Detailed Error/Message File: CONSHRA.ERR

**File for Summary of Results: CONSHRA.SUM

*** AERMOD - VERSION 19191 *** C:\LAKES\AERMOD VIEW\12004
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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

*** AREA SOURCE DATA ***

Table with 9 columns: Y-DIM, ORIENT., NUMBER INIT., EMISSION RATE URBAN, COORD (SW CORNER) X Y, BASE ELEV., RELEASE HEIGHT, X-DIM OF AREA. Includes data for AREA1, AREA2, and AREA3.

Table with 9 columns: Y-DIM, ORIENT., NUMBER INIT., EMISSION RATE URBAN, COORD (SW CORNER) X Y, BASE ELEV., RELEASE HEIGHT, X-DIM OF AREA. Includes data for AREA1, AREA2, and AREA3.

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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

*** AREAPOLY SOURCE DATA ***

Table with 8 columns: INIT. URBAN, NUMBER EMISSION RATE, LOCATION OF AREA X Y, BASE ELEV., RELEASE HEIGHT, NUMBER OF VERTS. Includes data for AREA1, AREA2, and AREA3.

ConSHRA

(METERS)

BY

PAREA1 0 0.90093E-07 441994.4 3761243.7 204.9 5.00 4
0.00 YES HRDOW7

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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS

SRCGROUP ID

SOURCE IDs

PHASEA AREA1 ,

PHASEB AREA2 , AREA3 ,

PHASEC PAREA1 ,

*** AERMOD - VERSION 19191 *** C:\LAKES\AERMOD VIEW\12004
HRA\CONSHRA\CONSHRA.ISC *** 01/22/20

*** AERMET - VERSION 16216 ***
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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES

URBAN ID URBAN POP

SOURCE IDs

2035210. AREA1 , AREA2 , AREA3 , PAREA1 ,

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*** MODELOPTs: RegDEFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW7) *

SOURCE ID = AREA1 ; SOURCE TYPE = AREA :
HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR
HOUR SCALAR HOUR SCALAR HOUR SCALAR

DAY OF WEEK = MONDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = TUESDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = WEDNESDY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = THURSDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = FRIDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SATURDAY

ConSHRA

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00
14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00
14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

▲ *** AERMOD - VERSION 19191 *** *** C:\LAKES\AERMOD VIEW\12004
HRA\CONSHRA\CONSHRA.ISC *** 01/22/20

*** AERMET - VERSION 16216 *** ***
*** 12:33:04

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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY
OF WEEK (HRDOW7) *

SOURCE ID = AREA2 ; SOURCE TYPE = AREA :
HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR
HOUR SCALAR HOUR SCALAR HOUR SCALAR

DAY OF WEEK = MONDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = TUESDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = WEDNESDY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00

ConSHRA

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = THURSDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = FRIDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SATURDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00
14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00
14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

*** AERMOD - VERSION 19191 *** C:\LAKES\AERMOD VIEW\12004
HRA\CONSHRA\CONSHRA.ISC *** 01/22/20

*** AERMET - VERSION 16216 ***
*** 12:33:04

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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY
OF WEEK (HRDOW7) *

SOURCE ID = AREA3 ; SOURCE TYPE = AREA :
HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR
HOUR SCALAR HOUR SCALAR HOUR SCALAR

DAY OF WEEK = MONDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00

ConsHRA

6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = TUESDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = WEDNESDY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = THURSDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = FRIDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01
14 .1000E+01 15 .1000E+01 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SATURDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00
14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00
14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

▲ *** AERMOD - VERSION 19191 *** *** C:\LAKES\AERMOD VIEW\12004

*** AERMET - VERSION 16216 *** ***
*** 12:33:04

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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW7) *

SOURCE ID = PAREA1 ; SOURCE TYPE = AREAPOLY :

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR
HOUR SCALAR HOUR SCALAR HOUR SCALAR

