The Gateway Cities Air Quality Action Plan

I-710 Corridor Construction Staging and Phasing Emissions

Final

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1. Introduction

The purpose of this study was to calculate the daily and monthly construction emissions from the roadway construction equipment for criteria and air toxic air pollutants and to quantify the strength of these emissions for the time and locations in which these emissions occur. These calculations require estimates of construction activity and duration. Data on activity and duration was provided in the Gateway Cities I-710 Construction and Staging Report. An earlier effort for estimating construction emissions from the I-710 project was completed in the I-710 Corridor Project EIR/EIS (April 2010). That project, however, did not detail the construction activity by location and did not include air toxic emissions. This report describes the methodology, underlying assumptions and findings that were used in developing emission estimates for construction emissions by time and location for the I-710 Corridor Project.

2. Methodology

This section explains the methodology by which the estimates for I-710 construction emissions were calculated.

2.1. General Approach

ICF used a modified version of the Road Construction Emissions Model (RCEM), originally developed for Sacramento Metropolitan Air Quality Management District as the primary tool to estimate daily and monthly emissions by segment and construction phase. This model has been widely used in a number of roadway construction modeling projects throughout the state and was used in the I-710 Corridor Project EIR/EIS to estimate construction emissions but without regard to the location and phasing. The model calculates construction emissions from either roadway or bridge-type construction.[1] The input data specifically required by the RCEM for sections of each construction segment of the I-710 project alignment was provided by Gateway Cities (Gateway City COG 2011a, 2011b, 2011c). The daily average and peak daily emissions output from the model are assigned to the construction schedule for each of the segments, and for each segment daily average, peak daily and monthly emissions are reported.

2.2. Road Construction Emissions Model

2.2.1. RCEM Model Description

For a given segment the user inputs information such as the area of activity, length of roadway, and volume of exported and imported soil. The RCEM then combines that information with the most recent version of California Air Resources Board's (CARB's) emission factors and calculates the daily emissions for each of the four main construction phases: grubbing/land clearing, grading and excavation, drainage and utilities, and paving. The CARB emission factors included in the original version of RCEM (version 6.3.2) used emission factors from EMFAC7G and OFFROAD2007 models, specifically for construction vehicles and equipment, for the years between 2005 and 2025. The original RCEM also only provided emission estimates for reactive organic gasses (ROG), carbon monoxide (CO), nitrogen oxides (NO_X), particulate matter (PM10 [fugitive and exhaust] and PM2.5 [fugitive and exhaust]), and carbon dioxide (CO_2) emissions.

2.2.2. Project-specific Modifications to the Model

The Gateway City AQAP study is examining all types of greenhouse gas (GHG) emissions and also the emissions from mobile source air toxics (MSAT) during the construction of I-710. The I-710 Construction Staging Concept Report (April 2011a) also identifies the earliest start date as 2018 and an end data of 2035. Thus, modifications to the original model included expanding the EMFAC7G and OFFROAD2007 emission factor models to include:

[1] Bridge construction includes overpass interchanges.

- Addition of greenhouse gases (methane [CH_4] and nitrous oxide [N_2O])[2]
- Five additional air toxic air pollutants (diesel particulate matter [DPM], acetaldehyde, acrolein, benzene, butadiene, and formaldehyde)
- Extension of the range of the emission factors to include years up to 2035

These are the same MSAT being analyzed for operational emissions in the I-710 Corridor EIR/EIS (April 2010).

This updated version is herein referred to as RCEM Version 6.4. In addition to the changes above, the EMFAC2007G emission factors were replaced with those for Los Angeles County for the light and heavy duty fleet of vehicles. Worker commute emissions are not included in calculating the criteria pollutant and MSAT emissions because their emissions occur outside the I-710 project study area, but they are still included in the calculation of total GHG emissions from the project. However, the GHG emissions are only for those associated with the construction related activity and are not a life cycle assessment of the construction equipment GHG emissions. The construction assessment does not include any measures for the use of "green" construction equipment as discussed in the June 29, 2011, Los Angeles County Metropolitan Transportation Authority "Green Construction Policy" statement. However, because of the 17-year duration of the project, vehicle emission factors were updated annually to reflect the gradual, annual, average fleet turnover in construction equipment.

OFFROAD2007 emission factors were updated to reflect statewide averages of construction emissions by equipment and horsepower. CARB recommended this change because statewide factors are more representative of the actual construction equipment to be used on site because construction equipment is often times rented and transported from one area of the state to another. Therefore, using a statewide average is recommended by CARB as more accurately reflecting the construction equipment roster used for this type of project (personal communication, Nicole Dolney, CARB, June 2011).

Impacts from OFFROAD2007 Update

In light of the recession in 2007-2009 and improved operating mode information, CARB updated the OFFROAD2007 model emission factors to reflect a reduced rate of construction fleet turnover than original projected in 2007 along with revisions to equipment load factors based on updated equipment testing. These changes generally resulted in slightly lower emissions than by the same vehicles in the original OFFROAD2007 model. The updated model was made available to the public as a Microsoft Access database file by CARB in August 2011.[3]

[2] CH_4 and N_2O were two additional GHGs added to the list of on-road emission factors that were not already provided by EMFAC. These were calculated using EPA's methodology that assumes that these emissions contribute about 5% of the total GHG emissions from mobile sources (EPA 420-5-05-004). The two specific emission factors were subsequently deduced using a ratio of the g/mi emission factors from the California Climate Action Registry, version 3.1 (Table C.4) January 2009.

[3] http://www.arb.ca.gov/msei/categories/categoriesita.htm (Login required)

The application of the outputs from the OFFROAD2011 model, however, has several caveats. As discussed below, the CARB OFFROAD2011 outputs and data sets were updated for only certain types of equipment and pollutants and were only projected to 2029.

- OFFROAD2011 does not include all listed equipment in the RCEM v6.3. While the RCEM's list of equipment is consistent with the construction equipment listed in OFFROAD2007, the RCEM incorporates a specific set of equipment for default calculations. However, of the default RCEM equipment list, only the non-diesel fueled signal boards and plate compactors did not have updated emission factors and load factors.
- Since the update was limited to diesel fueled equipment, the OFFROAD2011 outputs exclude both CO and SO_X,[4] so these emission factors remained the same as in OFFROAD2007. Adjustments to these emission factors would have negligible impacts on emissions.
- OFFROAD2011 outputs only span the calendar years from 2009-2029. Emissions factors before 2009 in the RCEM v6.4 are taken from OFFROAD2007. Emission factors from 2030 to 2035 are assumed to be the same as those in 2029.

Modified emission factors from both EMFAC and OFFROAD models used in the RCEM v. 6.4 are available for selected years in Appendix A.

2.3. Inputs

2.3.1. Model Inputs

The RCEM is designed to output daily emission factors (in lbs/day) by construction phase for a specific set of both mandatory and optional inputs. Table 5 lists these inputs and whether the information was contained within the I-710 Construction Staging Concept Report.

Table 1. Road Construction Emissions Model Input Options

Input Data	Units/Notes	Required or Optional	Gateway City Provided or Default values?
Project Description			
Project Name	Name	Required	Provided
Construction Start Year [a]	Year	Required	Provided
Project Type [b]	New Construction, Road Widening, or Bridge/Overpass	Required	Provided
Project Construction Time [a]	Months	Required	Default
Predominant Soil/Site Type	Sand Gravel, Weathered Rock-Earth, or Blasted Rock	Required	Provided
Project Length [a]	miles	Required	Provided
Total Project Area [b]	acres	Required	Provided

[4] OFFROAD2011 also does not output CH_4 and N_2O, but these were estimated from California Climate Action Registry.

Input Data	Units/Notes	Required or Optional	Gateway City Provided or Default values?
Maximum Area Disturbed/Day [b]	acres	Required	Provided
Water Trucks Used?	Yes or no	Required	Provided
Soil Imported [b]	yd^3/day	Required	Provided
Soil Exported [b]	yd^3/day	Required	Provided
Average Truck Capacity [a]	yd^3 (assume 20 if unknown)	Required	Provided
Construction Periods [a]			
Grubbing/Land Clearing	Months (Overrides "Project Construction Time")	Optional	Provided
Grading/Excavation	Months (Overrides "Project Construction Time")	Optional	Provided
Drainage/Utilities/Sub-Grade	Months (Overrides "Project Construction Time")	Optional	Provided
Paving	Months (Overrides "Project Construction Time")	Optional	Provided
Soil Hauling Emissions			
Miles/round trip		Optional	Default
Round trips/day		Optional	Default
Worker Commute [a]			
Miles/ one-way trip		Optional	Provided
One-way trips/day		Optional	Provided
No. of employees: Grubbing/Land Clearing	No. of employees	Optional	Default, except for Segment 7 (Provided)
No. of employees: Grading/Excavation	No. of employees	Optional	Default, except for Segment 7 (Provided)
No. of employees: Drainage/Utilities/Sub-Grade	No. of employees	Optional	Default, except for Segment 7 (Provided)
No. of employees: Paving	No. of employees	Optional	Default, except for Segment 7 (Provided)
Water Truck Emissions [a]			
Grubbing/Land Clearing - Exhaust	No. of water trucks, Miles/veh-day	Optional	Provided
Grading/Excavation - Exhaust	No. of water trucks, Miles/veh-day	Optional	Provided
Drainage/Utilities/Subgrade	No. of water trucks, Miles/veh-day	Optional	Provided
Fugitive Dust [a]			
Fugitive Dust - Grubbing/Land Clearing	Acres/day	Optional	Provided
Fugitive Dust - Grading/Excavation	Acres/day	Optional	Provided

Input Data	Units/Notes	Required or Optional	Gateway City Provided or Default values?
Fugitive Dust - Drainage/Utilities/Subgrade	Acres/day	Optional	Provided
Off-Road Equipment Emissions			
Grubbing/Land Clearing	Number of equipment per type of activity	Optional	Default
Grading/Excavation	Number of equipment per type of activity	Optional	Default
Drainage/Utilities/Sub-Grade	Number of equipment per type of activity	Optional	Default
Paving	Number of equipment per type of activity	Optional	Default
Equipment horsepower	Horsepower rating for a list of construction equipment	Optional	Default
Activity Factor	Hours/day	Optional	Default

[a] This data is the same for both bridge and roadway construction.
[b] This data is revised from the April 2011 depending on bridge and roadway construction as described in Section 1.3.2.

2.3.2. I-710 Construction Staging Concept Report

The I-710 project consists of seven segments, each divided into one to four sub-segments based on time of construction and location. The Gateway Cities Council of Governments (GCCOG) provided two sets of project-specific inputs for each sub-segment. The first set of data is a tabulated list of both required and optional inputs specifically for the RCEM. The second set of data is a detailed construction schedule that details the start and end dates of each stage and phase within a sub-segment. These are used later when assessing the total daily emissions outputs from each sub-segment.

GCCOG originally assumed that the activity at each sub-segment was equally divided between 50% bridge and 50% roadway. However, because roadway and bridge construction differ in equipment use and activity, further refinement in disturbance activity was provided by GCCOG for allocation regarding the roadway-bridge fractions of project area, total project area disturbed, imported soil volume, and exported soil volume. This additional data can be found in Table 6.

Table 2. Road and Bridge Construction Fractions

	Total Project Area and Area Disturbed		Imported Soil (cubic yards)		Exported Soil (for new roads) (cubic yards)		Imported Soil Fractions		Exported Soil Fractions (for new roads)	
	Road	Bridge	Road	Bridge	Road	Bridge	Road	Bridge	Road	Bridge
Segment 1	25%	75%	589,409	56,875	626,098	452,375	91%	9%	58%	42%
Segment 2	20%	80%	152,277	56,875	164,723	433,125	73%	27%	28%	72%
Segment 3	50%	50%	193,174	65,000	154,313	455,125	75%	25%	25%	75%
Segment 4	15%	85%	642,790	56,250	291,223	702,750	92%	8%	29%	71%
Segment 5	40%	60%	85,475	23,125	429,257	310,000	79%	21%	58%	42%
Segment 6	50%	50%	560,162	46,250	107,129	352,000	92%	8%	23%	77%
Segment 7	0%	100%	0	370000	0	0	0%	100%	0%	0%

Each sub-segment data set was split into two sets: one for bridge construction and another for roadway construction. It was assumed that the input for construction periods (which overrides the total number of construction months) for both bridge and roadway project types would reflect the original input for the entire sub-segment.[5] This would allow for the intensity of the output daily emissions to be consistent between the two project types, and would also reduce the complexity in further detailing the actual number of construction months used to build a bridge versus a roadway for a given sub-segment. For example, a shorter timeframe with the same construction requirements will result in higher daily emissions due to more concentrated activity.

A final summary of the original and revised model inputs for each sub-segment are shown in Appendix B.

2.3.3. Other Assumptions

Other assumptions not already identified as model inputs:

- 20 working days per month.
- Construction phases are all sequential and do not overlap with the freight corridor built first.
- Daily emissions are distributed uniformly over a given month.
- All construction schedules follow the late finish.
- All asphalt and concrete will be brought to the site.

[5] For example: a given set of data a sub-segment was to require 3, 5, 3 and 10 months of grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade, and paving, respectively. Although the bridge construction inputs and roadway construction inputs represent portions of the sub-segment construction, both would reflect the 3, 5, 3, and 10 months of construction.

- The RCEM implicitly assumes a best management practice for dust suppression from watering of roads of 50%.[6]
- Mobile source air toxics are derived from CARB emission speciation profiles (dated 10/27/10).

2.4. Outputs

2.4.1. Daily and Monthly Emissions

The RCEM outputs daily emissions factors in lbs/day per construction period for each pollutant. These daily emissions outputs from RCEM assume that construction will occur on an 8-hour-per-day basis for the number of months given in under "Construction Periods"; however, the number of months under "Construction Periods" does not necessarily coincide with the duration (time required for completion) of construction.

Because of this difference between required work hours and the estimated project duration, a ratio is calculated between the two times to convert the daily emissions output from the RCEM to revised daily emissions based on the estimated timeline for the construction. These revised emissions reflect the assumed 20 work days per month as well as the extended (or compacted) schedule of construction. In most situations, this ratio decreases the daily emission rate initially estimated by the RCEM because in most situations the projected duration is estimated to be longer than the actual time needed for the particular construction activity. Appendix C provides further detail on these calculation ratios for each sub-segment.

Once the daily emissions (lbs/day) are adjusted to account for the projected construction timeline, they are multiplied by 20 days per month to estimate the monthly emissions. The monthly emissions are categorized by construction period, sub-segment, and bridge and roadway construction. In addition to the daily emissions, peak emissions (lbs/day) show the maximum daily emissions that could be emitted at any location along any of the segments. The peak daily emissions show the peak daily emissions at any location along the corridor.

2.4.2. Application of Emissions to Construction Schedule

Because of different construction activity for different construction periods, applying the correct emissions factor to the timelines is critical to ensuring good estimates of the emission rates. The final emission rates are based on the following procedures.

First, the detailed construction timeline for each segment and sub-segments is identified. These sub-segments are then divided into stages and into phases within each stage. For each sub-segment:

- The start and end months were used for each stage's phase (stage-phase), including the end months under the "late finish" scenario.

[6] RCEM assumes a 50% emission reduction for watering roadways as a best management practice. This is based on a 1973 EPA study "Investigation of Fugitive Dust Sources- Emissions and Control," USEPA/OAQPS contract No. 68-02-044, May. More recent fugitive dust studies have shown that more frequent watering (every 2 hours) can further reduce PM10 emissions achieve a 74% reduction in PM10 emissions.

- Each phase was identified with a description pertaining to the location and type of construction.

Second, for each sub-segment it was identified whether or not the phase was for bridge or roadway construction by using the phase descriptions as well as the I-710 Construction Staging Concept Report engineering diagrams (GCCOG 2011a, 2011b, 2011c).

Third, emissions outputs were identified for each of the associated stage-phases. This was done by identifying the associated sub-segment based on:

- The provided descriptions from the I-710 Construction Staging Concept Report engineering diagrams).
- Matching the construction schedule with the start and end dates given in the Gateway City I-710 Construction Staging Concept Report - Critical Data Needs information.[7]

Next, the specific construction period emissions were identified for each phase by sub-segment and project type. These construction emissions were applied along the duration of a given phase, since the construction period would differ along the progress of construction. However, phase-level construction staging data was not available. To estimate the emission rate, the ratio of construction periods given for the sub-segment level was applied to the duration of the individual stage-phases within each sub-segment.

For example, the Del Amo Interchange (I/C) sub-segment of Segment 2 was estimated to require 10, 160, 115, and 75 construction days for the four construction periods, respectively. The construction period days are unknown for Stage 2/Phase 1 of the Del Amo I/C, which starts in December 2018 and ends December 2019. Thus, the ratio of 1:16:11.5:7.5 was applied to construction periods along the year of construction between December 2018 and December 2019. Since the construction schedule is only given in one-month increments, months in which more than one construction period occur are assumed to be represented by the construction period that spans the majority of that month. For Stage 2/Phase 1 of the Del Amo I/C, this means that December 2018 will be represented by the grading/excavation emissions per month for roadway construction emissions.

Finally, the emissions rates for each stage-phase and date are summed for total emissions for each month across phases. Figure 2 below provides a conceptual example of this procedure just described (This does not reflect the Del Amo I/C example).

[7] Figure 3-x in the I-170 Construction Staging Concept Plan, where x refers to a segment number.

Figure 1. Construction Emissions and Staging Example

Segment 2										
Year	2018									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Stage 1 Phase 1										
Construction Phase	GLC	GEX	GEX	DUS	DUS	DUS	Pav	Pav	Pav	
ROG (lbs/month)	8.5	10.5	10.5	11.5	11.5	11.5	9	9	9	
NO_X (lbs/month)	2.5	2.5	2.5	3	3	3	2	2	2	
Stage 2 Phase 1										
Construction Phase						GEX	DUS	DUS	Pav	Pav
ROG (lbs/month)						10.5	11.5	11.5	9	9
NO_X (lbs/month)						2.5	3	3	2	2
TOTAL										
ROG (lbs/month)	8.5	10.5	10.5	11.5	11.5	22	20.5	20.5	18	9
NO_X (lbs/month)	2.5	2.5	2.5	3	3	5.5	5	5	4	2
GLC = Grubbing/Land Clearing GEX = Grading/ Excavation DUS = Drainage/Utilities/Sub-Grade Pav = Paving										

3. Results

The final emission estimates for each segment can be characterized into three types: daily average, peak daily and cumulative emissions. Daily and peak daily are important metrics for comparison with emissions thresholds, air quality impacts and health risk. Cumulative emissions are important for GHG emissions. An overall summary of the construction emissions results can be found in Tables 3 through 5. Detailed tabular results for each month of construction can be found in Appendix D which shows the daily emissions summed across the segments and the number of months by pollutant where the daily emissions exceed the SCAQMD regional significance construction emission threshold. Similarly information is reported in Appendix E, but these are for peak daily emissions for any one segment and the number of months by pollutants where the peak daily emissions exceed the SCAQMD regional significance construction emission threshold.

Addressing the potential daily emissions from construction is important to assess air quality impacts and potentially assess local health risk. Thus, the emissions are analyzed and reported on a per-segment basis to provide the spatial information needed to assess local health risk and air quality over the 18 miles of construction. Overall, the general trend for most emissions is a steep increase in emissions in January 2019, a slow decrease in emissions until mid-2020, and then a lower-but-variable trend in emissions intensities.

The following subsection discusses the peak emissions and occurrences by pollutant, as well as any potential exceedances of SCAQMD regional significance thresholds. These SCAQMD regional significance construction thresholds were developed to indicate that a project has the potential to have significant adverse regional effects on air quality. The number of months in which each segment construction exceeds the thresholds by pollutant is summarized in Table 5. Below we discuss the emission results by pollutant.

3.1. ROG

Peak daily ROG emissions are highest for Segment 4 at 20 lbs/day, occurring from January to May 2019. Segments 1 and 6 have concurrent peak daily emissions of between 11 and 13 lbs/day from October 2019 through April 2020, as seen in **Error! Reference source not found.**. The rest of the segments have peak emissions between 3 and 8 lbs/day. If ROG emissions are summed over the entire 18-mile corridor, the maximum for all seven segments is 52 lbs/day, which is still below the 75 lbs/day SCAQMD regional emission threshold for ROG. Thus the ROG emissions do not have the potential to have any adverse regionally effects on air quality.

3.2. CO

Peak daily CO emissions are highest for Segment 4 at 175 lbs/day, occurring from January to May 2019. Segments 1 and 6 have concurrent peak daily emissions of between 108 and 139 lbs/day from October 2019 through April 2020, as shown in Figure 6. Remaining segments have peak emissions between 38 and 73 lbs/day. If CO emissions are summed over the entire 18-mile corridor, the maximum for all seven

segments is 478 lbs/day, which is still below the 550 lbs/day SCAQMD regional emission threshold for CO. Thus, the CO emissions do not have the potential to have any adverse regional effects on air quality.

