Technical Appendix B2

Mobile Health Risk Assessment

First Nandina Logistics Center

MOBILE SOURCE HEALTH RISK ASSESSMENT

CITY OF MORENO VALLEY

PREPARED FOR:

FIRST INDUSTRIAL REALTY TRUST
898 N. Sepulveda Blvd Suite 750
El Segundo, CA 90245

PREPARED BY:

Haseeb Qureshi
hqureshi@urbanxroads.com
(949) 660-1994 x217

Stephen Abille
sabille@urbanxroads.com
(949) 660-1994 x234

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LIST OF ABBREVIATED TERMS

(1)	Reference
µg	Microgram
AERMOD	Atmospheric Dispersion Modeling System
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
PCE	Passenger Car Equivalent
PM10	Particulate Matter 10 microns in diameter or less
Project	First Nandina Logistics Center
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

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) typically issues a comment letter on the Notice of Preparation of a CEQA Document. Per the SCAQMD's typical comment letter, if a proposed Project is expected to generate/attract diesel trucks, which emit diesel particulate matter (DPM), preparation of a HRA is necessary. 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 (1). 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 cumulatively considerable increase that would result in a cumulative impact.

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 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 First Nandina Logistics Center development is located at the southwest corner of Indian Avenue and Nandina Avenue in the City of Moreno Valley as shown on Exhibit 1-A. The Project site is currently vacant with the exception of a few building structures located in the middle of the site

1.2 STUDY AREA

The Project site is located within area developed mostly with commercial and industrial land uses. However, the study area includes several residential homes scattered throughout the project study area. The March Air Reserve Base / Inland Port Airport is located immediately west of the Project site. Existing surrounding land uses are graphically presented at Exhibit 1-B.

1.3 PROJECT DESCRIPTION

The Project is proposed to consist of approximately 1,450,000 square feet of high-cube distribution warehouse use within a single building. It is assumed that the Project will be constructed and occupied by 2015 and conservatively assumed an idling time of 15 minutes per truck. Exhibit 1-C illustrates a preliminary conceptual site plan.

The project area is located within the currently adopted Moreno Valley Industrial Area Plan (SP No. 208). The proposed project is an allowable use under SP No. 208 and the property's Industrial (I) zoning classification.

EXHIBIT 1-A: LOCATION MAP

EXHIBIT 1-B: EXISTING LAND USES

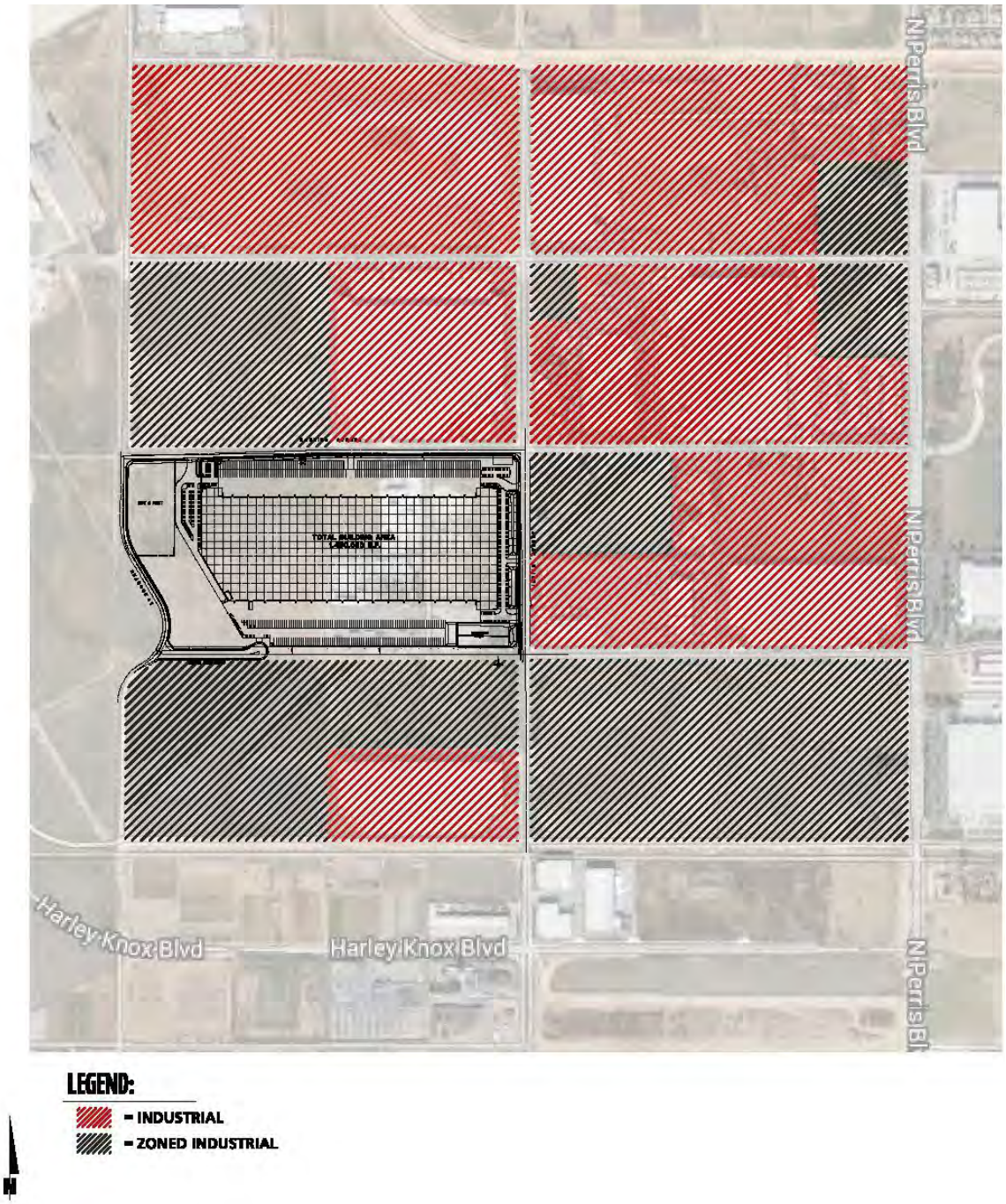
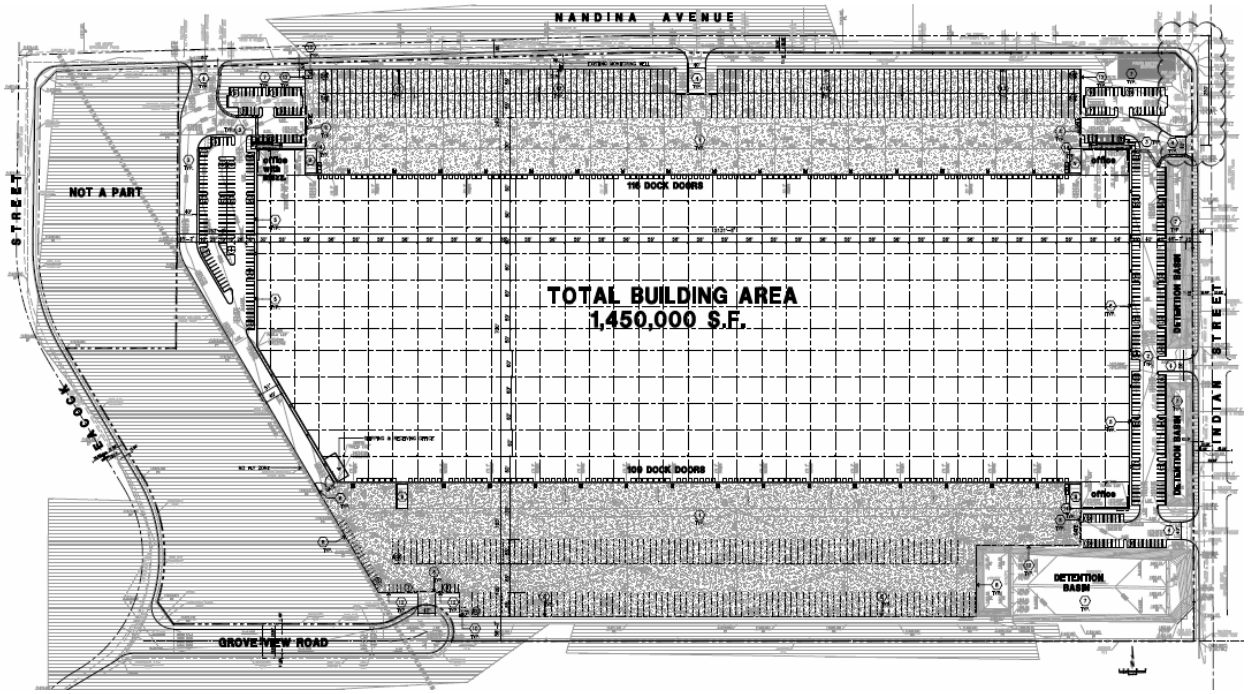


EXHIBIT 1-C: PRELIMINARY SITE PLAN



1.4 SUMMARY OF FINDINGS/CONCLUSIONS

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

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project DPM source emissions is located just south of Harley Knox Boulevard along the Projects primary truck route to the I-215 freeway or 0.60 miles (968 meters) southwest of the Project site. At the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project DPM source emissions is estimated at 6.12 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 0.004, which would not exceed the applicable threshold of 1.0. Exhibit 2-B illustrates the location of the modeled residential receptors and the MEIR.

Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project DPM source emissions is located 0.03 miles (25 meters) north of the Project site. At the maximally exposed individual worker (MEIW), the maximum incremental cancer risk impact at this location is 2.55 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 0.008, which would not exceed the applicable threshold of 1.0. Exhibit 2-C illustrates the location of the modeled worker receptors and the MEIW.

School Child Exposure Scenario:

The school site land use with the greatest potential exposure to Project DPM source emissions is located at the Morning Dove Christian School located approximately one mile (1,524 meters) northeast of the Project site. At the maximally exposed individual school child (MEISC), the maximum incremental cancer risk impact at this location is 0.011 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 0.00005, which would not exceed the applicable threshold of 1.0. Exhibit 2-D illustrates the location of the modeled school receptors and the MEISC.

The results of the analysis also indicate that the project will not result in a cumulatively considerable impact to cumulative cancer risk. Section 2.7 contains a detailed cumulative analysis for the Project.

TABLE 1-1: SUMMARY OF CANCER RISKS ATTRIBUTABLE TO THE PROJECT (WITHOUT MITIGATION)

Time Period	Location	Maximum Lifetime Cancer Risk (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold
70 Year Exposure (2015 to 2084)	Maximum Exposed Sensitive Receptor	6.12	10	NO
40 Year Exposure (2015 to 2054)	Maximum Exposed Worker Receptor	2.55	10	NO
9 Year Exposure (2015 to 2023)	Maximum Exposed School Child	0.011	10	NO

1.5 REQUIREMENTS

The Project would be required to comply with all mandatory regulatory requirements imposed by the State of California and the South Coast Air Quality Management District aimed at the reduction of air quality emissions. It should be noted that the analysis herein does not take any "credit" or "reduction" for the following measures. Those that are applicable to the Project and that would assist in the reduction of diesel particulate emissions are:

CARB Air Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling limits the idling of diesel vehicles to reduce emissions of toxics and criteria pollutants. The driver of any vehicle subject to this section: (1) shall not idle the vehicle's primary diesel engine for greater than five minutes at any location; and (2) shall not idle a diesel-fueled auxiliary power system (APS) for more than five minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle if it has a sleeper berth and the truck is located within 100 feet of a restricted area (homes and schools) (2).

