RIDGE CAJON WAREHOUSE PROJECT RDD1601

CONSTRUCTION AIR QUALITY EMISSIONS

Construction would require heavy equipment during mass grading, utility installations, building construction and paving. Construction equipment estimates are based on default values in CalEEMod, Version 2013.2.2 model. CalEEMod is designed to model construction emissions for land development projects and allows for the input of project-specific information, such as the number of equipment, hours of operations, duration of construction activities, and selection of emission control measures. Results from the model are shown in Appendix A. Table A shows the construction emissions from the CalEEMod output tables listed as "Mitigated Construction," even though the only measures that have been applied to the analysis are the SCAQMD required construction emissions control measures, or standard conditions. All Project-related construction equipment was assumed to meet EPA-Certified Tier 2 emissions standards. In addition, all construction equipment would be outfitted with best available control technology (BACT) devices certified by the CARB. Any emissions control device used by the contractor would achieve emissions reductions that are no less than what could be achieved by a Level 1 diesel emissions control strategy for a similarly sized engine in accordance with the CARB regulations. Application of water during grading was taken into consideration. Based on CalEEMod, Version 2013.2.2, the fugitive dust control efficiency for on-site watering three times daily is 61 percent. The Project proposes balanced grading activity, which means that no soil would be transported off site for disposal nor would soil be transported on site for use in construction activities. CalEEMod outputs are included in Appendix A.

Table 1, *Estimated Construction Emissions,* provides a summary of the daily construction emission estimates by construction activity during the respective calendar year. Significant construction impact will occur because the VOC emissions would exceed the daily threshold as indicated in the certified EIR.

Table 1: Estimated Construction Emissions

VOCConstruction Phase	Total Regional Pollutant Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Construction Year 2017	2.19	34.51	33.77	0.06	7.97	4.65
SCAQMD Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Significant Emissions?	**No**	**No**	**No**	**No**	**No**	**No**
Construction Year 2018	111.99	28.90	32.47	0.06	2.97	1.35
SCAQMD Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Significant Emissions?	**Yes**	**No**	**No**	**No**	**No**	**No**
Construction Year 2019	94.61	27.66	29.33	0.06	7.97	4.65
SCAQMD Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Significant Emissions?	**Yes**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA Associates, Inc. (September 2016).
CO = carbon monoxide
CO_2e = carbon dioxide equivalent
lbs/day = pounds per day
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides
VOC = volatile organic compounds

As discussed above, Table 1 presents the total construction emissions (i.e., fugitive-dust emissions and construction-equipment exhausts) that have incorporated a number of feasible control measures. These measures which include using minimum Tier 2 equipment engine standard with particulate control devices and on-site watering at least three times daily are required by SCAQMD and can be reasonably implemented to significantly reduce PM_{10} emissions from construction. Results from the CalEEMod analysis, as shown in Table 1 indicate the construction emissions from the proposed project would exceed the corresponding SCAQMD daily emission thresholds for VOC criteria pollutant. Therefore, project-related air quality impacts would remain unchanged from the certified EIR.

Localized Impacts Analysis

The SCAQMD has issued guidance on applying CalEEMod modeling results to localized impacts analyses. Sensitive receptors include residences, schools, hospitals, and similar uses that are sensitive to adverse air quality. There are several existing residences surrounding the project site, the closest of which is approximately 1,650 feet (500 m). Using the LST guidance from SCAQMD, Table 2 shows that the emissions of the pollutants on the peak day of construction will result in concentrations of pollutants at these nearest residences that are all below the SCAQMD thresholds of significance.

Table 2: Construction Localized Impacts Analysis

Emissions Sources	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**
On-Site Emissions (lbs/day)	34	23	8	5
LST Thresholds (lbs/day)	**778**	**27,680**	**229**	**120**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: Compiled by LSA Associates, Inc. (September 2016).
Note: SRA – Central San Bernardino Valley, 5 acres, 500-meter distance
CO = carbon monoxide
lbs/day = pounds per day
LST = local significance threshold
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SRA = Source Receptor Area

OPERATIONAL AIR QUALITY EMISSIONS

Operational emissions from area sources include the combustion of natural gas for heating and hot water, engine emissions from landscape maintenance equipment, and the use of appliances at the residences also would be generated. Mobile source emissions are associated with Project-related vehicle trip generation. Based on the Traffic Impact Analysis at full buildout the Project would generate 1,196 average daily trips (ADT) (URBAN Crossroads August 30, 2016). The vehicle fleet mix was adjusted in CalEEMod to reflect the employee vehicle and truck fleet percentage breakdown. Truck mix by axle type source was obtained from SCAQMD. The following vehicle fleet mix was used: 29 percent light duty autos, 24 percent light duty trucks part 1, five percent light duty truck part 2, two percent medium duty vehicles, two percent light heavy duty trucks part 1, eight percent light heavy duty trucks part 2, seven percent medium duty trucks, and 23 percent heavy-heavy duty trucks. Table 3 presents the estimated operational emissions for the proposed project.

Table 3: Operational Emissions

Source	Pollutant Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Proposed Project						
Area Sources	17.94	<0.01	0.07	<0.00	<0.01	<0.01
Energy Sources	0.05	0.41	0.34	<0.01	0.03	0.03
Mobile Sources	8.93	90.62	125.25	0.49	25.41	8.00
Total Project Emissions	**26.92**	**91.03**	**125.66**	**0.49**	**25.44**	**8.03**
SCAQMD Thresholds	55	**55**	550	150	150	55
Significant?	No	**Yes**	No	No	No	No

Source: Compiled by LSA Associates, Inc. (September 2016).
CO = carbon monoxide
CO_2 = carbon dioxide
lbs/day = pounds per day
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides
VOC = volatile organic compounds

As shown in Table 3, significant NOx emissions would occur during operation. Therefore, project-related significant air quality impacts would remain unchanged from the certified EIR.

