Appendix C2
Dispersion Modeling of Criteria Pollutants for the Southern California International Gateway Project

(Tables and figures in Appendix C2 (Dispersion Modeling of Criteria Pollutants) have all been updated according to the revised No Project Alternative analysis in the FEIR. Changes in emissions are reflected in Hobart-bound trucks and locomotive sources.)

Appendix C2
Dispersion Modeling of Criteria Pollutants for the Southern California International Gateway Project

2.1 Introduction

This document describes the methods and results of air dispersion modeling that predict the ground-level concentrations of criteria pollutants resulting from construction and operation of the Port of Los Angeles (POLA) Southern California International Gateway (SCIG) Project.

The air dispersion modeling was performed using the U.S. Environmental Protection Agency's (USEPA) AERMOD Modeling System, version 09292, based on the Guideline on Air Quality Models (USEPA, 2005). Criteria pollutants, including nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter equal or less than 10 microns in diameter (PM_{10}), particulate matter equal or less than 2.5 microns in diameter ($PM_{2.5}$) were modeled for the Baseline and Project alternatives. The predicted ground-level concentrations were compared to the relevant South Coast Air Quality Management District (SCAQMD) air quality significance thresholds to determine the air quality impacts of the project.

2.2 Development of Emission Scenarios Used in the Air Dispersion Modeling

2.2.1 Construction Emission Sources

Project construction activities would involve the use of:

- Construction off-road equipment
- Construction on-road trucks and worker vehicles
- Construction rail locomotives
- General cargo ships and tug boats
- Cargo-handling equipment of alternate business sites
- On-road trucks and worker vehicles of alternate business sites
- Locomotives of alternate business sites

In accordance with SCAQMD guidance, only onsite construction emission sources were modeled for criteria pollutant impacts (SCAQMD, 2005). Onsite emissions sources included fugitive dust, onsite construction equipment, onsite haul trucks, rail locomotive delivery of materials, and worker vehicles. General cargo ships and tugs (for delivery of

the rail-mounted wide-span electric cranes) were considered an off-site construction source and thus not modeled as part of the dispersion modeling for construction. Off-site truck hauling, and off-site worker trips are considered off-site activities which were not modeled for construction.

The dispersion modeling of construction also considered that businesses would continue to operate during the construction period of their respective alternatesites, and during the SCIG construction period. In 2013, businesses at alternate sites were assumed to continue to operate at their existing locations while the alternate sites were constructed, and in 2014 and 2015 the businesses were assumed to operate at thealternate sites. Activities of the businesses at alternate sites included on-site cargo-handling equipment, on-site drayage truck and worker vehicles, and on-site locomotive visits. Off-site truck, worker vehicle and locomotive activities were not modeled for construction as these were considered off-site activities.

The construction modeling was performed both with and without the overlap of the business operations in order to present the construction-only impacts, and the total impacts during the construction period which include both construction and alternate business operational activities. Construction modeling was performed with and without mitigation for both the construction only scenario and construction overlapped with construction of alternate business sites.

2.2.2 Construction Emissions

Maximum 24-hour Emissions: Maximum daily (24-hour) emissions from construction were calculated by first calculating daily emissions from individual construction activities and elements (i.e., site construction, Dominguez Channel Bridge construction, Sepulveda Bridge construction, Pacific Coast Highway grade separation construction, lead track construction). Maximum daily emissions then were determined by summing emissions from overlapping construction activities as indicated in the proposed construction schedule (Figure 2-6 of the EIR).

Maximum 1-hour and 8-hour Emissions: The construction schedule is assumed to be 10 hours per day, 6 days per week, and 52 weeks per year for SCIG site construction, and 10 hours per day, 5 days per week and 52 weeks per year for alternate business site construction. Daily construction activities were assumed to be constant throughout the workday. Therefore, the maximum 1-hour emissions were estimated by dividing the maximum daily emission rates by 10 hours. The same emission rates, on a per-hour basis, were used for the 8-hour averaging period. The averaging period for operations at alternate business sites in the overlap scenarios are described below in Section C2.1.4 under operational emissions.

A summary of the construction emissions used in the AERMOD modeling for the Unmitigated Project and Unmitigated Reduced Project Alternative is provided in Table C2.2-1. Construction emissions used for the Mitigated Project and Mitigated Reduced Project Alternative are provided in Table C2.2-2. The emissions used in this AERMOD modeling differ from the construction emissions summarized in Section 3.2 of the EIR because the off-site emissions were not included in the AERMOD dispersion modeling.

Table C2.2-1. Peak Construction Emissions Associated with the Unmitigated Project and the Unmitigated Reduced Project Alternative.

Emission Source	1-hour NOx (lb/hr)	Annual NOx (ton/yr)	1-hour CO (lb/hr)	8-hour CO (lb/8-hr)	1-hour SO_2 (lb/hr)	24-hr SO_2 (lb/day)	24-hr PM_{10} (lb/day)	Annual PM_{10} (ton/yr)	24-hr $PM_{2.5}$ (lb/day)
SCIG Construction	1.1E+02	9.4E+01	6.1E+01	4.8E+02	1.6E-01	1.6E+00	5.6E+02	4.1E+01	1.1E+02
Alternate Business Location CHE	1.1E+01	1.8E+01	3.8E+01	3.0E+02	1.5E-02	1.7E-01	4.1E+00	5.8E-01	3.7E+00
Alternate Business Location Onsite Trucks	5.5E+00	8.8E+00	2.6E+00	2.1E+01	5.1E-03	5.8E-02	2.8E+00	4.0E-01	1.1E+00
Alternate Business Location Construction	4.3E+00	3.9E+00	2.7E+00	2.1E+01	0.0E+00	0.0E+00	0.0E+00	2.0E+00	1.8E+00
Alternate Business Location Onsite Locomotives	2.3E-02	4.6E-02	3.6E-03	2.8E-02	7.1E-04	8.5E-03	5.7E-03	9.4E-04	5.2E-03
Alternate Business Location Onsite Gasoline Vehicles	1.1E-02	1.8E-02	1.4E-01	1.1E+00	1.9E-04	2.1E-03	2.9E-01	4.4E-02	7.8E-02
Total - All Sources	**1.3E+02**	**1.2E+02**	**1.0E+02**	**8.3E+02**	**1.9E-01**	**1.8E+00**	**5.7E+02**	**4.4E+01**	**1.2E+02**

Table C2.2-2. Peak Construction Emissions Associated with the Mitigated Project and the Mitigated Reduced Project Alternative.