CARB Final Regulation Order, Requirements to Reduce Idling Emissions from New and In-Use Trucks, beginning in 2008, would require that new 2008 and subsequent model-year heavy-duty diesel engines be equipped with an engine shutdown system that automatically shuts down the engine after 300 seconds of continuous idling operation once the vehicle is stopped, the transmission is set to "neutral" or "park", and the parking brake is engaged (3).

1.6 RECOMMENDED MEASURES

Although Project operations will **not** exceed the risk threshold of 10 in one million established by the SCAQMD, the following measures are consistent with design and operating attributes of contemporary distribution warehouses in the Basin, and are recommended as means to generally reduce local and regional DPM–source cancer risk impacts.

RM HRA 1:

The truck access gates and loading docks within the truck court on the Project site shall be posted with signs which state:

a) Truck drivers shall turn off engines when not in use;

b) Diesel delivery trucks servicing the Project shall not idle for more than five (5) minutes[1]; and

c) Telephone numbers of the building facilities manager and the CARB to report violations.

RM HRA 2:

- Site design shall allow for trucks to check-in within the facility area to prevent queuing of trucks outside the facility.[2]

[1] While restricted idling is required per RM HRA-1, the analysis presented here takes no quantified credit or reduction in emissions for restricted idling, and reflects an assumed 15-minute "worst case" idling condition.
[2] As above, no quantified credit or reduction in emissions is taken for site design requirements reflected in RM HRA-2

2 BACKGROUND

2.1 REGULATORY SETTING

CARB estimates that the average Californian is exposed to 1.2-1.8 µg/m^3 of DPM, this exposure results in an average cancer risk of 360-540 in one million for the average Californian exposed to DPM (4).

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 CARB-adopted diesel exhaust URF of 300 in one million per µg/m3 is based upon the upper 95 percentile of estimated risk for each of the epidemiological studies utilized to develop the URF. Therefore the risk factor is already representative of the conservative risk posed by DPM.

The risk estimates assume sensitive receptors will be subject to DPM for 24 hours a day, 365 days a year. As a conservative measure, the SCAQMD does not recognize indoor adjustments for residents. However, the typical person spends the majority of their time indoors versus remaining outdoors for 24 hours a day, 365 days a year.[1]

The exposure to DPM is assumed to be constant for the given period analyzed (i.e., 70 years). It should be noted however that emissions from DPM are expected to substantially decrease in the future with the implementation of standard regulatory requirements and technological advancement to reduce DPM.

The emissions derived assume that every truck accessing the project site will idle for 15 minutes, this is an overestimation of actual idling times and thus conservative.[2]

2.2 EMISSIONS ESTIMATION

Vehicle DPM emissions were estimated using emission factors for particulate matter less than 10µm in diameter (PM_{10}) generated with the 2011 version of the Emission FACtor model (EMFAC) developed by the ARB. EMFAC 2011 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

[1] In May, 1991 the California Air Resources Board (CARB) Research Division in association with the University of California, Berkeley published research findings entitled: *Activity Patterns of California Residents*. The findings of that study indicate that on average, adults and adolescents in California spent almost 15 hours per day inside their homes, and six hours in other indoor locations, for a total of 21 hours (87% of the day). About 2 hours per day were spent in transit, and just over 1 hour per day was spent in outdoor locations.

[2] 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 (personal communication, phone call, with James Koizumi, May 6, 2009), 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.

from on-road mobile sources (5). The most recent version of this model, EMFAC 2011, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled (VMT) by speed, and number of starts per day.

The most important improvement in EMFAC 2011 is the integration of the new data and methods to estimate emissions from diesel trucks and buses. EMFAC 2011 uses the same diesel truck and bus vehicle populations, miles traveled and other emissions-related factors developed for the Truck and Bus Rule approved by the Air Resources Board in 2010. The model includes the emissions benefits of the truck and bus rule and the previously adopted rules for other on-road diesel equipment. Finally, the impacts of the recession (2007-2009) on emissions that were quantified as part of the truck and bus rulemaking are included.

Several distinct emission processes are included in EMFAC 2011. Emission factors calculated using EMFAC 2011 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 corresponding emission factor units associated with diesel particulate exhaust for this Project are presented below.

For this Project, annual average PM_{10} emission factors were generated by running EMFAC 2011 in EMFAC Mode for vehicles in the SCAQMD district. 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. These are average speeds and represent conservative assumptions because lower speeds result in higher emission rates.

- 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.

The average PM10 emission factors for each type of vehicle were calculated based on the annual average emission factors from different model years for various exposure periods associated with assumptions for evaluating exposure to different receptor populations (e.g., sensitive, offsite worker and resident, respectively):

1. 70-year exposure: 2015 through 2084 (Residential Exposure Scenario)
2. 40-year exposure: 2015 through 2054 (Worker Exposure Scenario)
3. 9-yr exposure: 2015 through 2023 (School Child Exposure Scenario)

Calculated emission factors for each of these scenarios are shown in Table 2-1. The emission factors for model years beyond 2035 were assumed to be the same as emission factors in 2035 due to the fact that EMFAC 2011 only contains emission factors for the model year from 1990 through 2035. This is a conservative measure as it assumes no fleet turnover or cleaner technology with lower emissions could be incorporated after 2035.

The vehicle DPM exhaust emissions were calculated for running exhaust emissions. The running exhaust emissions were calculated by applying the running exhaust PM10 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 (5):

$Emissions_{speedA}$ (g/s) = $EF_{RunExhaust}$ (g/VMT) * Distance (VMT/trip) * Number of Trips (trips/day) / seconds per day

Where:

$Emissions_{speedA}$ (g/s): Vehicle emissions at a given speed A;

$EF_{RunExhaust}$ (g/VMT): EMFAC running exhaust PM_{10} 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_{10} 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_{10} 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 (5):

$Emissions_{idle}$ (g/s) = EF_{idle} (g/hr) * Number of Trips (trips/day) * Idling Time (min/trip) *

60 minutes per hour / seconds per day

Where:

$Emissions_{idle}$ (g/s): Vehicle emissions during idling;

EF_{idle}(g/s): EMFAC idle exhaust PM_{10} emission factor.

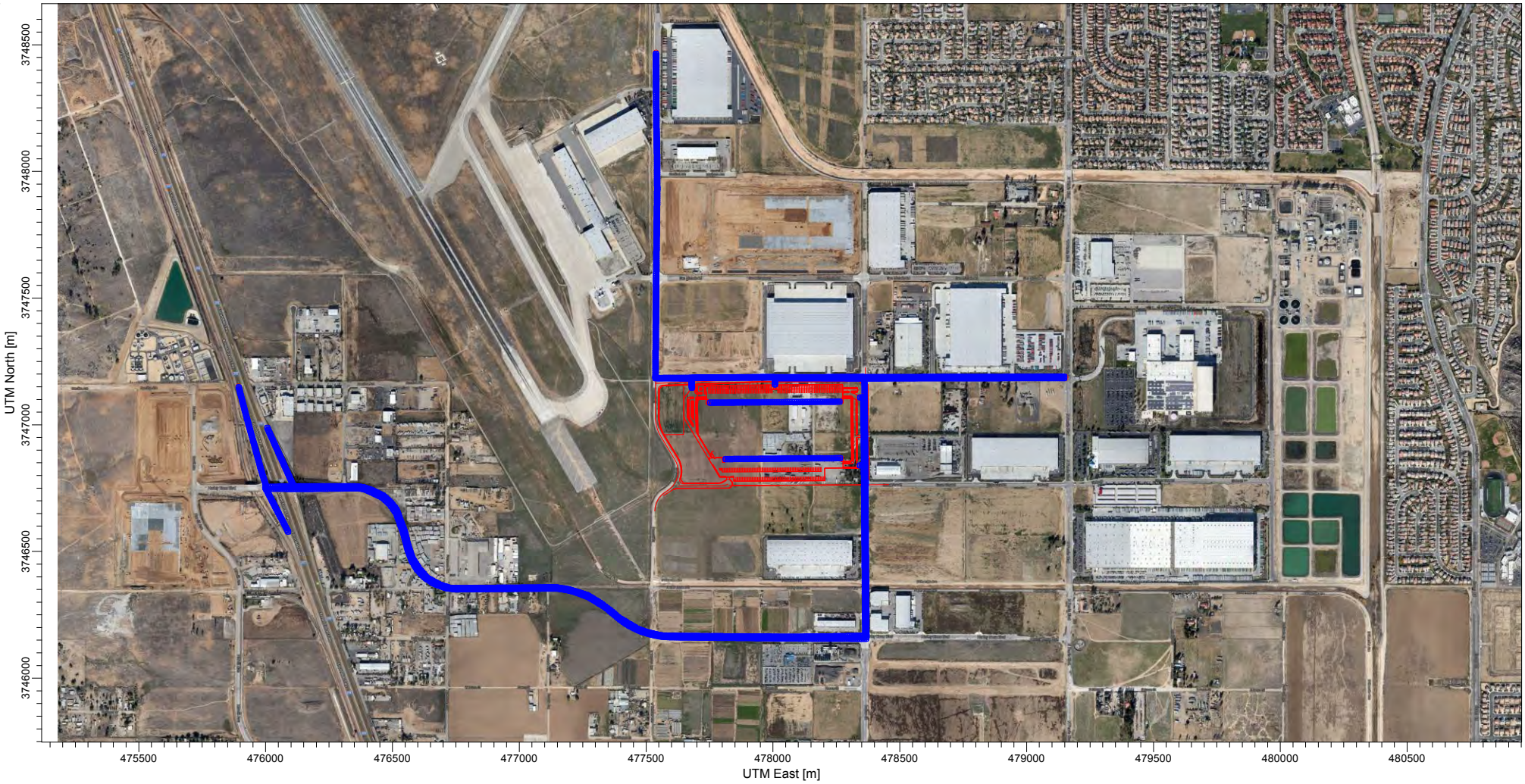
TABLE 2-1: WEIGHTED AVERAGE DPM EMISSIONS FACTORS

2015-2084 – 70 Year Residential Exposure Scenario	
Speed	Weighted Average
0 (idling)	0.19644 (g/idle-hr)
5	0.07894 (g/s)
25	0.05164 (g/s)
2015-2054 – 40 Year Worker Exposure Scenario	
Speed	Weighted Average
0 (idling)	0.19996(g/idle-hr)
5	0.08431 (g/s)
25	0.05307 (g/s)
2015-2023 – 9 Year School Child Exposure Scenario	
Speed	Weighted Average
0 (idling)	0.22767 (g/idle-hr)
5	0.12487 (g/s)
25	0.063737 (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 "A". 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 Tables 2-2 through 2-4. The modeled emission sources are illustrated on Exhibit 2-A. The modeled truck travel routes included in the HRA are based on the truck trip distributions (inbound and outbound) available from the Project's Traffic Impact Analysis (TIA) (6).