DAY OF WEEK = MONDAY										
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	
6	.0000E+00	7	.0000E+00	8	.1000E+01					
	9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.1000E+01
14	.1000E+01	15	.1000E+01	16	.0000E+00					
	17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00
22	.0000E+00	23	.0000E+00	24	.0000E+00					
DAY OF WEEK = TUESDAY										
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	
6	.0000E+00	7	.0000E+00	8	.1000E+01					
	9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.1000E+01
14	.1000E+01	15	.1000E+01	16	.0000E+00					
	17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00
22	.0000E+00	23	.0000E+00	24	.0000E+00					
DAY OF WEEK = WEDNESDY										
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	
6	.0000E+00	7	.0000E+00	8	.1000E+01					
	9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.1000E+01
14	.1000E+01	15	.1000E+01	16	.0000E+00					
	17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00
22	.0000E+00	23	.0000E+00	24	.0000E+00					
DAY OF WEEK = THURSDAY										
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	
6	.0000E+00	7	.0000E+00	8	.1000E+01					
	9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.1000E+01
14	.1000E+01	15	.1000E+01	16	.0000E+00					
	17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00
22	.0000E+00	23	.0000E+00	24	.0000E+00					
DAY OF WEEK = FRIDAY										
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	
6	.0000E+00	7	.0000E+00	8	.1000E+01					
	9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.1000E+01
14	.1000E+01	15	.1000E+01	16	.0000E+00					

ConSHRA

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SATURDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00
14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00
6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00
14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00
22 .0000E+00 23 .0000E+00 24 .0000E+00

*** AERMOD - VERSION 19191 *** *** C:\LAKES\AERMOD VIEW\12004
HRA\CONSHRA\CONSHRA.ISC *** 01/22/20

*** AERMET - VERSION 16216 *** ***
*** 12:33:04

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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

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

(442032.3, 3761316.8, 208.2, 208.2, 0.0); (441966.0,
3761227.0, 203.0, 203.0, 0.0);
(441961.7, 3760816.6, 199.5, 199.5, 0.0); (441959.1,
3760593.9, 197.8, 197.8, 0.0);
(442439.0, 3760433.9, 204.3, 204.3, 0.0); (443950.0,
3760446.0, 207.5, 207.5, 0.0);
(443970.9, 3760748.7, 207.9, 207.9, 0.0); (442994.6,
3761308.1, 207.0, 207.0, 0.0);
(443971.5, 3760652.3, 207.0, 207.0, 0.0); (442854.1,
3760416.5, 203.3, 203.3, 0.0);
(442946.6, 3760418.1, 203.3, 203.3, 0.0); (443057.6,
3760418.1, 203.3, 203.3, 0.0);
(443140.1, 3760419.8, 203.4, 203.4, 0.0); (443252.8,
3760423.2, 203.4, 203.4, 0.0);
(443320.1, 3760423.2, 203.4, 203.4, 0.0); (443417.7,
3760424.9, 203.4, 203.4, 0.0);
(443517.0, 3760424.9, 203.4, 203.4, 0.0); (442267.3,
3758597.0, 189.0, 189.0, 0.0);
(445418.0, 3765343.3, 245.8, 2735.0, 0.0); (446052.4,
3764637.6, 240.6, 2735.0, 0.0);

ConSHRA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL

DATA ***

Surface file: KCNO_V9_ADJU\KCNO_V9.SFC
 Met Version: 16216
 Profile file: KCNO_V9_ADJU\KCNO_V9.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 3179
 Name: UNKNOWN
 Year: 2012