Emission Source	1-hour NOx (lb/hr)	Annual NOx (ton/yr)	1-hour CO (lb/hr)	8-hour CO (lb/8-hr)	1-hour SO_2 (lb/hr)	24-hr SO_2 (lb/day)	24-hr PM_{10} (lb/day)	Annual PM_{10} (ton/yr)	24-hr $PM_{2.5}$ (lb/day)
SCIG Construction	1.1E+02	8.6E+01	6.0E+01	4.8E+02	1.6E-01	1.6E+00	3.1E+02	1.8E+01	3.9E+01
Alternate Business Location CHE	1.1E+01	1.8E+01	3.8E+01	3.0E+02	1.5E-02	1.7E-01	4.1E+00	5.8E-01	3.7E+00
Alternate Business Location Onsite Trucks	5.5E+00	8.8E+00	2.6E+00	2.1E+01	5.1E-03	5.8E-02	2.8E+00	4.0E-01	1.1E+00
Alternate Business Location Construction	4.3E+00	3.9E+00	2.7E+00	2.1E+01	0.0E+00	0.0E+00	2.9E+01	1.5E+00	6.2E+00
Alternate Business Location Onsite Locomotives	2.3E-02	4.6E-02	3.6E-03	2.8E-02	7.1E-04	8.5E-03	5.7E-03	9.4E-04	5.2E-03
Alternate Business Location Onsite Gasoline Vehicles	1.1E-02	1.8E-02	1.4E-01	1.1E+00	1.9E-04	2.1E-03	2.9E-01	4.4E-02	7.8E-02
Total - All Sources	**1.3E+02**	**1.2E+02**	**1.0E+02**	**8.2E+02**	**1.9E-01**	**1.8E+00**	**3.5E+02**	**2.0E+01**	**5.0E+01**

2.2.3 Operational Emission Sources

Both on-site and off-site emission sources were included in the modeling of operational emissions, including both SCIG emission sources and alternate business emission sources. The following operational emission sources were included in the air dispersion modeling for NO_2, CO, PM_{10}, $PM_{2.5}$, and SO_2. Detailed descriptions of the sources and their emissions are discussed in Section 2 of Appendix C3 (Health Risk Assessment Report) and Section 3.2.4 of the EIR.

- **Truck** emissions from off-site and on-site driving, and idling at the SCIG facility and for the alternate business sites. A sensitivity analysis was performed to examine potential impacts from trucks traveling on roadways farther from the facility than the links described above. The sensitivity analysis showed that each roadway segment at these distances contributes no greater than 0.2 percent to the total risks from all Project sources at the maximum residential and occupational receptors, as discussed in the health risk assessment Appendix C3. Therefore, emissions from roadways farther from the Project site, including I-110 north of I-405, CA-91 more than one kilometer west of I-710, I-710 more than two kilometers north of CA-91, and trucks traveling in what is defined in Section 4.2 of Appendix C3 as the outer harbor region,

have negligible impacts compared to the other sources at or near the Project site and, therefore, were not included in the air dispersion modeling.

- **Cargo Handling Equipment**, including yard hostlers, wheel change-out machines, top picks and forklifts on-site at either SCIG or alternate business sites.
- **Locomotives** movement and idling on the SCIG site by linehaul locomotives, limited switching locomotive activity at the SCIG site, and limited switching locomotive activity at alternate business sites. Off-site locomotives movement associated with the SCIG project were included in the modeling for travel along the Alameda Corridor, up to the intersection with CA-91, or a distance of approximately 4.6 miles from the Project site, to be consistent with the truck source domain, as described above.
- **Gasoline vehicles**, including SCIG on-site service trucks, and SCIG and alternate business on-site and off-site worker commute vehicles. The off-site emissions of gasoline vehicles were modeled using the same domain used for off-site trucks, described above.
- **Other sources,** including the SCIG site emergency generator, and limited TRU emissions before TRUs are plugged into the electrical outlets were included in the dispersion modeling for the on-site SCIG facility.

2.2.4 Operational Emissions

To evaluate the air quality impacts of project operations, peak operational emissions were calculated for the project analysis years of 2013, 2014, and 2015 (for alternate business sites only), and 2016, 2023, 2035, 2046 and 2066 (for SCIG and alternate business sites), corresponding to the opening year (2016), the full facility throughput year (2035), and the lease termination year (2066). To ensure the evaluation of maximum potential concentrations, the highest emissions from each type of source, such as trucks or cargo handling equipment, for example, were conservatively modeled together in AERMOD, even if the emissions would occur in different analysis years for different sources.

The dispersion modeling analysis for project operations did not include construction activities. Since the SCIG facility is a new facility, there would be no overlap of construction of the SCIG facility with its operations. The overlap of alternate business operations and SCIG and alternate business site construction was treated as part of the construction dispersion modeling, as discussed earlier. Dispersion modeling for project operations also included the emissions from alternate business locations.

Operational emissions for the various modeled averaging times were derived as follows:

2.2.4.1 SCIG On-Site Equipment and Locomotives

Annual Emissions: Annual emissions from rail yard equipment, locomotives, and trains were estimated following the methodologies described in *Section 3.2.4.1: Methodology for Determining Operational Emissions* of the EIR, based on the projected annual activity levels and emission factors of the analysis years.

Maximum 24-Hour Emissions: Due to the physical constraints of the SCIG facility and throughput capacity, the linehaul locomotive visits were assumed to be limited to 8 trains per day. Maximum 24-hour emissions were determined by using the emission factors of the oldest locomotives in the linehaul locomotive fleet for all 8 trains visiting the facility.

For yard hostlers, maximum 24-hour emissions were developed using a peaking factor of 1.1 which represents a peak level of container cargo activity at Port terminals determined as part of the 2004 POLA baseline transportation study conducted by the Port.

Maximum 24-hour emissions for TRUs and the on-site emergency generator assumed activity for the entire 24-hour duration. For other on-site equipment, maximum 24-hour emissions were assumed to be equivalent to average daily emissions.

Maximum 1-Hour Emissions: Maximum 1-hour emissions for locomotives at the SCIG facility were derived from the detailed locomotive movement emissions, which track every step in the entry, breakdown, build and departure of trains. The movements were analyzed to determine the series of movements representing the maximum 1-hour emissions from all movements. Maximum 1-hour emissions for all other sources were determined from the maximum 24-hour emissions of those sources.