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



First Nandina Logistics Center Traffic Impact Analysis (Urban Crossroads, Inc., 2013) (Project TIA) were utilized in this analysis. Project operational (vehicular) impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations (6). It should be noted that the Project's traffic study presents the total Project vehicle trips in terms of Passenger Car Equivalents (PCEs) in an effort to recognize and acknowledge the effects of heavy vehicles at the study area intersections. Notwithstanding, for purposes of the HRA, the PCE trips were not used. Rather, to more accurately estimate and model vehicular-source emissions, the actual number of vehicles, by vehicle classification (e.g., passenger cars (including light trucks), heavy trucks) were used in the analysis. The vehicle fleet mix, in terms of actual vehicles, as derived from the traffic study for the Project is comprised of approximately 76% passenger cars (1,851 passenger cars) and approximately 24% total trucks (585 trucks). For analysis purposes, (consistent with the Project's Traffic Impact Analysis) 2-axle trucks are categorized as LHD1, 3-axle trucks are categorized as MHD, and 4+ axle trucks are categorized as 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 (1). 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. According to the AERMOD user's guide, the initial horizontal standard deviation (σy) of individual volume sources should be estimated as the distance between adjacent volume sources divided by 2.15. In a similar manner, the AERMOD user guide specifies that the source initial vertical standard deviation (σz) for a surface-based source should be estimated as the height of the source divided by a factor of 2.15 (8). The release height of 4 meters was assumed for the diesel trucks, consistent with the methodology used in the Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach prepared by CARB in April 2006, and the vertical (sigma z) dispersion parameter of 1.86 meters was utilized in the AERMOD model (9).

TABLE 2-2: DPM EMISSIONS FROM PROJECT TRUCKS (RESIDENTIAL EXPOSURE 70 YEAR AVERAGE)

Source	Trips Per Day	VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
On-Site Travel & Idling - North of building	146	46.83	0.0789	0.1964	10.88	1.259E-04
On-Site Travel & Idling - South of building	146	41.68	0.0789	0.1964	10.47	1.212E-04
90% inbound from I-215 S	263	598.23	0.0516		30.89	3.575E-04
5% inbound from Heacock St.	15	11.69	0.0516		0.60	6.988E-06
5% inbound from Nandina Ave	15	7.13	0.0516		0.37	4.259E-06
5% outbound Heacock St.	15	11.69	0.0516		0.60	6.988E-06
5% outbound to Nandina Ave.	15	7.13	0.0516		0.37	4.259E-06
70% outbound to I-215 N	205	429.40	0.0516		22.17	2.566E-04
20% outbound to I-215 S	59	124.68	0.0516		6.44	7.452E-05
5% inbound DWY 2 from Nandina Ave.	15	6.64	0.0516		0.34	3.969E-06
90% inbound DWY 2 from Indian St.	263	188.42	0.0516		9.73	1.126E-04
5% inbound Dwy 2 from Heacock St.	15	1.63	0.0516		0.08	9.744E-07
5% outbound DWY 3 to Heacock St.	15	4.60	0.0516		0.24	2.750E-06
5% outbound DWY 3 to Nandina Ave.	15	3.53	0.0516		0.18	2.109E-06
30% outbound DWY 4 to Indian St.	88	19.66	0.0516		1.02	1.175E-05
60% outbound DWY 6 to Indian St.	176	10.55	0.0516		0.54	6.302E-06

[a] Vehicle miles traveled are for modeled truck route only.

[b] Emission rates determined using EMFAC 2011. Idle emission rates are expressed in grams per idle hour rather than grams per mile.

[c] 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.

TABLE 2-3: DPM EMISSIONS FROM PROJECT TRUCKS (WORKER EXPOSURE 40 YEAR AVERAGE)

Source	Trips Per Day	VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
On-Site Travel & Idling - North of building	146	46.83	0.0843	0.2000	11.26	1.303E-04
On-Site Travel & Idling - South of building	146	41.68	0.0843	0.2000	10.82	1.253E-04
90% inbound from I-215 S	263	598.23	0.0531		31.75	3.675E-04
5% inbound from Heacock St.	15	11.69	0.0531		0.62	7.183E-06
5% inbound from Nandina Ave	15	7.13	0.0531		0.38	4.377E-06
5% outbound Heacock St.	15	11.69	0.0531		0.62	7.183E-06
5% outbound to Nandina Ave.	15	7.13	0.0531		0.38	4.377E-06
70% outbound to I-215 N	205	429.40	0.0531		22.79	2.638E-04
20% outbound to I-215 S	59	124.68	0.0531		6.62	7.659E-05
5% inbound DWY 2 from Nandina Ave.	15	6.64	0.0531		0.35	4.080E-06
90% inbound DWY 2 from Indian St.	263	188.42	0.0531		10.00	1.157E-04
5% inbound Dwy 2 from Heacock St.	15	1.63	0.0531		0.09	1.001E-06
5% outbound DWY 3 to Heacock St.	15	4.60	0.0531		0.24	2.827E-06
5% outbound DWY 3 to Nandina Ave.	15	3.53	0.0531		0.19	2.168E-06
30% outbound DWY 4 to Indian St.	88	19.66	0.0531		1.04	1.208E-05
60% outbound DWY 6 to Indian St.	176	10.55	0.0531		0.56	6.478E-06

[a] Vehicle miles traveled are for modeled truck route only.

[b] Emission rates determined using EMFAC 2011. Idle emission rates are expressed in grams per idle hour rather than grams per mile.

[c] 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.

TABLE 2-4: DPM EMISSIONS FROM PROJECT TRUCKS (SCHOOL CHILD EXPOSURE 9 YEAR AVERAGE)

Source	Trips Per Day	VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
On-Site Travel & Idling - North of building	146	46.83	0.1249	0.2277	14.17	1.640E-04
On-Site Travel & Idling - South of building	146	41.68	0.1249	0.2277	13.53	1.566E-04
90% inbound from I-215 S	263	598.23	0.0637		38.13	4.413E-04
5% inbound from Heacock St.	15	11.69	0.0637		0.75	8.626E-06
5% inbound from Nandina Ave	15	7.13	0.0637		0.45	5.256E-06
5% outbound Heacock St.	15	11.69	0.0637		0.75	8.626E-06
5% outbound to Nandina Ave.	15	7.13	0.0637		0.45	5.256E-06
70% outbound to I-215 N	205	429.40	0.0637		27.37	3.168E-04
20% outbound to I-215 S	59	124.68	0.0637		7.95	9.198E-05
5% inbound DWY 2 from Nandina Ave.	15	6.64	0.0637		0.42	4.899E-06
90% inbound DWY 2 from Indian St.	263	188.42	0.0637		12.01	1.390E-04
5% inbound Dwy 2 from Heacock St.	15	1.63	0.0637		0.10	1.203E-06
5% outbound DWY 3 to Heacock St.	15	4.60	0.0637		0.29	3.395E-06
5% outbound DWY 3 to Nandina Ave.	15	3.53	0.0637		0.22	2.604E-06
30% outbound DWY 4 to Indian St.	88	19.66	0.0637		1.25	1.450E-05
60% outbound DWY 6 to Indian St.	176	10.55	0.0637		0.67	7.779E-06

[a] Vehicle miles traveled are for modeled truck route only.

[b] Emission rates determined using EMFAC 2011. Idle emission rates are expressed in grams per idle hour rather than grams per mile.

[c] 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.

SCAQMD required model parameters are presented in Table 2-5 (8). The model requires additional input parameters including emission data and local meteorology. Meteorological data from the SCAQMD's Perris monitoring station (SRA 24) located approximately 9.34 miles south of the Project site was used to represent local weather conditions and prevailing winds (10).

TABLE 2-5: AERMOD MODEL PARAMETERS

Dispersion Coefficient (Urban/Rural)	Urban
Terrain (Flat/Complex)	Flat
Averaging Time	1 year
Receptor Height	1.5 meters (consistent with SCAQMD protocol)

Universal Transverse Mercator (UTM) coordinates for North American Datum (NAD) 83 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 "A".

Modeled sensitive receptors were placed at discrete residential and non-residential locations for the applicable residential and non-residential scenarios.

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 ten 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 ((1), for purposes of this analysis, ten (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 1 in a million implies a likelihood that up to one person, 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. This risk would be an excess cancer risk that is in addition to any cancer risk borne by a person not exposed to these air toxics.

The risk estimates were thus calculated as follows:

Cancer Risk = Inhalation cancer potency factor (CPF) x Dose-inhalation

Where:

Cancer Risk = Total individual lifetime excess cancer risk defined as the cancer risk a hypothetical individual faces if exposed to carcinogenic emissions from a particular facility.

Inhalation cancer potency factor (CPF) = 1.1 (milligrams per kilogram per day)$^{-1}$ for DPM

$$\text{Dose-inhalation} = C_{air} \times (DBR \times EF \times ED \times 10^{-6}) / AT)$$

Where:

C_{air}	=	concentration of contaminant in air (mg/m^3)
DBR	=	average daily breathing rate (liters/kg of body weight-day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)

Discrete variants for daily breathing rates, exposure frequency, and exposure duration were obtained from relevant distribution profiles presented in the OEHHA guidance document entitled Air Toxic Hot Spots Program Risk Assessment Guidelines, Part IV: Technical Support Document for Exposure Assessment and Stochastic Analysis (11) and guidance from SCAQMD. Table 2-6 summarizes the Exposure Parameters for Residents, Offsite Worker, and School Children. Appendix "5.2" includes the detailed emissions and risk calculation outputs.

TABLE 2-6: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK

Exposure Parameter	Units	Residential	Worker	School Child [a]
Exposure Frequency	days/year	350	245	180
Exposure Duration	years	70	40	9
Inhalation Rate [b]	L/kg-day	302	149	581
Exposure Duration	Years	70	40	9
Exposure Time	hours/day	24	12	10

[a] To represent the unique characteristics of the school-based population, the assessment employed the U.S. Environmental Protection Agency's guidance to develop viable dose estimates based on reasonable maximum exposures (RME). RME's are defined as the "highest exposure that is reasonably expected to occur" for a given receptor population. As a result, lifetime risk values for the student population were adjusted to account for an exposure duration of 180 days per year for nine (9) years. The 9 year exposure duration is also consistent with OEHHA Recommendations and consistent with the exposure duration utilized in school-based risk assessments for various schools within the Los Angeles County Unified School District (LAUSD) that have been accepted by the SCAQMD.