Upper air station no.: 3190
 Name: UNKNOWN
 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							
12	01	01	1	01	-2.3	0.067	-9.000	-9.000	-999.	41.	11.2	0.09	0.74	
1.00	0.73	313.			7.9	279.2	2.0							
12	01	01	1	02	-2.7	0.070	-9.000	-9.000	-999.	44.	11.3	0.09	0.74	
1.00	0.80	342.			7.9	280.9	2.0							
12	01	01	1	03	-5.6	0.098	-9.000	-9.000	-999.	73.	14.7	0.09	0.74	
1.00	1.20	9.			7.9	281.4	2.0							
12	01	01	1	04	-3.5	0.078	-9.000	-9.000	-999.	52.	11.9	0.09	0.74	
1.00	0.94	21.			7.9	282.0	2.0							
12	01	01	1	05	-8.4	0.119	-9.000	-9.000	-999.	99.	18.1	0.09	0.74	
1.00	1.45	353.			7.9	279.9	2.0							
12	01	01	1	06	-7.6	0.113	-9.000	-9.000	-999.	91.	17.0	0.09	0.74	
1.00	1.38	325.			7.9	277.5	2.0							
12	01	01	1	07	-8.0	0.117	-9.000	-9.000	-999.	96.	17.7	0.09	0.74	
1.00	1.42	313.			7.9	281.4	2.0							
12	01	01	1	08	-5.2	0.101	-9.000	-9.000	-999.	77.	17.5	0.09	0.74	
0.53	1.23	19.			7.9	280.9	2.0							
12	01	01	1	09	23.2	0.117	0.267	0.012	29.	97.	-6.2	0.09	0.74	
0.31	0.96	318.			7.9	287.5	2.0							
12	01	01	1	10	65.2	0.101	0.531	0.014	82.	77.	-1.4	0.09	0.74	
0.24	0.63	244.			7.9	291.4	2.0							
12	01	01	1	11	95.5	0.162	0.778	0.008	176.	156.	-4.0	0.09	0.74	
0.21	1.23	91.			7.9	296.4	2.0							
12	01	01	1	12	110.8	0.197	1.018	0.005	338.	209.	-6.1	0.09	0.74	
0.20	1.60	90.			7.9	299.9	2.0							
12	01	01	1	13	110.5	0.229	1.184	0.005	534.	262.	-9.6	0.09	0.74	
0.20	1.98	92.			7.9	302.0	2.0							

ConSHRA

12	01	01	1	14	94.6	0.185	1.215	0.005	674.	191.	-5.9	0.09	0.74
0.21	1.50	73.			7.9	303.1	2.0						
12	01	01	1	15	68.6	0.187	1.184	0.005	858.	194.	-8.4	0.09	0.74
0.25	1.59	64.			7.9	303.1	2.0						
12	01	01	1	16	24.9	0.255	0.862	0.005	911.	308.	-58.8	0.09	0.74
0.34	2.61	92.			7.9	300.4	2.0						
12	01	01	1	17	-13.7	0.168	-9.000	-9.000	-999.	168.	31.1	0.09	0.74
0.62	1.98	107.			7.9	295.4	2.0						
12	01	01	1	18	-26.7	0.279	-9.000	-9.000	-999.	354.	85.6	0.09	0.74
1.00	3.22	134.			7.9	291.4	2.0						
12	01	01	1	19	-8.0	0.118	-9.000	-9.000	-999.	120.	18.2	0.09	0.74
1.00	1.43	37.			7.9	290.4	2.0						
12	01	01	1	20	-7.7	0.115	-9.000	-9.000	-999.	94.	17.6	0.09	0.74
1.00	1.40	49.			7.9	287.0	2.0						
12	01	01	1	21	-9.7	0.130	-9.000	-9.000	-999.	113.	20.2	0.09	0.74
1.00	1.57	26.			7.9	288.8	2.0						
12	01	01	1	22	-4.8	0.090	-9.000	-9.000	-999.	65.	13.6	0.09	0.74
1.00	1.11	56.			7.9	284.9	2.0						
12	01	01	1	23	-11.5	0.141	-9.000	-9.000	-999.	127.	21.9	0.09	0.74
1.00	1.69	36.			7.9	282.0	2.0						
12	01	01	1	24	-16.9	0.172	-9.000	-9.000	-999.	171.	32.4	0.09	0.74
1.00	2.03	33.			7.9	279.9	2.0						