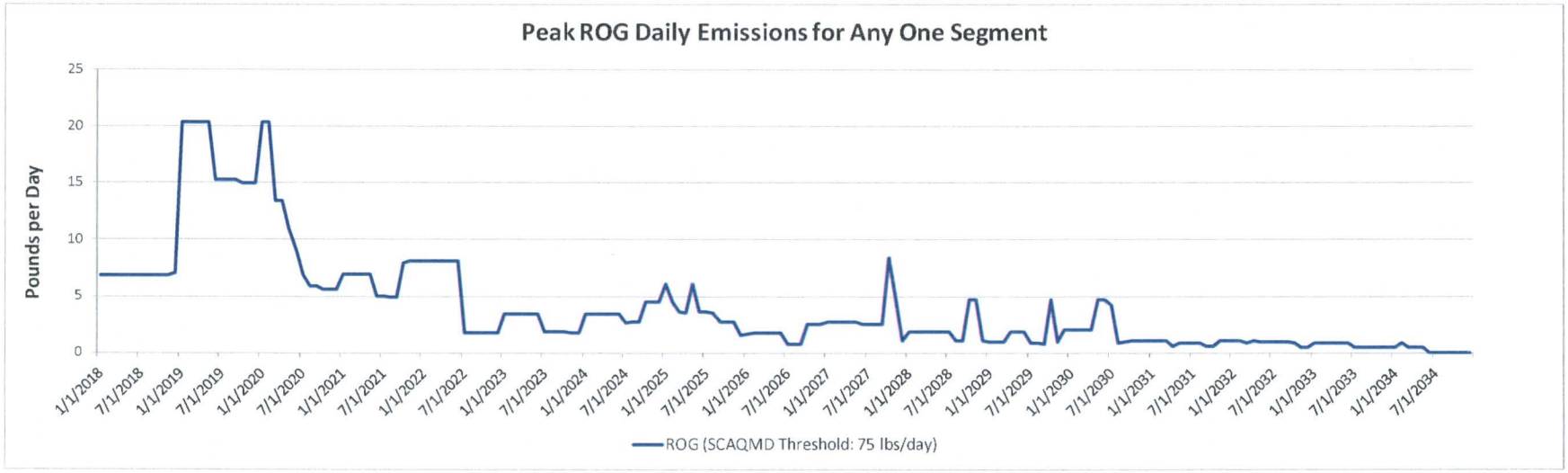


Figure 2 - Peak ROG Daily Emissions for Any One Segment

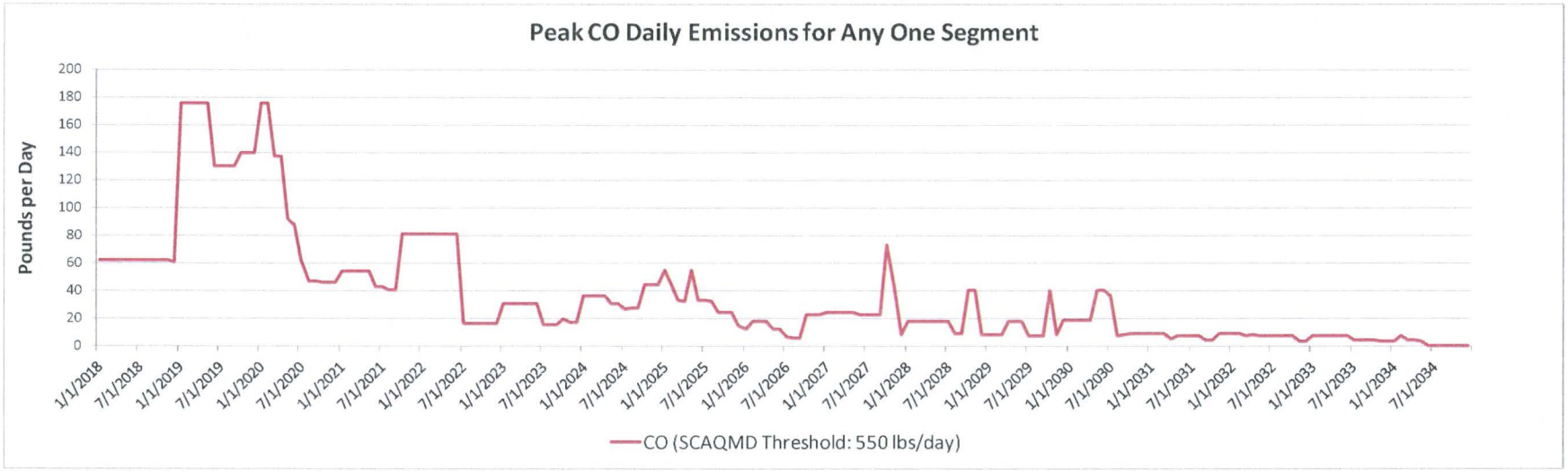
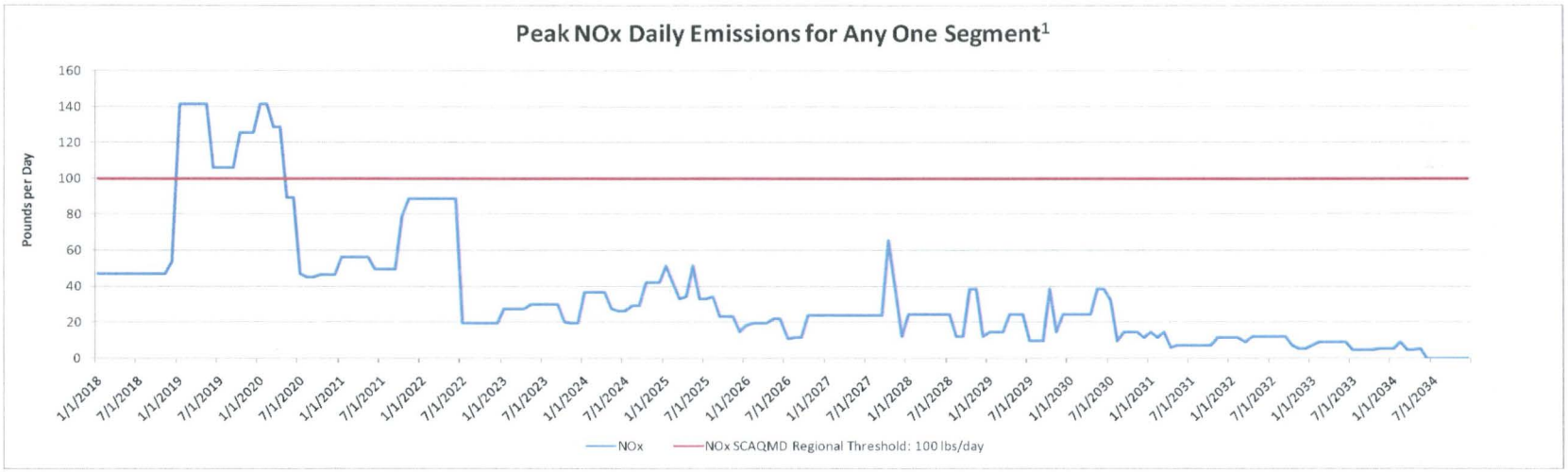
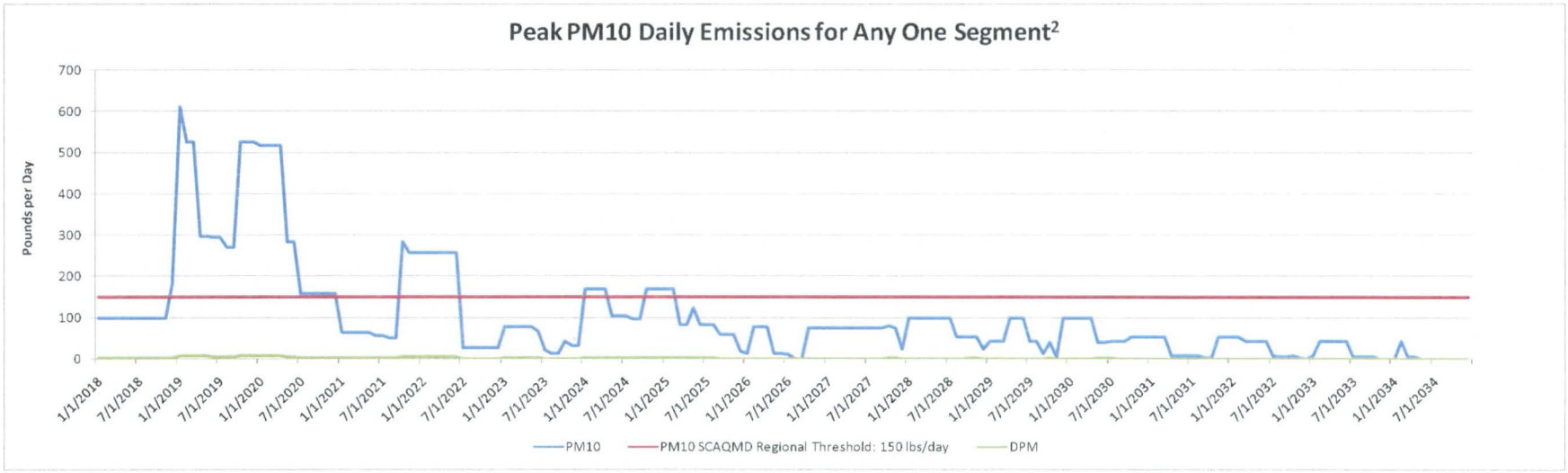


Figure 3 - Peak CO Daily Emissions for Any One Segment



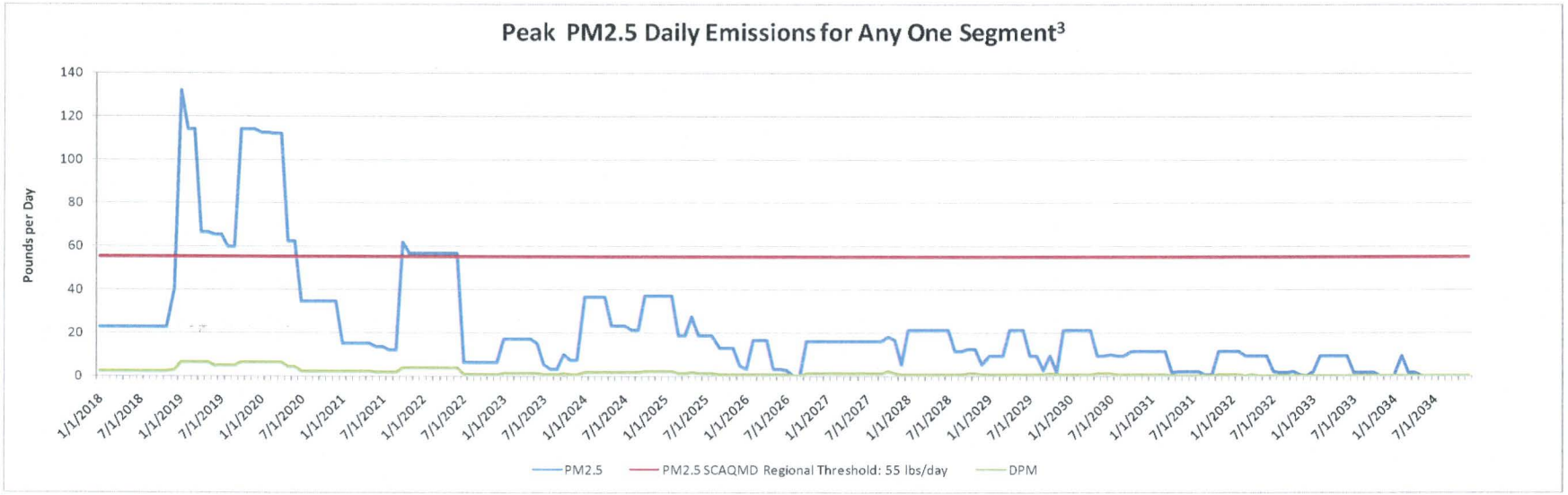
[1] If LACMTA green policy was applied during the 2019-2020 construction period peak daily emissions would be reduced by approximately 39% and would then be below the 100 lbs per day SCAQMD regional significance threshold.

Figure 4 - Peak NOx Daily Emissions for Any One Segment



[2] If LACMTA green policy was applied during the 2019-2020 construction period diesel particulate emissions (DPM) would be reduced by approximately 44% but would have little change to total PM_{10} emissions.

Figure 5 - Peak PM10 Daily Emissions for Any One Segment



[3] If LACMTA green policy was applied during the 2019-2020 construction period diesel particulate emissions (DPM) would be reduced by approximately 44% but would reduce total $PM_{2.5}$ emissions by less than 10%.

Figure 6 - Peak PM2.5 Daily Emissions for Any One Segment

3.3. NO_X

Peak daily NO_X emissions are highest for Segment 4 and 6 at 141 and 129 lbs/day, respectively. Peak emissions for Segment 4 are estimated to occur from January to May 2019 and again at the beginning of 2020. NO_X emissions from Segment 6 are estimated to peak from at the beginning of 2019 and from October 2019 through April 2020, as shown in Figure 3. Construction emissions for Segments 4 and 7 individually are projected to exceed regional SCAQMD threshold for NO_X (100 lbs/day) for 14 and 10 months, respectively. Remaining segments have peak daily emissions of between 35 and 80 lbs/day. The maximum NO_X emission over the entire 18-mile corridor for all seven segments totals 414 lbs/day. Thus the NOx emissions do have the potential to have any adverse regionally effects on air quality, but are limited to segments 4 and 7. Possible emission reduction strategies are discussed in Section 4.

3.4. Particulate Matter (PM)

PM emissions are the result of both fugitive dust and diesel exhaust. As shown in the tabular summary presented on pages 1 through 4 in Appendix D and E the fugitive dust (FD) emissions are more than 95% of the PM10 emissions and about 90% of the PM2.5 emissions. The remaining portion is attributable to diesel (D) exhaust emissions. SCAQMD's thresholds do not distinguish between the particular sources of PM but regulate total PM emissions. Both PM10 and PM2.5 emissions exceed their respective SCAQMD regional significance thresholds over a period of 86 months[8] for individual segments, most occurring between 2018 and 2025. SCAQMD's regional significance thresholds for construction for PM10 and PM2.5 are 150 lbs/day and 55 lbs/day, respectively.

3.4.1. PM10

Construction estimates for Segments 1 and 3 through 6 show that during some portion of their construction the regional SCAQMD PM10 emission threshold will be exceeded. Segment 6 has the most months that exceed the regional significance threshold occurring for a total of 36 months over the 132-month construction schedule. Emissions are greatest during the construction of Segment 6, exceeding the threshold with a peak of 612 lbs/day in January 2019, as shown in Figure 6. Segment 6 is expected to exceed thresholds for 36 months starting in January 2019. Segments 1, 3, 4, and 5 have peak PM10 emissions of between 158 and 234 lbs/day and exceed thresholds between 3 and 15 months for each segment. Segments 2 and 7 have peak emissions of 80 lbs/day. Again more than 95% of these emissions are associated with fugitive dust emissions associated with earth movement activity. Possible emission reduction strategies are discussed in Section 4.

3.4.2. PM2.5

While similar in trend to PM10 emissions, PM2.5 thresholds show a peak daily emissions threshold exceedance for only one segment. Segment 6 is projected to exceed the regional significance thresholds

[8] 86 months represents the sum of 76 months, where the construction of any one segment exceeds the PM10 threshold, and 10 months, where the construction of any one segment exceeds the PM2.5 threshold.

for 10 months starting in 2019, with a peak of 132 lbs/day, as shown in Figure 7. Emissions from Segment 4 construction approach the regional significance threshold with a peak of 53 lbs/day starting in 2019 and lasting 5 months. All other segments have peak emissions of between 18 and 40 lbs/day. Again, most of these emissions (>90%) are associated with fugitive dust emissions from earth movement activities. Possible emission reduction strategies are discussed in Section 4.

3.5. Greenhouse Gases

This analysis determined emissions for the GHG emissions associated with the operation of construction equipment and mobile sources. However, SCAQMD's current GHG threshold (10,000 $MTCO_2e$/year) applies only to operation of projects and not construction. This GHG significance threshold was adopted for the purpose of analyzing GHG impacts pursuant to CEQA setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions.

Using the SCAQMD GHG threshold as a bench mark here shows that the average annual emissions over the 17 year period from 2018 to 2035 is only 2,024 (=34,414/17) $MTCO_2e$ per year, well below SCAQMD GHG significance threshold. The entire project is expected to only generate 34,414 $MTCO_2e$ (Table 4), nearly all of which is from the combustion of diesel fuel in construction vehicles and equipment. This is considered a baseline estimate since any new policies may result in the use of alternatively fuel construction vehicles which will likely reduce this estimate.

GHG emissions are generally proportional to the amount of construction activity taking place. The segments with the most activity are Segment 6 and Segment 4, emitting a total of 9,162 and 8,655 $MTCO_2e$, respectively (Table 4).

3.6. Mobile Source Air Toxics

3.6.1. Gas-phase Emissions

Generally, MSAT gas-phase emissions are much smaller than the criteria pollutants emissions since they are a relatively small fraction of the ROG emissions. Total MSAT emissions (excluding DPM) do not exceed 2.1 pounds per day across all segments. The MSATs in order from highest to lowest emission rate are: formaldehyde, acetaldehyde, benzene, acrolein, and butadiene; each MSAT reaches a peak of 1,6, 0.79, 0.38, 0.24, and 0.03 lbs/day, respectively, for any one segment. MSAT emissions follow a similar intensity pattern during construction as the ROG emissions, peaking in January 2019, slowly decreasing until mid-2021, experiencing variable emissions until the end of 2025, and afterwards never exceeding 0.6 lbs/day for any MSAT.

3.6.2. Diesel Particulate Matter

DPM emissions are from the combustion of diesel fuel and are almost all particles less the 2.5 microns (93.7%), but have a small coarse fraction of 3.8% and an even smaller fraction (2.3%) greater than 10 microns. While small compared to fugitive dust emissions, DPM has a peak daily emission rate of 13

lb/day for Segment 4. The maximum daily DPM emission over the entire 18-mile corridor for all seven segments totals 42 lbs/day.

4. Summary of Model Outputs and Possible Emission Reduction Strategies

The following tables summarize the results of average and peak daily air pollutant emissions and total GHG emissions by segment. Table 3 shows that the peak period of construction occurs 12 to 17 months after the start of construction. Since the I-710 spans 7 segments the SCAQMD regional significant emission thresholds were compared for each segments peak emissions rate. At no time are the ROG or CO regionally significant emission thresholds exceeded. The PM10 and PM2.5 emissions exceed the regional significance threshold but are due almost exclusively to emissions from fugitive dust rather than exhaust emissions. The NO_x emissions also show the potential to exceed the regional significance construction emission threshold, however if the intensity of construction was extended over a longer time these emission rates could potentially be reduced below the regionally significant construction emissions threshold.

As discussed in Section 3 GHG emissions of 2,024 MTCO2e per year is well below the SCAQMD GHG significance threshold of 10,000 $MTCO_2e$ per year, although this threshold applies only to operation of projects and not construction.

Table 3. Average and Peak Daily Construction Emissions Across All Segments

Pollutant	Average Daily Emissions across Segments[a] (lbs/day)	Peak Daily Emissions for Any One Segment (lbs/day)	Peak Month(s)	Segment with Peak Daily Emissions	Exceeds SCAQMD Regional Significance Thresholds?
ROG	1.37	20.3	1-5/2019	4	No
CO	12.5	175	1-5/2019	4	No
NO_X	12.5	141	1/2019	4	Yes
PM10	199	612	1/2019	6	Yes
PM2.5	43	132	1/2019	6	Yes
DPM	7.0	13	1-2/2019	4	n/a
Acetaldehyde	0.61	0.79	1/2019	6	n/a
Acrolein	0.011	0.38	1/2025	4	n/a
Benzene	0.16	0.24	1/2019	4	n/a
Butadiene	0.02	0.03	1/2019	4	n/a
Formaldehyde	1.1	1.6	1/2019	6	n/a

[a] Non-weighted average of average daily emissions across all segments, not average of total daily emissions.

Table 4. Cumulative Greenhouse Gas Emissions over the 17 years of construction

Segment	CO_2 ($MTCO_2e$)	CH4 ($MTCO_2e$)	N2O ($MTCO_2e$)	CO_2e ($MTCO_2e$)
1	5766	18	285	6070
2	2088	6	104	2198
3	2736	8	136	2880
4	8223	26	407	8655
5	3453	10	172	3635
6	8704	25	433	9162
7	1724	5	85	1814
Total	32693	98	1623	34414

Table 5 presents results for the number of months in which an exceedance of the SCAQMD regionally significant emission threshold occurs over the life of the construction project. During no period due the ROG or CO emissions exceeded the SCAQMD regional significant emission threshold. The PM_{10} and $PM_{2.5}$ thresholds are exceeded between 0-27% depending upon the segment. However, these emissions are overwhelmingly associated with fugitive dust emissions from earth movement activities. Implicit in the RCEM is a control efficiency of 50% associated with watering on a 4-hour cycle. The 50% efficiency is based on data from a 1973 EPA study "Investigation of Fugitive Dust Sources- Emissions and Control," USEPA/OAQPS contract No. 68-02-044, May 1973. Additional reductions are possible as discussed in Fugitive Dust Handbook (Countless Environmental, 2006) which reports that control efficiency through increased frequency of watering, every 2.1 hours, lead to an overall fugitive dust emission reduction of 74%. Use of the more frequent watering would effectively lower the fugitive emissions by and additional (1-.74/.5)= 52%. Other measures include increasing soil moisture for earthmoving and limiting construction vehicle speeds as well as the use of chemical stabilizers such as calcium chloride. These stabilizers work by significantly increasing surface tension of water between dust particles, helping to slow evaporation and further binds the soil.

Table also shows that emissions of NO_x exceed the SCAQMD significance threshold level along Segment 4 and Segment 6. This occurs early in the construction period (2019-2020) and these emission rates could be reduced either by extending the period of construction or through the use of Tier-4 emission compliant construction equipment at these locations. Use of this lower emission construction equipment could significantly reduced NO_x emissions at these locations.

Table 5. Number of Months with an Exceedance of the SCAQMD Regionally Significant Emission Threshold

Segment	Total Months of Construction (for segment)	Total Months Construction Emissions are Estimated to Exceeded the SCAQMD Regional Significant Emissions Threshold				
		ROG	CO	NO_x	PM10	PM2.5
1	123	none	none	none	3	none
2	108	none	none	none	none	none
3	131	none	none	none	11	none
4	103	none	none	14	11	none
5	118	none	none	none	15	none
6	132	none	none	10	36	10
7	60	none	none	none	none	none

5. References

Air Quality Action Plan I-710 Construction Staging Concept Report prepared by Gateway City Council of Government (2011a), April 1, 2011.

Air Quality Action Plan I-710 Construction Staging Concept Report Addendum, prepared by Gateway City Council of Government (2011b), May 10, 2011.

Air Quality Action Plan I-710 Construction Staging Concept Report Addendum, prepared by Gateway City Council of Government (2011c), July, 2011.

California Climate Action Registry General Reporting Protocol, Version 3.1 January2009. Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

WRAP Fugitive Dust Handbook, Prepared for the Western Governor Association, by Countless Environmental, Westlake Village, CA, September 2006.