[b] The residential breathing rate of 302 L/kg-day represents the 80th percentile breathing rate per ARB and consistent with SCAQMD Risk Assessment Procedures for Rules 1401 and 212, the worker breathing rate of 149 L/kg-day is also consistent with SCAQMD Risk Assessment Procedures for Rules 1401 and 212, the school child breathing rate of 581 L/kg-day represents the high end 95th percentile breathing rate.

Universal Transverse Mercator (UTM) coordinates for North American Datum (NAD) 83 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 "A".

Area sources were placed near loading docks of each building to account for onsite emissions from the use of yard tractors. It was assumed that there were 3.1 yard tractors per million square feet of building use.

Modeled sensitive receptors were placed at discrete residential and non-residential locations for the applicable residential and non-residential scenarios as illustrated on Exhibits 2-B, 2-C, and 2-D.

EXHIBIT 2-B: NEAREST MODELED RESIDENTIAL RECEPTORS

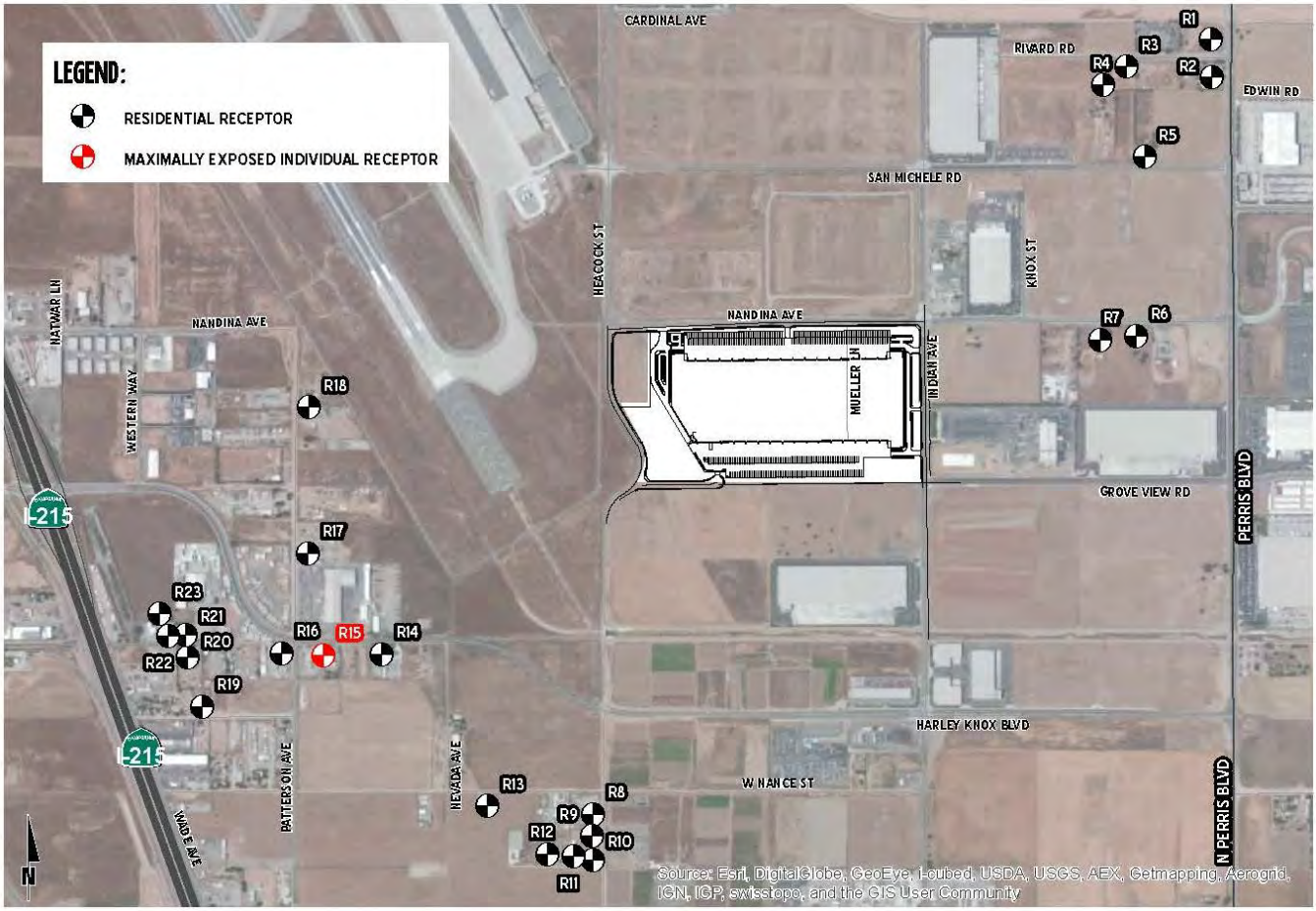


EXHIBIT 2-C: NEAREST MODELED WORKER RECEPTORS

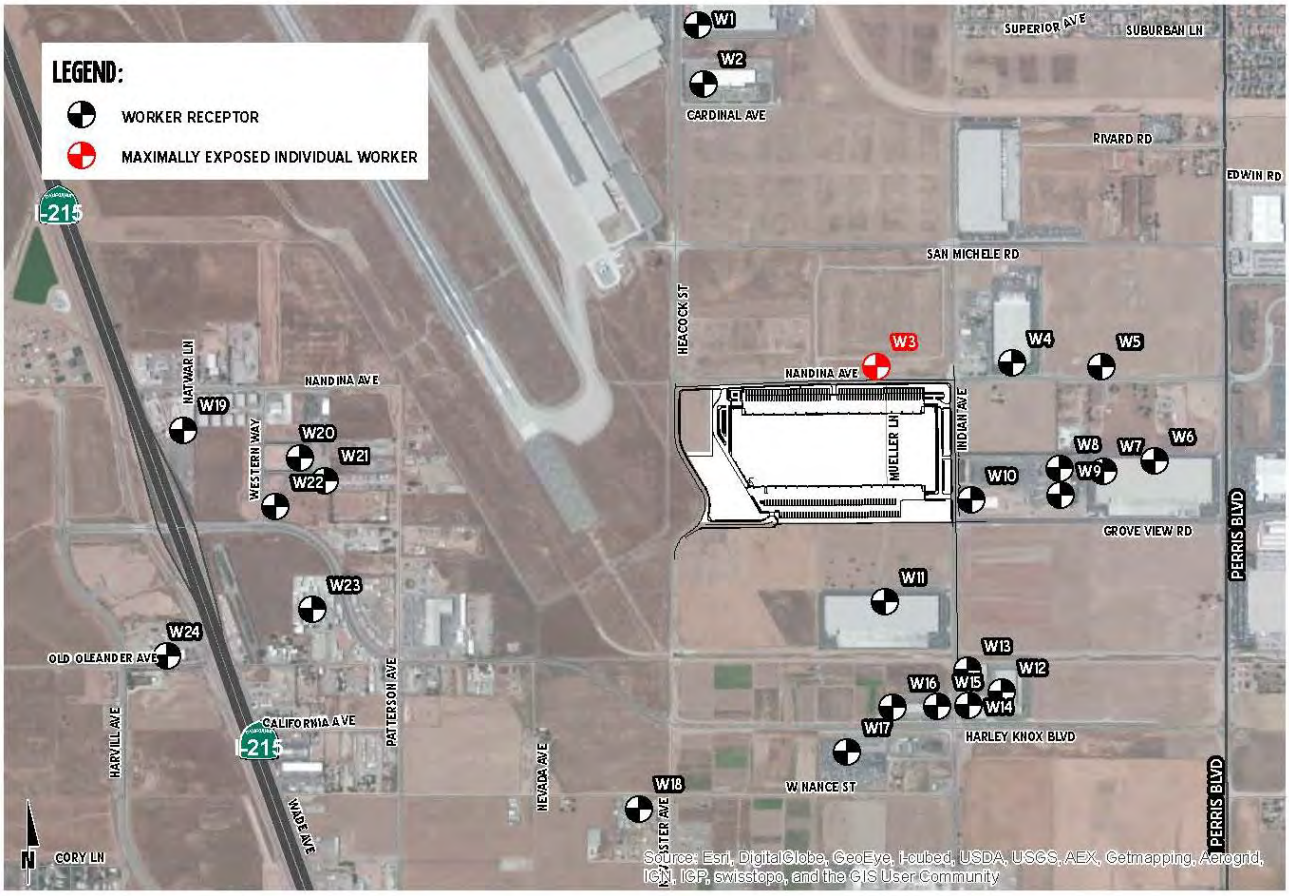
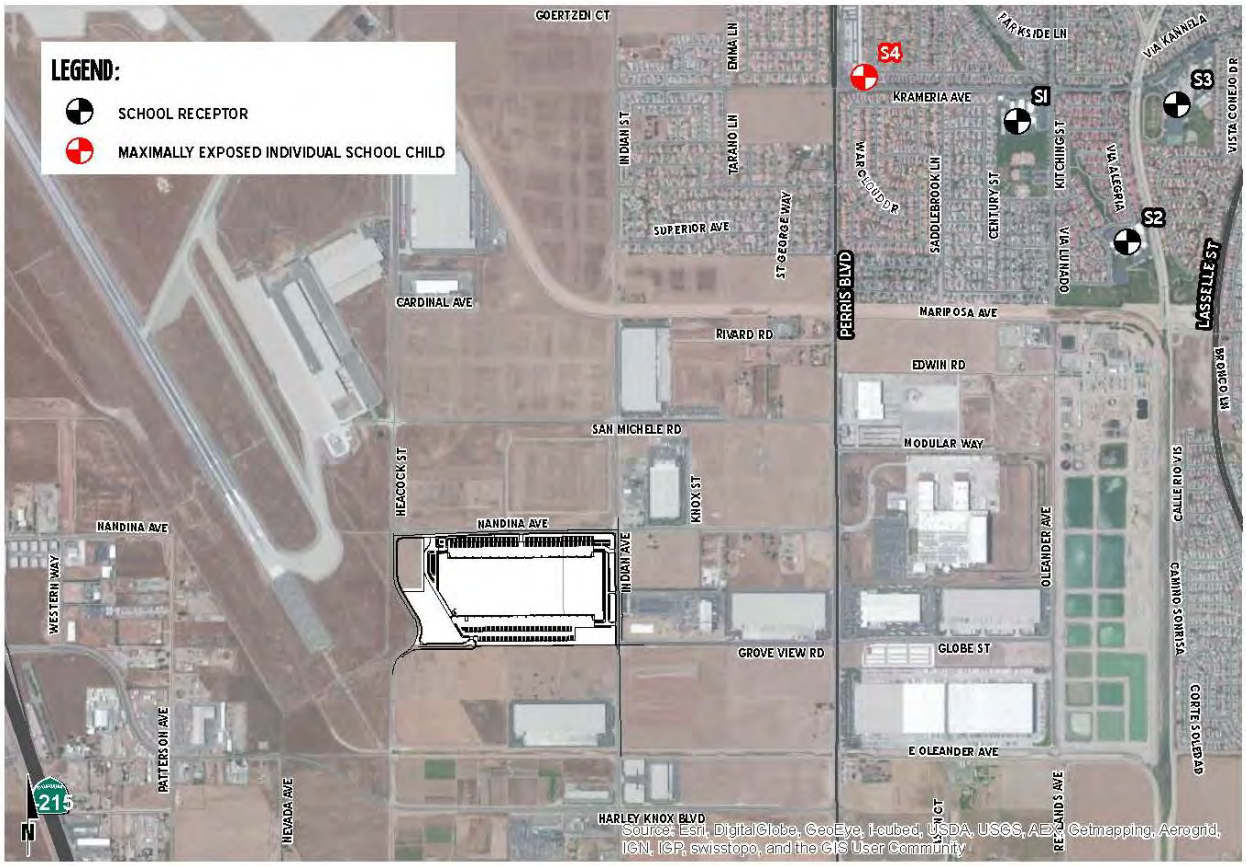


EXHIBIT 2-D: NEAREST MODELED SCHOOL CHILD RECEPTORS



2.5 POTENTIAL PROJECT-RELATED DPM SOURCE CANCER RISKS[3]

Project-related DPM-source cancer risks under the three (3) operational scenarios for the Project are considered herein and are summarized as follows.