Maximum 8-Hour Emissions: For all on-site sources, maximum 8-hour emissions were determined from the maximum 24-hour emissions of those sources.

The Reduced Project emissions (Alternative 2), utilized the same methodology for determining annual and maximum emissions as for the Project.

2.2.4.2 SCIG Drayage Trucks

Emissions from SCIG drayage trucks include driving and idling on-site, and driving off-site.

Annual Emissions: Annual emissions from SCIG drayage trucks were estimated following the methodologies described in *Section 3.2.4.1: Methodology for Determining Operational Emissions* of the EIR, based on the projected annual activity levels and emission factors of the analysis years.

Maximum 24-Hour Emissions: Maximum 24-hour emissions were derived from the annual emissions, using a peaking factor of 1.1 which represents a peak level of container cargo activity at Port terminals determined as part of the 2004 POLA baseline transportation study conducted by the Port.

Maximum 1-Hour and 8-Hour Emissions: Maximum 1-hour and 8-hour emissions for drayage trucks at the SCIG facility were derived from the annual emissions.

The Reduced Project (Alternative 2) emissions, utilized the same methodology for determining annual and maximum emissions as for the Project.

2.2.4.3 Other Drayage Trucks

Emissions from drayage trucks traveling between the Hobart Yard in downtown Los Angeles and the Port terminals include off-site driving.

Annual Emissions: Annual emissions from drayage trucks traveling between Hobart Yard and the Ports were estimated following the methodologies described in *Section 3.2.4.1: Methodology for Determining Operational Emissions* of the EIR, based on the projected annual activity levels and emission factors of the analysis years.

Maximum 24-Hour Emissions: Maximum 24-hour emissions were derived from the annual emissions, using a peaking factor of 1.1 which represents a peak level of container cargo activity at Port terminals determined as part of the 2004 POLA baseline transportation study conducted by the Port.

Maximum 1-Hour and 8-Hour Emissions: Maximum 1-hour and 8-hour emissions for drayage trucks traveling between the Hobart Yard and the Ports were derived from the annual emissions.

The No Project Alternative and Baseline scenarios utilized this methodology for determining annual and maximum emissions.

2.2.4.4 SCIG Service and Employee Vehicles

Emissions from SCIG service trucks and employee vehicles include driving and idling on-site, and employee vehicles driving off-site.

Annual Emissions: Annual emissions from service trucks and employee vehicles were estimated using the methodologies described in *Section 3.2.4.1: Methodology for Determining Operational Emissions* of the EIR, based on the number of vehicles and emission factors of the analysis years.

Maximum 24-Hour Emissions: Maximum 24-hour emissions were determined from the annual emissions.

Maximum 1-Hour and 8-Hour Emissions: Maximum 1-hour and 8-hour emissions were determined from the maximum 24-hour emissions

The Reduced Project (Alternative 2) emissions, utilized the same methodology for determining annual and maximum emissions as for the Project.

2.2.4.5 On-Site Equipment at Alternate Business Locations

Annual Emissions: Annual emissions from on-site equipment (cargo-handling equipment) at alternate business sites were estimated using the methodologies described in *Section 3.2.4.1: Methodology for Determining Operational Emissions* of the EIR, based on the projected annual activity at each alternate business site and emission factors of the analysis years.

Maximum 24-Hour Emissions: A peaking factor of 1.1 was applied to business on-site equipment activities, as these activities were assumed to be linked with the truck traffic to and from the facilities.

Maximum 1-Hour and 8-Hour Emissions: Maximum 1-hour and 8-hour emissions were determined from the maximum 24-hour emissions.

The same methodology used to determine peak equipment emissions at alternate business sites for the Project scenarios were also used for the Baseline, Reduced Project and No Project scenarios.

2.2.4.6 Vehicles at Alternate Business Locations

Annual Emissions: Annual emissions from trucks and employee vehicles at alternate business sites included driving and idling on-site at each alternate business site, and off-site driving. Emissions were estimated using the methodologies described in *Section 3.2.4.1: Methodology for Determining Operational Emissions* of the EIR, based on the projected annual activity at each alternate business site and emission factors of the analysis years.

Maximum 24-Hour Emissions: A peaking factor of 1.1 was applied to business on-site and off-site truck and employee vehicle activities, similar to the methodology described above for SCIG drayage trucks.

Maximum 1-Hour and 8-Hour Emissions: Maximum 1-hour and 8-hour emissions were determined from the maximum 24-hour emissions.

The same methodology used to determine peak day equipment emissions at alternate business sites for the Project scenarios were also used for the Baseline, Reduced Project and No Project scenarios.

2.2.4.7 Summary of Operational Emissions

Tables C2.2-3 through C2.2-8 present the operational emissions by source for the:

- Unmitigated Project,
- Mitigated Project,
- No Project Alternative,
- Unmitigated Reduced Project Alternative,
- Mitigated Reduced Project Alternative, and
- Baseline, respectively.

Table C2.2-3. Peak NOx, CO, SO_2, PM_{10}, and $PM_{2.5}$ Operational Emissions by Source - Unmitigated Project.