APPENDIX A-1
EMFAC EMISSION FACTORS

Appendix A-1 : EMFAC On-Road Emission Factors

Light Duty Truck @ 30 mph, 70 degrees F **County: Los Angeles**

MSATs from CT-EMFAC 2007 (T=67, RH=56, V=30mph, where non-truck is assumed to be LDT and truck assumed to be HDT)

	Running Exhaust (g/mi)													Tire Wear (g/mi)		Break Wear (g/mi		Start Emission Rate @ 480 min (g/trip)								20 minutes Hot Soak	20 minutes Evaporative Running Loss (g/mi)						
Scenario Year	ROG	NOx	CO	PM2.5	PM10	DPM (PM30)	ACETALDEHYDE	ACROLEIN	BENZENE	BUTADIENE	FORMALDEHYDE	CO2	CH4	N2O	PM10	PM2.5	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5	CO2	CH4	N2O	Scenario Year	ROG	ROG	ACETALDEHYDE	ACROLEIN	BENZENE	BUTADIENE	FORMAL-DEHYDE
2005	0.196	0.538	5.050	0.017	0.018	0.0148	0.0014	0.0003	0.0065	0.0015	0.0052	432.7	0.0469	0.0703	0.008	0.002	0.013	0.005	1.279	0.885	13.919	0.020	0.018	204.7	0.0222	0.0332	2005	0.210	0.071	-	-	0.0007	5.16E-06	-
2006	0.171	0.479	4.574	0.017	0.018	0.0154	0.0013	0.0003	0.0059	0.0014	0.0047	433.1	0.0469	0.0703	0.008	0.002	0.013	0.005	1.158	0.819	12.840	0.020	0.019	204.1	0.0221	0.0332	2006	0.196	0.066	-	-	0.0007	4.73E-06	-
2007	0.150	0.429	4.164	0.017	0.018	0.0158	0.0011	0.0003	0.0050	0.0011	0.0040	433.3	0.0469	0.0704	0.008	0.002	0.013	0.005	1.052	0.758	11.892	0.021	0.019	203.6	0.0220	0.0331	2007	0.186	0.062	-	-	0.0006	4.23E-06	-
2008	0.132	0.388	3.826	0.017	0.019	0.0156	0.0010	0.0002	0.0045	0.0010	0.0037	433.5	0.0470	0.0704	0.008	0.002	0.013	0.005	0.961	0.704	11.077	0.021	0.020	203.2	0.0220	0.0330	2008	0.179	0.058	-	-	0.0006	3.85E-06	-
2009	0.116	0.353	3.532	0.018	0.019	0.0153	0.0009	0.0002	0.0040	0.0009	0.0033	433.7	0.0470	0.0705	0.008	0.002	0.013	0.005	0.881	0.655	10.349	0.022	0.020	202.8	0.0220	0.0329	2009	0.174	0.055	-	-	0.0005	3.56E-06	-
2010	0.102	0.323	3.274	0.018	0.020	0.0154	0.0008	0.0002	0.0035	0.0008	0.0029	433.8	0.0470	0.0705	0.008	0.002	0.013	0.005	0.811	0.608	9.696	0.023	0.021	202.5	0.0219	0.0329	2010	0.171	0.053	-	-	0.0005	3.30E-06	-
2011	0.091	0.297	3.055	0.019	0.021	0.0163	0.0007	0.0002	0.0032	0.0007	0.0027	433.9	0.0470	0.0705	0.008	0.002	0.013	0.005	0.750	0.567	9.114	0.024	0.022	202.3	0.0219	0.0329	2011	0.170	0.051	-	-	0.0004	3.05E-06	-
2012	0.082	0.274	2.866	0.020	0.021	0.0165	0.0007	0.0002	0.0029	0.0007	0.0024	434.0	0.0470	0.0705	0.008	0.002	0.013	0.005	0.695	0.529	8.591	0.025	0.023	202.0	0.0219	0.0328	2012	0.170	0.049	-	-	0.0004	2.88E-06	-
2013	0.073	0.252	2.683	0.020	0.022	0.0156	0.0006	0.0001	0.0024	0.0005	0.0021	434.0	0.0470	0.0705	0.008	0.002	0.013	0.005	0.644	0.491	8.079	0.026	0.024	201.8	0.0219	0.0328	2013	0.170	0.048	-	-	0.0004	2.61E-06	-
2014	0.065	0.233	2.518	0.021	0.022	0.0159	0.0006	0.0001	0.0023	0.0005	0.0020	434.0	0.0470	0.0705	0.008	0.002	0.013	0.005	0.597	0.457	7.606	0.027	0.025	201.6	0.0218	0.0328	2014	0.170	0.046	-	-	0.0004	2.54E-06	-
2015	0.057	0.215	2.360	0.021	0.023	0.0161	0.0005	0.0001	0.0019	0.0004	0.0017	434.0	0.0470	0.0705	0.008	0.002	0.013	0.005	0.553	0.423	7.148	0.028	0.026	201.5	0.0218	0.0327	2015	0.170	0.045	-	-	0.0003	2.38E-06	-
2016	0.051	0.199	2.224	0.022	0.023	0.0175	0.0004	0.0001	0.0017	0.0004	0.0015	434.0	0.0470	0.0705	0.008	0.002	0.013	0.005	0.514	0.393	6.733	0.028	0.026	201.3	0.0218	0.0327	2016	0.170	0.044	-	-	0.0003	2.17E-06	-
2017	0.045	0.185	2.091	0.022	0.024	0.0173	0.0004	0.0001	0.0016	0.0004	0.0014	433.9	0.0470	0.0705	0.008	0.002	0.013	0.005	0.476	0.363	6.331	0.029	0.027	201.1	0.0218	0.0327	2017	0.169	0.043	-	-	0.0003	2.11E-06	-
2018	0.040	0.171	1.966	0.022	0.024	0.0172	0.0004	0.0001	0.0014	0.0003	0.0013	433.8	0.0470	0.0705	0.008	0.002	0.013	0.005	0.441	0.335	5.950	0.030	0.028	201.0	0.0218	0.0326	2018	0.168	0.042	-	-	0.0003	2.03E-06	-
2019	0.036	0.159	1.861	0.023	0.025	0.0181	0.0004	0.0001	0.0014	0.0003	0.0012	433.8	0.0470	0.0705	0.008	0.002	0.013	0.005	0.411	0.309	5.601	0.030	0.028	200.9	0.0218	0.0326	2019	0.167	0.042	-	-	0.0003	1.94E-06	-
2020	0.033	0.148	1.764	0.023	0.025	0.0175	0.0003	0.0001	0.0013	0.0003	0.0011	433.7	0.0470	0.0705	0.008	0.002	0.013	0.005	0.382	0.285	5.271	0.031	0.029	200.7	0.0217	0.0326	2020	0.166	0.041	-	-	0.0003	1.88E-06	-
2021	0.031	0.138	1.673	0.023	0.025	0.0181	0.0003	0.0001	0.0012	0.0003	0.0011	433.7	0.0470	0.0705	0.008	0.002	0.013	0.005	0.356	0.263	4.957	0.031	0.029	200.6	0.0217	0.0326	2021	0.164	0.040	-	-	0.0003	1.80E-06	-
2022	0.029	0.129	1.587	0.023	0.025	0.0175	0.0003	0.0001	0.0011	0.0003	0.0011	433.7	0.0470	0.0704	0.008	0.002	0.013	0.005	0.333	0.242	4.664	0.031	0.029	200.6	0.0217	0.0326	2022	0.162	0.039	-	-	0.0002	1.72E-06	-
2023	0.027	0.121	1.506	0.023	0.025	0.0180	0.0003	0.0001	0.0011	0.0002	0.0010	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.311	0.224	4.391	0.031	0.029	200.5	0.0217	0.0326	2023	0.159	0.038	-	-	0.0002	1.67E-06	-
2024	0.025	0.113	1.433	0.023	0.025	0.0172	0.0003	0.0001	0.0011	0.0002	0.0010	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.291	0.206	4.142	0.031	0.029	200.4	0.0217	0.0326	2024	0.155	0.037	-	-	0.0002	1.60E-06	-
2025	0.024	0.106	1.368	0.023	0.025	0.0175	0.0003	0.0001	0.0010	0.0002	0.0010	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.272	0.190	3.918	0.031	0.029	200.3	0.0217	0.0325	2025	0.151	0.036	-	-	0.0002	1.53E-06	-
2026	0.022	0.099	1.309	0.023	0.025	0.0178	0.0003	0.0000	0.0010	0.0002	0.0009	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.256	0.176	3.715	0.031	0.029	200.3	0.0217	0.0325	2026	0.147	0.036	-	-	0.0002	1.49E-06	-
2027	0.021	0.094	1.257	0.023	0.025	0.0179	0.0003	0.0001	0.0010	0.0002	0.0009	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.241	0.163	3.534	0.031	0.028	200.2	0.0217	0.0325	2027	0.143	0.035	-	-	0.0002	1.44E-06	-
2028	0.020	0.088	1.211	0.023	0.025	0.0181	0.0002	0.0001	0.0010	0.0002	0.0008	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.227	0.152	3.375	0.030	0.028	200.2	0.0217	0.0325	2028	0.139	0.034	-	-	0.0002	1.43E-06	-
2029	0.019	0.083	1.167	0.023	0.025	0.0183	0.0002	0.0000	0.0009	0.0002	0.0008	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.215	0.141	3.227	0.030	0.028	200.1	0.0217	0.0325	2029	0.135	0.033	-	-	0.0002	1.36E-06	-
2030	0.018	0.079	1.126	0.023	0.025	0.0184	0.0002	0.0000	0.0009	0.0002	0.0008	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.203	0.131	3.092	0.030	0.028	200.1	0.0217	0.0325	2030	0.131	0.032	-	-	0.0002	1.33E-06	-
2031	0.017	0.074	1.087	0.023	0.025	0.0173	0.0002	0.0000	0.0009	0.0002	0.0008	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.192	0.122	2.962	0.030	0.028	200.0	0.0217	0.0325	2031	0.127	0.031	-	-	0.0002	1.33E-06	-
2032	0.016	0.070	1.051	0.023	0.025	0.0172	0.0002	0.0000	0.0009	0.0002	0.0008	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.182	0.114	2.844	0.030	0.028	200.0	0.0217	0.0325	2032	0.123	0.030	-	-	0.0002	1.27E-06	-
2033	0.015	0.067	1.018	0.023	0.025	0.0173	0.0002	0.0000	0.0008	0.0002	0.0007	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.173	0.106	2.736	0.030	0.028	200.0	0.0217	0.0325	2033	0.119	0.030	-	-	0.0002	1.24E-06	-
2034	0.014	0.063	0.987	0.023	0.025	0.0173	0.0002	0.0000	0.0008	0.0002	0.0007	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.165	0.099	2.635	0.030	0.028	199.9	0.0217	0.0325	2034	0.115	0.029	-	-	0.0002	1.22E-06	-
2035	0.014	0.060	0.959	0.023	0.025	0.0173	0.0002	0.0000	0.0008	0.0002	0.0007	433.6	0.0470	0.0704	0.008	0.002	0.013	0.005	0.158	0.092	2.545	0.030	0.028	199.9	0.0216	0.0325	2035	0.111	0.028	-	-	0.0002	1.21E-06	-

Heavy Duty Truck @ 30 mph, 70 degrees F **County: Los Angeles**

MSATs from CT-EMFAC 2007 (T=67, RH=56, V=30mph, where non-truck is assumed to be LDT and truck assumed to be HDT)

	Running Exhaust (g/mi)														Tire Wear (g/mi)		Break Wear (g/mi		Start Emission Rate @ 480 min (g/trip)								20 minutes Hot Soak	20 minutes Evaporative Running Loss (g/mi)						
Scenario Year	ROG	NOx	CO	PM2.5	PM10	DPM (PM30)	ACETALDEHYDE	ACROLEIN	BENZENE	BUTADIENE	FORMALDEHYDE	CO2	CH4	N2O	PM10	PM2.5	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5	CO2	CH4	N2O	Scenario Year	ROG	ROG	ACETALDEHYDE	ACROLEIN	BENZENE	BUTADIENE	FORMAL-DEHYDE
2005	1.623	18.746	11.039	0.861	0.935	0.1758	0.0209	0.0004	0.0132	0.0023	0.0448	1,837	0.3092	0.2910	0.034	0.009	0.028	0.012	10.982	8.316	191.123	0.014	0.012	201.9	0.0340	0.0320	2005	0.118	0.007	-	-	0.0005	3.35E-06	-
2006	1.569	18.276	10.466	0.781	0.849	0.1568	0.0127	0.0209	0.0118	0.0020	0.0415	1,844	0.3102	0.2920	0.035	0.009	0.028	0.012	10.631	8.321	181.249	0.014	0.012	196.2	0.0330	0.0311	2006	0.107	0.006	-	-	0.0005	3.15E-06	-
2007	1.507	17.505	9.863	0.724	0.787	0.1442	0.0152	0.0127	0.0109	0.0019	0.0381	1,850	0.3113	0.2930	0.035	0.009	0.028	0.012	10.260	8.290	171.489	0.014	0.012	190.6	0.0321	0.0302	2007	0.098	0.005	-	-	0.0004	3.00E-06	-
2008	1.435	16.632	9.216	0.664	0.722	0.1392	0.1568	0.0152	0.0104	0.0018	0.0377	1,856	0.3123	0.2939	0.035	0.009	0.028	0.012	9.983	8.184	163.983	0.013	0.012	185.8	0.0313	0.0294	2008	0.092	0.005	-	-	0.0004	2.87E-06	-
2009	1.354	15.699	8.529	0.602	0.655	0.1299	0.0415	0.1568	0.0098	0.0017	0.0358	1,862	0.3133	0.2949	0.035	0.009	0.028	0.012	9.672	8.041	156.840	0.013	0.012	180.6	0.0304	0.0286	2009	0.086	0.004	-	-	0.0004	2.79E-06	-
2010	1.260	14.391	7.757	0.541	0.588	0.1227	0.0020	0.0415	0.0093	0.0016	0.0345	1,868	0.3143	0.2958	0.035	0.009	0.028	0.012	9.184	7.864	145.492	0.013	0.011	173.6	0.0292	0.0275	2010	0.076	0.004	-	-	0.0004	2.68E-06	-
2011	1.162	13.039	6.971	0.480	0.522	0.1133	0.0118	0.0020	0.0088	0.0015	0.0324	1,873	0.3152	0.2967	0.035	0.009	0.028	0.012	8.648	7.688	132.657	0.012	0.011	165.8	0.0279	0.0263	2011	0.064	0.003	-	-	0.0004	2.60E-06	-
2012	1.061	11.695	6.196	0.423	0.460	0.1059	0.0004	0.0118	0.0072	0.0011	0.0299	1,878	0.3161	0.2975	0.035	0.009	0.028	0.012	8.047	7.453	119.184	0.011	0.010	157.2	0.0265	0.0249	2012	0.052	0.003	-	-	0.0004	2.51E-06	-
2013	0.960	10.384	5.442	0.368	0.400	0.0983	0.0194	0.0004	0.0067	0.0011	0.0281	1,883	0.3169	0.2983	0.035	0.009	0.028	0.012	7.418	7.179	105.707	0.011	0.010	148.0	0.0249	0.0234	2013	0.040	0.002	-	-	0.0004	2.44E-06	-
2014	0.863	9.143	4.789	0.317	0.345	0.0912	0.0126	0.0194	0.0063	0.0010	0.0263	1,887	0.3176	0.2989	0.035	0.009	0.028	0.012	6.969	6.845	98.160	0.010	0.010	141.5	0.0238	0.0224	2014	0.035	0.002	-	-	0.0003	2.37E-06	-
2015	0.771	8.000	4.191	0.272	0.295	0.0838	0.0151	0.0126	0.0057	0.0009	0.0244	1,891	0.3183	0.2995	0.035	0.009	0.028	0.012	6.471	6.474	90.510	0.010	0.009	134.6	0.0227	0.0213	2015	0.030	0.002	-	-	0.0003	2.34E-06	-
2016	0.697	7.095	3.716	0.236	0.256	0.0765	0.1442	0.0151	0.0053	0.0008	0.0227	1,895	0.3188	0.3001	0.035	0.009	0.028	0.012	6.037	6.123	84.068	0.009	0.009	128.3	0.0216	0.0203	2016	0.026	0.002	-	-	0.0003	2.25E-06	-
2017	0.635	6.345	3.324	0.206	0.224	0.0714	0.0381	0.1442	0.0049	0.0008	0.0208	1,897	0.3193	0.3005	0.036	0.009	0.028	0.012	5.639	5.798	78.474	0.009	0.008	122.5	0.0206	0.0194	2017	0.023	0.001	-	-	0.0003	2.23E-06	-
2018	0.582	5.713	2.996	0.181	0.197	0.0663	0.0019	0.0381	0.0045	0.0007	0.0197	1,900	0.3197	0.3009	0.036	0.009	0.028	0.012	5.263	5.468	73.750	0.009	0.008	117.0	0.0197	0.0185	2018	0.022	0.001	-	-	0.0003	2.17E-06	-
2019	0.536	5.178	2.718	0.160	0.174	0.0624	0.0109	0.0019	0.0041	0.0006	0.0183	1,902	0.3200	0.3012	0.036	0.009	0.028	0.012	4.906	5.140	69.636	0.008	0.008	111.7	0.0188	0.0177	2019	0.021	0.001	-	-	0.0003	2.11E-06	-
2020	0.496	4.725	2.484	0.143	0.155	0.0591	0.0003	0.0109	0.0035	0.0005	0.0167	1,903	0.3203	0.3014	0.036	0.009	0.028	0.012	4.551	4.825	65.802	0.008	0.007	106.6	0.0179	0.0169	2020	0.019	0.001	-	-	0.0003	2.01E-06	-
2021	0.461	4.340	2.282	0.128	0.140	0.0560	0.0178	0.0003	0.0033	0.0005	0.0157	1,905	0.3205	0.3017	0.036	0.009	0.028	0.012	4.170	4.520	61.675	0.008	0.007	101.7	0.0171	0.0161	2021	0.018	0.001	-	-	0.0003	2.01E-06	-
2022	0.432	4.024	2.109	0.117	0.127	0.0534	0.0127	0.0178	0.0031	0.0004	0.0152	1,906	0.3207	0.3019	0.036	0.009	0.028	0.012	3.752	4.192	57.014	0.007	0.007	96.8	0.0163	0.0153	2022	0.017	0.001	-	-	0.0003	1.95E-06	-
2023	0.407	3.762	1.968	0.107	0.116	0.0508	0.0152	0.0127	0.0029	0.0004	0.0143	1,907	0.3209	0.3020	0.036	0.009	0.028	0.012	3.446	3.922	53.214	0.007	0.006	92.1	0.0155	0.0146	2023	0.016	0.001	-	-	0.0003	1.88E-06	-
2024	0.388	3.551	1.854	0.099	0.108	0.0490	0.1392	0.0152	0.0027	0.0004	0.0136	1,908	0.3210	0.3021	0.036	0.009	0.028	0.012	3.168	3.675	49.859	0.006	0.006	88.1	0.0148	0.0139	2024	0.015	0.001	-	-	0.0003	1.86E-06	-
2025	0.371	3.379	1.763	0.093	0.101	0.0475	0.0377	0.1392	0.0026	0.0004	0.0131	1,908	0.3211	0.3022	0.036	0.009	0.028	0.012	2.931	3.466	47.228	0.006	0.006	84.7	0.0142	0.0134	2025	0.015	0.001	-	-	0.0003	1.81E-06	-
2026	0.357	3.237	1.688	0.087	0.095	0.0462	0.0018	0.0377	0.0024	0.0003	0.0126	1,909	0.3212	0.3023	0.036	0.009	0.028	0.012	2.741	3.291	44.982	0.006	0.006	81.6	0.0137	0.0129	2026	0.014	0.001	-	-	0.0003	1.79E-06	-
2027	0.346	3.121	1.625	0.083	0.090	0.0454	0.0104	0.0018	0.0023	0.0003	0.0122	1,909	0.3213	0.3024	0.036	0.009	0.028	0.012	2.577	3.132	42.971	0.006	0.005	78.7	0.0132	0.0125	2027	0.014	0.001	-	-	0.0003	1.73E-06	-
2028	0.337	3.026	1.576	0.080	0.086	0.0444	0.0003	0.0104	0.0022	0.0003	0.0118	1,910	0.3213	0.3024	0.036	0.009	0.028	0.012	2.426	2.996	41.335	0.006	0.005	76.1	0.0128	0.0121	2028	0.013	0.001	-	-	0.0002	1.68E-06	-
2029	0.328	2.946	1.531	0.077	0.083	0.0437	0.0177	0.0003	0.0022	0.0003	0.0115	1,910	0.3214	0.3025	0.036	0.009	0.028	0.012	2.266	2.857	39.290	0.005	0.005	73.7	0.0124	0.0117	2029	0.013	0.001	-	-	0.0002	1.67E-06	-
2030	0.321	2.880	1.495	0.074	0.081	0.0432	0.0127	0.0177	0.0021	0.0003	0.0113	1,910	0.3214	0.3025	0.036	0.009	0.028	0.012	2.106	2.702	37.492	0.005	0.005	71.3	0.0120	0.0113	2030	0.012	0.001	-	-	0.0002	1.63E-06	-
2031	0.317	2.838	1.470	0.073	0.079	0.0426	0.0152	0.0127	0.0020	0.0003	0.0112	1,910	0.3215	0.3026	0.036	0.009	0.028	0.012	1.945	2.542	35.613	0.005	0.005	68.7	0.0116	0.0109	2031	0.012	0.001	-	-	0.0002	1.62E-06	-
2032	0.313	2.804	1.449	0.071	0.078	0.0423	0.1299	0.0152	0.0019	0.0003	0.0108	1,911	0.3215	0.3026	0.036	0.009	0.028	0.012	1.786	2.390	34.313	0.005	0.004	66.4	0.0112	0.0105	2032	0.011	0.001	-	-	0.0002	1.56E-06	-
2033	0.310	2.777	1.432	0.070	0.076	0.0418	0.0358	0.1299	0.0019	0.0002	0.0106	1,911	0.3215	0.3026	0.036	0.009	0.028	0.012	1.687	2.235	33.015	0.005	0.004	64.0	0.0108	0.0101	2033	0.010	0.001	-	-	0.0002	1.51E-06	-
2034	0.307	2.756	1.419	0.070	0.076	0.0418	0.0017	0.0358	0.0019	0.0002	0.0106	1,911	0.3216	0.3026	0.036	0.009	0.028	0.012	1.494	2.096	31.796	0.004	0.004	61.9	0.0104	0.0098	2034	0.010	0.001	-	-	0.0002	1.47E-06	-
2035	0.305	2.740	1.409	0.069	0.075	0.0415	0.0098	0.0017	0.0019	0.0002	0.0105	1,911	0.3216	0.3027	0.036	0.009	0.028	0.012	1.379	1.983	30.821	0.004	0.004	60.2	0.0101	0.0095	2035	0.009	-	-	-	0.0002	1.47E-06	-

	N2O (g/mi)	CH4 (g/mi)	CH4:N2O Ratio	Source
Diesel LDTs (MY 1983 to Present)	0.0015	0.001	0.666667	Table C.4 Climate Registry CRP_3.1January2009
Diesel HDTs (MY 1996 to Present)	0.0048	0.0051	1.0625	Table C.4 Climate Registry CRP_3.1January2009

Contribution of CH4 and N2O to total CO2e emissions	5%	EPA420-F-05-004

APPENDIX A-2
OFFROAD EMISSION FACTORS

Appendix A-2 : OFFROAD2007 and 2011 Off-Road Emission Factors

For the purposes of brevity, OFFROAD emissions factors here reflect only the default equipment types used in the Road Construction Emissions Model v.6.4. for representative years of 2018, 2025, and 2034. A asterik represents a equipment emission factors that were updated with OFFROAD2011 values.

