APPENDIX B1

AIR QUALITY & GREENHOUSE EMISSIONS TECHNICAL SUMMARY

1.0 PROJECT LOCATION AND DESCRIPTION

Air quality and greenhouse gas (GHG) emissions impacts were evaluated in support of an Initial Study/Mitigated Negative Declaration (IS/MND) prepared under the California Environmental Quality Act (CEQA) for a paved 2.7-mile Class I Bikeway component of the larger OC Loop. This section of the OC Loop would be broken into three segments, OC Loop Segments O, P and Q. OC Loop Segment O would be 1.1 miles long and extend from Coyote Creek North Fork to Artesia Boulevard. OC Loop Segment P would be 0.6 mile long and extend from Artesia Boulevard to Knott Avenue. OC Loop Segment Q would be one mile long and extend from Knott Avenue to Malvern Avenue.

In addition to the paved bikeway, the project would include numerous new structures, including bridges with abutments, jacked box undercrossings, a cantilevered bikeway section, a tie-back wall, and new traffic signals.

2.0 NEED AND METHODOLOGY

Under the California Environmental Quality Act (CEQA) and its guidelines, impacts on air quality and impacts of GHG emissions must be addressed for discretionary projects, unless specifically exempted. Any construction project of the scope of OC Loop Segments O, P and Q has the potential for short-term air quality and GHG emissions impacts.

2.1 Air Quality Methods

UltraSystems reviewed federal, State of California and South Coast Air Management District (SCAQMD) laws, regulations and standards for their applicability to the proposed project. The South Coast Air Basin, in which the project is located, is currently in nonattainment of federal standards for ambient concentrations of the criteria pollutants ozone (O_3) and fine particulate matter ($PM_{2.5}$) and of state standards for O_3, $PM_{2.5}$, and respirable particulate matter (PM_{10}). Recent data demonstrating nonattainment are summarized in the Initial Study. The SCAQMD, in concert with the Southern California Association of Governments (SCAG) has developed an air quality management plan (AQMP) to reduce criteria pollutant emissions enough to reach attainment with ambient air quality standards. It has also published CEQA-related significance thresholds for criteria pollutant emissions.

2.1.1 Short-term (Construction) Impacts

For the purpose of this analysis, it was assumed that the three proposed project segments would be built one at time, given uncertainties in the funding schedule. Construction emission sources, including soil disturbance and fossil fuel combustion by onsite construction equipment, from offsite employee commuting vehicles, vendor activity, and trucks hauling building materials and waste, would temporarily add pollutants to local and regional airsheds. The first step in estimating emissions was to divide project construction in each segment into discrete "activities" such as installing a bridge or paving a stretch of bike path. Each activity comprises one or several sub-activities, which were addressed in calculating emissions, such as grading, base compaction, asphalt laying, etc. **Table B.1-1** lists the activities whose emissions were estimated.

Table B.1-1
CONSTRUCTION ACTIVITIES, BY SEGMENT

Phase	Activity	Description
Segment O		
I	O-01	Construct cast-in-place concrete end bents on each side of North Fork of Coyote Creek
	O-03	Remove existing asphalt along north side of East Fork of Coyote Creek
	O-06	Remove portion of concrete slope underneath Valley View Avenue Bridge
	O-08	Place 3,010 feet of asphalt paving from Valley View Avenue to Artesia Boulevard
II	O-02	Install pedestrian truss bridge across North Fork of Coyote Creek
	O-04	Place 1,570 feet of asphalt paving from pedestrian Bridge to Valley View Avenue
	O-07	Install tieback wall underneath Valley View Avenue bridge
III	O-05	Install about 4,800 feet of cable railing fencing all along the route
Segment P		
I	P-12	Place 1,200 feet of asphalt paving between Artesia Boulevard and the UPRR undercrossing
	P-01	Assemble a concrete box via jacking method underneath UPRR Industrial lead
	P-02	Construct open U-cross section channels just down- and upstream of jacked box and extend 400 the U-channel for 400 feet
	P-02a	Construct cast-in-place concrete abutments on each side of UPRR right-of-way[a]
	P-02b	Install pedestrian truss bridge across UPRR right-of-way[a]
	P-04	Make a 12- or 14-foot wide cut perpendicular open cut across South Firestone Boulevard
	P-07	Excavate under Interstate 5
	P-08	Place 1,550 feet of asphalt paving between North Firestone Boulevard and Knott Avenue
	P-09	Install several concrete columns underneath the Artesia Boulevard bridge
	P-10	Remove a portion of concrete slope underneath Artesia Boulevard bridge
II	P-05	Install a 12-foot wide, 10-foot tall precast concrete box in channel; add 7.5-foot cover, base, and repave
	P-11	Install a cantilevered deck between the channel bottom and the bottom of the existing bridge carrying Artesia Boulevard over Coyote Creek channel
Segment Q		
I	Q-01	Install traffic signals and crosswalk for at-grade crossing of Knott Avenue
	Q-02	Place 420 feet of asphalt paving from Knott Avenue upstream
	Q-03	Install a railroad crossing warning signal for at-grade crossing east of Knott Avenue
	Q-04	Place 2,900 feet of asphalt paving upstream of railroad lead line east of Knott Avenue
	Q-05	Assemble a concrete box via jacking method at undercrossing of BNSF/Metrolink rail line
	Q-06	Relocate a Chevron fuel line (cut/cap/remove?)
	Q-07	Construct open U-cross section channels just down- and upstream of jacked box and extend U-channel for 500 feet
	Q-10	Install T intersection traffic signal for at-grade crossing of Stage Road