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project DPM source emissions is located just south of Harley Knox Boulevard along the Projects primary truck route to the I-215 freeway or 0.60 miles (968 meters) southwest of the Project site. At the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project DPM source emissions is estimated at 6.12 in one million, which is less than the threshold of 10 in one million. Exhibit 2-B illustrates the nearest modeled residential receptors and the MEIR.

Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project DPM source emissions is located 0.03 miles (25 meters) north of the Project site. At the maximally exposed individual worker (MEIW), the maximum incremental cancer risk impact at this location is 2.55 in one million which is less than the threshold of 10 in one million. Exhibit 2-C illustrates the nearest modeled worker receptors and the MEIW.

School Child Exposure Scenario:

The school site land use with the greatest potential exposure to Project DPM source emissions is located at the Morning Dove Christian School located approximately one mile (1,524 meters) northeast of the Project site. At the maximally exposed individual school child (MEISC), the maximum incremental cancer risk impact at this location is 0.011 in one million which is less than the threshold of 10 in one million. Exhibit 2-D illustrates the nearest modeled school receptors and the MEISC.

2.6 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 $\mu g/m^3$ (OEHHA Toxicity Criteria Database, http://www.oehha.org/risk/chemicaldb/index.asp).

The non-cancer hazard index was calculated (consistent with SCAQMD methodology) as follows:

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

[3] 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.

$$HI_{DPM} = C_{DPM}/REL_{DPM}$$

Where:

HI_{DPM} = Hazard Index; an expression of the potential for non-cancer health effects.

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

REL_{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.

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project DPM source emissions is located just south of Harley Knox Boulevard along the Projects primary truck route to the I-215 freeway or 0.60 miles (968 meters) southwest of the Project site. At the MEIR, the maximum incremental non-cancer risk attributable to Project DPM source emissions were estimated to be 0.004, which would not exceed the applicable threshold of 1.0. Exhibit 2-B illustrates the nearest modeled residential receptors and the MEIR.

Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project DPM source emissions is located 0.03 miles (25 meters) north of the Project site. At the MEIW, the maximum incremental non-cancer risk impacts at this location were estimated to be 0.008, which would not exceed the applicable threshold of 1.0. Exhibit 2-C illustrates the nearest modeled worker receptors and the MEIW.

School Child Exposure Scenario:

The school site land use with the greatest potential exposure to Project DPM source emissions is located at the Morning Dove Christian School located approximately one mile (1,524 meters) northeast of the Project site. At the maximally exposed individual school child (MEISC), the maximum incremental non-cancer risk impacts at this location were estimated to be 0.00005 which would not exceed the applicable threshold of 1.0. Exhibit 2-D illustrates the nearest modeled school receptors and the MEISC.

2.7 CEQA Requirements for Addressing Cumulative Impacts

As a first step in determining a cumulative threshold for cumulative toxic air contaminant impacts, the applicable provisions of CEQA were reviewed. Excerpts from CEQA and the CEQA Guidelines regarding cumulative impacts are provided below.

In defining what may constitute a significant effect on the environment, CEQA 21083(b)(2) lists the following conditions for cumulative impacts:

> *The possible effects of a project are individually limited but cumulatively considerable. As used in this paragraph, "cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.*

CEQA Guidelines 15064(h) provides guidance for determining the significance of environmental effects caused by the project. The following subsections provide guidance specifically addressed at cumulative impacts.

(1) When assessing whether a cumulative effect requires an EIR, the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable. An EIR must be prepared if the cumulative impact may be significant and the project's incremental effect, though individually limited, is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

(2) A lead agency may determine in an initial study that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant. When a project might contribute to a significant cumulative impact, but the contribution will be rendered less than cumulatively considerable through mitigation measures set forth in a mitigated negative declaration, the initial study shall briefly indicate and explain how the contribution has been rendered less than cumulatively considerable.

(3) A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including, but not limited to, water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. When relying on a plan, regulation or program, the lead agency should explain how implementing the particular requirements in the plan, regulation or program ensure that the project's incremental contribution to the cumulative effect is not cumulatively considerable. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding that the project complies with the specified plan or

mitigation program addressing the cumulative problem, an EIR must be prepared for the project.

(4) The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable.

CEQA Guidelines 15130 provides guidance for discussing cumulative impact in an EIR. The following excerpts apply:

(a) An EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in section 15065 (a)(3). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.

(1) As defined in Section 15355, a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.

(2) When the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed in further detail in the EIR. A lead agency shall identify facts and analysis supporting the lead agency's conclusion that the cumulative impact is less than significant.

(b) The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact. The following elements are necessary to an adequate discussion of significant cumulative impacts:

(1) Either:

(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or

(B) A summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect….

(2) When utilizing a list, as suggested in paragraph (1) of subdivision (b), factors to consider when determining whether to include a related project should include the nature of each environmental resource being examined, the location of the project and its type. Location may be important, for example, when water quality impacts are at issue since projects outside the watershed would probably not contribute to a cumulative effect. Project type may be important, for example, when the impact is specialized, such as a particular air pollutant or mode of traffic.

(3) Lead agencies should define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used.

(4) A summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available; and

(5) A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

(c) With some projects, the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis.

For cumulative toxic air contaminant (or "TAC") assessment, a list approach should be used to identify past and probable future projects producing related impacts. This allows for discrete sources of TAC emissions contributing to the cumulative impact to be identified. The location and geographic scope of the analysis is important for TACs due to effects of distance from the source on exposure of sensitive receptors to these pollutants.

2.8 EXISTING CONDITIONS FOR TOXIC EMISSIONS

There are no state or federal ambient air quality standards applicable to TAC emissions. Preparing a cumulative assessment for TACs is complicated by the fact that site-specific impacts can be far different from average impacts over a larger geographic area. Impacts from TAC emissions are highest closest to sources of TACs, but the sources are often spread over a large area. For example, emissions from diesel engines, the largest source of risk from TACs, are operated on roads, businesses, and construction sites throughout the air basin. Locations where large numbers of TAC sources are concentrated such as freeways, railyards, and ports may pose a higher level of risk to sensitive receptors near these facilities. Examination of the risk from TACs at national, state, regional, and local levels is useful for providing context, but site-specific evaluation is ultimately necessary to determine existing conditions for development projects.

ENVIRONMENTAL PROTECTION AGENCY'S NATIONAL AIR TOXIC ASSESSMENT

The EPA prepared estimates of the impact from the combined effects of all sources of TACs throughout the United States for its 2005 National Air Toxic Assessment (NATA) (12). The 2005 NATA provides information on 177 of the 187 Clean Air Act air toxics plus DPM (DPM was assessed for noncancer effects only). The assessment represents a snapshot in time for characterizing risks from exposure to air toxics and is not designed to characterize risks sufficiently for it to be the sole source for regulatory action. Note that in this assessment, the potential carcinogenic risk from diesel PM is not addressed because there is no federal unit risk estimate available.

NATA estimates that all 285 million people in the U.S. have an increased cancer risk of greater than 10 in one million and that approximately 13.8 million people (less than 5 percent of the total U.S. population based on the 2000 census) have an increased cancer risk of greater than 100 in a million. The average, national, cancer risk for 2005 is 50 in a million.

Further, NATA provides tract-level information on cancer risks based on the 2005 toxic emissions inventory. NATA provides Google Earth Risk Maps for the Project vicinity, based on available data, cancer risk for the Project vicinity based on NATA information ranges from 51-56 in one million.

AIR RESOURCES BOARD RISK ESTIMATES FOR CALIFORNIA

ARB's 2009 Air Quality Almanac provides the most recent available TAC risk estimates for California. The ARB Almanac Chapter 5: Toxic Air Contaminant Emissions, Air Quality and Health Risk (ARB 2009) provide estimates of the annual average concentrations and health risks for each air basin, including the South Coast Air Basin. The latest estimate of cancer risk without accounting for DPM is 149 in a million in 2007. The last analysis year that included an estimate of DPM risk was 2000, with an estimate risk of 720 in a million from diesel alone and 285 in a million from the other sources analyzed, for a total risk of 1005 in a million (13).

The Almanac shows a significant decrease in non-diesel risk between 2000 and 2007. The implementation of regulations on the non-diesel sources has reduced the risk from 285 in a million in 2000 to 149 in a million in 2007—a 52-percent reduction in just 7 years. DPM comprised of approximately 72 percent of the TAC risk in the South Coast Air Basin in the year 2000 (13). The ARB's Diesel Risk Reduction Program (DRRP) adopted in 2000 is predicted to result in a decrease in diesel PM by 17 percent between 2000 and 2010 statewide (14).

The ARB has adopted regulations implementing the DRRP. The regulations are being phased in over time and achieve incremental reductions as new equipment and vehicles enter the fleet and old equipment and vehicles are retired. The regulations also require emission control retrofits that are implemented for different types of equipment and vehicle over time.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT TOXIC ASSESSMENT

The SCAQMD has conducted an in-depth analysis of the toxic air contaminants and their resulting health risks for all of Southern California. This study, the *Multiple Air Toxics Exposure*

Study in the South Coast Air Basin, MATES III," shows that the region around the Project site has an ambient cancer risk of 566 in one million (15).

MATES-III is the most comprehensive dataset documenting the ambient air toxic levels and health risks associated with the South Coast Air Basin emissions. Therefore, MATES-III study represents the baseline health risk for a cumulative analysis. MATES-III estimates the average excess cancer risk level from exposure to TACs is approximately 1,200 in one million basin-wide. These model estimates were based on monitoring data collected at ten fixed sites within the South Coast Air Basin. None of the fixed monitoring sites are within the local area of the Project site. However, MATES-III has extrapolated the excess cancer risk levels throughout the basin by modeling the specific grids. MATES-III modeling predicted an excess cancer risk of 566 in one million for the Project area. DPM is included in this cancer risk along with all other TAC sources. DPM accounts for 83.6% of the total risk shown in MATES-III. Cumulative Project generated TACs are limited to DPM.