All units here are in g/hp-hr.

OFFROAD Model	Calendar Year	HP Category	AvgHP	Equipment	Max HP	ROG	CO	NOX	SOX	CO2	PM10	ACET	BENZ	BUTA	FORM
					g/hp-hr										
2011	2018	0	43	Cranes	50	0.684	2.668	2.131	0.003	244.6	0.160	0.060	0.016	0.002	0.120
2011	2018	50	93	Cranes	120	0.331	1.701	1.406	0.003	135.8	0.146	0.029	0.008	0.001	0.058
2011	2018	120	149	Cranes	175	0.136	1.451	1.694	0.003	112.4	0.125	0.012	0.003	0.000	0.024
2011	2018	175	208	Cranes	250	0.103	0.550	1.596	0.003	129.4	0.085	0.009	0.002	0.000	0.018
2011	2018	250	334	Cranes	500	0.083	0.555	1.444	0.002	132.5	0.062	0.007	0.002	0.000	0.014
2011	2018	500	562	Cranes	750	0.049	0.555	0.898	0.002	102.5	0.036	0.004	0.001	0.000	0.009
2011	2018	750	1800	Cranes	9999	0.040	0.603	0.821	0.002	114.9	0.030	0.004	0.001	0.000	0.007
2011	2018	0	23	Excavators	25	0.391	1.335	2.472	0.004	324.2	0.092	0.034	0.009	0.001	0.068
2011	2018	25	35	Excavators	50	0.607	3.266	2.594	0.004	324.2	0.143	0.053	0.014	0.001	0.106
2011	2018	50	103	Excavators	120	0.128	2.209	1.200	0.004	160.5	0.078	0.011	0.003	0.000	0.022
2011	2018	120	157	Excavators	175	0.065	1.918	0.980	0.004	136.4	0.065	0.006	0.002	0.000	0.011
2011	2018	175	222	Excavators	250	0.059	0.679	0.932	0.004	168.6	0.045	0.005	0.001	0.000	0.010
2011	2018	250	327	Excavators	500	0.046	0.650	0.866	0.003	176.4	0.026	0.004	0.001	0.000	0.008
2011	2018	500	542	Excavators	750	0.030	0.650	0.515	0.003	132.4	0.017	0.003	0.001	0.000	0.005
2007	2018	0	11	Generator Sets	15	0.516	2.664	3.582	0.007	420.9	0.187	0.045	0.012	0.001	0.090
2007	2018	15	19	Generator Sets	25	0.558	1.896	3.500	0.005	420.9	0.175	0.049	0.013	0.001	0.098
2007	2018	25	33	Generator Sets	50	0.774	3.292	3.484	0.005	420.9	0.226	0.068	0.018	0.002	0.135
2007	2018	50	84	Generator Sets	120	0.398	2.581	3.161	0.005	420.9	0.213	0.035	0.009	0.001	0.070
2007	2018	120	153	Generator Sets	175	0.275	2.199	2.653	0.005	420.9	0.118	0.024	0.007	0.001	0.048
2007	2018	175	229	Generator Sets	250	0.192	0.792	2.275	0.005	420.9	0.063	0.017	0.005	0.000	0.034
2007	2018	250	363	Generator Sets	500	0.178	0.775	2.029	0.004	420.9	0.060	0.016	0.004	0.000	0.031
2007	2018	500	586	Generator Sets	750	0.182	0.775	2.085	0.004	420.9	0.061	0.016	0.004	0.000	0.032
2007	2018	750	1130	Generator Sets	9999	0.241	0.860	3.281	0.004	420.9	0.083	0.021	0.006	0.001	0.042
2011	2018	0	36	Graders	50	0.856	3.618	2.906	0.004	347.0	0.199	0.075	0.020	0.002	0.150
2011	2018	50	98	Graders	120	0.614	2.379	1.978	0.004	176.7	0.253	0.054	0.015	0.001	0.108
2011	2018	120	162	Graders	175	0.228	2.043	2.640	0.004	162.9	0.216	0.020	0.005	0.001	0.040
2011	2018	175	225	Graders	250	0.156	0.762	2.282	0.004	185.3	0.128	0.014	0.004	0.000	0.027
2011	2018	250	300	Graders	500	0.088	0.785	1.761	0.003	178.4	0.057	0.008	0.002	0.000	0.015
2011	2018	500	635	Graders	750	0.053	0.785	0.802	0.003	126.7	0.031	0.005	0.001	0.000	0.009
2011	2018	0	13	Other Construction Equipment	15	0.411	2.153	2.571	0.005	352.7	0.100	0.036	0.010	0.001	0.072
2011	2018	15	17	Other Construction Equipment	25	0.425	1.452	2.688	0.004	352.7	0.100	0.037	0.010	0.001	0.074
2011	2018	25	36	Other Construction Equipment	50	0.519	2.950	2.647	0.005	352.7	0.136	0.045	0.012	0.001	0.091
2011	2018	50	104	Other Construction Equipment	120	0.252	2.231	1.665	0.004	186.9	0.142	0.022	0.006	0.001	0.044
2011	2018	120	137	Other Construction Equipment	175	0.115	1.940	1.536	0.004	149.2	0.118	0.010	0.003	0.000	0.020
2011	2018	175	327	Other Construction Equipment	500	0.108	0.658	1.721	0.003	190.4	0.091	0.009	0.003	0.000	0.019
2011	2018	0	24	Pavers	25	0.428	1.453	2.711	0.004	352.7	0.107	0.037	0.010	0.001	0.075

OFFROAD Model	Calendar Year	HP Category	AvgHP	Equipment	Max HP	ROG	CO	NOX	SOX	CO2	PM10	ACET	BENZ	BUTA	FORM
						g/hp-hr									
2011	2018	25	36	Pavers	50	1.223	4.022	3.202	0.005	352.7	0.274	0.107	0.029	0.003	0.214
2011	2018	50	89	Pavers	120	0.337	2.479	1.643	0.004	189.3	0.153	0.030	0.008	0.001	0.059
2011	2018	120	165	Pavers	175	0.101	2.098	1.383	0.004	145.0	0.103	0.009	0.002	0.000	0.018
2011	2018	175	250	Pavers	250	0.087	0.907	1.407	0.004	198.8	0.069	0.008	0.002	0.000	0.015
2011	2018	250	300	Pavers	500	0.048	1.040	1.231	0.003	187.7	0.033	0.004	0.001	0.000	0.008
2011	2018	0	19	Paving Equipment	25	0.364	1.241	2.298	0.004	301.5	0.086	0.032	0.009	0.001	0.064
2011	2018	25	36	Paving Equipment	50	1.038	3.400	2.729	0.004	301.5	0.234	0.091	0.025	0.002	0.182
2011	2018	50	82	Paving Equipment	120	0.125	2.108	1.066	0.004	144.1	0.071	0.011	0.003	0.000	0.022
2011	2018	120	152	Paving Equipment	175	0.080	1.782	1.120	0.003	139.1	0.079	0.007	0.002	0.000	0.014
2011	2018	175	184	Paving Equipment	250	0.058	0.756	0.955	0.003	158.8	0.047	0.005	0.001	0.000	0.010
2007	2018	0	8	Plate Compactors	15	0.285	1.493	1.783	0.004	244.6	0.070	0.025	0.007	0.001	0.050
2011	2018	0	9	Rollers	15	0.371	1.945	2.322	0.005	318.5	0.091	0.032	0.009	0.001	0.065
2011	2018	15	19	Rollers	25	0.384	1.312	2.428	0.004	318.5	0.091	0.034	0.009	0.001	0.067
2011	2018	25	37	Rollers	50	0.816	3.127	2.664	0.004	318.5	0.195	0.071	0.019	0.002	0.143
2011	2018	50	84	Rollers	120	0.195	2.117	1.296	0.004	157.7	0.104	0.017	0.005	0.000	0.034
2011	2018	120	154	Rollers	175	0.089	1.806	1.263	0.004	144.1	0.087	0.008	0.002	0.000	0.016
2011	2018	175	218	Rollers	250	0.056	0.688	0.981	0.004	162.9	0.045	0.005	0.001	0.000	0.010
2011	2018	250	312	Rollers	500	0.046	0.712	0.959	0.003	169.6	0.030	0.004	0.001	0.000	0.008
2011	2018	0	175	Rubber Tired Dozers	175	0.435	2.123	2.972	0.004	335.6	0.168	0.038	0.010	0.001	0.076
2011	2018	175	248	Rubber Tired Dozers	250	0.185	1.030	2.712	0.004	179.1	0.156	0.016	0.004	0.000	0.032
2011	2018	250	358	Rubber Tired Dozers	500	0.152	1.307	2.405	0.003	177.5	0.117	0.013	0.004	0.000	0.027
2011	2018	500	539	Rubber Tired Dozers	750	0.114	1.307	1.820	0.003	150.3	0.084	0.010	0.003	0.000	0.020
2011	2018	750	800	Rubber Tired Dozers	1000	0.106	1.423	2.071	0.003	163.1	0.076	0.009	0.003	0.000	0.019
2011	2018	0	25	Rubber Tired Loaders	25	0.371	1.265	2.342	0.004	307.2	0.087	0.032	0.009	0.001	0.065
2011	2018	25	46	Rubber Tired Loaders	50	0.735	3.157	2.556	0.004	307.2	0.173	0.064	0.018	0.002	0.129
2011	2018	50	87	Rubber Tired Loaders	120	0.364	2.094	1.713	0.004	177.3	0.174	0.032	0.009	0.001	0.064
2011	2018	120	157	Rubber Tired Loaders	175	0.116	1.799	1.421	0.003	135.5	0.117	0.010	0.003	0.000	0.020
2011	2018	175	220	Rubber Tired Loaders	250	0.095	0.667	1.355	0.003	163.6	0.075	0.008	0.002	0.000	0.017
2011	2018	250	350	Rubber Tired Loaders	500	0.068	0.681	1.231	0.003	156.7	0.042	0.006	0.002	0.000	0.012
2011	2018	500	717	Rubber Tired Loaders	750	0.053	0.681	0.862	0.003	120.8	0.032	0.005	0.001	0.000	0.009
2011	2018	750	877	Rubber Tired Loaders	1000	0.065	0.733	1.027	0.003	148.8	0.041	0.006	0.002	0.000	0.011
2011	2018	0	104	Scrapers	120	0.605	2.917	3.567	0.005	409.5	0.289	0.053	0.014	0.001	0.106
2011	2018	120	164	Scrapers	175	0.171	2.477	2.385	0.005	183.8	0.184	0.015	0.004	0.000	0.030
2011	2018	175	232	Scrapers	250	0.168	1.040	2.584	0.005	245.6	0.139	0.015	0.004	0.000	0.030
2011	2018	250	356	Scrapers	500	0.165	1.166	2.849	0.004	227.9	0.126	0.014	0.004	0.000	0.029
2011	2018	500	615	Scrapers	750	0.093	1.166	1.681	0.004	194.7	0.066	0.008	0.002	0.000	0.016
2007	2018	0	6	Signal Boards	15	0.543	2.848	3.400	0.007	466.4	0.133	0.048	0.013	0.001	0.095
2007	2018	15	37	Signal Boards	50	0.796	3.636	3.456	0.006	443.7	0.211	0.070	0.019	0.002	0.139
2007	2018	50	82	Signal Boards	120	0.385	2.765	2.907	0.005	443.7	0.197	0.034	0.009	0.001	0.067
2007	2018	120	158	Signal Boards	175	0.274	2.376	2.287	0.005	443.7	0.111	0.024	0.007	0.001	0.048
2007	2018	175	216	Signal Boards	250	0.242	1.020	2.374	0.006	536.1	0.071	0.021	0.006	0.001	0.042
2011	2018	0	9	Trenchers	15	0.497	2.605	3.110	0.007	426.6	0.122	0.043	0.012	0.001	0.087

OFFROAD Model	Calendar Year	HP Category	AvgHP	Equipment	Max HP	ROG	CO	NOX	SOX	CO2	PM10	ACET	BENZ	BUTA	FORM
					g/hp-hr										
2011	2018	15	35	Trenchers	25	0.515	1.757	3.252	0.005	426.6	0.121	0.045	0.012	0.001	0.090
2011	2018	25	35	Trenchers	50	1.485	4.732	3.845	0.006	426.6	0.331	0.130	0.035	0.003	0.260
2011	2018	50	69	Trenchers	120	0.284	2.958	1.983	0.005	236.3	0.164	0.025	0.007	0.001	0.050
2011	2018	120	153	Trenchers	175	0.154	2.501	2.033	0.005	182.9	0.155	0.014	0.004	0.000	0.027
2011	2018	175	237	Trenchers	250	0.133	1.114	2.118	0.005	216.4	0.108	0.012	0.003	0.000	0.023
2011	2018	250	331	Trenchers	500	0.126	1.309	2.325	0.004	232.7	0.093	0.011	0.003	0.000	0.022
2011	2018	500	624	Trenchers	750	0.063	1.309	1.157	0.004	190.2	0.044	0.006	0.002	0.000	0.011
2007	2018	0	175	Water Trucks	175	0.255	1.955	1.542	0.004	324.2	0.081	0.022	0.006	0.001	0.045
2007	2018	175	233	Water Trucks	250	0.203	0.695	1.297	0.004	324.2	0.044	0.018	0.005	0.000	0.035
2007	2018	250	381	Water Trucks	500	0.197	0.664	1.156	0.003	324.2	0.042	0.017	0.005	0.000	0.035
2007	2018	500	618	Water Trucks	750	0.198	0.664	1.185	0.003	324.2	0.042	0.017	0.005	0.000	0.035
2007	2018	750	874	Water Trucks	1000	0.211	0.692	2.252	0.003	324.2	0.058	0.018	0.005	0.000	0.037
2011	2025	0	43	Cranes	50	0.369	2.380	1.734	0.003	244.6	0.066	0.032	0.009	0.001	0.065
2011	2025	50	93	Cranes	120	0.290	1.651	1.319	0.003	135.8	0.127	0.025	0.007	0.001	0.051
2011	2025	120	149	Cranes	175	0.068	1.444	0.883	0.003	112.3	0.056	0.006	0.002	0.000	0.012
2011	2025	175	208	Cranes	250	0.056	0.505	0.769	0.003	129.4	0.040	0.005	0.001	0.000	0.010
2011	2025	250	334	Cranes	500	0.045	0.480	0.671	0.002	132.5	0.029	0.004	0.001	0.000	0.008
2011	2025	500	562	Cranes	750	0.029	0.480	0.417	0.002	102.4	0.017	0.003	0.001	0.000	0.005
2011	2025	750	1800	Cranes	9999	0.026	0.497	0.357	0.002	114.8	0.015	0.002	0.001	0.000	0.004
2011	2025	0	23	Excavators	25	0.391	1.335	2.472	0.004	324.2	0.092	0.034	0.009	0.001	0.068
2011	2025	25	35	Excavators	50	0.385	3.066	2.095	0.004	324.2	0.046	0.034	0.009	0.001	0.067
2011	2025	50	103	Excavators	120	0.075	2.177	0.943	0.004	160.7	0.029	0.007	0.002	0.000	0.013
2011	2025	120	157	Excavators	175	0.036	1.917	0.542	0.004	136.0	0.022	0.003	0.001	0.000	0.006
2011	2025	175	222	Excavators	250	0.034	0.656	0.368	0.004	168.7	0.018	0.003	0.001	0.000	0.006
2011	2025	250	327	Excavators	500	0.030	0.624	0.321	0.003	176.6	0.011	0.003	0.001	0.000	0.005
2011	2025	500	542	Excavators	750	0.020	0.624	0.182	0.003	132.2	0.006	0.002	0.000	0.000	0.003
2007	2025	0	11	Generator Sets	15	0.453	2.588	3.181	0.007	420.9	0.135	0.040	0.011	0.001	0.079
2007	2025	15	19	Generator Sets	25	0.516	1.765	3.276	0.005	420.9	0.132	0.045	0.012	0.001	0.090
2007	2025	25	33	Generator Sets	50	0.358	2.836	2.680	0.005	420.9	0.083	0.031	0.009	0.001	0.063
2007	2025	50	84	Generator Sets	120	0.198	2.485	1.760	0.005	420.9	0.077	0.017	0.005	0.000	0.035
2007	2025	120	153	Generator Sets	175	0.152	2.178	1.146	0.005	420.9	0.047	0.013	0.004	0.000	0.027
2007	2025	175	229	Generator Sets	250	0.118	0.744	0.885	0.005	420.9	0.024	0.010	0.003	0.000	0.021
2007	2025	250	363	Generator Sets	500	0.115	0.729	0.816	0.004	420.9	0.023	0.010	0.003	0.000	0.020
2007	2025	500	586	Generator Sets	750	0.116	0.729	0.833	0.004	420.9	0.024	0.010	0.003	0.000	0.020
2007	2025	750	1130	Generator Sets	9999	0.142	0.752	2.164	0.004	420.9	0.040	0.012	0.003	0.000	0.025
2011	2025	0	36	Graders	50	0.482	3.274	2.364	0.004	347.0	0.080	0.042	0.011	0.001	0.084
2011	2025	50	98	Graders	120	0.408	2.318	1.614	0.004	176.9	0.167	0.036	0.010	0.001	0.071
2011	2025	120	162	Graders	175	0.135	2.033	1.572	0.004	162.6	0.115	0.012	0.003	0.000	0.024
2011	2025	175	225	Graders	250	0.078	0.715	0.958	0.004	185.2	0.053	0.007	0.002	0.000	0.014
2011	2025	250	300	Graders	500	0.052	0.697	0.854	0.003	177.2	0.027	0.005	0.001	0.000	0.009
2011	2025	500	635	Graders	750	0.046	0.697	0.543	0.003	126.3	0.021	0.004	0.001	0.000	0.008
2011	2025	0	13	Other Construction Equipment	15	0.411	2.153	2.571	0.005	352.7	0.100	0.036	0.010	0.001	0.072

OFFROAD Model	Calendar Year	HP Category	AvgHP	Equipment	Max HP	ROG	CO	NOX	SOX	CO2	PM10	ACET	BENZ	BUTA	FORM
						g/hp-hr									
2011	2025	15	17	Other Construction Equipment	25	0.425	1.452	2.688	0.004	352.7	0.100	0.037	0.010	0.001	0.074
2011	2025	25	36	Other Construction Equipment	50	0.308	2.757	2.134	0.005	352.7	0.043	0.027	0.007	0.001	0.054
2011	2025	50	104	Other Construction Equipment	120	0.163	2.200	1.360	0.004	187.1	0.085	0.014	0.004	0.000	0.029
2011	2025	120	137	Other Construction Equipment	175	0.066	1.940	0.918	0.004	149.5	0.057	0.006	0.002	0.000	0.012
2011	2025	175	327	Other Construction Equipment	500	0.058	0.639	0.785	0.003	190.5	0.041	0.005	0.001	0.000	0.010
2011	2025	0	24	Pavers	25	0.425	1.452	2.688	0.004	352.7	0.101	0.037	0.010	0.001	0.074
2011	2025	25	36	Pavers	50	0.726	3.534	2.650	0.005	352.7	0.145	0.063	0.017	0.002	0.127
2011	2025	50	89	Pavers	120	0.201	2.394	1.326	0.004	189.3	0.085	0.018	0.005	0.000	0.035
2011	2025	120	165	Pavers	175	0.059	2.074	0.845	0.004	145.0	0.052	0.005	0.001	0.000	0.010
2011	2025	175	250	Pavers	250	0.046	0.778	0.617	0.004	198.6	0.029	0.004	0.001	0.000	0.008
2011	2025	250	300	Pavers	500	0.026	0.812	0.367	0.003	187.9	0.012	0.002	0.001	0.000	0.005
2011	2025	0	19	Paving Equipment	25	0.364	1.241	2.298	0.004	301.5	0.086	0.032	0.009	0.001	0.064
2011	2025	25	36	Paving Equipment	50	0.593	2.968	2.254	0.004	301.5	0.121	0.052	0.014	0.001	0.104
2011	2025	50	82	Paving Equipment	120	0.080	2.031	0.897	0.004	144.3	0.035	0.007	0.002	0.000	0.014
2011	2025	120	152	Paving Equipment	175	0.043	1.760	0.654	0.003	139.0	0.031	0.004	0.001	0.000	0.008
2011	2025	175	184	Paving Equipment	250	0.036	0.652	0.454	0.003	158.7	0.022	0.003	0.001	0.000	0.006
2007	2025	0	8	Plate Compactors	15	0.285	1.493	1.783	0.004	244.6	0.070	0.025	0.007	0.001	0.050
2011	2025	0	9	Rollers	15	0.371	1.945	2.322	0.005	318.5	0.091	0.032	0.009	0.001	0.065
2011	2025	15	19	Rollers	25	0.384	1.312	2.428	0.004	318.5	0.091	0.034	0.009	0.001	0.067
2011	2025	25	37	Rollers	50	0.423	2.768	2.177	0.004	318.5	0.083	0.037	0.010	0.001	0.074
2011	2025	50	84	Rollers	120	0.104	2.052	0.988	0.004	157.8	0.045	0.009	0.002	0.000	0.018
2011	2025	120	154	Rollers	175	0.047	1.795	0.731	0.004	144.1	0.037	0.004	0.001	0.000	0.008
2011	2025	175	218	Rollers	250	0.027	0.632	0.339	0.004	162.9	0.015	0.002	0.001	0.000	0.005
2011	2025	250	312	Rollers	500	0.038	0.609	0.570	0.003	169.8	0.021	0.003	0.001	0.000	0.007
2011	2025	0	175	Rubber Tired Dozers	175	0.302	2.079	1.794	0.004	335.6	0.100	0.026	0.007	0.001	0.053
2011	2025	175	248	Rubber Tired Dozers	250	0.106	0.845	1.430	0.004	179.5	0.078	0.009	0.003	0.000	0.019
2011	2025	250	358	Rubber Tired Dozers	500	0.085	0.948	1.270	0.003	177.3	0.056	0.007	0.002	0.000	0.015
2011	2025	500	539	Rubber Tired Dozers	750	0.070	0.948	0.943	0.003	150.2	0.042	0.006	0.002	0.000	0.012
2011	2025	750	800	Rubber Tired Dozers	1000	0.090	1.018	1.642	0.003	163.1	0.060	0.008	0.002	0.000	0.016
2011	2025	0	25	Rubber Tired Loaders	25	0.371	1.265	2.342	0.004	307.2	0.087	0.032	0.009	0.001	0.065
2011	2025	25	46	Rubber Tired Loaders	50	0.412	2.863	2.079	0.004	307.2	0.068	0.036	0.010	0.001	0.072
2011	2025	50	87	Rubber Tired Loaders	120	0.198	2.041	1.312	0.004	177.0	0.078	0.017	0.005	0.000	0.035
2011	2025	120	157	Rubber Tired Loaders	175	0.062	1.791	0.771	0.003	135.8	0.046	0.005	0.001	0.000	0.011
2011	2025	175	220	Rubber Tired Loaders	250	0.047	0.627	0.493	0.003	163.4	0.026	0.004	0.001	0.000	0.008
2011	2025	250	350	Rubber Tired Loaders	500	0.036	0.603	0.430	0.003	156.8	0.014	0.003	0.001	0.000	0.006
2011	2025	500	717	Rubber Tired Loaders	750	0.031	0.603	0.331	0.003	121.5	0.012	0.003	0.001	0.000	0.005
2011	2025	750	877	Rubber Tired Loaders	1000	0.042	0.617	0.479	0.003	150.9	0.019	0.004	0.001	0.000	0.007
2011	2025	0	104	Scrapers	120	0.388	2.823	2.280	0.005	409.5	0.144	0.034	0.009	0.001	0.068
2011	2025	120	164	Scrapers	175	0.131	2.452	1.865	0.005	183.1	0.137	0.011	0.003	0.000	0.023
2011	2025	175	232	Scrapers	250	0.091	0.907	1.205	0.005	245.7	0.063	0.008	0.002	0.000	0.016
2011	2025	250	356	Scrapers	500	0.086	0.934	1.217	0.004	228.2	0.054	0.008	0.002	0.000	0.015
2011	2025	500	615	Scrapers	750	0.054	0.934	0.754	0.004	194.7	0.030	0.005	0.001	0.000	0.010