Emission Source	1-hour NOx (lb/hr)	Annual NOx (ton/yr)	1-hour CO (lb/hr)	8-hour CO (lb/8-hr)	1-hour SO_2 (lb/hr)	24-hr SO_2 (lb/day)	24-hr PM_{10} (lb/day)	Annual PM_{10} (ton/yr)	24-hr $PM_{2.5}$ (lb/day)
Alternate Business Location Offsite Trucks	1.2E+01	2.0E+01	2.5E+00	2.0E+01	2.6E-02	2.9E-01	1.1E+01	1.6E+00	4.5E+00
SCIG Offsite Trucks	8.3E+00	3.2E+01	2.9E+00	2.3E+01	4.4E-02	1.1E+00	3.8E+01	6.1E+00	1.3E+01
SCIG Offsite Locomotives	2.7E+00	1.2E+01	7.3E-01	5.9E+00	7.3E-03	1.7E-01	1.2E+00	2.1E-01	1.1E+00
Alternate Business Location CHE	1.1E+01	1.8E+01	3.8E+01	3.0E+02	1.5E-02	1.7E-01	4.1E+00	5.8E-01	3.7E+00
Alternate Business Location Onsite Trucks	5.5E+00	8.8E+00	2.6E+00	2.1E+01	5.1E-03	5.8E-02	2.8E+00	4.0E-01	1.1E+00
SCIG Onsite Trucks	1.0E+01	3.9E+01	7.0E+00	5.6E+01	2.6E-02	6.2E-01	4.6E+01	7.4E+00	1.3E+01
Emergency Generator	9.3E-01	9.3E-02	4.8E+00	3.9E+01	7.9E-03	1.9E-01	9.8E-01	4.1E-03	9.1E-01
SCIG CHE/TRU	4.8E-01	1.1E-01	8.3E-01	6.7E+00	1.5E-03	3.5E-02	3.5E-01	3.8E-03	3.3E-01
Hostler	3.9E-01	1.5E+00	4.3E+01	3.4E+02	0.0E+00	0.0E+00	1.4E-01	2.3E-02	1.3E-01
SCIG Onsite Locomotives	1.4E+00	6.0E+00	4.5E-01	3.6E+00	3.2E-03	7.6E-02	7.0E-01	1.3E-01	6.4E-01
Alternate Business Location Offsite Gasoline Vehicles	1.2E-01	2.0E-01	1.3E+00	1.0E+01	3.4E-03	3.9E-02	5.0E+00	7.8E-01	1.3E+00
SCIG Offsite Gasoline Vehicles	2.7E-02	1.2E-01	3.0E-01	2.4E+00	1.9E-03	4.6E-02	5.9E+00	1.1E+00	1.6E+00
Alternate Business Location Onsite Locomotives	2.3E-02	4.6E-02	3.6E-03	2.8E-02	7.1E-04	8.5E-03	5.7E-03	9.4E-04	5.2E-03
SCIG Onsite Gasoline Vehicles	1.8E-02	7.7E-02	6.7E-01	5.3E+00	1.6E-04	3.8E-03	7.9E-01	1.4E-01	2.7E-01
Alternate Business Location Onsite Gasoline Vehicles	1.1E-02	1.8E-02	1.4E-01	1.1E+00	1.9E-04	2.1E-03	2.9E-01	4.4E-02	7.8E-02
Onsite Refueling Trucks	3.2E-02	1.4E-01	3.4E-02	2.7E-01	5.7E-05	1.4E-03	1.1E-02	2.0E-03	4.4E-03
Total - All Sources	**5.3E+01**	**1.4E+02**	**1.1E+02**	**8.4E+02**	**1.4E-01**	**2.8E+00**	**1.2E+02**	**1.8E+01**	**4.2E+01**

Table C2.2-4. Peak NOx, CO, SO_2, PM_{10}, and $PM_{2.5}$ Operational Emissions by Source - Mitigated Project.

Emission Source	1-hour NOx (lb/hr)	Annual NOx (ton/yr)	1-hour CO (lb/hr)	8-hour CO (lb/8-hr)	1-hour SO_2 (lb/hr)	24-hr SO_2 (lb/day)	24-hr PM_{10} (lb/day)	Annual PM_{10} (ton/yr)	24-hr $PM_{2.5}$ (lb/day)
Alternate Business Location Offsite Trucks	1.2E+01	2.0E+01	2.5E+00	2.0E+01	2.6E-02	2.9E-01	1.1E+01	1.6E+00	4.5E+00
SCIG Offsite Trucks	8.3E+00	3.2E+01	2.9E+00	2.3E+01	4.4E-02	1.1E+00	3.8E+01	6.1E+00	1.3E+01
SCIG Offsite Locomotives	2.7E+00	1.2E+01	7.3E-01	5.9E+00	7.3E-03	1.7E-01	1.2E+00	2.1E-01	1.1E+00
Alternate Business Location CHE	1.1E+01	1.8E+01	3.8E+01	3.0E+02	1.5E-02	1.7E-01	4.1E+00	5.8E-01	3.7E+00
Alternate Business Location Onsite Trucks	5.5E+00	8.8E+00	2.6E+00	2.1E+01	5.1E-03	5.8E-02	2.8E+00	4.0E-01	1.1E+00
SCIG Onsite Trucks	1.0E+01	3.9E+01	7.0E+00	5.6E+01	2.6E-02	6.2E-01	3.5E+01	5.6E+00	1.1E+01
Emergency Generator	9.3E-01	9.3E-02	4.8E+00	3.9E+01	7.9E-03	1.9E-01	9.8E-01	4.1E-03	9.1E-01
SCIG CHE/TRU	4.8E-01	1.1E-01	8.3E-01	6.7E+00	1.5E-03	3.5E-02	3.5E-01	3.8E-03	3.3E-01
Hostler	3.9E-01	1.5E+00	4.3E+01	3.4E+02	0.0E+00	0.0E+00	1.4E-01	2.3E-02	1.3E-01
SCIG Onsite Locomotives	1.4E+00	6.0E+00	4.5E-01	3.6E+00	3.2E-03	7.6E-02	7.0E-01	1.3E-01	6.4E-01
Alternate Business Location Offsite Gasoline Vehicles	1.2E-01	2.0E-01	1.3E+00	1.0E+01	3.4E-03	3.9E-02	5.0E+00	7.8E-01	1.3E+00
SCIG Offsite Gasoline Vehicles	2.7E-02	1.2E-01	3.0E-01	2.4E+00	1.9E-03	4.6E-02	5.9E+00	1.1E+00	1.6E+00
Alternate Business Location Onsite Locomotives	2.3E-02	4.6E-02	3.6E-03	2.8E-02	7.1E-04	8.5E-03	5.7E-03	9.4E-04	5.2E-03
SCIG Onsite Gasoline Vehicles	1.8E-02	7.7E-02	6.7E-01	5.3E+00	1.6E-04	3.8E-03	6.2E-01	1.1E-01	2.3E-01
Alternate Business Location Onsite Gasoline Vehicles	1.1E-02	1.8E-02	1.4E-01	1.1E+00	1.9E-04	2.1E-03	2.9E-01	4.4E-02	7.8E-02
Onsite Refueling Trucks	3.2E-02	1.4E-01	3.4E-02	2.7E-01	5.7E-05	1.4E-03	8.8E-03	1.6E-03	3.9E-03
Total - All Sources	**5.3E+01**	**1.4E+02**	**1.1E+02**	**8.4E+02**	**1.4E-01**	**2.8E+00**	**1.1E+02**	**1.7E+01**	**3.9E+01**

Table C2.2-5. Peak NOx, CO, SO_2, PM_{10}, and $PM_{2.5}$ Operational Emissions by Source - No Project Alternative.