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
12	01	01	01	7.9	1	313.	0.73	279.3	99.0	-99.00	-99.00

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

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*** AERMOD - VERSION 19191 ***      *** C:\LAKES\AERMOD VIEW\12004
HRA\CONSHRA\CONSHRA.ISC          ***      01/22/20
*** AERMET - VERSION 16216 ***      ***
***                               ***      12:33:04
    
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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5
YEARS FOR SOURCE GROUP: PHASEA ***
INCLUDING SOURCE(S): AREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS

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

**

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
-------------	-------------	------	-------------

ConSHRA

Y-COORD (M)	CONC		
442032.33	3761316.84	0.00049	441966.02
3761227.01	0.00050		
441961.70	3760816.59	0.00062	441959.10
3760593.88	0.00062		
442439.00	3760433.95	0.00124	443950.05
3760445.99	0.00360		
443970.90	3760748.74	0.00581	442994.61
3761308.08	0.00219		
443971.50	3760652.31	0.00528	442854.06
3760416.46	0.00383		
442946.60	3760418.14	0.00589	443057.64
3760418.14	0.01000		
443140.08	3760419.82	0.01250	443252.81
3760423.19	0.01469		
443320.10	3760423.19	0.01510	443417.69
3760424.87	0.01528		
443516.95	3760424.87	0.01393	442267.32
3758596.97	0.00031		
445417.99	3765343.27	0.00007	446052.41
3764637.60	0.00008		
447239.82	3764206.74	0.00010	

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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5
 YEARS FOR SOURCE GROUP: PHASEB ***

INCLUDING SOURCE(S): AREA2 , AREA3

*** DISCRETE CARTESIAN RECEPTOR POINTS

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

**

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
Y-COORD (M)	CONC		

		ConSHRA	
442032.33	3761316.84	0.00144	441966.02
3761227.01	0.00197		
441961.70	3760816.59	0.00761	441959.10
3760593.88	0.00705		
442439.00	3760433.95	0.01167	443950.05
3760445.99	0.00732		
443970.90	3760748.74	0.01793	442994.61
3761308.08	0.00293		
443971.50	3760652.31	0.01765	442854.06
3760416.46	0.00938		
442946.60	3760418.14	0.00856	443057.64
3760418.14	0.00605		
443140.08	3760419.82	0.00474	443252.81
3760423.19	0.00383		
443320.10	3760423.19	0.00358	443417.69
3760424.87	0.00359		
443516.95	3760424.87	0.00418	442267.32
3758596.97	0.00043		
445417.99	3765343.27	0.00008	446052.41
3764637.60	0.00010		
447239.82	3764206.74	0.00012	

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*** MODELOPTs: RegDFault CONC ELEV URBAN ADJ_U*

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5
 YEARS FOR SOURCE GROUP: PHASEC ***
 INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS

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

**

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
Y-COORD (M)	CONC		
442032.33	3761316.84	0.00560	441966.02
3761227.01	0.01078		
441961.70	3760816.59	0.00184	441959.10
3760593.88	0.00116		

ConSHRA

442439.00	3760433.95	0.00138	443950.05
3760445.99	0.00127		
443970.90	3760748.74	0.00222	442994.61
3761308.08	0.01981		
443971.50	3760652.31	0.00179	442854.06
3760416.46	0.00154		
442946.60	3760418.14	0.00156	443057.64
3760418.14	0.00157		
443140.08	3760419.82	0.00158	443252.81
3760423.19	0.00158		
443320.10	3760423.19	0.00157	443417.69
3760424.87	0.00155		
443516.95	3760424.87	0.00151	442267.32
3758596.97	0.00029		
445417.99	3765343.27	0.00008	446052.41
3764637.60	0.00010		
447239.82	3764206.74	0.00012	

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HRA\CONSHRA\CONSHRA.ISC               ***      01/22/20
*** AERMET - VERSION 16216 ***      ***
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*** MODELOPTs: RegDEFAULT CONC ELEV URBAN ADJ_U*