OFFROAD Model	Calendar Year	HP Category	AvgHP	Equipment	Max HP	ROG	CO	NOX	SOX	CO2	PM10	ACET	BENZ	BUTA	FORM
						g/hp-hr									
2007	2025	0	6	Signal Boards	15	0.543	2.848	3.400	0.007	466.4	0.133	0.048	0.013	0.001	0.095
2007	2025	15	37	Signal Boards	50	0.408	3.293	2.780	0.006	443.7	0.077	0.036	0.010	0.001	0.072
2007	2025	50	82	Signal Boards	120	0.218	2.710	1.702	0.005	443.7	0.070	0.019	0.005	0.000	0.038
2007	2025	120	158	Signal Boards	175	0.169	2.381	0.986	0.005	443.7	0.044	0.015	0.004	0.000	0.030
2007	2025	175	216	Signal Boards	250	0.167	0.982	0.932	0.006	536.1	0.028	0.015	0.004	0.000	0.029
2011	2025	0	9	Trenchers	15	0.497	2.605	3.110	0.007	426.6	0.122	0.043	0.012	0.001	0.087
2011	2025	15	35	Trenchers	25	0.515	1.757	3.252	0.005	426.6	0.122	0.045	0.012	0.001	0.090
2011	2025	25	35	Trenchers	50	0.894	4.147	3.199	0.006	426.6	0.183	0.078	0.021	0.002	0.157
2011	2025	50	69	Trenchers	120	0.148	2.854	1.462	0.005	236.0	0.065	0.013	0.004	0.000	0.026
2011	2025	120	153	Trenchers	175	0.107	2.469	1.470	0.005	183.1	0.098	0.009	0.003	0.000	0.019
2011	2025	175	237	Trenchers	250	0.101	0.942	1.466	0.005	216.4	0.074	0.009	0.002	0.000	0.018
2011	2025	250	331	Trenchers	500	0.092	1.009	1.455	0.004	233.0	0.063	0.008	0.002	0.000	0.016
2011	2025	500	624	Trenchers	750	0.047	1.009	0.658	0.004	189.8	0.028	0.004	0.001	0.000	0.008
2007	2025	0	175	Water Trucks	175	0.161	1.953	0.616	0.004	324.2	0.029	0.014	0.004	0.000	0.028
2007	2025	175	233	Water Trucks	250	0.142	0.669	0.491	0.004	324.2	0.016	0.012	0.003	0.000	0.025
2007	2025	250	381	Water Trucks	500	0.141	0.633	0.462	0.003	324.2	0.016	0.012	0.003	0.000	0.025
2007	2025	500	618	Water Trucks	750	0.141	0.633	0.468	0.003	324.2	0.016	0.012	0.003	0.000	0.025
2007	2025	750	874	Water Trucks	1000	0.147	0.644	1.649	0.003	324.2	0.028	0.013	0.003	0.000	0.026
2011	2034	0	43	Cranes	50	0.369	2.380	1.734	0.003	244.6	0.066	0.032	0.009	0.001	0.065
2011	2034	50	93	Cranes	120	0.158	1.651	1.061	0.003	135.7	0.072	0.014	0.004	0.000	0.028
2011	2034	120	149	Cranes	175	0.056	1.444	0.736	0.003	112.3	0.041	0.005	0.001	0.000	0.010
2011	2034	175	208	Cranes	250	0.046	0.505	0.572	0.003	129.4	0.029	0.004	0.001	0.000	0.008
2011	2034	250	334	Cranes	500	0.037	0.480	0.477	0.002	132.5	0.020	0.003	0.001	0.000	0.006
2011	2034	500	562	Cranes	750	0.026	0.480	0.329	0.002	102.4	0.014	0.002	0.001	0.000	0.005
2011	2034	750	1800	Cranes	9999	0.022	0.497	0.254	0.002	114.9	0.011	0.002	0.001	0.000	0.004
2011	2034	0	23	Excavators	25	0.391	1.335	2.472	0.004	324.2	0.092	0.034	0.009	0.001	0.068
2011	2034	25	35	Excavators	50	0.385	3.066	2.095	0.004	324.2	0.046	0.034	0.009	0.001	0.067
2011	2034	50	103	Excavators	120	0.067	2.177	0.905	0.004	160.8	0.020	0.006	0.002	0.000	0.012
2011	2034	120	157	Excavators	175	0.030	1.917	0.454	0.004	136.1	0.013	0.003	0.001	0.000	0.005
2011	2034	175	222	Excavators	250	0.029	0.656	0.248	0.004	168.6	0.012	0.003	0.001	0.000	0.005
2011	2034	250	327	Excavators	500	0.028	0.624	0.235	0.003	176.7	0.008	0.002	0.001	0.000	0.005
2011	2034	500	542	Excavators	750	0.019	0.624	0.142	0.003	132.2	0.005	0.002	0.000	0.000	0.003
2007	2034	0	11	Generator Sets	15	0.453	2.588	3.181	0.007	420.9	0.135	0.040	0.011	0.001	0.079
2007	2034	15	19	Generator Sets	25	0.516	1.765	3.276	0.005	420.9	0.132	0.045	0.012	0.001	0.090
2007	2034	25	33	Generator Sets	50	0.358	2.836	2.680	0.005	420.9	0.083	0.031	0.009	0.001	0.063
2007	2034	50	84	Generator Sets	120	0.198	2.485	1.760	0.005	420.9	0.077	0.017	0.005	0.000	0.035
2007	2034	120	153	Generator Sets	175	0.152	2.178	1.146	0.005	420.9	0.047	0.013	0.004	0.000	0.027
2007	2034	175	229	Generator Sets	250	0.118	0.744	0.885	0.005	420.9	0.024	0.010	0.003	0.000	0.021
2007	2034	250	363	Generator Sets	500	0.115	0.729	0.816	0.004	420.9	0.023	0.010	0.003	0.000	0.020
2007	2034	500	586	Generator Sets	750	0.116	0.729	0.833	0.004	420.9	0.024	0.010	0.003	0.000	0.020
2007	2034	750	1130	Generator Sets	9999	0.142	0.752	2.164	0.004	420.9	0.040	0.012	0.003	0.000	0.025
2011	2034	0	36	Graders	50	0.482	3.274	2.364	0.004	347.0	0.080	0.042	0.011	0.001	0.084

OFFROAD Model	Calendar Year	HP Category	AvgHP	Equipment	Max HP	ROG	CO	NOX	SOX	CO2	PM10	ACET	BENZ	BUTA	FORM
										g/hp-hr					
2011	2034	50	98	Graders	120	0.265	2.318	1.351	0.004	175.8	0.098	0.023	0.006	0.001	0.046
2011	2034	120	162	Graders	175	0.112	2.033	1.298	0.004	163.0	0.084	0.010	0.003	0.000	0.020
2011	2034	175	225	Graders	250	0.060	0.715	0.615	0.004	185.6	0.033	0.005	0.001	0.000	0.010
2011	2034	250	300	Graders	500	0.041	0.697	0.516	0.003	177.2	0.017	0.004	0.001	0.000	0.007
2011	2034	500	635	Graders	750	0.039	0.697	0.402	0.003	126.9	0.016	0.003	0.001	0.000	0.007
2011	2034	0	13	Other Construction Equipment	15	0.411	2.153	2.571	0.005	352.7	0.100	0.036	0.010	0.001	0.072
2011	2034	15	17	Other Construction Equipment	25	0.425	1.452	2.688	0.004	352.7	0.100	0.037	0.010	0.001	0.074
2011	2034	25	36	Other Construction Equipment	50	0.308	2.757	2.134	0.005	352.7	0.043	0.027	0.007	0.001	0.054
2011	2034	50	104	Other Construction Equipment	120	0.117	2.200	1.156	0.004	187.0	0.047	0.010	0.003	0.000	0.020
2011	2034	120	137	Other Construction Equipment	175	0.054	1.940	0.750	0.004	149.2	0.040	0.005	0.001	0.000	0.009
2011	2034	175	327	Other Construction Equipment	500	0.051	0.639	0.610	0.003	190.6	0.031	0.004	0.001	0.000	0.009
2011	2034	0	24	Pavers	25	0.425	1.452	2.688	0.004	352.7	0.101	0.037	0.010	0.001	0.074
2011	2034	25	36	Pavers	50	0.726	3.534	2.650	0.005	352.7	0.145	0.063	0.017	0.002	0.127
2011	2034	50	89	Pavers	120	0.176	2.394	1.259	0.004	189.4	0.070	0.015	0.004	0.000	0.031
2011	2034	120	165	Pavers	175	0.047	2.074	0.696	0.004	144.9	0.036	0.004	0.001	0.000	0.008
2011	2034	175	250	Pavers	250	0.038	0.778	0.424	0.004	198.6	0.020	0.003	0.001	0.000	0.007
2011	2034	250	300	Pavers	500	0.024	0.812	0.255	0.003	188.0	0.009	0.002	0.001	0.000	0.004
2011	2034	0	19	Paving Equipment	25	0.364	1.241	2.298	0.004	301.5	0.086	0.032	0.009	0.001	0.064
2011	2034	25	36	Paving Equipment	50	0.593	2.968	2.254	0.004	301.5	0.121	0.052	0.014	0.001	0.104
2011	2034	50	82	Paving Equipment	120	0.075	2.031	0.877	0.004	144.2	0.031	0.007	0.002	0.000	0.013
2011	2034	120	152	Paving Equipment	175	0.037	1.760	0.564	0.003	139.1	0.023	0.003	0.001	0.000	0.006
2011	2034	175	184	Paving Equipment	250	0.029	0.652	0.313	0.003	158.8	0.015	0.003	0.001	0.000	0.005
2007	2034	0	8	Plate Compactors	15	0.285	1.493	1.783	0.004	244.6	0.070	0.025	0.007	0.001	0.050
2011	2034	0	9	Rollers	15	0.371	1.945	2.322	0.005	318.5	0.091	0.032	0.009	0.001	0.065
2011	2034	15	19	Rollers	25	0.384	1.312	2.428	0.004	318.5	0.091	0.034	0.009	0.001	0.067
2011	2034	25	37	Rollers	50	0.423	2.768	2.177	0.004	318.5	0.083	0.037	0.010	0.001	0.074
2011	2034	50	84	Rollers	120	0.090	2.052	0.934	0.004	157.7	0.034	0.008	0.002	0.000	0.016
2011	2034	120	154	Rollers	175	0.041	1.795	0.633	0.004	144.2	0.027	0.004	0.001	0.000	0.007
2011	2034	175	218	Rollers	250	0.023	0.632	0.231	0.004	162.9	0.010	0.002	0.001	0.000	0.004
2011	2034	250	312	Rollers	500	0.034	0.609	0.440	0.003	169.7	0.017	0.003	0.001	0.000	0.006
2011	2034	0	175	Rubber Tired Dozers	175	0.302	2.079	1.794	0.004	335.6	0.100	0.026	0.007	0.001	0.053
2011	2034	175	248	Rubber Tired Dozers	250	0.064	0.845	0.696	0.004	179.5	0.035	0.006	0.002	0.000	0.011
2011	2034	250	358	Rubber Tired Dozers	500	0.070	0.948	0.883	0.003	177.3	0.040	0.006	0.002	0.000	0.012
2011	2034	500	539	Rubber Tired Dozers	750	0.065	0.948	0.800	0.003	149.7	0.036	0.006	0.002	0.000	0.011
2011	2034	750	800	Rubber Tired Dozers	1000	0.084	1.018	1.399	0.003	163.1	0.054	0.007	0.002	0.000	0.015
2011	2034	0	25	Rubber Tired Loaders	25	0.371	1.265	2.342	0.004	307.2	0.087	0.032	0.009	0.001	0.065
2011	2034	25	46	Rubber Tired Loaders	50	0.412	2.863	2.079	0.004	307.2	0.068	0.036	0.010	0.001	0.072
2011	2034	50	87	Rubber Tired Loaders	120	0.157	2.041	1.180	0.004	177.4	0.048	0.014	0.004	0.000	0.027
2011	2034	120	157	Rubber Tired Loaders	175	0.050	1.791	0.601	0.003	136.1	0.027	0.004	0.001	0.000	0.009
2011	2034	175	220	Rubber Tired Loaders	250	0.039	0.627	0.299	0.003	163.6	0.015	0.003	0.001	0.000	0.007
2011	2034	250	350	Rubber Tired Loaders	500	0.032	0.603	0.257	0.003	156.8	0.009	0.003	0.001	0.000	0.006
2011	2034	500	717	Rubber Tired Loaders	750	0.028	0.603	0.237	0.003	121.2	0.009	0.002	0.001	0.000	0.005

OFFROAD Model	Calendar Year	HP Category	AvgHP	Equipment	Max HP	ROG	CO	NOX	SOX	CO2	PM10	ACET	BENZ	BUTA	FORM
					g/hp-hr										
2011	2034	750	877	Rubber Tired Loaders	1000	0.037	0.617	0.337	0.003	150.6	0.013	0.003	0.001	0.000	0.007
2011	2034	0	104	Scrapers	120	0.388	2.823	2.280	0.005	409.5	0.144	0.034	0.009	0.001	0.068
2011	2034	120	164	Scrapers	175	0.062	2.452	0.962	0.005	183.3	0.048	0.005	0.001	0.000	0.011
2011	2034	175	232	Scrapers	250	0.075	0.907	0.880	0.005	245.8	0.045	0.007	0.002	0.000	0.013
2011	2034	250	356	Scrapers	500	0.076	0.934	0.933	0.004	228.2	0.043	0.007	0.002	0.000	0.013
2011	2034	500	615	Scrapers	750	0.047	0.934	0.542	0.004	194.9	0.022	0.004	0.001	0.000	0.008
2007	2034	0	6	Signal Boards	15	0.543	2.848	3.400	0.007	466.4	0.133	0.048	0.013	0.001	0.095
2007	2034	15	37	Signal Boards	50	0.408	3.293	2.780	0.006	443.7	0.077	0.036	0.010	0.001	0.072
2007	2034	50	82	Signal Boards	120	0.218	2.710	1.702	0.005	443.7	0.070	0.019	0.005	0.000	0.038
2007	2034	120	158	Signal Boards	175	0.169	2.381	0.986	0.005	443.7	0.044	0.015	0.004	0.000	0.030
2007	2034	175	216	Signal Boards	250	0.167	0.982	0.932	0.006	536.1	0.028	0.015	0.004	0.000	0.029
2011	2034	0	9	Trenchers	15	0.497	2.605	3.110	0.007	426.6	0.122	0.043	0.012	0.001	0.087
2011	2034	15	35	Trenchers	25	0.515	1.757	3.252	0.005	426.6	0.122	0.045	0.012	0.001	0.090
2011	2034	25	35	Trenchers	50	0.894	4.147	3.199	0.006	426.6	0.183	0.078	0.021	0.002	0.157
2011	2034	50	69	Trenchers	120	0.114	2.854	1.331	0.005	236.0	0.038	0.010	0.003	0.000	0.020
2011	2034	120	153	Trenchers	175	0.091	2.469	1.210	0.005	183.2	0.073	0.008	0.002	0.000	0.016
2011	2034	175	237	Trenchers	250	0.101	0.942	1.402	0.005	216.4	0.072	0.009	0.002	0.000	0.018
2011	2034	250	331	Trenchers	500	0.083	1.009	1.171	0.004	233.2	0.055	0.007	0.002	0.000	0.014
2011	2034	500	624	Trenchers	750	0.047	1.009	0.647	0.004	190.2	0.029	0.004	0.001	0.000	0.008
2007	2034	0	175	Water Trucks	175	0.161	1.953	0.616	0.004	324.2	0.029	0.014	0.004	0.000	0.028
2007	2034	175	233	Water Trucks	250	0.142	0.669	0.491	0.004	324.2	0.016	0.012	0.003	0.000	0.025
2007	2034	250	381	Water Trucks	500	0.141	0.633	0.462	0.003	324.2	0.016	0.012	0.003	0.000	0.025
2007	2034	500	618	Water Trucks	750	0.141	0.633	0.468	0.003	324.2	0.016	0.012	0.003	0.000	0.025
2007	2034	750	874	Water Trucks	1000	0.147	0.644	1.649	0.003	324.2	0.028	0.013	0.003	0.000	0.026

APPENDIX B
REVISED RCEM INPUTS

Appendix B : Gateway Cities I-710 Project - Final Inputs for Road Construction Emissions Model v. 6.4

Project Name	Segment 1:Freight Corridor w/o Willow St. Interchange-Bridges	Segment 1:Freight Corridor w/o Willow St. Interchange-Roadway	Segment 1:Willow St. Interchange Only-Bridges	Segment 1:Willow St. Interchange Only-Roadway	Segment 2:Freight Corridor with Wardlow Bridge, Blue Line Bridge, and Portion of Freeway-Bridges	Segment 2:Freight Corridor with Wardlow Bridge, Blue Line Bridge, and Portion of Freeway-Roadway	Segment 2:Del Amo I/C Built-Bridges	Segment 2:Del Amo I/C Built-Roadway
Construction Start Year	2018	2018	2030	2030	2018	2018	2023	2023
Project Type	**3**	**1**	**3**	**1**	**3**	**1**	**3**	**1**
Project Construction Time	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Predominant Soil/Site Type: Enter 1, 2, or 3	1	1	1	1	1	1	1	1
Project Length (mi)	2.18	2.18	1.33	1.33	2.95	2.95	0.89	0.89
Total Project Area (Area)	117	39	60	20	60	15	63	16
Maximum Area Disturbed/Day	5	5	2	2	3	3	2	2
Water Trucks Used?	1	1	1	1	1	1	1	1
Soil Imported (CY/day)	88	912	217	2253	27	73	33	87
Soil Exported (CY/day)	696	964	994	1376	485	185	65	25
Average Truck Capacity	15	15	15	15	15	15	15	15
Use Project Timeline **Construction Periods (MONTHS)**				User Override of Construction Months				
Grubbing/Land Clearing	1	1	1	1	1	1	1	1
Grading/Excavation	29	29	3	3	8	8	8	8
Drainage/Utilities/Sub-Grade	16	16	4	4	6	6	6	6
Paving	10	10	2	2	4	4	4	4
Worker Commute Emissions				Commute Default Values				
Miles/ one-way trip	12	12	12	12	12	12	12	12
One-way trips/day	100	100	100	100	100	100	100	100
No. of employees: Grubbing/Land Clearing	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Grading/Excavation	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Drainage/Utilities/Sub-Grade	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Paving	Default	Default	Default	Default	Default	Default	Default	Default
Water Truck Emissions				User Override of Default # Water Trucks				
Grubbing/Land Clearing - Exhaust	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Grading/Excavation - Exhaust	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Drainage/Utilities/Subgrade	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Water Truck Emissions				User Override of Truck Miles Traveled/Day				
Grubbing/Land Clearing - Exhaust (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Grading/Excavation - Exhaust (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Drainage/Utilities/Subgrade (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Fugitive Dust				User Override of Max Acreage Disturbed/Day				
Fugitive Dust - Grubbing/Land Clearing	4.0	4.0	1.0	1.0	2.0	2.0	2.0	2.0
Fugitive Dust - Grading/Excavation	7.0	7.0	3.0	3.0	4.0	4.0	3.0	3.0
Fugitive Dust - Drainage/Utilities/Subgrade	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Project Name	Segment 2:Remainder of I-405 Built-Bridges	Segment 2:Remainder of I-405 Built-Roadway	Segment 3:Freight Corridor Only-Bridges	Segment 3:Freight Corridor Only-Roadway	Segment 3:Long Beach I/C-Bridges	Segment 3:Long Beach I/C-Roadway	Segment 3:SR-91 I/C-Bridges	Segment 3:SR-91 I/C-Roadway
Construction Start Year	2028	2028	2018	2018	2023	2023	2028	2028
Project Type	**3**	**1**	**3**	**1**	**3**	**1**	**3**	**1**
Project Construction Time	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Predominant Soil/Site Type: Enter 1, 2, or 3	1	1	1	1	1	1	1	1
Project Length (mi)	2.06	2.06	3.01	3.01	0.91	0.91	2.10	2.10
Total Project Area (Area)	146	36	22	22	38	38	914	914
Maximum Area Disturbed/Day	5	5	6	6	6	6	4	4
Water Trucks Used?	1	1	1	1	1	1	1	1
Soil Imported (CY/day)	71	189	101	299	30	90	73	217
Soil Exported (CY/day)	152	58	403	137	82	28	187	63
Average Truck Capacity	15	15	15	15	15	15	15	15
Use Project Timeline **Construction Periods (MONTHS)**				User Override of Construction Months				
Grubbing/Land Clearing	1	1	1	1	1	1	1	1
Grading/Excavation	15	15	32	32	9	9	21	21
Drainage/Utilities/Sub-Grade	8	8	20	20	6	6	15	15
Paving	4	4	13	13	4	4	9	9
Worker Commute Emissions				Commute Default Values				
Miles/ one-way trip	12	12	12	12	12	12	12	12
One-way trips/day	100	100	100	100	100	100	100	100
No. of employees: Grubbing/Land Clearing	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Grading/Excavation	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Drainage/Utilities/Sub-Grade	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Paving	Default	Default	Default	Default	Default	Default	Default	Default
Water Truck Emissions				User Override of Default # Water Trucks				
Grubbing/Land Clearing - Exhaust	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Grading/Excavation - Exhaust	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Drainage/Utilities/Subgrade	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Water Truck Emissions				User Override of Truck Miles Traveled/Day				
Grubbing/Land Clearing - Exhaust (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Grading/Excavation - Exhaust (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Drainage/Utilities/Subgrade (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Fugitive Dust				User Override of Max Acreage Disturbed/Day				
Fugitive Dust - Grubbing/Land Clearing	4.0	4.0	1.0	1.0	5.0	5.0	3.0	3.0
Fugitive Dust - Grading/Excavation	7.0	7.0	10.0	10.0	10.0	10.0	7.0	7.0
Fugitive Dust - Drainage/Utilities/Subgrade	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Project Name	Segment 4:Freight Corridor Only-Bridges	Segment 4:Freight Corridor Only-Roadway	Segment 4:Firestone/Southern, Portion of Rosecrans I/C-Bridges	Segment 4:Firestone/Southern, Portion of Rosecrans I/C-Roadway	Segment 4:Remainder of Rosecrans I/C-Bridges	Segment 4:Remainder of Rosecrans I/C-Roadway	Segment 4:Imperial Hwy I/C Only-Bridges	Segment 4:Imperial Hwy I/C Only-Roadway
Construction Start Year	2019	2019	2019	2019	2023	2023	2025	2025
Project Type	3	1	3	1	3	1	3	1
Project Construction Time	0	0	0	0	0	0	0	0
Predominant Soil/Site Type: Enter 1, 2, or 3	1	1	1	1	1	1	1	1
Project Length (mi)	4.73	4.73	1.57	1.57	1.57	1.57	1.57	1.57
Total Project Area (Area)	28	5	94	17	94	17	94	17
Maximum Area Disturbed/Day	4	4	3	3	3	3	3	3
Water Trucks Used?	1	1	1	1	1	1	1	1
Soil Imported (CY/day)	14	166	48	552	48	552	48	552
Soil Exported (CY/day)	997	413	212	88	212	88	212	88
Average Truck Capacity	15	15	15	15	15	15	15	15