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* (16). 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."

DIESEL REGULATIONS

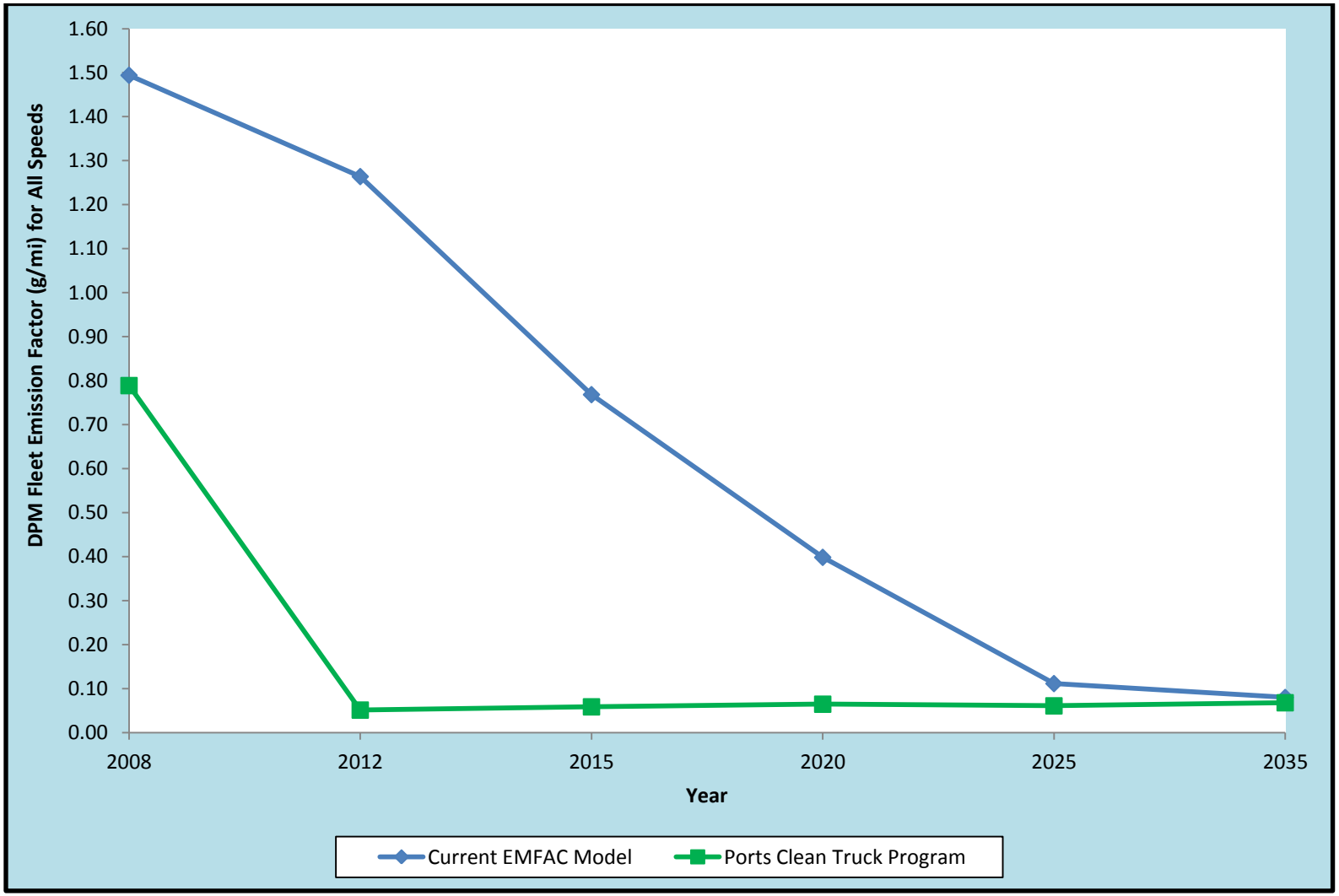
The CARB and the Ports of Los Angeles and Long Beach have adopted several iterations of regulations for diesel trucks that are aimed at reducing DPM. More specifically, the CARB Drayage Truck Regulation (17), the CARB statewide On-road Truck and Bus Regulation (18), and the Ports of Los Angeles and Long Beach "Clean Truck Program" (CTP) require accelerated implementation of "clean trucks" into the statewide truck fleet (19). In other words, older more polluting trucks will be replaced with newer, cleaner trucks as a function of these regulatory requirements.

Moreover, the average statewide DPM emissions for Heavy Duty Trucks (HHDT), in terms of grams of DPM generated per mile traveled, will dramatically be reduced due to the aforementioned regulatory requirements. Table 2-7 provides a comparison of the estimated

DPM emissions from that would occur under the statewide programs, reflected in EMFAC 2011, and what would occur under the Ports CTP (20).

Diesel emissions identified in this analysis would therefore overstate future DPM emissions since not all the regulatory requirements are reflected in the modeling.

TABLE 2-7: COMPARISON OF CALIFORNIA HHDT DPM EMISSIONS CONTROL PROGRAMS



PROJECT-LEVEL CUMULATIVE TOXIC RISK ESTIMATES

The most appropriate way to identify cumulative risk at a specific receptor location is to determine the zone of impact of all sources that contribute risk within a specified radius of the receptor that is most impacted by the project. The BAAQMD guidelines recommended analyzing the impact of sources within 1,000-foot radius to capture the cumulative impact. A larger radius may be appropriate if a particularly large source is located beyond 1,000 feet from the project and should be considered on a project-by-project basis.

There are three scenarios that may occur when preparing a project-level cumulative analysis:

1. There are no existing or planned sources within the analysis radius that would contribute substantial emissions to the cumulative impact.
2. There are existing and planned sources within the analysis radius, but those sources are not cumulatively significant without the project.
3. The existing and planned sources within the analysis radius are significant without the project.

When considering the background cancer risk for the Project vicinity, the MATES-III data has been determined to be the most appropriate since it provides a comprehensive assessment of the Project's geographic vicinity. Of the three scenarios identified above, #3 is most applicable for purposes of this analysis.

JUSTIFICATION OF THE GEOGRAPHIC SCOPE OF THE ANALYSIS

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 ARB and South Coast District emissions and modeling analyses, an 80-percent drop-off in pollutant concentrations is estimated at approximately 1,000 feet from a distribution center (21).

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 assessing the cumulative impacts of a new source of TAC emissions associated with a project in combination with existing sources and probable future sources, a project radius is necessary. Assessment of impacts from existing sources within 1,000 feet of the new source in combination with risks and hazards from the new source is recommended. Then, once the location of the maximally impacted receptor is identified for the project, cumulative impacts from other sources within the radius of the project (i.e., not the receptor) are assessed at that location. Assessments should sum individual hazards or risks to find the cumulative impact at the location of the maximally impacted receptor from the new source.

Lastly, the Waters Bill (AB 3205) (H&SC Section, 42301.6 through 42301.9) (22) addresses sources of hazardous air pollutants near schools. It requires new or modified sources of hazardous air emissions located within 1000 feet from the outer boundary of a school to give

public notice to the parents or guardians of children enrolled in any school located within one-quarter mile of the source and to each address within a 1000 foot radius.

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

CUMULATIVE IMPACT ANALYSIS

Consistent with Section 15130(b) of the CEQA Guidelines a list of past, present, and probable future projects producing related or cumulative impacts have been identified. The Project's traffic study (23) identified 110 cumulative projects in the study area radius of approximately 5 miles as summarized on Table 2-8. As discussed above, for analytical purposes related to TACs the geographic scope of this analysis is focused on an approximate one-quarter mile or 1,320 feet radius from the Project site and the primary truck route. As identified in the Project's traffic study, 90 percent of the truck traffic associated with the Project travels to and from the Project site from the I-215 freeway via Harley Knox Boulevard and Indian Street. The other 10 percent of truck traffic serves the local vicinity of Moreno Valley (5 percent north and south on Heacock Street) and Perris (5 percent east and west on Nandina Avenue). Since the ultimate destination for local travel to Moreno Valley and Perris is unknown, it would be speculative to chase a *de minimis* amount of trucks (10 percent of the total) along Heacock Street and Nandina Avenue. As such, the focus of this assessment is on the primary truck route to and from the I-215 freeway which represents 90% of the truck travel to and from the Project.

Exhibit 2-E illustrates cumulative projects that are within the quarter-mile buffer from the Project site and primary truck route. Of the 110 cumulative projects identified, approximately 11 are located within the quarter-mile buffer. These 11 cumulative (related) projects have been highlighted on Table 2-8 (and are represented by the following 10 TAZs 1, 13, 17, 29, 31, 32, 36, 41, 48, and 93) and have the potential to contribute to cumulative health risk impacts. Since specific risk estimates for each of the related projects is not available, in the abundance of caution, related projects (in sum) are assumed to generate >10 in one million cumulative cancer risk.

It should be noted that stationary (loading dock) and mobile source emissions from these cumulative projects and from future development on currently undeveloped or underdeveloped parcels within a quarter-mile radius and projects beyond a quarter-mile radius that add mobile sources to the same roadway segments as the proposed Project's truck route, have the potential to contribute to the overall cumulative risk in the Project vicinity.

The cumulative health risk is significant since the existing conditions plus cumulative projects would generate greater than a 10 in one million cancer risk. Notwithstanding, the Project's contribution is less than cumulatively considerable because it is less than the 10 in one million incremental cancer risk threshold established by the SCAQMD. Lastly, it should be noted that although there will be ambient growth in the Project vicinity, any increase in emissions and consequently cancer risk from ambient growth would be offset by the expected decrease in

future risk estimates due to the natural turnover of older fleets and equipment being replaced by more efficient, less polluting engines and regulatory actions being phased in.