Emission Source	1-hour NOx (lb/hr)	Annual NOx (ton/yr)	1-hour CO (lb/hr)	8-hour CO (lb/8-hr)	1-hour SO_2 (lb/hr)	24-hr SO_2 (lb/day)	24-hr PM_{10} (lb/day)	Annual PM_{10} (ton/yr)	24-hr $PM_{2.5}$ (lb/day)
Business Offsite Trucks	3.1E+01	4.9E+01	7.4E+00	5.9E+01	7.0E-02	7.8E-01	2.9E+01	4.2E+00	1.2E+01
Hobart Trucks	2.1E+01	8.2E+01	8.1E+00	6.5E+01	1.2E-01	3.0E+00	1.1E+02	1.7E+01	3.8E+01
Business Offsite Gasoline Vehicles	5.2E-01	7.6E-01	5.8E+00	4.6E+01	1.6E-02	1.6E-01	2.1E+01	3.0E+00	5.5E+00
Business CHE	3.2E+01	5.2E+01	1.5E+02	1.2E+03	1.3E-01	1.2E+00	1.1E+01	1.5E+00	9.8E+00
Business Onsite Trucks	1.1E+01	1.7E+01	5.8E+00	4.7E+01	1.1E-02	1.2E-01	6.5E+00	9.1E-01	2.7E+00
Business Onsite Locomotives	2.7E-01	3.6E-01	4.1E-02	3.3E-01	8.2E-03	7.6E-02	5.1E-02	7.4E-03	4.7E-02
Business Onsite Gasoline Vehicles	4.8E-02	6.8E-02	6.7E-01	5.4E+00	9.5E-04	9.4E-03	1.4E+00	2.0E-01	3.7E-01
Total - All Sources	**9.7E+01**	**2.0E+02**	**1.8E+02**	**1.4E+03**	**3.6E-01**	**5.3E+00**	**1.8E+02**	**2.7E+01**	**6.8E+01**

Table C2.2-6. Peak NOx, CO, SO_2, PM_{10}, and $PM_{2.5}$ Operational Emissions by Source - Unmitigated Reduced Project Alternative.

Emission Source	1-hour NOx (lb/hr)	Annual NOx (ton/yr)	1-hour CO (lb/hr)	8-hour CO (lb/8-hr)	1-hour SO_2 (lb/hr)	24-hr SO_2 (lb/day)	24-hr PM_{10} (lb/day)	Annual PM_{10} (ton/yr)	24-hr $PM_{2.5}$ (lb/day)
SCIG Offsite Trucks	5.7E+00	2.2E+01	2.0E+00	1.6E+01	2.9E-02	7.0E-01	2.5E+01	4.1E+00	8.8E+00
Alternate Business Location Offsite Trucks	1.2E+01	2.0E+01	2.5E+00	2.0E+01	2.6E-02	2.9E-01	1.1E+01	1.6E+00	4.5E+00
Alternate Business Location CHE	1.1E+01	1.8E+01	3.8E+01	3.0E+02	1.5E-02	1.7E-01	4.1E+00	5.8E-01	3.7E+00
SCIG Offsite Locomotives	2.5E+00	1.1E+01	5.5E-01	4.4E+00	5.4E-03	1.3E-01	1.2E+00	2.1E-01	1.1E+00
Alternate Business Location Onsite Trucks	5.5E+00	8.8E+00	2.6E+00	2.1E+01	5.1E-03	5.8E-02	2.8E+00	4.0E-01	1.1E+00
SCIG Onsite Trucks	6.8E+00	2.6E+01	4.7E+00	3.7E+01	1.7E-02	4.1E-01	3.1E+01	4.9E+00	8.9E+00
Emergency Generator	9.3E-01	9.3E-02	4.8E+00	3.9E+01	7.9E-03	1.9E-01	9.8E-01	4.1E-03	9.1E-01
SCIG CHE/TRU	4.8E-01	1.1E-01	8.3E-01	6.7E+00	1.5E-03	3.5E-02	3.5E-01	3.8E-03	3.3E-01
Hostler	2.6E-01	1.0E+00	2.8E+01	2.3E+02	0.0E+00	0.0E+00	9.6E-02	1.5E-02	8.9E-02
Alternate Business Location Offsite Gasoline Vehicles	1.2E-01	2.0E-01	1.3E+00	1.0E+01	3.4E-03	3.9E-02	5.0E+00	7.8E-01	1.3E+00
SCIG Onsite Locomotives	1.3E+00	5.7E+00	3.6E-01	2.9E+00	2.4E-03	5.7E-02	7.0E-01	1.3E-01	6.4E-01
SCIG Offsite Gasoline Vehicles	1.8E-02	7.8E-02	2.0E-01	1.6E+00	1.3E-03	3.1E-02	3.9E+00	7.1E-01	1.0E+00
Alternate Business Location Onsite Locomotives	2.3E-02	4.6E-02	3.6E-03	2.8E-02	7.1E-04	8.5E-03	5.7E-03	9.4E-04	5.2E-03
SCIG Onsite Gasoline Vehicles	1.7E-02	7.3E-02	6.6E-01	5.2E+00	1.2E-04	2.9E-03	5.7E-01	1.0E-01	2.1E-01
Alternate Business Location Onsite Gasoline Vehicles	1.1E-02	1.8E-02	1.4E-01	1.1E+00	1.9E-04	2.1E-03	2.9E-01	4.4E-02	7.8E-02
Onsite Refueling Trucks	2.4E-02	1.0E-01	2.6E-02	2.0E-01	4.3E-05	1.0E-03	8.1E-03	1.5E-03	3.3E-03
Total - All Sources	**4.7E+01**	**1.1E+02**	**8.7E+01**	**7.0E+02**	**1.2E-01**	**2.1E+00**	**8.7E+01**	**1.4E+01**	**3.3E+01**

Table C2.2-7. Peak NOx, CO, SO_2, PM_{10}, and $PM_{2.5}$ Operational Emissions by Source - Mitigated Reduced Project Alternative.