Use Project Timeline

Construction Periods (MONTHS)

User Override of Construction Months

Grubbing/Land Clearing	1	1	1	1	1	1	1	1
Grading/Excavation	32	32	19	19	19	19	19	19
Drainage/Utilities/Sub-Grade	20	20	14	14	14	14	14	14
Paving	13	13	8	8	8	8	8	8

Worker Commute Emissions

Commute Default Values

Miles/ one-way trip	12	12	12	12	12	12	12	12
One-way trips/day	100	100	100	100	100	100	100	100
No. of employees: Grubbing/Land Clearing	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Grading/Excavation	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Drainage/Utilities/Sub-Grade	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Paving	Default	Default	Default	Default	Default	Default	Default	Default

Water Truck Emissions

User Override of Default # Water Trucks

Grubbing/Land Clearing - Exhaust	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Grading/Excavation - Exhaust	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Drainage/Utilities/Subgrade	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

Water Truck Emissions

User Override of Truck Miles Traveled/Day

Grubbing/Land Clearing - Exhaust (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Grading/Excavation - Exhaust (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Drainage/Utilities/Subgrade (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0

Fugitive Dust

User Override of Max Acreage Disturbed/Day

Fugitive Dust - Grubbing/Land Clearing	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Fugitive Dust - Grading/Excavation	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Fugitive Dust - Drainage/Utilities/Subgrade	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Project Name	Segment 5:Freight Corridor Only-Bridges	Segment 5:Freight Corridor Only-Roadway	Segment 5:Florence I/C-Bridges	Segment 5:Florence I/C-Roadway	Segment 5:Slauson I/C-Bridges	Segment 5:Slauson I/C-Roadway	Segment 6:Atlantic Blvd N/B ramps only-Bridges	Segment 6:Atlantic Blvd N/B ramps only-Roadway
Construction Start Year	2019	2019	2023	2023	2028	2028	2018	2018
Project Type	3	1	3	1	3	1	3	1
Project Construction Time	0	0	0	0	0	0	0	0
Predominant Soil/Site Type: Enter 1, 2, or 3	1	1	1	1	1	1	1	1
Project Length (mi)	2.44	2.44	1.22	1.22	1.22	1.22	0.47	0.47
Total Project Area (Area)	17	11	40	27	40	27	9	9
Maximum Area Disturbed/Day	5	5	5	5	5	5	6	6
Water Trucks Used?	1	1	1	1	1	1	1	1
Soil Imported (CY/day)	21	79	26	94	26	94	14	166
Soil Exported (CY/day)	84	116	220	305	220	305	77	23
Average Truck Capacity	15	15	15	15	15	15	15	15
Use Project Timeline **Construction Periods (MONTHS)**				User Override of Construction Months				
Grubbing/Land Clearing	1	1	1	1	1	1	1	1
Grading/Excavation	32	32	22	22	22	22	12	12
Drainage/Utilities/Sub-Grade	20	20	15	15	15	15	10	10
Paving	12	12	9	9	9	9	5	5
Worker Commute Emissions				Commute Default Values				
Miles/ one-way trip	12	12	12	12	12	12	12	12
One-way trips/day	100	100	100	100	100	100	100	100
No. of employees: Grubbing/Land Clearing	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Grading/Excavation	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Drainage/Utilities/Sub-Grade	Default	Default	Default	Default	Default	Default	Default	Default
No. of employees: Paving	Default	Default	Default	Default	Default	Default	Default	Default
Water Truck Emissions				User Override of Default # Water Trucks				
Grubbing/Land Clearing - Exhaust	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Grading/Excavation - Exhaust	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Drainage/Utilities/Subgrade	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Water Truck Emissions				User Override of Truck Miles Traveled/Day				
Grubbing/Land Clearing - Exhaust (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Grading/Excavation - Exhaust (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Drainage/Utilities/Subgrade (mi/day)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Fugitive Dust				User Override of Max Acreage Disturbed/Day				
Fugitive Dust - Grubbing/Land Clearing	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0
Fugitive Dust - Grading/Excavation	7.0	7.0	8.0	8.0	8.0	8.0	10.0	10.0
Fugitive Dust - Drainage/Utilities/Subgrade	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Project Name	Segment 6:Freight Corridor Washington Blvd I/C Only-Bridges	Segment 6:Freight Corridor Washington Blvd I/C Only-Roadway	Segment 6:Atlantic/Bandini I/C only (Remainder)-Bridges	Segment 6:Atlantic/Bandini I/C only (Remainder)-Roadway	Segment 7:Washington Blvd to SR-60-Bridges
Construction Start Year	2019	2019	2024	2024	2028
Project Type	**3**	**1**	**3**	**1**	**3**
Project Construction Time	**0**	**0**	**0**	**0**	**0**
Predominant Soil/Site Type: Enter 1, 2, or 3	1	1	1	1	1
Project Length (mi)	1.00	1.00	1.34	1.34	1.40
Total Project Area (Area)	23	23	37	37	42
Maximum Area Disturbed/Day	5	5	5	5	5
Water Trucks Used?	1	1	1	1	1
Soil Imported (CY/day)	8	92	53	647	2000
Soil Exported (CY/day)	307	93	138	42	0
Average Truck Capacity	15	15	15	15	15

Use Project Timeline **Construction Periods (MONTHS)** — User Override of Construction Months

Grubbing/Land Clearing	1	1	1	1	2
Grading/Excavation	55	55	27	27	5
Drainage/Utilities/Sub-Grade	63	63	18	18	3
Paving	25	25	11	11	36

Worker Commute Emissions — Commute Default Values

Miles/ one-way trip	12	12	12	12	12
One-way trips/day	100	100	100	100	2
No. of employees: Grubbing/Land Clearing	Default	Default	Default	Default	40
No. of employees: Grading/Excavation	Default	Default	Default	Default	90
No. of employees: Drainage/Utilities/Sub-Grade	Default	Default	Default	Default	70
No. of employees: Paving	Default	Default	Default	Default	100

Water Truck Emissions — User Override of Default # Water Trucks

Grubbing/Land Clearing - Exhaust	2.0	2.0	2.0	2.0	6.0
Grading/Excavation - Exhaust	2.0	2.0	2.0	2.0	6.0
Drainage/Utilities/Subgrade	2.0	2.0	2.0	2.0	5.0

Water Truck Emissions — User Override of Truck Miles Traveled/Day

Grubbing/Land Clearing - Exhaust (mi/day)	24.0	24.0	24.0	24.0	60.0
Grading/Excavation - Exhaust (mi/day)	24.0	24.0	24.0	24.0	60.0
Drainage/Utilities/Subgrade (mi/day)	24.0	24.0	24.0	24.0	40.0

Fugitive Dust — User Override of Max Acreage Disturbed/Day

Fugitive Dust - Grubbing/Land Clearing	1.0	1.0	1.0	1.0	6.5
Fugitive Dust - Grading/Excavation	10.0	10.0	8.0	8.0	5.0
Fugitive Dust - Drainage/Utilities/Subgrade	1.0	1.0	1.0	1.0	3.0

APPENDIX C
WORK-DURATION RATIO

Appendix C : Ratio of Construction Work Time to Project Duration

Segment	1		2	3				
Figure [a]	3-1a	3-1b	3-2a	3-2b	3-2c	3-a	3-b	3-c
	Freight Corridor w/o Willow St. Interchange	Willow St. Interchange Only	Freight Corridor with Wardlow Bridge, Blue Line Bridge, and Portion of Freeway	Del Amo I/C Built	Remainder of I-405 Built	Freight Corridor Only	Long Beach I/C	SR-91 I/C
Start Date	1/1/2018	1/1/2030	1/1/2018	1/1/2023	1/1/2028	12/1/2018	1/1/2023	1/1/2028
End Date	1/1/2025	3/1/2033	11/1/2020	6/1/2024	7/1/2032	12/1/2021	7/1/2025	4/1/2034
Total Number of Working Months [b]	56.25	10.25	5.00	18.00	41.00	64.75	20.00	45.25
Total Duration (Months)	81	38	34	17	54	36	30	75
Working:Duration Ratio	0.69	0.27	0.15	1.06	0.76	1.80	0.67	0.60

Segment	4				5			6		
Figure [a]	3-a	3-b	3-c	3-d	3-a	3-b	3-c	3-a	3-b	3-c
	Freight Corridor Only	Firestone/ Southern, Portion of Rosecrans I/C	Remainder of Rosecrans I/C	Imperial Hwy I/C Only	Freight Corridor Only	Florence I/C	Slauson I/C	Atlantic Blvd N/B ramps only	Freight Corridor Washington Blvd I/C Only	Atlantic/ Bandini I/C only (Remainder)
Start Date	1/1/2019	1/1/2019	1/1/2023	1/1/2025	1/1/2019	1/1/2023	1/1/2028	1/1/2018	1/1/2019	1/1/2024
End Date	7/1/2021	7/1/2022	9/1/2025	1/1/2028	6/1/2021	2/1/2027	3/1/2031	6/1/2020	9/1/2023	3/1/2029
Total Number of Working Months [b]	64.50	41.25	41.25	41.25	64.50	46.50	46.50	27.50	143.00	57.00
Total Duration (Months)	30	42	32	36	29	49	38	29	56	62
Working:Duration Ratio	2.15	0.98	1.29	1.15	2.22	0.95	1.22	0.95	2.55	0.92

Segment	7
Figure [a]	3-a
	Washington Blvd to SR-60
Start Date	1/1/2028
End Date	1/1/2033
Total Number of Working Months [b]	46.00
Total Duration (Months)	60
Working:Duration Ratio	0.77

[a] Refers to Figure numbers given in the "Air Quality Action Plan I-710 Construction Staging Report" (Gateway Cities Council of Governments 2011)

[b] From the sum of "Construction Period" months given in sub-segment inputs.

APPENDIX D
DAILY CONSTRUCTION EMISSIONS ACROSS ALL SEGMENTS

Appendix D : Daily Construction Emissions Across All Segments

Daily Emissions Across All Segments (lbs/day)																
	Criteria Pollutants								Greenhouse Gases			MSATs				
	ROG	CO	NOx	PM10 (D)	PM10 (FD)	PM2.5 (D)	PM2.5 (FD)	DPM	CO2	CH4	N2O	ACET	ACRO	BENZ	BUTA	FORM
Average	14	87	87	4	195	3	40	7	8	0.02	0.40	0.61	0.11	0.16	0.02	1.1
Peak	410	478	414	22	1288	20	268	42	41	0.13	2.01	2.70	0.63	0.78	0.08	5
SCAQMD Regional Thresholds	75	550	100	150		55		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Months > Threshold	0	0	53	85		48		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1/1/2018	10	91	71	4	201	4	42	8	7	0.02	0.36	0.43	0.12	0.13	0.01	0.92
2/1/2018	10	92	72	4	204	4	42	8	7	0.02	0.36	0.43	0.13	0.13	0.01	0.91
3/1/2018	11	98	78	4	210	4	44	8	8	0.03	0.39	0.43	0.15	0.14	0.01	0.94
4/1/2018	11	98	78	4	210	4	44	8	8	0.03	0.39	0.43	0.15	0.14	0.01	0.94
5/1/2018	11	98	78	4	210	4	44	8	8	0.03	0.39	0.43	0.15	0.14	0.01	0.94
6/1/2018	11	98	78	4	210	4	44	8	8	0.03	0.39	0.43	0.15	0.14	0.01	0.94
7/1/2018	11	98	78	4	210	4	44	8	8	0.03	0.39	0.43	0.15	0.14	0.01	0.94
8/1/2018	11	98	78	4	210	4	44	8	8	0.03	0.39	0.43	0.15	0.14	0.01	0.94
9/1/2018	11	98	78	4	210	4	44	8	8	0.03	0.39	0.43	0.15	0.14	0.01	0.94
10/1/2018	10	94	75	4	204	4	42	8	8	0.02	0.38	0.41	0.15	0.13	0.01	0.88
11/1/2018	10	94	75	4	204	4	42	8	8	0.02	0.38	0.41	0.15	0.13	0.01	0.88
12/1/2018	17	157	138	8	408	7	85	14	13	0.04	0.62	0.90	0.18	0.27	0.03	1.85
1/1/2019	52	478	414	22	1288	20	268	42	40	0.12	1.99	2.70	0.28	0.78	0.08	5.42
2/1/2019	51	474	410	22	1212	19	252	41	41	0.13	2.01	2.62	0.26	0.76	0.08	5.27
3/1/2019	410	474	410	22	1212	19	252	41	41	0.13	2.01	2.62	0.26	0.76	0.08	5.27
4/1/2019	48	440	379	20	964	17	200	37	38	0.12	1.88	2.48	0.26	0.72	0.07	4.97
5/1/2019	48	440	379	20	964	17	200	37	38	0.12	1.88	2.48	0.26	0.72	0.07	4.97
6/1/2019	43	388	339	18	857	16	178	34	32	0.10	1.60	2.39	0.22	0.68	0.07	4.76
7/1/2019	42	385	338	18	847	16	176	34	32	0.10	1.59	2.37	0.22	0.68	0.07	4.74
8/1/2019	42	382	349	18	814	15	169	33	32	0.10	1.57	2.38	0.21	0.68	0.07	4.77
9/1/2019	42	379	342	17	814	15	169	33	31	0.09	1.55	2.33	0.21	0.67	0.07	4.68
10/1/2019	49	442	390	20	954	17	199	37	39	0.12	1.91	2.41	0.34	0.71	0.07	4.87
11/1/2019	40	366	325	17	772	15	161	32	30	0.09	1.51	2.29	0.18	0.65	0.07	4.55
12/1/2019	40	366	325	17	772	15	161	32	30	0.09	1.51	2.29	0.18	0.65	0.07	4.55
1/1/2020	51	468	397	21	958	18	199	39	41	0.13	2.01	2.53	0.29	0.74	0.08	5.10
2/1/2020	51	468	397	21	958	18	199	39	41	0.13	2.01	2.53	0.29	0.74	0.08	5.10
3/1/2020	42	379	338	17	828	15	172	33	31	0.09	1.55	2.28	0.25	0.66	0.07	4.61
4/1/2020	39	355	320	17	786	14	164	31	29	0.09	1.44	2.23	0.20	0.64	0.06	4.49
5/1/2020	34	303	281	14	549	12	114	26	25	0.07	1.22	2.03	0.18	0.58	0.06	4.10
6/1/2020	29	258	246	12	471	11	98	23	20	0.06	0.98	1.96	0.15	0.55	0.05	3.92
7/1/2020	24	210	203	10	351	9	73	19	16	0.04	0.80	1.65	0.13	0.46	0.05	3.31
8/1/2020	22	186	186	9	309	8	64	17	14	0.04	0.69	1.60	0.09	0.44	0.04	3.19
9/1/2020	22	186	186	9	309	8	64	17	14	0.04	0.69	1.60	0.09	0.44	0.04	3.19
10/1/2020	21	180	187	9	290	8	60	16	13	0.04	0.67	1.58	0.09	0.44	0.04	3.15
11/1/2020	21	180	187	9	290	8	60	16	13	0.04	0.67	1.58	0.09	0.44	0.04	3.15
12/1/2020	18	156	154	7	284	7	59	14	12	0.03	0.59	1.31	0.07	0.36	0.04	2.61
1/1/2021	18	152	153	7	185	6	38	13	12	0.04	0.62	1.20	0.08	0.33	0.03	2.39
2/1/2021	18	152	153	7	185	6	38	13	12	0.04	0.62	1.20	0.08	0.33	0.03	2.39
3/1/2021	18	152	153	7	185	6	38	13	12	0.04	0.62	1.20	0.08	0.33	0.03	2.39
4/1/2021	18	146	155	6	163	6	34	12	12	0.03	0.60	1.17	0.08	0.33	0.03	2.34
5/1/2021	165	146	165	6	137	6	29	12	12	0.03	0.59	1.18	0.07	0.33	0.03	2.38
6/1/2021	15	121	147	5	91	5	19	10	9	0.02	0.46	1.14	0.06	0.31	0.03	2.28
7/1/2021	10	83	94	4	91	3	19	7	7	0.02	0.33	0.65	0.06	0.18	0.02	1.31
8/1/2021	9	81	95	4	84	3	17	7	6	0.02	0.32	0.65	0.05	0.18	0.02	1.29
9/1/2021	9	81	95	4	84	3	17	7	6	0.02	0.32	0.65	0.05	0.18	0.02	1.29
10/1/2021	11	103	107	5	288	4	60	10	8	0.02	0.42	0.76	0.04	0.21	0.02	1.49
11/1/2021	11	103	117	5	262	4	55	9	8	0.02	0.40	0.78	0.03	0.21	0.02	1.53
12/1/2021	11	103	117	5	262	4	55	9	8	0.02	0.40	0.78	0.03	0.21	0.02	1.53
1/1/2022	16	151	145	7	360	6	75	13	13	0.0	0.6	0.8	0.1	0.2	0.0	1.6

(D): Diesel Exhaust, (FD): Fugitive Dust

Daily Emissions Across All Segments (lbs/day)																
	Criteria Pollutants								Greenhouse Gases			MSATs				
	ROG	CO	NOx	PM10 (D)	PM10 (FD)	PM2.5 (D)	PM2.5 (FD)	DPM	CO2	CH4	N2O	ACET	ACRO	BENZ	BUTA	FORM
2/1/2022	13	128	127	6	321	5	67	11	10	0.0	0.5	0.8	0.1	0.2	0.0	1.6
3/1/2022	13	126	127	6	314	5	65	11	10	0.0	0.5	0.8	0.1	0.2	0.0	1.5
4/1/2022	13	122	128	6	304	5	63	11	10	0.0	0.5	0.8	0.1	0.2	0.0	1.5
5/1/2022	16	148	145	7	353	6	73	12	13	0.0	0.6	0.8	0.1	0.2	0.0	1.6
6/1/2022	13	126	127	6	314	5	65	11	10	0.0	0.5	0.8	0.1	0.2	0.0	1.5
7/1/2022	3	29	35	1	32	1	7	3	2	0.0	0.1	0.3	0.0	0.1	0.0	0.6
8/1/2022	3	23	26	1	32	1	7	2	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
9/1/2022	3	23	26	1	32	1	7	2	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
10/1/2022	2	21	26	1	26	1	5	2	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
11/1/2022	2	21	26	1	26	1	5	2	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
12/1/2022	2	21	26	1	26	1	5	2	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
1/1/2023	13	126	126	6	345	5	72	10	13	0.0	0.7	1.0	0.2	0.2	0.0	1.3
2/1/2023	13	126	126	6	345	5	72	10	13	0.0	0.7	1.0	0.2	0.2	0.0	1.3
3/1/2023	13	126	126	6	345	5	72	10	13	0.0	0.7	1.0	0.2	0.2	0.0	1.3
4/1/2023	13	126	126	6	345	5	72	10	13	0.0	0.7	1.0	0.2	0.2	0.0	1.3
5/1/2023	13	122	131	5	298	4	62	10	12	0.0	0.6	1.0	0.1	0.2	0.0	1.4
6/1/2023	9	88	101	4	180	3	37	7	8	0.0	0.4	0.6	0.1	0.2	0.0	1.2
7/1/2023	60	56	72	3	57	2	12	5	4	0.0	0.2	0.6	0.0	0.1	0.0	1.0
8/1/2023	6	53	72	2	47	2	10	5	4	0.0	0.2	0.5	0.0	0.1	0.0	1.0
9/1/2023	6	53	72	2	47	2	10	5	4	0.0	0.2	0.5	0.0	0.1	0.0	1.0
10/1/2023	5	42	57	2	42	2	9	4	3	0.0	0.2	0.4	0.0	0.1	0.0	0.8
11/1/2023	5	39	56	2	32	2	7	3	3	0.0	0.2	0.4	0.0	0.1	0.0	0.8
12/1/2023	5	39	56	2	32	2	7	3	3	0.0	0.2	0.4	0.0	0.1	0.0	0.8
1/1/2024	15	142	139	6	456	6	95	12	14	0.0	0.7	1.1	0.2	0.2	0.0	1.4
2/1/2024	14	132	127	6	435	5	90	11	13	0.0	0.7	1.0	0.2	0.2	0.0	1.3
3/1/2024	14	132	127	6	435	5	90	11	13	0.0	0.7	1.0	0.2	0.2	0.0	1.3
4/1/2024	14	132	127	6	435	5	90	11	13	0.0	0.7	1.0	0.2	0.2	0.0	1.3
5/1/2024	13	120	116	5	360	5	75	10	12	0.0	0.6	0.9	0.2	0.2	0.0	1.2
6/1/2024	10	98	97	5	308	4	64	9	9	0.0	0.4	0.7	0.1	0.2	0.0	1.1
7/1/2024	7	66	68	3	206	3	43	6	6	0.0	0.3	0.6	0.1	0.1	0.0	0.9
8/1/2024	6	54	59	3	131	2	27	5	4	0.0	0.2	0.4	0.1	0.1	0.0	0.9
9/1/2024	6	54	59	3	131	2	27	5	4	0.0	0.2	0.4	0.1	0.1	0.0	0.9
10/1/2024	7	66	75	3	178	3	37	6	6	0.0	0.3	0.6	0.3	0.1	0.0	0.9
11/1/2024	7	66	75	3	178	3	37	6	6	0.0	0.3	0.6	0.3	0.1	0.0	0.9
12/1/2024	7	66	75	3	178	3	37	6	6	0.0	0.3	0.6	0.3	0.1	0.0	0.9
1/1/2025	12	114	116	5	357	4	74	9	13	0.0	0.7	1.0	0.6	0.2	0.0	1.1
2/1/2025	10	92	98	4	305	4	63	8	10	0.0	0.5	0.8	0.6	0.1	0.0	1.0
3/1/2025	9	80	87	3	220	3	46	6	9	0.0	0.5	0.7	0.6	0.1	0.0	0.9
4/1/2025	9	85	90	4	223	3	46	7	10	0.0	0.5	0.8	0.6	0.1	0.0	0.9
5/1/2025	12	109	110	5	281	4	58	8	13	0.0	0.7	1.1	0.6	0.2	0.0	1.0
6/1/2025	9	87	92	4	229	3	48	7	10	0.0	0.5	0.8	0.6	0.1	0.0	1.0
7/1/2025	9	83	84	4	229	3	48	7	10	0.0	0.5	0.8	0.6	0.1	0.0	0.9
8/1/2025	8	69	73	3	150	2	31	5	8	0.0	0.4	0.6	0.6	0.1	0.0	0.8
9/1/2025	87	45	46	2	85	2	18	4	5	0.0	0.3	0.3	0.3	0.1	0.0	0.6
10/1/2025	5	45	46	2	85	2	18	4	5	0.0	0.3	0.3	0.3	0.1	0.0	0.6
11/1/2025	5	45	46	2	85	2	18	4	5	0.0	0.3	0.3	0.3	0.1	0.0	0.6
12/1/2025	3	28	35	1	30	1	6	3	2	0.0	0.1	0.3	0.0	0.1	0.0	0.5
1/1/2026	3	26	38	1	21	1	4	2	2	0.0	0.1	0.3	0.0	0.1	0.0	0.6
2/1/2026	4	37	46	2	97	2	20	3	3	0.0	0.2	0.4	0.0	0.1	0.0	0.6
3/1/2026	4	37	46	2	97	2	20	3	3	0.0	0.2	0.4	0.0	0.1	0.0	0.6
4/1/2026	4	37	46	2	97	2	20	3	3	0.0	0.2	0.4	0.0	0.1	0.0	0.6
5/1/2026	3	26	38	1	21	1	4	2	2	0.0	0.1	0.3	0.0	0.1	0.0	0.6
6/1/2026	3	26	38	1	21	1	4	2	2	0.0	0.1	0.3	0.0	0.1	0.0	0.6
7/1/2026	2	20	28	1	21	1	4	2	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
8/1/2026	2	18	32	1	0	1	0	1	1	0.0	0.1	0.2	0.0	0.1	0.0	0.4
9/1/2026	2	18	32	1	0	1	0	1	1	0.0	0.1	0.2	0.0	0.1	0.0	0.4
10/1/2026	4	35	41	1	83	1	17	3	4	0.0	0.2	0.4	0.2	0.1	0.0	0.4