*** 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, ZHILL, ZFLAG)	GRID-ID	
- - - - -		
- - - - -		

PHASEA 1ST HIGHEST VALUE IS	0.01528 AT (	443417.69, 3760424.87,
203.43, 203.43, 0.00) DC		
2ND HIGHEST VALUE IS	0.01510 AT (	443320.10, 3760423.19,
203.41, 203.41, 0.00) DC		
3RD HIGHEST VALUE IS	0.01469 AT (	443252.81, 3760423.19,
203.41, 203.41, 0.00) DC		
4TH HIGHEST VALUE IS	0.01393 AT (	443516.95, 3760424.87,
203.44, 203.44, 0.00) DC		

		ConSHRA	
203.36,	5TH HIGHEST VALUE IS 203.36, 0.00) DC	0.01250 AT (	443140.08, 3760419.82,
203.34,	6TH HIGHEST VALUE IS 203.34, 0.00) DC	0.01000 AT (	443057.64, 3760418.14,
203.33,	7TH HIGHEST VALUE IS 203.33, 0.00) DC	0.00589 AT (	442946.60, 3760418.14,
207.91,	8TH HIGHEST VALUE IS 207.91, 0.00) DC	0.00581 AT (	443970.90, 3760748.74,
207.00,	9TH HIGHEST VALUE IS 207.00, 0.00) DC	0.00528 AT (	443971.50, 3760652.31,
203.31,	10TH HIGHEST VALUE IS 203.31, 0.00) DC	0.00383 AT (	442854.06, 3760416.46,
PHASEB 207.91,	1ST HIGHEST VALUE IS 207.91, 0.00) DC	0.01793 AT (	443970.90, 3760748.74,
207.00,	2ND HIGHEST VALUE IS 207.00, 0.00) DC	0.01765 AT (	443971.50, 3760652.31,
204.28,	3RD HIGHEST VALUE IS 204.28, 0.00) DC	0.01167 AT (	442439.00, 3760433.95,
203.31,	4TH HIGHEST VALUE IS 203.31, 0.00) DC	0.00938 AT (	442854.06, 3760416.46,
203.33,	5TH HIGHEST VALUE IS 203.33, 0.00) DC	0.00856 AT (	442946.60, 3760418.14,
199.49,	6TH HIGHEST VALUE IS 199.49, 0.00) DC	0.00761 AT (	441961.70, 3760816.59,
207.45,	7TH HIGHEST VALUE IS 207.45, 0.00) DC	0.00732 AT (	443950.05, 3760445.99,
197.83,	8TH HIGHEST VALUE IS 197.83, 0.00) DC	0.00705 AT (	441959.10, 3760593.88,
203.34,	9TH HIGHEST VALUE IS 203.34, 0.00) DC	0.00605 AT (	443057.64, 3760418.14,
203.36,	10TH HIGHEST VALUE IS 203.36, 0.00) DC	0.00474 AT (	443140.08, 3760419.82,
PHASEC 206.98,	1ST HIGHEST VALUE IS 206.98, 0.00) DC	0.01981 AT (	442994.61, 3761308.08,
202.98,	2ND HIGHEST VALUE IS 202.98, 0.00) DC	0.01078 AT (	441966.02, 3761227.01,
208.17,	3RD HIGHEST VALUE IS 208.17, 0.00) DC	0.00560 AT (	442032.33, 3761316.84,
207.91,	4TH HIGHEST VALUE IS 207.91, 0.00) DC	0.00222 AT (	443970.90, 3760748.74,
199.49,	5TH HIGHEST VALUE IS 199.49, 0.00) DC	0.00184 AT (	441961.70, 3760816.59,
207.00,	6TH HIGHEST VALUE IS 207.00, 0.00) DC	0.00179 AT (443971.50, 3760652.31,
203.36,	7TH HIGHEST VALUE IS 203.36, 0.00) DC	0.00158 AT (443140.08, 3760419.82,