Emission Source	1-hour NOx (lb/hr)	Annual NOx (ton/yr)	1-hour CO (lb/hr)	8-hour CO (lb/8-hr)	1-hour SO_2 (lb/hr)	24-hr SO_2 (lb/day)	24-hr PM_{10} (lb/day)	Annual PM_{10} (ton/yr)	24-hr $PM_{2.5}$ (lb/day)
SCIG Offsite Trucks	5.7E+00	2.2E+01	2.0E+00	1.6E+01	2.9E-02	7.0E-01	2.5E+01	4.1E+00	8.8E+00
Alternate Business Location Offsite Trucks	1.2E+01	2.0E+01	2.5E+00	2.0E+01	2.6E-02	2.9E-01	1.1E+01	1.6E+00	4.5E+00
Alternate Business Location CHE	1.1E+01	1.8E+01	3.8E+01	3.0E+02	1.5E-02	1.7E-01	4.1E+00	5.8E-01	3.7E+00
SCIG Offsite Locomotives	2.5E+00	1.1E+01	5.5E-01	4.4E+00	5.4E-03	1.3E-01	1.2E+00	2.1E-01	1.1E+00
Alternate Business Location Onsite Trucks	5.5E+00	8.8E+00	2.6E+00	2.1E+01	5.1E-03	5.8E-02	2.8E+00	4.0E-01	1.1E+00
SCIG Onsite Trucks	6.8E+00	2.6E+01	4.7E+00	3.7E+01	1.7E-02	4.1E-01	2.3E+01	3.8E+00	7.1E+00
Emergency Generator	9.3E-01	9.3E-02	4.8E+00	3.9E+01	7.9E-03	1.9E-01	9.8E-01	4.1E-03	9.1E-01
SCIG CHE/TRU	4.8E-01	1.1E-01	8.3E-01	6.7E+00	1.5E-03	3.5E-02	3.5E-01	3.8E-03	3.3E-01
Hostler	2.6E-01	1.0E+00	2.8E+01	2.3E+02	0.0E+00	0.0E+00	9.6E-02	1.5E-02	8.9E-02
Alternate Business Location Offsite Gasoline Vehicles	1.2E-01	2.0E-01	1.3E+00	1.0E+01	3.4E-03	3.9E-02	5.0E+00	7.8E-01	1.3E+00
SCIG Onsite Locomotives	1.3E+00	5.7E+00	3.6E-01	2.9E+00	2.4E-03	5.7E-02	7.0E-01	1.3E-01	6.4E-01
SCIG Offsite Gasoline Vehicles	1.8E-02	7.8E-02	2.0E-01	1.6E+00	1.3E-03	3.1E-02	3.9E+00	7.1E-01	1.0E+00
Alternate Business Location Onsite Locomotives	2.3E-02	4.6E-02	3.6E-03	2.8E-02	7.1E-04	8.5E-03	5.7E-03	9.4E-04	5.2E-03
SCIG Onsite Gasoline Vehicles	1.7E-02	7.3E-02	6.6E-01	5.2E+00	1.2E-04	2.9E-03	4.5E-01	8.1E-02	1.8E-01
Alternate Business Location Onsite Gasoline Vehicles	1.1E-02	1.8E-02	1.4E-01	1.1E+00	1.9E-04	2.1E-03	2.9E-01	4.4E-02	7.8E-02
Onsite Refueling Trucks	2.4E-02	1.0E-01	2.6E-02	2.0E-01	4.3E-05	1.0E-03	6.6E-03	1.2E-03	2.9E-03
Total - All Sources	**4.7E+01**	**1.1E+02**	**8.7E+01**	**7.0E+02**	**1.2E-01**	**2.1E+00**	**8.0E+01**	**1.2E+01**	**3.1E+01**

Table C2.2-8. Peak NOx, CO, SO_2, PM_{10}, and $PM_{2.5}$ Operational Emissions by Source – CEQA Baseline (2010).

Emission Source	1-hour NOx (lb/hr)	Annual NOx (ton/yr)	1-hour CO (lb/hr)	8-hour CO (lb/8-hr)	1-hour SO_2 (lb/hr)	24-hr SO_2 (lb/day)	24-hr PM_{10} (lb/day)	Annual PM_{10} (ton/yr)	24-hr $PM_{2.5}$ (lb/day)
Business Offsite Trucks	3.2E+01	5.2E+01	7.6E+00	6.1E+01	5.9E-02	6.6E-01	3.1E+01	4.4E+00	1.5E+01
Hobart Trucks	1.8E+01	7.0E+01	4.1E+00	3.3E+01	4.9E-02	1.2E+00	4.6E+01	7.4E+00	1.8E+01
Business Offsite Gasoline Vehicles	9.1E-01	1.3E+00	1.0E+01	8.3E+01	1.5E-02	1.5E-01	1.7E+01	2.5E+00	4.8E+00
Business CHE	3.5E+01	5.6E+01	1.3E+02	1.0E+03	1.3E-01	1.1E+00	9.6E+00	1.4E+00	8.9E+00
Business Onsite Trucks	1.3E+01	2.0E+01	5.7E+00	4.6E+01	9.4E-03	1.0E-01	7.9E+00	1.1E+00	4.1E+00
Business Onsite Locomotives	2.3E-01	3.1E-01	3.4E-02	2.8E-01	6.9E-03	6.5E-02	4.4E-02	6.4E-03	4.0E-02
Business Onsite Gasoline Vehicles	7.1E-02	1.0E-01	1.0E+00	8.0E+00	7.9E-04	7.9E-03	1.2E+00	1.7E-01	3.3E-01
Total - All Sources	**9.9E+01**	**2.0E+02**	**1.6E+02**	**1.3E+03**	**2.7E-01**	**3.3E+00**	**1.1E+02**	**1.7E+01**	**5.1E+01**

2.3 Dispersion Model Selection and Inputs

The air dispersion modeling was performed using the USEPA AERMOD dispersion model, version 09292, based on the *Guideline on Air Quality Models* (USEPA, 2005). The AERMOD model is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources. The AERMOD model requires hourly meteorological data consisting of wind direction wind speed, temperature, stability class, and mixing height. The AERMOD model allows input of multiple sources and source groupings, eliminating the need for multiple model runs. The selection of the AERMOD model is well suited based on (1) the general acceptance by the modeling community and regulatory agencies of its ability to provide reasonable results for large industrial complexes with multiple emission sources, (2) a consideration of the availability of annual sets of hourly meteorological data for use by AERMOD, and (3) the ability of the model to handle the various physical characteristics of project emission sources, including, "point," "area," and "volume" source types. AERMOD is a USEPA-approved dispersion model; the SCAQMD approves of its use for mobile source analyses, and CARB's *Health Risk Assessment Guidance for Rail Yard and Intermodal Facilities* (CARB, 2006) recommends its use.