EXHIBIT 2-E: CUMULATIVE DEVELOPMENT WITHIN ONE-QUARTER MILE OF THE PROJECT AND PRIMARY TRUCK ROUTE

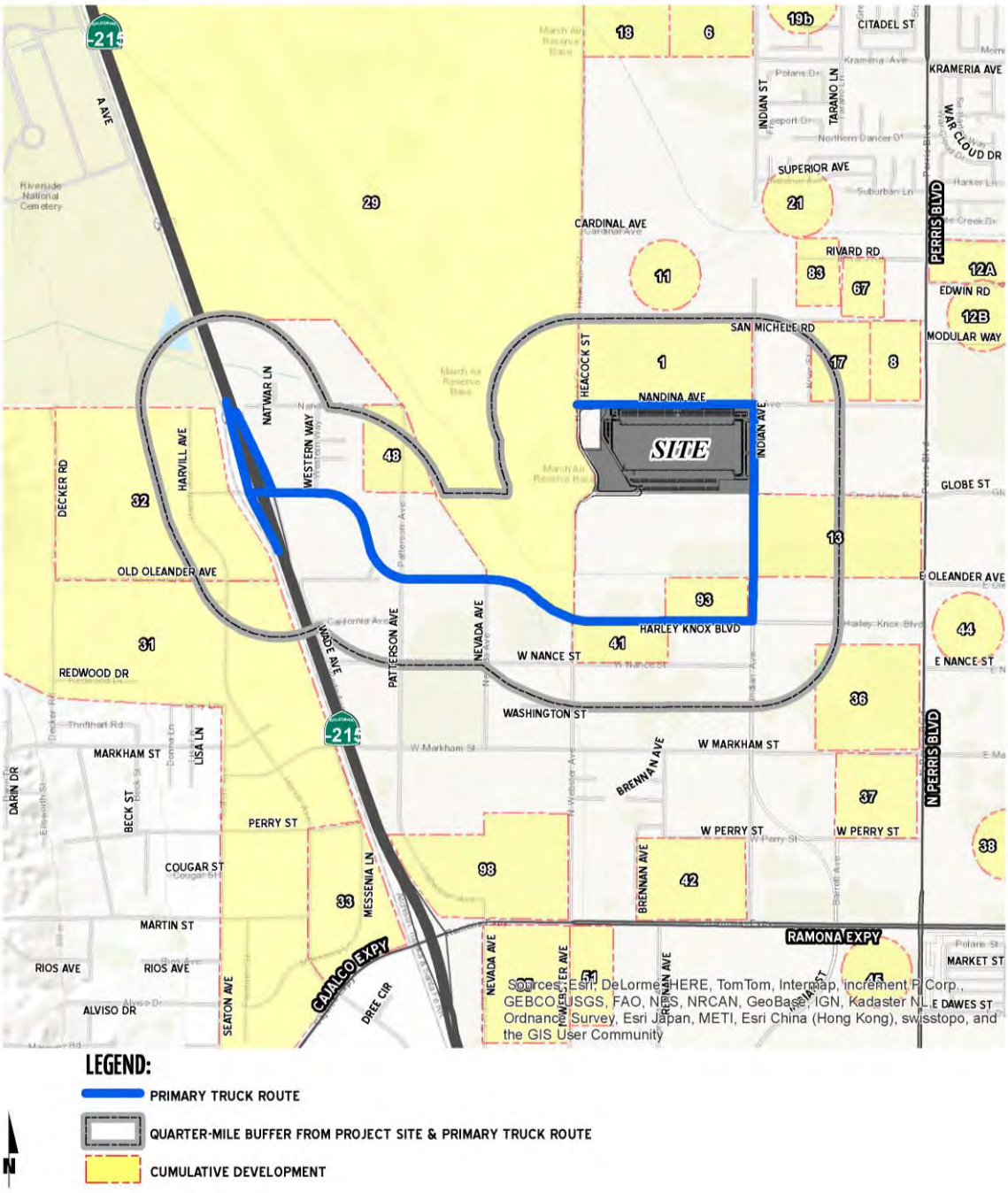


TABLE 2-8: CUMULATIVE DEVELOPMENT LIST

TAZ	Project Name	Land Use[1]	Quantity	Units[2]
1	PA 06-0152 & PA 06-0153 (First Park Nandina I & II)	High-Cube Warehouse	1,182.918	TSF
2	Moreno Valley Walmart	Free-Standing Discount Store	189.520	TSF
		Gas Station	16	VFP
3A	PA 08-0072 (Overton Moore Properties)	High-Cube Warehouse	520.000	TSF
3B	Harbor Freight Expansion	High-Cube Warehouse	1,279.910	TSF
4	PA 04-0063 (Centerpointe Buildings 8 and 9)	General Light Industrial	361.384	TSF
5	PA 07-0035; PA 07-0039 (Moreno Valley Industrial Park)	General Light Industrial	204.657	TSF
		High-Cube Warehouse	409.920	TSF
6	PA 07-0079 (Indian Business Park)	High-Cube Warehouse	1,560.046	TSF
7	PA 08-0047-0052 (Komar Cactus Plaza)[3]	Hotel	110	RMS
		Fast Food w/Drive Thru	8.000	TSF
		Commercial	42.400	TSF
8	First Inland Logistics Center	High-Cube Warehouse	400.130	TSF
9	TM 33607	Condo/Townhomes	54	DU
10	PA 08-0093 (Centerpointe Business Park II)	General Light Industrial	99.988	TSF
11	PA 06-0021; PA 06-0022; PA 06-0048; PA 06-0049 (Komar Investments)	Warehousing	2,057.400	TSF
12A	PA 06-0017 (Ivan Devries)	Industrial Park	569.200	TSF
12B	Dorado Property	High-Cube Warehouse	1,101.368	TSF
13	PA 09-0004 (Vogel)	High-Cube Warehouse	1,616.133	TSF
14	TM 34748	SFDR	135	DU
15	TR 32548 (Gabel, Cook & Associates)	SFDR	107	DU
16	PA 09-0031	Gas Station	12	VFP
17	First Park Nandina III	High-Cube Warehouse	691.960	TSF
	Moreno Valley Commerce Park	High-Cube Warehouse	354.321	TSF
18	March Business Center	General Light Industrial	16.732	TSF
		Warehousing	87.429	TSF
		High-Cube Warehouse	1,380.246	TSF
19A	TM 33810	SFDR	16	DU
19B	TM 34151	SFDR	37	DU
20	373K Industrial Facility	High-Cube Warehouse	373.030	TSF
21	TM 32716	SFDR	57	DU
22	TM 32917	Condo/Townhomes	227	DU
23	TM 33417	Condo/Townhomes	10	DU
24	TM 34988	Condo/Townhomes	251	DU
25A	TM 34216	Condo/Townhomes	40	DU

25B	TM 34681	Condo/Townhomes	49	DU
25C	PA 08-0079-0081 (Winco Foods)	Discount Supermarket	95.440	TSF
		Specialty Retail	14.800	TSF
26	Moreno Beach Marketplace (Lowe's)	Commercial Retail	175.000	TSF
	Auto Mall Specific Plan (Planning Area C)	Commercial Retail	304.500	TSF
	Westridge	High-Cube Warehouse	937.260	TSF
	ProLogis	High-Cube Warehouse	1,916.190	TSF
		Warehousing	328.448	TSF
	World Logistics Center	High-Cube Warehouse	41,400.000	TSF
		Warehousing	200.000	TSF
		Gas Station w/ Market	12	VFP
		Existing SFDR	7	DU
27	March Lifecare Campus Specific Plan[4]	Medical Offices	190.000	TSF
		Commercial Retail	210.000	TSF
		Research & Education	200.000	TSF
		Hospital	50	Beds
		Institutional Residential	660	Beds
28	Alessandro Metrolink Station	Light Rail Transit Station	300	SP
29	Airport Master Plan	Airport Use	559.000	TSF
30	Meridian Business Park North	Industrial Park	5,985.000	TSF
31	SP 341; PP 21552 (Majestic Freeway Business Center)	High-Cube Warehouse	6,200.000	TSF
32	PP 20699 (Oleander Business Park)	Warehousing	1,206.710	TSF
33	Ramona Metrolink Station	Light Rail Transit Station	300	SP
34	PP 22925 (Amstar/Kaliber Development)	Office (258.102 TSF)	258.102	TSF
		Warehousing	409.312	TSF
		General Light Industrial	42.222	TSF
		Retail	10.000	TSF
35	P07-1028 (Alessandro Business Park)	General Light Industrial	652.018	TSF
36	P 05-0113 (IDI)	High-Cube Warehouse	1,750.000	TSF
37	P 05-0192 (Oakmont I)	High-Cube Warehouse	697.600	TSF
38	P 05-0477	High-Cube Warehouse	462.692	TSF
39	Rados Distribution Center	High-Cube Warehouse	1,200.000	TSF
40	Investment Development Services (IDS) II	High-Cube Warehouse	350.000	TSF
41	P 07-09-0018	Warehousing	170.000	TSF
42	P 07-07-0029 (Oakmont II)	High-Cube Warehouse	1,600.000	TSF
43	TR 32707	SFDR	137	DU
44	TR 34716	SFDR	318	DU
45	P 05-0493 (Ridge I)	High-Cube Warehouse	700.000	TSF

46	Ridge II	High-Cube Warehouse	2,000.000	TSF
47	Harvest Landing Specific Plan	SFDR	717	DU
		Condo/Townhomes	1,139	DU
		Sports Park	16.700	AC
		Business Park	1,233.401	TSF
		Shopping Center	73.181	TSF
	Perris Marketplace	Shopping Center	450.000	TSF
48	P 06-0411 (Concrete Batch Plant)	Manufacturing	2.000	TSF
49	Jordan Distribution	High-Cube Warehouse	378.000	TSF
50	Aiere	High-Cube Warehouse	642.000	TSF
51	P 08-11-0005; P 08-11-0006 (Starcrest)	High-Cube Warehouse	454.088	TSF
52A	Stratford Ranch Specific Plan	High-Cube Warehouse	1,725.411	TSF
52B	Stratford Ranch Specific Plan	High-Cube Warehouse	480.000	TSF
		General Light Industrial	120.000	TSF
53	PP 18908	General Light Industrial	133.000	TSF
54	Tract 33869	SFDR	39.000	DU
55	PP 16976	General Light Industrial	85.000	TSF
56	PP 21144	Industrial Park	190.802	TSF
57	Quail Ranch Specific Plan	Private School (K-12)	300	STU
		Golf Course	18	Holes
		Hotel	500	ROOMS
		Specialty Retail	66.667	TSF
		General office	66.667	TSF
		Assisted Living	500	Beds
		Senior Living (Detached)	200	DU
		SFDR	600	DU
58	a TR 32460 (Sussex Capital)	SFDR	58	DU
	b TR 32459 (Sussex Capital)	SFDR	11	DU
	c TR 30411 (Pacific Communities)	SFDR	24	DU
	d TR 33962 (Pacific Scene Homes)	SFDR	31	DU
	e TR 30998 (Pacific Communities)	SFDR	47	DU
59	a Westridge Commerce Center	High-Cube Warehouse	937.260	TSF
	b P06-158 (Gascon)	Commercial Retail	116.360	TSF
	c Auto Mall Specific Plan (PAC)	Commercial Retail	304.500	TSF
	d ProLogis	Warehousing	367.000	TSF
		High-Cube Warehouse	1,901.000	TSF
	e TR 35823 (Stowe Passco)	SFDR	262	DU
		Apartments	216	DU
60	TR 36340	SFDR	275	DU