Localized Impacts Analysis

Table 4 shows the calculated emissions for the proposed operational activities compared with the appropriate LSTs. By design, the localized impacts analysis only includes on-site sources; however, the CalEEMod model outputs do not separate on-site and off-site emissions for mobile sources. For a worst-case scenario assessment, the emissions shown in Table 4 include all on-site project-related stationary sources and 5 percent of the project-related new mobile sources, which is an estimate of the amount of project-related new vehicle traffic that will occur on site. All off-site emissions are subtracted out from the total emissions.

Table 4: Long-Term Operational Localized Impacts Analysis

Emissions Sources	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
On-Site Emissions[1]	5	6	1	<1
LST Thresholds	**778**	**27,680**	**55**	**29**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: Compiled by LSA Associates, Inc. (September 2016).
Note: SRA – Southwest San Bernardino Valley, 5 acres, 500-meter distance, on-site traffic 5 percent of total mobile source trips within the project area (i.e., driveways and parking lots).
[1] CalEEMod clearly delineates the on-site and off-site emissions; thus, this includes all on-site emissions without having to include a percentage of the mobile source emissions.
CO = carbon monoxide
LST = Local Significance Thresholds
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SRA = Source Receptor Area

A total of 5 percent is considered conservative as the average worker trip lengths assumed are 14.7 miles for home to work, and 40 miles for all truck trips. It is unlikely that the average on-site distance driven will be even 1,000 feet, which is approximately 2 percent of the total miles traveled. Considering the total trip length included in the CalEEMod model, the 5 percent assumption is conservative.

Table 4 shows that the operational emission rates would not exceed the LSTs for receptors at 1,650 feet (25 m). Therefore, the proposed operational activity would not result in a locally significant air quality impact.

CONSTRUCTION GREENHOUSE GAS EMISSIONS

Construction activities produce combustion emissions from various sources, such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, asphalt paving, and motor vehicles transporting the construction crew. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.
See the CalEEMod modeling output in Appendix A for details. The construction phase in Table 5 shows GHG emissions from equipment exhaust and energy use. Results indicate that project construction would generate approximately 1,271 MT of CO_2e/yr. Amortized over 30 years, the total construction emissions would generate approximately 42.36 MT of CO_2e/yr.

Table 5: Estimated Construction GHG Emissions

Construction Phase	Peak Annual Emissions (mt/yr)			Total Emissions ($MTCO_2e$)
	CO_2	CH_4	N_2O	
2017	587.85	0.07	0.00	589.64
2018	514.98	0.05	0.00	516.71
2019	163.99	0.02	0.00	164.54
Total Construction Emissions				**1,270.89**
Total Construction Emissions Amortized over 30 years				**42.36**

Source: Compiled by LSA Associates, Inc. (September 2016).
CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
$MTCO_2e$ = metric tons of carbon dioxide equivalent
mt/yr = metric tons per year
CO_2e = carbon dioxide equivalent

OPERATIONAL GREENHOUSE GAS EMISSIONS

Long-term operation of the proposed project would generate GHG emissions from area and mobile sources and indirect emissions from stationary sources associated with energy consumption. Mobile-source emissions of GHGs would include project-generated vehicle trips associated with on-site facilities and customers/visitors to the project site. Area-source emissions would be associated with activities such as landscaping and maintenance of proposed land uses, natural gas for heating, and other sources. Increases in stationary-source emissions would also occur at off-site utility providers as a result of demand for electricity, natural gas, and water by the proposed uses.

The GHG emission estimates presented in Table 6 show the emissions associated with the level of development envisioned by the proposed project at opening. Appendix A includes the model outputs. Area sources include architectural coatings, consumer products, and landscaping. Energy sources include natural gas consumption for space heating.

Table 6: Estimated Operational Greenhouse Gas Emissions

Source	Pollutant Emissions (MT/yr)			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Construction emissions amortized over 30 years	-	-	-	42.36
Operational Emissions				
Area Sources	0.02	<0.01	0.00	0.02
Energy Sources	617.37	0.03	<0.01	619.88
Mobile Sources	6,773.37	0.13	0.00	6,776.11
Waste Sources	135.81	8.03	0.00	304.36
Water Usage	532.41	4.31	0.11	655.78
Total Project Emissions	**8,059.16**	**12.50**	**0.00**	**8,398.68**
SCAQMD GHG Threshold	-	-	-	**10,000**
Significant Emissions?	-	-	-	**No**

Source: Compiled by LSA Associates, Inc. (September 2016).
Note: Numbers in table may not appear to add up correctly due to rounding of all numbers to two decimal places.
MT/yr = metric tons per year
CH_4 = methane
N_2O = nitrous oxide
CO_2e = carbon dioxide equivalent
CO_2 = carbon dioxide

As shown in Table 6, the project will result in a net increase of 8,399 MT of CO_2e/yr. The emissions level of MT CO_2e/yr is less than the SCAQMD Tier 3 threshold of 10,000 MT CO_2e/yr for industrial projects; thus, project-level and cumulative GHG emissions would be less than significant.