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                ConSHRA
203.41,      8TH HIGHEST VALUE IS      0.00158 AT ( 443252.81, 3760423.19,
203.41,      203.41,    0.00) DC
                9TH HIGHEST VALUE IS      0.00157 AT ( 443057.64, 3760418.14,
203.34,      203.34,    0.00) DC
                10TH HIGHEST VALUE IS     0.00157 AT ( 443320.10, 3760423.19,
203.41,      203.41,    0.00) DC

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

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^ *** AERMOD - VERSION 19191 ***      *** C:\LAKES\AERMOD VIEW\12004
HRA\CONSHRA\CONSHRA.ISC              ***      01/22/20
*** AERMET - VERSION 16216 ***      ***
***                                  ***      12:33:04

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*** MODELOPTs:      RegDFault  CONC  ELEV  URBAN  ADJ_U*

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

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

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A Total of          0 Fatal Error Message(s)
A Total of          2 Warning Message(s)
A Total of        1279 Informational Message(s)

A Total of        43848 Hours Were Processed

A Total of          917 Calm Hours Identified

A Total of          362 Missing Hours Identified ( 0.83 Percent)

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

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***** WARNING MESSAGES *****
ME W186      164      MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
              0.50
ME W187      164      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

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

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ATTACHMENT B: RISK CALCULATION WORKSHEETS

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 ³) (b)	(mg/m ³) (c)			URF (ug/m ³) ⁻¹ (f)	CPF (mg/kg/day) ⁻¹ (g)	DOSE (mg/kg-day) (h)	RISK (i)	REL (ug/m ³) (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)
	0.00581	5.81E-06			1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	2.0E-06	6.4E-08	5.0E+00	1.4E-03	1.2E-03					
TOTAL					6.4E-08				1.2E-03	0.0E+00	0.0E+00	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**										
	(ug/m ³) (b)	(mg/m ³) (c)			URF (ug/m ³) ⁻¹ (f)	CPF (mg/kg/day) ⁻¹ (g)	DOSE (mg/kg-day) (h)	RISK (i)	REL (ug/m ³) (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)	
		0.00581			5.81E-06	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	6.1E-06	1.5E-06	5.0E+00	1.4E-03	1.2E-03					
TOTAL								1.5E-06			1.2E-03	0.0E+00	0.0E+00	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 ³) (b)	(mg/m ³) (c)			URF (ug/m ³) ⁻¹ (f)	CPF (mg/kg/day) ⁻¹ (g)	DOSE (mg/kg-day) (h)	RISK (i)	REL (ug/m ³) (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)
		0.01840			1.84E-05	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	1.0E-05	1.3E-06	5.0E+00	1.4E-03	3.7E-03				
TOTAL								1.3E-06			3.7E-03	0.0E+00	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)	2.92E-06
EYES	Eye irritation and/or other effects	

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	350
exposure duration (years)	4
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 5
Quantification of Carcinogenic Risks and Noncarcinogenic Risks
25-Year Worker Exposure Scenario

	Source (a)	Mass GLC		Weight Fraction (d)	Contaminant (e)	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints**														
		(b)	(c)			URF (ug/m ³) ⁻¹	CPF (mg/kg/day) ⁻¹	DOSE (mg/kg-day)	RISK (i)	REL (ug/m ³) (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)					
		(b)	(c)			(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)					
1	Diesel Particulates	1.98E-02	1.98E-05	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	3.1E-06	2.8E-07	5.0E+00	1.4E-03	4.0E-03												
TOTAL									2.8E-07 0.28		4.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00				

** Key to Toxicological Endpoints

Note: Exposure factors used to calculate contaminant intake

RESP	Respiratory System	exposure frequency (days/year)	250
CNS/PNS	Central/Peripheral Nervous System	exposure duration (years)	6
CV/BL	Cardiovascular/Blood System	inhalation rate (L/kg-day)	230
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		