Phase	Activity	Description
	Q-11	Place 560 feet of asphalt paving between Stage Road and new pedestrian bridge
	Q-08	Construct cast-in-place concrete abutments for pedestrian bridge across East Fork of Coyote Creek
	Q-09	Install prefabricated cantilever bridge across East Fork of Coyote Creek
	Q-15	Place 700 feet of asphalt paving between new pedestrian bridge and La Mirada Boulevard
	Q-12	Remove ornamental trees from La Mirada Boulevard and do minor grading
	Q-13	Install 280-foot trail on either side of La Mirada Boulevard

Source: GHD and UltraSystems, 2020.
[a]If UPRR does not allow the concrete box undercrossing, then a truss bridge overcrossing will be installed.

Assumptions about the types and numbers of pieces of equipment anticipated for each activity were based upon information from GHD, the construction emissions module of the California Emissions Estimator Model (CalEEMod), Version 2016.3.2, and experience with similar projects. In general, the calculations followed the same methods used in CalEEMod.[1] Calculations are shown in detail in **Appendix B.2**.

The SCAQMD has developed a screening method for "localized significance analysis" of nitrogen dioxide (NO_2), carbon monoxide (CO), PM_{10} and $PM_{2.5}$, which compares onsite construction emissions with thresholds based on geographical location and project area (in acres). If onsite emissions of nitrogen oxides (NO_x), CO, PM_{10}, or $PM_{2.5}$ exceed their published thresholds, then they are considered to be significant under CEQA. The method is conservative, in that in some cases a more detailed analysis, such as dispersion modeling, predicts lower exposures.

2.1.2 Long-term (Operational) Impacts

The only operational emissions for the proposed project would be from operation of onroad motor vehicles and offroad equipment for the routine maintenance of the bikeway. These emissions would be nominal and infrequent, and therefore would be less than significant.

2.2 Greenhouse Gas Emissions Methods

Short-term construction GHG emissions were estimated with the same methods used for the criteria air pollutants in Section 2.1.1. Details of all the calculations are provided in **Appendix** B2**.** Operational GHG emissions would be negligible and were therefore not quantified. To assess the overall lifetime project GHG emissions, the SCAQMD developed an Interim Guidance that recommends that construction emissions should be amortized over the life of the project, defined in the guidance as 30 years.

CEQA Guidelines require a determination of whether the project would interfere with various plans, policies, and regulations aimed at reducing GHG emissions. The IS/MND includes a review of relevant statewide GHG reduction targets, policies and plans, as well as local bicycle plans.

1 CalEEMod was not used to calculate emissions for this project.

3.0 PROJECT IMPACTS

3.1 Air Quality

3.1.1 Regional Criteria Pollutant Emissions

The analysis determined that emissions of all the criteria pollutants during both construction and operation of the project would be below their respective SCAQMD thresholds. This conclusion is the same for both the undercrossing and overcrossing options for the Union Pacific Railroad (UPRR) right-of-way. No project-specific mitigation is necessary.