61	a TR 31771 (Sanchez)	SFDR	25	DU
	b TR 34397 (Winchester Associates)	SFDR	52	DU
	c TR 32645 (Winchester Associates)	SFDR	54	DU
62	Lowe's (Moreno Beach Marketplace)	Home Improvement Store	175.000	TSF
63	a Convenience Store/ Fueling Station	Gas Station w/ Market	30.750	TSF
	b Senior Assisted Living	Assisted Living Units	139	DU
	c TR 31590 (Winchester Associates)	SFDR	96	DU
	d TR 32548 (Gabel, Cook & Associates)	SFDR	107	DU
	e 26th Corp. & Granite Capitol	SFDR	32	DU
	f TR 32218 (Whitney)	SFDR	63	DU
	g Moreno Marketplace	Commercial Retail	93.788	TSF
	h Medical Plaza	Medical Offices	311.633	TSF
64	a Moreno Medical Campus	Medical Offices	80.000	TSF
	b Aqua Bella Specific Plan	SFDR	2,922	DU
	c TR 34329 (Granite Capitol)	SFDR	90	DU
	d Cresta Bella	General Office	30.000	TSF
65	a Villages of Lakeview	SFDR	860	DU
		Condo/Townhomes	1,920	DU
		Elementary School	1,200	STU
		Commercial Retail	100.000	TSF
		Soccer Complex	12	Fields
		City Park	8.900	AC
		County Park	8.100	AC
		Regional Park	107.100	AC
	b Motte Lakeview Ranch	SFDR	847	DU
		Condo/Townhomes	686	DU
		Apartments	467	DU
		Elementary School	650	STU
		Middle School	300	STU
		Commercial Retail	120.000	TSF
		Regional Park	177.000	AC
66	Gateway Area Specific Plan	Commercial Retail	255.000	AC
		General Office	510.000	AC
		Business Park	595.000	AC
		Residential	340.000	AC
67	Moreno Valley Industrial Center (Industrial Area SP)	General Light Industrial	354.810	TSF
68	Centerpointe Business Park	General Light Industrial	356.000	TSF
69	ProLogis/Rolling Hills Ranch Industrial	Heavy Industrial	2,565.684	TSF
70	P05-0493	Logistics	597.370	TSF

71	P07-1028, -0102; and P09-0416, -0418, -0419	General Light Industrial	652.018	TSF
72	Amstar/Kaliber Development, PP22925	General Light Industrial	42.222	TSF
		Heavy Industrial	409.312	TSF
		Commercial Retail	10.000	TSF
		General Office	258.102	TSF
73	TR 31305 / Richmond American	Residential	87	DU
74	TR 32505 / DR Horton	Residential	71	DU
75	TR 34329 / Granite Capitol	Residential	90	DU
76	TR 31814 / Moreno Valley Investors	Residential	60	DU
77	TR 33771 / Creative Design Associates	Residential	12	DU
78	TR 35663 / Kha	Residential	12	DU
79	TR 22180 / Young Homes	Residential	87	DU
80	TR 32515	Residential	161	DU
81	TR 32142	Residential	81	DU
82	Heartland	Residential	922	DU
83	San Michele Industrial Center (Industrial Area SP)	General Light Industrial	865.960	TSF
84	Hidden Canyon	General Light Industrial	2,890.000	TSF
85	Starcrest, P011-0005; 08-11-0006	General Light Industrial	454.088	TSF
86	Commercial Medical Plaza	Medical Offices	311.633	TSF
87	Mountain Bridge Regional Commercial Community	Commercial	1,853.251	TSF
88	Jack Rabbit Trail	Residential	2,000	DU
89	The Preserve / Legacy Highlands SP	Commercial	595.901	TSF
		Residential	3,412	DU
90	South Perris Industrial Phase 1	Logistics	787.700	TSF
91	South Perris Industrial Phase 2	Logistics	3,448.734	TSF
92	South Perris Industrial Phase 3	Logistics	3,166.857	TSF
93	P 04-0343	Warehousing	41.650	TSF
94	P 06-0228	General Light Industrial	149.738	TSF
95	P 06-0378	Senior Housing	429	DU
96	P 11-09-0011	Retail	80.000	TSF
97	P 12-05-0013	Apartments	75	DU
98	P 12-10-0005	High-Cube Warehouse	1,463.887	TSF
99	TR 30850	Residential	496	DU
100	TR 30973	Residential	35	DU
101	TR 31225	Residential	57	DU
102	TR 31226	Residential	82	DU
103	TR 31240	Residential	114	DU
104	TR 31407	Residential	243	DU

105	TR 31650	SFDR	61	DU
106	TR 31659	SFDR	161	DU
107	TR 32041	Residential	122	DU
108	TR 32406	SFDR	15	DU
109	TR 33193	Townhomes	94	DU
110	TR 33338	Residential	75	DU

1 SFDR = Single Family Detached Residential
2 DU = Dwelling Units; TSF = Thousand Square Feet; SP = Spaces; VFP = Vehicle Fueling Positions
3 Source: Cactus Avenue and Commerce Center Drive Commercial Center TIA, Urban Crossroads, Inc., December 9, 2008 (Revised).

4 Source: March Lifecare Campus Specific Plan Traffic Impact Analysis, Mountain Pacific, Inc., May 2009 (Revised).

The cumulative with Project cancer risks are summarized on Table 2-9 for the Project. A summary of cumulative impacts for Residential, Worker, and School Child Exposure scenarios is as follows:

Residential Exposure Scenario:

The highest cumulative with Project cancer risk is >582.12 in one million. The Project's maximum incremental contribution to the cumulative health risk in the Project area is 6.12 in one million which is not above the 10 in one million incremental threshold set by SCAQMD, and is therefore less-than-significant. Accordingly, pursuant to SCAQMD cumulative impact criteria, the Project's Residential Exposure impacts would not be cumulatively considerable.

Worker Exposure Scenario:

The highest cumulative with Project cancer risk after is >578.55 in one million. The Project's maximum incremental contribution to the cumulative health risk in the Project area is 2.55 in one million which is not above the 10 in one million incremental threshold set by SCAQMD, and is therefore less-than-significant. Accordingly, pursuant to SCAQMD cumulative impact criteria, the Project's Worker Exposure impacts would not be cumulatively considerable.

School Child Exposure Scenario:

The highest cumulative with Project cancer risk after is >576.01 in one million. The Project's maximum incremental contribution to the cumulative health risk in the Project area is 0.011 in one million which is not above the 10 in one million incremental threshold set by SCAQMD, and is therefore less-than-significant. Accordingly, pursuant to SCAQMD cumulative impact criteria, the Project's School Child Exposure impacts would not be cumulatively considerable.

TABLE 2-9: CUMULATIVE CANCER RISK[4]

	Cancer Risk as Maximum Sensitive Receptor (risk in one million)			
	Existing	Project Site	Cumulative Projects	Total Cumulative Risk
Maximum Impact to All Receptors Without Project	566		>10	>576
Maximum Impact to Nearest Residential With Project	566	6.12	>10	>582.12
Maximum Impact to Nearest Worker With Project	566	2.55	>10	>578.55
Maximum Impact to Nearest School With Project	566	0.011	>10	>576.01
	Source: **MATES III Carcinogenic Risk Interactive Map (**http://www2.aqmd.gov/webappl/matesiii/) (SCAQMD 2008).			

[4] Although cumulative impacts typically represent a General Plan Buildout Scenario, there is no such data available for what General Plan Buildout DPM emissions impacts would be. The background risk, however, would likely overstate, rather than understate future DPM impacts and is assumed to be inclusive of future growth. It should be noted that due to improved DPM emissions control technologies and increasingly stringent DPM emissions regulations, the cancer risk incidence in the seven (7) years between the Mates II and Mates III studies declined by approximately 15% even as population and business growth occurred throughout the region. Similar future declines in area-wide DPM source emissions are anticipated pursuant to enactment of further emissions regulations, including but not limited to anticipated greenhouse gas (GHG) reduction and control measures to be implemented by the state (see also: emissions regulatory measures discussed within *First Nandina Logistics Center Air Quality Impact Analysis (*Urban Crossroads) 2014*; and First Nandina Logistics Center Greenhouse Gas Impact Analysis (*Urban Crossroads) 2014.

3 REFERENCES

1. **South Coast Air Quality Managment District.** Mobile Source Toxics Analysis. [Online] 2003. http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html.
2. **Air Resources Board.** § 2485. Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling. [Online] http://www.arb.ca.gov/msprog/truck-idling/2485.pdf.
3. —. [Online] August 30, 2007. http://www.arb.ca.gov/msprog/macs/mac0703/mac0703.pdf.
4. **Air Resource Board.** *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.* 2000.
5. **California Department of Transportation.** EMFAC Software. [Online] http://www.dot.ca.gov/hq/env/air/pages/emfac.htm.
6. **Urban Crossroads, Inc.** *First Nandina Logistics Center Traffic Risk Assessment.* Irvine : s.n., 2013. 8578-05.
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. Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach. [Online] April 2006. http://www.arb.ca.gov/regact/marine2005/portstudy0406.pdf.
10. **South Coast Air Quality Management District.** *Air Quality Reporting.* [pdf] Diamond Bar : Sierra Wade Associates, 1999.
11. **Office of Environmental Health Hazard Assessmen.** IR TOXICS HOT SPOTS PROGRAM RISK ASSESSMENT GUIDELINES. [Online] February 2012. http://oehha.ca.gov/air/hot_spots/SRP/index.html.
12. **United States Environmental Protection Agency.** 2005 Assessment Results. *Technology Transfer Network Air Toxics.* [Online] http://www.epa.gov/ttn/atw/nata2005/tables.html#int.
13. **California Air Resources Board.** The California Almanac of Emissions and Air Quality - 2009 Edition. *Air Resources Board.* [Online] http://www.arb.ca.gov/aqd/almanac/almanac09/chap509.htm.
14. **Air Resources Board.** California's Diesel Risk Reduction Plan . [Online] http://www.arb.ca.gov/diesel/dieselrrp.htm.
15. **South Coast Air Quality Management District.** Multiple Air Toxics Exposure Study III Model Estimated Carcinogenic Risk. [Online] 2008. http://www3.aqmd.gov/webappl/matesiii/.
16. **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.
17. **Air Resources Board.** ARB's Drayage Truck Regulatory Activities. [Online] http://www.arb.ca.gov/msprog/onroad/porttruck/porttruck.htm.
18. —. Truck and Bus Regulation. *On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation.* [Online] http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm.
19. **The Port of Los Angeles.** Clean Truck Program. [Online] http://www.portoflosangeles.org/ctp/idx_ctp.asp.
20. **Air Resources Board.** Mobile Source Emission Inventory -- Current Methods and Data. [Online] http://www.arb.ca.gov/msei/modeling.htm.

21. —. *Air Quality and Land Use Handbook: A Community Health Perspective.* 2005.

22. CAL HSC Code 42301.6 California Code - Section 42301.6. *Find Law.* [Online] http://codes.lp.findlaw.com/cacode/HSC/1/d26/4/4/1/s42301.6.

23. **Urban Crossroads, Inc.** *First Nandina Logistics Center Traffic Impact Analysis.* Irvine : s.n., 2013.

4 CERTIFICATION

The contents of this health risk assessment represent an accurate depiction of the impacts to sensitive receptors associated with the proposed First Nandina Logistics Center 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) 660-1994 ext. 217.

Haseeb Qureshi
Senior Associate
URBAN CROSSROADS, INC.
41 Corporate Park, Suite 300
Irvine, CA 92606
(949) 660-1994 x217
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

APPENDIX 5.1:

AERMOD MODEL INPUT/OUTPUT

APPENDIX 5.2:

RISK CALCULATIONS