2.3.1 Emission Source Representation

2.3.1.1 Construction Emission Sources

Implementation of the Project includes the construction of alternate business sites; those remaining on POLA property were considered part of the Project. The alternate business sites remaining on POLA property include ACTA, California Cartage, and Fastlane and are shown in Figure 2-2 of the EIR. As discussed earlier, construction emission sources include both the SCIG site and the alternate business sites. The areas of SCIG and business construction were approximated with square boxes of various sizes to achieve complete coverage of the aerial extent to which the construction equipment and truck sources operate. Each of the boxes represents the base of a volume source. The emissions were assumed to be spread uniformly over the entire area represented by the volume sources. Therefore, emissions were assigned to each volume source in proportion to the base area of that source divided by the total area of all sources. Emissions from construction trucks and equipment were assigned a release height of 15 feet, which is the approximate average height of the exhaust port plus a nominal amount of plume rise and is consistent with past POLA EIRs. Construction fugitive dust emission sources were modeled as area sources with plume depletion due to dry removal mechanisms, and their emissions were distributed uniformly throughout each construction area. The SCIG rail yard and alternate business site footprints were covered with polygon area sources to achieve complete coverage of the surface areas where construction activity occurs.

The source release parameters used in the AERMOD modeling for construction emissions are shown in Table C2.3-1.

Table C2.3-1. AERMOD Source Release Parameters - Construction Emissions.

Source Type	Source Description	AERMOD Source Type	Release Height (feet)	Source Width (m)	Line Source Spacing (m)	Exit Velocity (fpm)	Exit Temp. (°F)	Stack Diam. (feet)
SCIG and Alternate Business Site Construction	Construction Equipment and Trucks	Volume	15[a]	Various[c]	—	—	—	—
	Construction Fugitive Dust	Area	0[b]	—	—	—	—	—

Notes:
Consistent with the past POLA EIRs.
Based on South Coast Air Quality Management District (SCAQMD) *Final Localized Significance Threshold Methodology* (SCAQMD, 2008).
It was assumed that construction activities can occur anywhere onsite. Various size of volume sources were used to cover the SCIG and alternate business site construction area.
fpm feet per minute
m meter
°F degrees Fahrenheit

2.3.1.2 Operational Emission Sources

The AERMOD modeling analysis evaluated project-related operational emission sources, including rail yard equipment, locomotives, and on-road vehicles. Emissions from the movement of locomotives on rail lines and vehicles on roadways are line source emissions that were simulated and modeled as a series of separated volume sources. Mobile source operations confined within specific geographic locations, such as vehicles operating on the SCIG site, were modeled as a collection of volume sources covering the area. The onsite cargo handling equipment emissions were modeled as area sources covering specific geographic locations. Finally, stationary emissions from idling trains and an onsite emergency generator were modeled as stationary point (stack) sources with upward plume velocity and buoyancy.

The operational characteristics of each source type in terms of area of operation and vertical stack height or source height determined the release parameters of each volume or point source. The specific methodology for defining the sources is summarized below. Detailed descriptions of the parameters defining each source are described in Section 4.1 of Appendix C3, Health Risk Assessment Report.

1. **Cargo handling equipment.** The SCIG rail yard and alternate business site footprints were covered with polygon area sources to achieve complete coverage of the surface areas where the cargo handling equipment sources operate. The emissions were assumed to be spread uniformly over each area source. Emissions from cargo handling equipment were assigned a release height of 15 feet, which is the approximate average height of the exhaust port plus a nominal amount of plume rise and is consistent with past POLA EIRs.

2. **Roadways and railways.** Truck and gasoline vehicle movements on roadways and train movements on rail lines were modeled as a series of separated volume sources, as recommended for the simulation of line sources in the AERMOD User's Guide (USEPA, 2004). Roadways were divided into links that have uniform average speeds and widths. Average roadway speeds by roadway link were taken directly from the traffic modeling described in Section 3.10 of the EIR.. The rail line was assumed to

have a width of 9.05 meters where there is only a single track, consistent with past POLA EIRs, and the combined track width plus 3.05 meters where there are multiple tracks, consistent with MOU rail yard analyses (ENVIRON, 2008; ENVIRON, 2007a; ENVIRON, 2007b; ENVIRON, 2006a; ENVIRON, 2006b; ENVIRON, 2006c; ENVIRON, 2006d; ENVIRON, 2006e; ENVIRON, 2006f), with uniform emissions per mile of off-site locomotive travel over the entire segment from the SCIG rail yard to I-405. Therefore, the source characteristics for each volume source along a given link are identical except for the centerpoint locations. Total link emissions were divided equally among the number of sources in a given link. Truck idling at the gate was modeling using discrete volume sources.

Emissions from trucks were assigned a release height of 15 feet, which is the approximate average height of the exhaust port plus a nominal amount of plume rise and is consistent with past POLA EIRs, and emissions from gasoline vehicles were assigned a release height of 2 feet based on CARB (2000) and recommendations from ARB staff. The width of the volume sources for roadways was set equal to the width of the roadway.

Based on the methodology in the Roseville Rail Yard Study, the volume source heights for locomotives in transit were set to between 16 – 280 feet for daytime conditions and 28 – 177 feet for nighttime conditions (CARB, 2004). Following the same methodology, the volume source height for switcher locomotives was 36 feet for daytime conditions and 51 feet for nighttime conditions. The width of the volume sources for rail lines was set equal to the number of tracks times 3.05 meters per track, consistent with MOU rail yard analyses (ENVIRON, 2008; ENVIRON, 2007a; ENVIRON, 2007b; ENVIRON, 2006a; ENVIRON, 2006b; ENVIRON, 2006c; ENVIRON, 2006d; ENVIRON, 2006e; ENVIRON, 2006f), except if the rail line had only a single track, in which an additional 3 m was added on each side, consistent with past POLA EIRs.

- **Emergency Generator.** SCIG's emergency generator was modeled as a single point source, with a release height of 3.7 feet, an exit velocity of 10,755 feet per minute, an exit temperature of 879 degrees Fahrenheit, and a stack diameter of 23 feet, based on the Generac Model SD 600 specifications.

Emission sources were positioned by using the Universal Transverse Mercator (UTM) coordinate system (NAD-83) referenced to topographic data obtained from the U.S. Geological Survey (USGS). The source release parameters used in the AERMOD modeling for operational emissions are shown in Table C2.3-2.

Table C2.3-2. AERMOD Source Release Parameters - Operational Emissions.