3.1.2 Localized Significance Analysis

The proposed project is located in a predominantly industrial and commercial area. The nearest sensitive receptors are residential neighborhoods immediately west of the confluence of the north and east forks of Coyote Creek (Segment O); east of Knott Avenue and southeast of the east fork of Coyote Creek (Segment Q); and on both sides of the east fork of Coyote Creek, between Stage Road and La Mirada Boulevard (Segment Q) No other types of sensitive receivers near the project were identified, and none at all were found in Segment P.

Localized significance thresholds for projects in Source Receptor Areas 5 and 16 were obtained from tables in Appendix C of the SCAQMD's Final Localized Significance Threshold Methodology. Comparison of these thresholds with onsite construction emissions showed that localized short-term air quality impacts from construction of the proposed project would be less than significant.

3.2 Greenhouse Gas Emissions

3.2.1 Emission Estimates

Estimated construction GHG emissions are 225.1 metric tons (MT) of carbon dioxide equivalent (CO_2e). Offroad construction equipment would be responsible for about 88% of these emissions. For the UPRR overcrossing option, GHG emissions would be 176.6 MT, of which about 87% would be from offroad construction equipment.

Use of the bike path by bicycle riders and pedestrians would not result in GHG emissions. Routine maintenance with fossil-fuel burning equipment such as leaf blowers, and motor vehicles transporting maintenance workers, would generate a small amount of GHG emissions. In addition, indirect GHG emissions would occur when offsite fossil-fueled power plants generate electricity for the traffic signals to be installed for the project. As the state converts to a higher percentage of renewable fuel for electricity generation, the latter class of emissions would decrease over the life of the project. For these reasons, operational emissions were not quantified. The only project-related emissions during the operational phase would be the 7.5 tonnes per year (5.9 tonnes per year for the UPRR overcrossing option) of amortized emissions. This is far below the SCAQMD criterion of 3,000 tonnes per year. Under the first significance criterion, therefore, GHG emissions would be less than significant, and no mitigation is necessary.

3.2.2 Consistency with GHG Reduction Plans

None of the cities through which the project runs has a plan, policy or regulation adopted explicitly for the purpose of reducing the emissions of greenhouse gases. However, the following regional and local plans have at least some nexus with the proposed project:

- The 2008 Coyote Creek Bikeway Master Plan (Rivers and Mountains Conservancy and Trails4All).
- The 2009 OCTA Commuter Bikeway Strategic Plan.
- The 2012 OCTA Fourth District Bikeways Strategy report.
- The 2014 County of Orange General Plan.
- The 2015 OC Loop Gap Feasibility Study (OC Parks).
- The City of La Mirada General Plan Circulation Element contains a "Master Plan of Bikeways" that includes over 14 miles of bicycle lanes along streets (Class III) and dedicated multiuse trails (Class I). If also acknowledges development of the OC Loop and its benefits to the city.[2]

Neither the City of Cerritos nor the City of Buena Park has a bicycle plan.

The proposed completion of segments O, P and Q is compatible with the above-listed plans. In addition, it furthers statewide GHG emission reduction policies by reducing vehicle miles traveled by fossil-fueled vehicles. Therefore, project impacts would be less than significant.

3.3 Evaluation of Alternatives

After this Initial Study/Mitigated Negative Declaration (IS/MND) was publicly circulated,[3] County of Orange staff decided that additional analysis was warranted for the following four crossing alternatives:

1. Open Cut Box Culvert Alternative for the Artesia Boulevard Undercrossing.
2. Open Cut Box Culvert Alternative Underpass for the BNSF Industry Lead (Spur).
3. An overcrossing of the UPRR Industry Lead track and adjusting/relocation of overhead powerlines downstream from the UPRR.
4. An overcrossing of the BNSF/Metrolink/Amtrak (LOSSAN) Corridor and Stage Road plus adjusting/relocating of overhead power/telephone lines.

Criteria pollutant and GHG emissions were estimated for all four alternatives by the same methods used for the circulated IS/MND. Localized significance analyses were performed only for Alternatives 2 and 4; the remaining two were in areas with no nearby sensitive receptors. Some of the alternatives would result in slightly increased criteria pollutant and greenhouse gas emissions. However, none

2 https://www.cityoflamirada.org/home/showdocument?id=914. Accessed April 29, 2020.
3 November 13, 2020 to December 15, 2020.

of the alternatives would result in emissions that would exceed CEQA significance thresholds. The conclusion that air quality and GHG emissions would be less than significant did not change.