(D): Diesel Exhaust, (FD): Fugitive Dust

Daily Emissions Across All Segments (lbs/day)																
	Criteria Pollutants								Greenhouse Gases			MSATs				
	ROG	CO	NOx	PM10 (D)	PM10 (FD)	PM2.5 (D)	PM2.5 (FD)	DPM	CO2	CH4	N2O	ACET	ACRO	BENZ	BUTA	FORM
11/1/2026	4	35	45	1	74	1	15	3	4	0.0	0.2	0.4	0.2	0.1	0.0	0.4
12/1/2026	4	35	41	1	83	1	17	3	4	0.0	0.2	0.4	0.2	0.1	0.0	0.4
1/1/2027	6	53	59	2	131	2	27	4	7	0.0	0.4	0.5	0.5	0.1	0.0	0.5
2/1/2027	5	47	47	2	131	1	27	3	7	0.0	0.3	0.4	0.5	0.1	0.0	0.4
3/1/2027	5	47	47	2	131	1	27	3	7	0.0	0.3	0.4	0.5	0.1	0.0	0.4
4/1/2027	5	47	47	2	131	1	27	3	7	0.0	0.3	0.4	0.5	0.1	0.0	0.4
5/1/2027	5	47	47	2	131	1	27	3	7	0.0	0.3	0.4	0.5	0.1	0.0	0.4
6/1/2027	3	30	33	1	85	1	18	2	4	0.0	0.2	0.4	0.2	0.0	0.0	0.3
7/1/2027	3	30	33	1	85	1	18	2	4	0.0	0.2	0.4	0.2	0.0	0.0	0.3
8/1/2027	3	30	33	1	85	1	18	2	4	0.0	0.2	0.4	0.2	0.0	0.0	0.3
9/1/2027	3	30	33	1	85	1	18	2	4	0.0	0.2	0.4	0.2	0.0	0.0	0.3
10/1/2027	12	102	99	4	150	3	31	7	18	0.1	0.9	0.5	0.4	0.1	0.0	0.7
11/1/2027	138	70	72	3	135	2	28	5	11	0.0	0.6	0.5	0.3	0.1	0.0	0.6
12/1/2027	2	20	30	1	32	1	7	2	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
1/1/2028	4	48	65	2	202	2	42	4	6	0.0	0.3	0.3	0.0	0.1	0.0	0.7
2/1/2028	4	48	65	2	202	2	42	4	6	0.0	0.3	0.3	0.0	0.1	0.0	0.7
3/1/2028	4	48	65	2	202	2	42	4	6	0.0	0.3	0.3	0.0	0.1	0.0	0.7
4/1/2028	4	48	65	2	202	2	42	4	6	0.0	0.3	0.3	0.0	0.1	0.0	0.7
5/1/2028	4	48	65	2	202	2	42	4	6	0.0	0.3	0.3	0.0	0.1	0.0	0.7
6/1/2028	4	44	61	2	166	2	35	3	5	0.0	0.3	0.3	0.0	0.1	0.0	0.7
7/1/2028	4	44	61	2	166	2	35	3	5	0.0	0.3	0.3	0.0	0.1	0.0	0.7
8/1/2028	3	34	46	1	81	1	17	3	3	0.0	0.2	0.3	0.0	0.1	0.0	0.6
9/1/2028	3	34	46	1	81	1	17	3	3	0.0	0.2	0.3	0.0	0.1	0.0	0.6
10/1/2028	7	66	77	3	104	2	22	5	10	0.0	0.5	0.3	0.1	0.1	0.0	0.7
11/1/2028	7	66	77	3	104	2	22	5	10	0.0	0.5	0.3	0.1	0.1	0.0	0.7
12/1/2028	3	30	46	1	43	1	9	2	3	0.0	0.1	0.3	0.0	0.1	0.0	0.6
1/1/2029	4	31	48	1	50	1	10	2	3	0.0	0.1	0.3	0.0	0.1	0.0	0.6
2/1/2029	4	31	48	1	50	1	10	2	3	0.0	0.1	0.3	0.0	0.1	0.0	0.6
3/1/2029	4	31	48	1	50	1	10	2	3	0.0	0.1	0.3	0.0	0.1	0.0	0.6
4/1/2029	4	34	46	1	148	1	31	3	4	0.0	0.2	0.2	0.0	0.1	0.0	0.5
5/1/2029	4	34	46	1	148	1	31	3	4	0.0	0.2	0.2	0.0	0.1	0.0	0.5
6/1/2029	4	34	46	1	148	1	31	3	4	0.0	0.2	0.2	0.0	0.1	0.0	0.5
7/1/2029	3	24	32	1	62	1	13	2	3	0.0	0.1	0.2	0.0	0.1	0.0	0.4
8/1/2029	3	23	32	1	54	1	11	2	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
9/1/2029	2	19	28	1	18	1	4	1	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
10/1/2029	7	56	66	2	44	2	9	4	9	0.0	0.4	0.3	0.1	0.1	0.0	0.6
11/1/2029	3	24	39	1	6	1	1	2	2	0.0	0.1	0.3	0.0	0.1	0.0	0.5
12/1/2029	4	31	43	1	104	1	22	2	4	0.0	0.2	0.2	0.0	0.1	0.0	0.4
1/1/2030	161	39	50	2	160	1	33	3	5	0.0	0.2	0.3	0.0	0.1	0.0	0.5
2/1/2030	5	45	56	2	165	1	34	3	6	0.0	0.3	0.3	0.0	0.1	0.0	0.5
3/1/2030	5	44	57	2	159	1	33	3	6	0.0	0.3	0.3	0.0	0.1	0.0	0.5
4/1/2030	6	50	64	2	209	2	43	4	7	0.0	0.4	0.3	0.1	0.1	0.0	0.6
5/1/2030	7	64	68	2	66	2	14	4	10	0.0	0.5	0.3	0.1	0.1	0.0	0.6
6/1/2030	7	57	63	2	61	2	13	4	9	0.0	0.4	0.3	0.1	0.1	0.0	0.6
7/1/2030	7	58	60	2	103	2	21	4	9	0.0	0.5	0.2	0.1	0.1	0.0	0.5
8/1/2030	3	26	34	1	80	1	17	2	3	0.0	0.1	0.2	0.0	0.1	0.0	0.4
9/1/2030	3	26	39	1	68	1	14	2	3	0.0	0.1	0.2	0.0	0.1	0.0	0.5
10/1/2030	3	30	44	1	98	1	20	2	3	0.0	0.2	0.2	0.0	0.1	0.0	0.5
11/1/2030	3	30	44	1	98	1	20	2	3	0.0	0.2	0.2	0.0	0.1	0.0	0.5
12/1/2030	3	29	39	1	110	1	23	2	3	0.0	0.2	0.2	0.0	0.1	0.0	0.5
1/1/2031	3	30	44	1	95	1	20	2	3	0.0	0.2	0.2	0.0	0.1	0.0	0.5
2/1/2031	3	29	39	1	108	1	22	2	3	0.0	0.2	0.2	0.0	0.1	0.0	0.5
3/1/2031	3	26	39	1	59	1	12	2	3	0.0	0.1	0.2	0.0	0.1	0.0	0.5
4/1/2031	2	14	20	1	16	1	3	1	1	0.0	0.1	0.1	0.0	0.0	0.0	0.3
5/1/2031	2	20	25	1	22	1	5	1	3	0.0	0.1	0.2	0.0	0.0	0.0	0.3
6/1/2031	2	20	25	1	22	1	5	1	3	0.0	0.1	0.2	0.0	0.0	0.0	0.3
7/1/2031	2	20	25	1	22	1	5	1	3	0.0	0.1	0.2	0.0	0.0	0.0	0.3

(D): Diesel Exhaust, (FD): Fugitive Dust

Daily Emissions Across All Segments (lbs/day)																
	Criteria Pollutants								Greenhouse Gases			MSATs				
	ROG	CO	NOx	PM10 (D)	PM10 (FD)	PM2.5 (D)	PM2.5 (FD)	DPM	CO2	CH4	N2O	ACET	ACRO	BENZ	BUTA	FORM
8/1/2031	2	20	26	1	14	1	3	1	2	0.0	0.1	0.2	0.0	0.0	0.0	0.3
9/1/2031	2	13	21	0	3	0	1	1	1	0.0	0.0	0.1	0.0	0.0	0.0	0.3
10/1/2031	2	13	21	0	3	0	1	1	1	0.0	0.0	0.1	0.0	0.0	0.0	0.3
11/1/2031	2	18	25	1	56	1	12	1	2	0.0	0.1	0.2	0.0	0.0	0.0	0.3
12/1/2031	2	18	25	1	56	1	12	1	2	0.0	0.1	0.2	0.0	0.0	0.0	0.3
1/1/2032	3	22	29	1	98	1	20	2	3	0.0	0.1	0.2	0.0	0.0	0.0	0.3
2/1/2032	3	22	29	1	98	1	20	2	3	0.0	0.1	0.2	0.0	0.0	0.0	0.3
3/1/2032	2	18	24	1	53	1	11	1	2	0.0	0.1	0.2	0.0	0.0	0.0	0.3
4/1/2032	3	22	30	1	73	1	15	2	3	0.0	0.1	0.2	0.0	0.1	0.0	0.4
5/1/2032	3	21	30	1	50	1	10	1	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
6/1/2032	2	20	31	1	42	1	9	1	2	0.0	0.1	0.2	0.0	0.1	0.0	0.4
7/1/2032	3	23	32	1	14	1	3	2	3	0.0	0.1	0.2	0.0	0.1	0.0	0.4
8/1/2032	2	13	19	0	9	0	2	1	1	0.0	0.1	0.1	0.0	0.0	0.0	0.3
9/1/2032	2	12	19	0	6	0	1	1	1	0.0	0.0	0.1	0.0	0.0	0.0	0.3
10/1/2032	1	12	13	0	14	0	3	1	2	0.0	0.1	0.1	0.0	0.0	0.0	0.1
11/1/2032	1	5	8	0	3	0	1	0	0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
12/1/2032	1	5	7	0	0	0	0	0	0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1/1/2033	1	11	13	0	8	0	2	1	2	0.0	0.1	0.1	0.0	0.0	0.0	0.1
2/1/2033	1	9	11	0	45	0	9	1	1	0.0	0.1	0.1	0.0	0.0	0.0	0.1
3/1/2033	1	9	11	0	42	0	9	1	1	0.0	0.1	0.1	0.0	0.0	0.0	0.1
4/1/2033	1	8	9	0	42	0	9	1	1	0.0	0.1	0.0	0.0	0.0	0.0	0.1
5/1/2033	1	8	9	0	42	0	9	1	1	0.0	0.1	0.0	0.0	0.0	0.0	0.1
6/1/2033	1	8	9	0	42	0	9	1	1	0.0	0.1	0.0	0.0	0.0	0.0	0.1
7/1/2033	0	4	5	0	6	0	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
8/1/2033	0	4	5	0	6	0	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
9/1/2033	0	4	5	0	6	0	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10/1/2033	0	4	5	0	6	0	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11/1/2033	0	4	6	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
12/1/2033	0	4	6	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1/1/2034	0	4	6	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
2/1/2034	1	8	9	0	42	0	9	1	1	0.0	0.1	0.0	0.0	0.0	0.0	0.1
3/1/2034	0	4	5	0	6	0	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
4/1/2034	0	4	5	0	6	0	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
5/1/2034	0	4	6	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
6/1/2034	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7/1/2034	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8/1/2034	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9/1/2034	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10/1/2034	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11/1/2034	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12/1/2034	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(D): Diesel Exhaust, (FD): Fugitive Dust

APPENDIX E
PEAK DAILY CONSTRUCTION EMISSIONS FROM ANY ONE SEGMENT

Appendix E : Peak Daily Construction Emissions from Any One Segment

Peak Construction Emissions from Any One Segment (lbs/day)*																
	Criteria Pollutants								Greenhouse Gases			MSATs				
	ROG	CO	NOx	PM10 (D)	PM10 (FD)	PM2.5 (D)	PM2.5 (FD)	DPM	CO2	CH4	N2O	ACET	ACRO	BENZ	BUTA	FORM
Average	4	36	36	2	101	1	21	3	4	0.01	0.18	0.24	0.07	0.06	0.01	0.42
Peak	20	175	141	7	606	6	126	13	17	0.06	0.84	0.79	0.38	0.24	0.03	1.6
SCAQMD Regional Thresholds	75	550	100	150		55		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Months > Threshold	0	0	16	43		19		0	0	0	0	0	0	0	0	0
1/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
2/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
3/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
4/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
5/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
6/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
7/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
8/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
9/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
10/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
11/1/2018	7	62	47	3	97	2	20	5	5	0.02	0.27	0.24	0.09	0.08	0.01	0.53
12/1/2018	7	60	54	3	180	3	37	6	5	0.01	0.24	0.36	0.06	0.11	0.01	0.75
1/1/2019	20	175	141	7	606	6	126	13	17	0.06	0.84	0.79	0.08	0.24	0.03	1.61
2/1/2019	20	175	141	7	520	6	108	13	17	0.06	0.84	0.79	0.08	0.24	0.03	1.61
3/1/2019	20	175	141	7	520	6	108	13	17	0.06	0.84	0.79	0.08	0.24	0.03	1.61
4/1/2019	20	175	141	7	290	6	60	13	17	0.06	0.84	0.79	0.08	0.24	0.03	1.61
5/1/2019	20	175	141	7	290	6	60	13	17	0.06	0.84	0.79	0.08	0.24	0.03	1.61
6/1/2019	15	130	106	6	290	5	60	10	12	0.04	0.60	0.72	0.06	0.21	0.02	1.44
7/1/2019	15	130	106	6	290	5	60	10	12	0.04	0.60	0.72	0.06	0.21	0.02	1.44
8/1/2019	15	130	106	6	265	5	55	10	12	0.04	0.60	0.72	0.06	0.21	0.02	1.44
9/1/2019	15	130	106	6	265	5	55	10	12	0.04	0.60	0.72	0.06	0.21	0.02	1.44
10/1/2019	15	139	125	7	520	6	108	13	12	0.04	0.58	0.75	0.15	0.21	0.02	1.46
11/1/2019	15	139	125	7	520	6	108	13	12	0.04	0.58	0.75	0.06	0.21	0.02	1.46
12/1/2019	15	139	125	7	520	6	108	13	12	0.04	0.58	0.75	0.06	0.21	0.02	1.46
1/1/2020	20	175	141	7	511	6	106	13	17	0.06	0.84	0.79	0.13	0.24	0.03	1.61
2/1/2020	20	175	141	7	511	6	106	13	17	0.06	0.84	0.79	0.13	0.24	0.03	1.61
3/1/2020	13	137	129	7	511	6	106	13	11	0.03	0.57	0.77	0.13	0.21	0.02	1.49
4/1/2020	13	137	129	7	511	6	106	13	11	0.03	0.57	0.77	0.09	0.21	0.02	1.49
5/1/2020	11	92	89	4	281	4	58	8	8	0.02	0.40	0.58	0.09	0.17	0.02	1.17
6/1/2020	9	88	89	4	281	4	58	8	7	0.02	0.36	0.58	0.09	0.16	0.02	1.11
7/1/2020	7	62	47	3	156	2	32	5	5	0.02	0.27	0.50	0.09	0.14	0.01	1.00
8/1/2020	6	47	45	2	156	2	32	4	3	0.01	0.16	0.50	0.04	0.14	0.01	1.00
9/1/2020	6	47	45	2	156	2	32	4	3	0.01	0.16	0.50	0.04	0.14	0.01	1.00
10/1/2020	6	46	46	2	156	2	32	4	3	0.01	0.16	0.48	0.04	0.13	0.01	0.96
11/1/2020	6	46	46	2	156	2	32	4	3	0.01	0.16	0.48	0.04	0.13	0.01	0.96
12/1/2020	6	46	46	2	156	2	32	4	3	0.01	0.16	0.48	0.04	0.13	0.01	0.96
1/1/2021	7	54	56	2	63	2	13	4	5	0.01	0.23	0.41	0.04	0.12	0.01	0.84
2/1/2021	7	54	56	2	63	2	13	4	5	0.01	0.23	0.41	0.04	0.12	0.01	0.84
3/1/2021	7	54	56	2	63	2	13	4	5	0.01	0.23	0.41	0.04	0.12	0.01	0.84
4/1/2021	7	54	56	2	63	2	13	4	5	0.01	0.23	0.41	0.04	0.12	0.01	0.84
5/1/2021	7	54	56	2	63	2	13	4	5	0.01	0.23	0.41	0.04	0.12	0.01	0.84
6/1/2021	5	43	50	2	56	2	12	4	3	0.01	0.17	0.38	0.04	0.10	0.01	0.75
7/1/2021	5	43	50	2	56	2	12	4	3	0.01	0.17	0.31	0.04	0.08	0.01	0.61
8/1/2021	5	40	50	2	49	2	10	3	3	0.01	0.17	0.31	0.04	0.08	0.01	0.61
9/1/2021	5	40	50	2	49	2	10	3	3	0.01	0.17	0.31	0.04	0.08	0.01	0.61
10/1/2021	8	81	79	4	281	3	58	7	7	0.02	0.35	0.49	0.04	0.13	0.01	0.94
11/1/2021	8	81	89	4	255	3	53	7	7	0.02	0.33	0.51	0.03	0.14	0.01	0.99
12/1/2021	8	81	89	4	255	3	53	7	7	0.02	0.33	0.51	0.03	0.14	0.01	0.99
1/1/2022	8	81	89	4	255	3	53	7	7	0.02	0.33	0.51	0.04	0.14	0.01	0.99

(D): Diesel Exhaust, (FD): Fugitive Dust

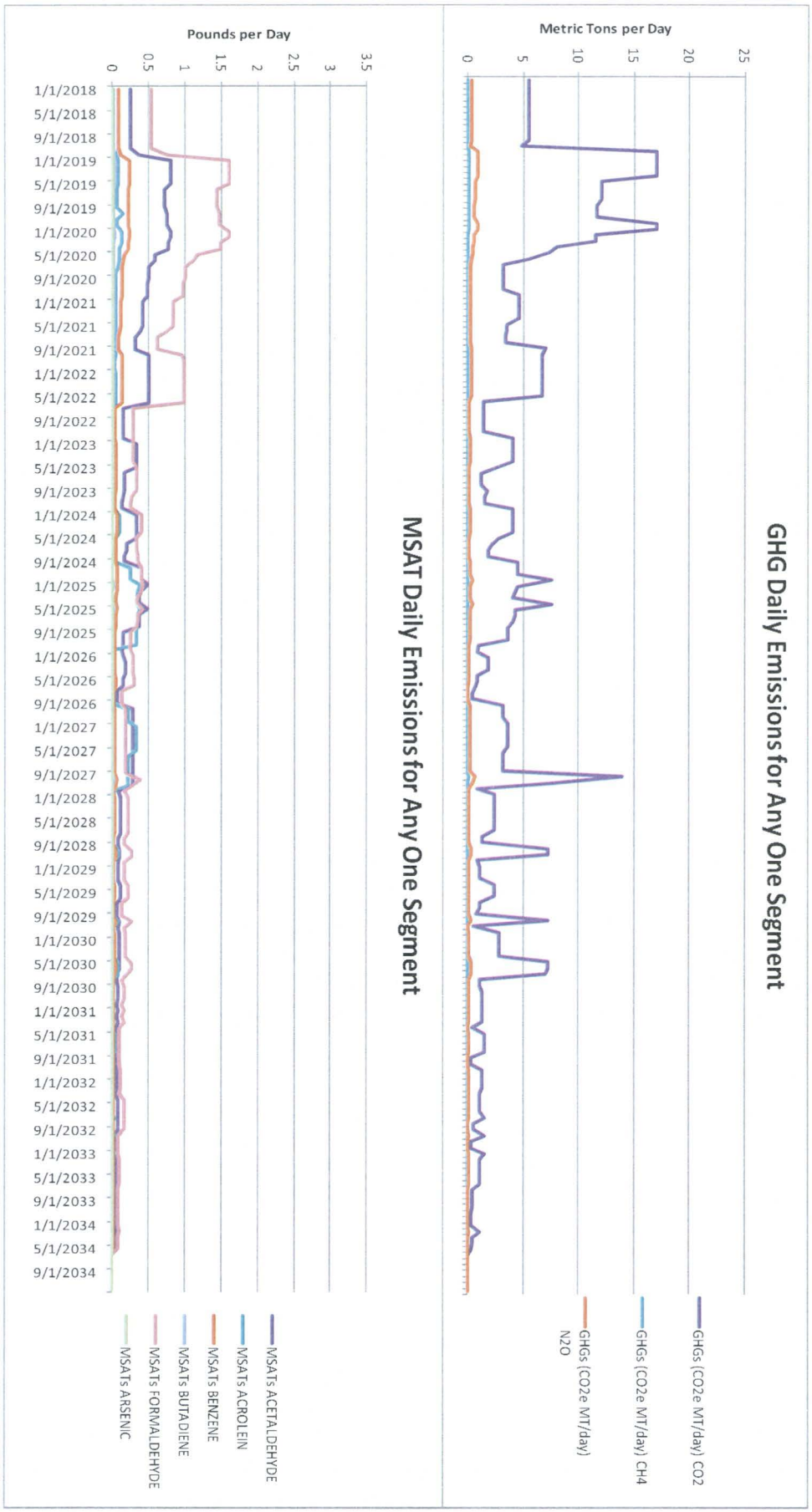
Peak Construction Emissions from Any One Segment (lbs/day)																
	Criteria Pollutants								Greenhouse Gases			MSATs				
	ROG	CO	NOx	PM10 (D)	PM10 (FD)	PM2.5 (D)	PM2.5 (FD)	DPM	CO2	CH4	N2O	ACET	ACRO	BENZ	BUTA	FORM
2/1/2022	8	81	89	4	255	3	53	7	7	0.02	0.33	0.51	0.04	0.14	0.01	0.99
3/1/2022	8	81	89	4	255	3	53	7	7	0.02	0.33	0.51	0.04	0.14	0.01	0.99
4/1/2022	8	81	89	4	255	3	53	7	7	0.02	0.33	0.51	0.04	0.14	0.01	0.99
5/1/2022	8	81	89	4	255	3	53	7	7	0.02	0.33	0.51	0.04	0.14	0.01	0.99
6/1/2022	8	81	89	4	255	3	53	7	7	0.02	0.33	0.51	0.04	0.14	0.01	0.99
7/1/2022	2	16	20	1	26	1	5	1	1	0.00	0.07	0.15	0.01	0.04	0.00	0.28
8/1/2022	2	16	20	1	26	1	5	1	1	0.00	0.07	0.15	0.01	0.04	0.00	0.28
9/1/2022	2	16	20	1	26	1	5	1	1	0.00	0.07	0.15	0.01	0.04	0.00	0.28
10/1/2022	2	16	20	1	26	1	5	1	1	0.00	0.07	0.15	0.01	0.04	0.00	0.28
11/1/2022	2	16	20	1	26	1	5	1	1	0.00	0.07	0.15	0.01	0.04	0.00	0.28
12/1/2022	2	16	20	1	26	1	5	1	1	0.00	0.07	0.15	0.01	0.04	0.00	0.28
1/1/2023	3	31	28	1	76	1	16	2	4	0.01	0.20	0.33	0.05	0.04	0.00	0.28
2/1/2023	3	31	28	1	76	1	16	2	4	0.01	0.20	0.33	0.05	0.04	0.00	0.28
3/1/2023	3	31	28	1	76	1	16	2	4	0.01	0.20	0.33	0.05	0.04	0.00	0.28
4/1/2023	3	31	28	1	76	1	16	2	4	0.01	0.20	0.33	0.05	0.04	0.00	0.28
5/1/2023	3	31	30	1	76	1	16	2	4	0.01	0.20	0.33	0.05	0.04	0.00	0.33
6/1/2023	3	31	30	1	67	1	14	2	3	0.01	0.13	0.16	0.04	0.04	0.00	0.33
7/1/2023	2	16	30	1	21	1	4	1	1	0.00	0.06	0.16	0.01	0.04	0.00	0.33
8/1/2023	2	16	30	1	13	1	3	1	1	0.00	0.06	0.16	0.01	0.04	0.00	0.33
9/1/2023	2	16	30	1	13	1	3	1	1	0.00	0.06	0.16	0.01	0.04	0.00	0.33
10/1/2023	2	20	20	1	42	1	9	2	2	0.00	0.09	0.15	0.01	0.04	0.00	0.27
11/1/2023	2	17	20	1	32	1	7	2	1	0.00	0.07	0.13	0.01	0.03	0.00	0.25
12/1/2023	2	17	20	1	32	1	7	2	1	0.00	0.07	0.13	0.01	0.03	0.00	0.25
1/1/2024	3	36	37	2	168	2	35	4	4	0.01	0.20	0.33	0.10	0.06	0.01	0.41
2/1/2024	3	36	37	2	168	2	35	4	4	0.01	0.20	0.33	0.10	0.06	0.01	0.41
3/1/2024	3	36	37	2	168	2	35	4	4	0.01	0.20	0.33	0.10	0.06	0.01	0.41
4/1/2024	3	36	37	2	168	2	35	4	4	0.01	0.20	0.33	0.10	0.06	0.01	0.41
5/1/2024	3	31	28	1	104	1	22	3	4	0.01	0.20	0.33	0.05	0.05	0.00	0.33
6/1/2024	3	31	26	1	104	1	22	3	3	0.01	0.13	0.21	0.04	0.05	0.00	0.33
7/1/2024	3	27	26	1	104	1	22	3	2	0.01	0.11	0.21	0.03	0.05	0.00	0.33
8/1/2024	3	27	30	1	95	1	20	3	2	0.01	0.09	0.17	0.03	0.05	0.00	0.36
9/1/2024	3	27	30	1	95	1	20	3	2	0.01	0.09	0.17	0.03	0.05	0.00	0.36
10/1/2024	4	44	42	2	168	2	35	4	5	0.01	0.22	0.40	0.24	0.06	0.01	0.41
11/1/2024	4	44	42	2	168	2	35	4	5	0.01	0.22	0.40	0.24	0.06	0.01	0.41
12/1/2024	4	44	42	2	168	2	35	4	5	0.01	0.22	0.40	0.24	0.06	0.01	0.41
1/1/2025	6	54	51	2	168	2	35	4	8	0.02	0.37	0.48	0.38	0.06	0.01	0.42
2/1/2025	4	44	42	2	168	2	35	4	5	0.01	0.22	0.40	0.35	0.06	0.01	0.41
3/1/2025	4	33	33	1	83	1	17	3	4	0.01	0.21	0.36	0.35	0.05	0.01	0.35
4/1/2025	4	32	34	1	83	1	17	3	4	0.01	0.20	0.36	0.33	0.05	0.00	0.34
5/1/2025	6	54	51	2	122	2	25	4	8	0.02	0.37	0.48	0.38	0.06	0.01	0.42
6/1/2025	4	33	33	1	83	1	17	3	4	0.01	0.21	0.36	0.35	0.05	0.01	0.35
7/1/2025	4	33	33	1	83	1	17	3	4	0.01	0.21	0.36	0.35	0.05	0.01	0.35
8/1/2025	4	32	34	1	83	1	17	3	4	0.01	0.20	0.36	0.33	0.05	0.00	0.34
9/1/2025	3	24	23	1	57	1	12	2	4	0.01	0.18	0.15	0.33	0.03	0.00	0.25
10/1/2025	3	24	23	1	57	1	12	2	4	0.01	0.18	0.15	0.33	0.03	0.00	0.25
11/1/2025	3	24	23	1	57	1	12	2	4	0.01	0.18	0.15	0.33	0.03	0.00	0.25
12/1/2025	2	15	15	1	19	1	4	1	1	0.00	0.05	0.13	0.00	0.03	0.00	0.25
1/1/2026	2	12	18	1	11	1	2	1	1	0.00	0.05	0.14	0.00	0.04	0.00	0.28
2/1/2026	2	18	20	1	76	1	16	2	2	0.01	0.09	0.17	0.02	0.04	0.00	0.28
3/1/2026	2	18	20	1	76	1	16	2	2	0.01	0.09	0.17	0.02	0.04	0.00	0.28
4/1/2026	2	18	20	1	76	1	16	2	2	0.01	0.09	0.17	0.02	0.04	0.00	0.28
5/1/2026	2	12	22	1	11	1	2	1	1	0.00	0.04	0.15	0.01	0.04	0.00	0.30
6/1/2026	2	12	22	1	11	1	2	1	1	0.00	0.04	0.15	0.01	0.04	0.00	0.30
7/1/2026	1	7	11	0	11	0	2	1	1	0.00	0.03	0.07	0.01	0.02	0.00	0.13
8/1/2026	1	6	11	0	0	0	0	1	0	0.00	0.02	0.07	0.00	0.02	0.00	0.14
9/1/2026	1	6	11	0	0	0	0	1	0	0.00	0.02	0.07	0.00	0.02	0.00	0.14
10/1/2026	2	23	24	1	74	1	15	2	3	0.01	0.16	0.29	0.21	0.03	0.00	0.18

(D): Diesel Exhaust, (FD): Fugitive Dust

Peak Construction Emissions from Any One Segment (lbs/day)																
	Criteria Pollutants								Greenhouse Gases			MSATs				
	ROG	CO	NOx	PM10 (D)	PM10 (FD)	PM2.5 (D)	PM2.5 (FD)	DPM	CO2	CH4	N2O	ACET	ACRO	BENZ	BUTA	FORM
11/1/2026	2	23	24	1	74	1	15	2	3	0.01	0.16	0.29	0.21	0.03	0.00	0.18
12/1/2026	2	23	24	1	74	1	15	2	3	0.01	0.16	0.29	0.21	0.03	0.00	0.18
1/1/2027	3	24	24	1	74	1	15	2	4	0.01	0.18	0.29	0.33	0.03	0.00	0.19
2/1/2027	3	24	24	1	74	1	15	2	4	0.01	0.18	0.29	0.33	0.03	0.00	0.19
3/1/2027	3	24	24	1	74	1	15	2	4	0.01	0.18	0.29	0.33	0.03	0.00	0.19
4/1/2027	3	24	24	1	74	1	15	2	4	0.01	0.18	0.29	0.33	0.03	0.00	0.19
5/1/2027	3	24	24	1	74	1	15	2	4	0.01	0.18	0.29	0.33	0.03	0.00	0.19
6/1/2027	2	23	24	1	74	1	15	2	3	0.01	0.16	0.29	0.21	0.03	0.00	0.18
7/1/2027	2	23	24	1	74	1	15	2	3	0.01	0.16	0.29	0.21	0.03	0.00	0.18
8/1/2027	2	23	24	1	74	1	15	2	3	0.01	0.16	0.29	0.21	0.03	0.00	0.18
9/1/2027	2	23	24	1	74	1	15	2	3	0.01	0.16	0.29	0.21	0.03	0.00	0.18
10/1/2027	8	73	65	3	77	2	16	5	14	0.05	0.69	0.29	0.21	0.06	0.01	0.38
11/1/2027	5	41	39	2	74	1	15	3	8	0.03	0.38	0.29	0.21	0.04	0.00	0.28
12/1/2027	1	8	12	0	23	0	5	1	1	0.00	0.05	0.08	0.00	0.02	0.00	0.17
1/1/2028	2	18	24	1	98	1	20	1	2	0.01	0.12	0.11	0.01	0.03	0.00	0.21
2/1/2028	2	18	24	1	98	1	20	1	2	0.01	0.12	0.11	0.01	0.03	0.00	0.21
3/1/2028	2	18	24	1	98	1	20	1	2	0.01	0.12	0.11	0.01	0.03	0.00	0.21
4/1/2028	2	18	24	1	98	1	20	1	2	0.01	0.12	0.11	0.01	0.03	0.00	0.21
5/1/2028	2	18	24	1	98	1	20	1	2	0.01	0.12	0.11	0.01	0.03	0.00	0.21
6/1/2028	2	18	24	1	98	1	20	1	2	0.01	0.12	0.11	0.01	0.03	0.00	0.21
7/1/2028	2	18	24	1	98	1	20	1	2	0.01	0.12	0.11	0.01	0.03	0.00	0.21
8/1/2028	1	9	12	0	53	0	11	1	1	0.00	0.06	0.08	0.01	0.02	0.00	0.16
9/1/2028	1	9	12	0	53	0	11	1	1	0.00	0.06	0.08	0.01	0.02	0.00	0.16
10/1/2028	5	40	39	2	53	1	11	3	7	0.02	0.36	0.09	0.08	0.04	0.00	0.27
11/1/2028	5	40	39	2	53	1	11	3	7	0.02	0.36	0.09	0.08	0.04	0.00	0.27
12/1/2028	1	8	12	0	23	0	5	1	1	0.00	0.05	0.08	0.00	0.02	0.00	0.17
1/1/2029	1	8	15	0	42	0	9	1	1	0.00	0.05	0.08	0.00	0.02	0.00	0.17
2/1/2029	1	8	15	0	42	0	9	1	1	0.00	0.05	0.08	0.00	0.02	0.00	0.17
3/1/2029	1	8	15	0	42	0	9	1	1	0.00	0.05	0.08	0.00	0.02	0.00	0.17
4/1/2029	2	18	24	1	98	1	20	1	2	0.01	0.12	0.11	0.01	0.03	0.00	0.21
5/1/2029	2	18	24	1	98	1	20	1	2	0.01	0.12	0.11	0.01	0.03	0.00	0.21
6/1/2029	2	18	24	1	98	1	20	1	2	0.01	0.12	0.11	0.01	0.03	0.00	0.21
7/1/2029	1	8	10	0	42	0	9	1	1	0.00	0.05	0.07	0.00	0.02	0.00	0.13
8/1/2029	1	8	10	0	42	0	9	1	1	0.00	0.05	0.07	0.00	0.02	0.00	0.13
9/1/2029	1	7	10	0	12	0	3	1	1	0.00	0.04	0.07	0.00	0.02	0.00	0.13
10/1/2029	5	40	39	2	38	1	8	3	7	0.02	0.36	0.09	0.08	0.04	0.00	0.27
11/1/2029	1	8	15	0	6	0	1	1	1	0.00	0.03	0.08	0.00	0.02	0.00	0.17
12/1/2029	2	19	25	1	98	1	20	1	3	0.01	0.14	0.10	0.01	0.03	0.00	0.19
1/1/2030	2	19	25	1	98	1	20	1	3	0.01	0.14	0.10	0.01	0.03	0.00	0.19
2/1/2030	2	19	25	1	98	1	20	1	3	0.01	0.14	0.10	0.03	0.03	0.00	0.19
3/1/2030	2	19	25	1	98	1	20	1	3	0.01	0.14	0.10	0.03	0.03	0.00	0.19
4/1/2030	2	19	25	1	98	1	20	1	3	0.01	0.14	0.10	0.03	0.03	0.00	0.19
5/1/2030	5	40	39	2	38	1	8	3	7	0.02	0.36	0.09	0.08	0.04	0.00	0.27
6/1/2030	5	40	39	2	38	1	8	3	7	0.02	0.36	0.09	0.08	0.04	0.00	0.27
7/1/2030	4	36	33	1	42	1	9	2	7	0.02	0.34	0.07	0.08	0.03	0.00	0.19
8/1/2030	1	8	10	0	42	0	9	1	1	0.00	0.05	0.07	0.00	0.02	0.00	0.13
9/1/2030	1	8	15	0	42	0	9	1	1	0.00	0.05	0.08	0.00	0.02	0.00	0.17
10/1/2030	1	9	15	0	53	0	11	1	1	0.00	0.06	0.08	0.01	0.02	0.00	0.17
11/1/2030	1	9	15	0	53	0	11	1	1	0.00	0.06	0.08	0.01	0.02	0.00	0.17
12/1/2030	1	9	11	0	53	0	11	1	1	0.00	0.06	0.07	0.01	0.02	0.00	0.13
1/1/2031	1	9	15	0	53	0	11	1	1	0.00	0.06	0.08	0.01	0.02	0.00	0.17
2/1/2031	1	9	11	0	53	0	11	1	1	0.00	0.06	0.07	0.01	0.02	0.00	0.13
3/1/2031	1	9	15	0	53	0	11	1	1	0.00	0.06	0.08	0.01	0.02	0.00	0.17
4/1/2031	1	5	6	0	8	0	2	0	0	0.00	0.02	0.05	0.00	0.01	0.00	0.10
5/1/2031	1	8	7	0	8	0	2	1	1	0.00	0.07	0.05	0.03	0.01	0.00	0.10
6/1/2031	1	8	7	0	8	0	2	1	1	0.00	0.07	0.05	0.03	0.01	0.00	0.10

(D): Diesel Exhaust, (FD): Fugitive Dust

Peak Construction Emissions from Any One Segment (lbs/day unless otherwise labeled)																
	Criteria Pollutants								Greenhouse Gases			MSATs				
	ROG	CO	NOx	(D)	(FD)	(D)	(FD)	DPM	CO2	CH4	N2O	ACET	ACRO	BENZ	BUTA	FORM
7/1/2031	1	8	7	0	8	0	2	1	1	0.00	0.07	0.05	0.03	0.01	0.00	0.10
8/1/2031	1	8	7	0	8	0	2	1	1	0.00	0.07	0.05	0.03	0.01	0.00	0.10
9/1/2031	1	4	7	0	3	0	1	0	0	0.00	0.02	0.05	0.00	0.01	0.00	0.10
10/1/2031	1	4	7	0	3	0	1	0	0	0.00	0.02	0.05	0.00	0.01	0.00	0.10
11/1/2031	1	9	11	0	53	0	11	1	1	0.00	0.06	0.06	0.01	0.02	0.00	0.12
12/1/2031	1	9	11	0	53	0	11	1	1	0.00	0.06	0.06	0.01	0.02	0.00	0.12
1/1/2032	1	9	11	0	53	0	11	1	1	0.00	0.06	0.06	0.01	0.02	0.00	0.12
2/1/2032	1	9	11	0	53	0	11	1	1	0.00	0.06	0.06	0.01	0.02	0.00	0.12
3/1/2032	1	8	9	0	42	0	9	1	1	0.00	0.05	0.05	0.00	0.01	0.00	0.10
4/1/2032	1	8	12	0	42	0	9	1	1	0.00	0.05	0.08	0.00	0.02	0.00	0.17
5/1/2032	1	8	12	0	42	0	9	1	1	0.00	0.05	0.08	0.00	0.02	0.00	0.16
6/1/2032	1	8	12	0	42	0	9	1	1	0.00	0.05	0.08	0.00	0.02	0.00	0.16
7/1/2032	1	8	12	0	8	0	2	1	1	0.00	0.07	0.08	0.03	0.02	0.00	0.16
8/1/2032	1	7	12	0	6	0	1	0	1	0.00	0.03	0.08	0.00	0.02	0.00	0.16
9/1/2032	1	7	12	0	6	0	1	0	1	0.00	0.03	0.08	0.00	0.02	0.00	0.16
10/1/2032	1	8	7	0	8	0	2	1	1	0.00	0.07	0.04	0.03	0.01	0.00	0.08
11/1/2032	0	4	6	0	3	0	1	0	0	0.00	0.01	0.04	0.00	0.01	0.00	0.08
12/1/2032	0	4	6	0	0	0	0	0	0	0.00	0.01	0.04	0.00	0.01	0.00	0.08
1/1/2033	1	8	7	0	8	0	2	1	1	0.00	0.07	0.04	0.03	0.01	0.00	0.08
2/1/2033	1	8	9	0	42	0	9	1	1	0.00	0.05	0.05	0.00	0.01	0.00	0.09
3/1/2033	1	8	9	0	42	0	9	1	1	0.00	0.05	0.05	0.00	0.01	0.00	0.09
4/1/2033	1	8	9	0	42	0	9	1	1	0.00	0.05	0.05	0.00	0.01	0.00	0.09
5/1/2033	1	8	9	0	42	0	9	1	1	0.00	0.05	0.05	0.00	0.01	0.00	0.09
6/1/2033	1	8	9	0	42	0	9	1	1	0.00	0.05	0.05	0.00	0.01	0.00	0.09
7/1/2033	0	4	5	0	6	0	1	0	0	0.00	0.02	0.04	0.00	0.01	0.00	0.08
8/1/2033	0	4	5	0	6	0	1	0	0	0.00	0.02	0.04	0.00	0.01	0.00	0.08
9/1/2033	0	4	5	0	6	0	1	0	0	0.00	0.02	0.04	0.00	0.01	0.00	0.08
10/1/2033	0	4	5	0	6	0	1	0	0	0.00	0.02	0.04	0.00	0.01	0.00	0.08
11/1/2033	0	4	6	0	0	0	0	0	0	0.00	0.01	0.04	0.00	0.01	0.00	0.08
12/1/2033	0	4	6	0	0	0	0	0	0	0.00	0.01	0.04	0.00	0.01	0.00	0.08
1/1/2034	0	4	6	0	0	0	0	0	0	0.00	0.01	0.04	0.00	0.01	0.00	0.08
2/1/2034	1	8	9	0	42	0	9	1	1	0.00	0.05	0.05	0.00	0.01	0.00	0.09
3/1/2034	0	4	5	0	6	0	1	0	0	0.00	0.02	0.04	0.00	0.01	0.00	0.08
4/1/2034	0	4	5	0	6	0	1	0	0	0.00	0.02	0.04	0.00	0.01	0.00	0.08
5/1/2034	0	4	6	0	0	0	0	0	0	0.00	0.01	0.04	0.00	0.01	0.00	0.08
6/1/2034	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/1/2034	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/1/2034	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/1/2034	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/1/2034	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/1/2034	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/1/2034	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00



* Note that charts for ROG, CO, Nox, PM10, and PM2.5 can be found in the the main report under Results.