Source Type	Source Description	AERMOD Source Type	Release Height (feet)	Source Width (m)	Line Source Spacing (m)	Exit Velocity (fpm)	Exit Temp. (°F)	Stack Diam. (feet)
Cargo Handling Equipment	Wheel Change Out Machines	Area	15[a]	—	—	—	—	—
	Yard Hostler	Area	15[a]	—	—	—	—	—
Locomotives	Line Haul Movement	Volume	Various[b]	Various[d]	50	—	—	—
	Line Haul Idling	Point	15	—	—	684[e]	209[e]	2[e]
	Switcher Movement	Volume	Various[c]	Various[d]	50	—	—	—
	Switcher Idling	Point	15	—	—	3,062[e]	191[e]	0.9[e]

Source Type	Source Description	AERMOD Source Type	Release Height (feet)	Source Width (m)	Line Source Spacing (m)	Exit Velocity (fpm)	Exit Temp. (°F)	Stack Diam. (feet)
Trucks	Trucks driving between terminals and SCIG or alternate business sites	Volume	15[a]	Various[f]	—	—	—	—
	Trucks idling at gate	Volume	15[a]	Various[f]	—	—	—	—
Gasoline Vehicles	Service Truck and Employee Vehicle	Volume	2[g]	Various[f]	50	—	—	—
Emergency Generator	Generac, Model SD600	Point	3.7[h]	—	—	10775[h]	879[h]	0.23[h]

Notes:

a) Consistent with the past POLA EIRs.

b) The volume source height for Line Haul locomotives ranges from 16 - 280 feet for daytime and 28 – 177 feet for nighttime conditions, respectively. These heights were derived based on the methodology in the *Roseville Railyard Study* (CARB, 2004).

c) The volume source height for switcher locomotives was 36 feet for daytime and 51 feet for nighttime conditions, respectively. These heights were derived based on the methodology in the *Roseville Railyard Study* (CARB, 2004).

d) The width of locomotive volume sources depends on the width of the proposed track lines.

e) Source parameters provided by Southwest Research Institute, Steve Fritz, Personal Communication, November 2006.

f) The width of truck sources depends on the width of the traveled roadways.

g) Release height based on CARB *Risk Reduction Plan* (CARB, 2000) and recommendations from ARB staff.

h) Stack Parameters are based on a 600 kW generator, consistent with parameters used under the MOU, which are different from those listed on the manufacturer's website. The use of the stack parameters listed on the manufacturer's website would not alter the results presented for the following two reasons:

a. The change to the modeled dispersion factors is de minimis. ENVIRON modeled the emergency generator using the manufacturer's parameters and compared the dispersion factors to those corresponding to the source parameters shown above. The differences are de minimis.

b. The emergency generator is a small source of emissions. As shown in the source contribution tables in Appendices C2 and C3, it contributes 0.1% or less to the criteria pollutant concentrations at the point of maximum impact, less than 1% to the cancer risk and chronic HI at the MEI, and less than 5% to the acute HI at the MEI.

Abbreviations:

fpm feet per minute
m meter
°F degrees Fahrenheit

2.3.2 Meteorological Data

The dominant terrain features/water bodies that may influence wind patterns in this part of the Los Angeles Basin include the Pacific Ocean to the west, the hills of the Palos Verdes Peninsula to the west/southwest and the San Pedro Bay and shipping channels to the south of the study area. Although the area in the immediate vicinity of the Ports of Los Angeles (POLA or the Port) and Long Beach (POLB) is generally flat, these terrain features/water bodies may result in significant variations in wind patterns over relatively short distances (POLA/POLB, 2010). POLA and POLB currently operate monitoring programs that includes the collection of meteorological data from several locations within port boundaries (POLA, 2004). The data sets contain 8,760 hourly observations of wind speed, wind direction, temperature, atmospheric stability, and mixing height recorded at each of the monitoring stations in the network.

The meteorological data stations to the west of the Palos Verdes Hills and within approximately 5 kilometers of the San Pedro Bay generally exhibit predominant winds from the northwest and from the south or southeast. The consistency of the predominant winds among these stations indicates that the Palo Verdes Hills are channeling the winds from the northwest and that the San Pedro Bay and shipping channels influence the winds from the south and southeast (POLA/POLB, 2010).

Because all of the Long Beach area stations indicate the same general wind patterns (i.e., predominant winds from the northwest and south/southeast), and due to data quality issues identified for most other stations in this area, the Saints Peter and Paul Elementary School (SPPS) meteorological station in Wilmington, about 2.5 miles southwest of the project site, and the Terminal Island Treatment Plant (TITP) meteorological station, about 4 miles southwest of the project site, were selected as representative meteorological stations for the on-Port emissions and out-of-Port truck emissions on major freeways and locomotive emissions on the Alameda Corridor in the northern part of Long Beach, as discussed in more detail below. The Berth 47 (B47) station is located at the southern tip of the Port of Los Angeles, where the winds appear to be heavily influenced by the San Pedro Bay and predominant winds are from the southwest. The B47 station is characterized by higher wind speeds and less variation in wind direction than patterns further inland (POLA/POLB, 2010).

To account for the unique wind patterns in the project area, the modeling domain for this analysis was split into inner, middle and outer harbor regions. The inner harbor zone is north of the East Basin Channel, Cerritos Channel, and Vincent Thomas Bridge, and bounded by Interstate 110 on west, Interstate 710 on the east, and an approximate east-west line created by Interstate 405 and 223rd Street in the northern part of Long Beach on the north. The middle harbor zone is the majority of Terminal Island and San Pedro. The outer harbor zone is the terminals on the southern end of Terminal Island and inside breakwater. Emission sources located in the inner harbor region, which includes construction sources and most operational sources, were modeled with the SPPS meteorological data. Emission sources located in the middle and outer harbor region, which includes trucks traffic between the project site and the terminals, were modeled with the TITP meteorological data. Emission sources located in the outer harbor region, which include truck traffic near the breakwater, were not included based on the results of a sensitivity analysis that showed that sources in the outer harbor region contributed less than 0.6% of the risk from diesel particulate matter (DPM) at the expected maximally exposed individual resident (MEIR), as described in Section 4.2 of Appendix C3. As a result, the B47 meteorological station was not used in the analysis. The modeling results were then summed at each common receptor point.

The meteorological data were processed using the USEPA's approved AERMET (version 06341) meteorological data preprocessor for the AERMOD dispersion model. AERMET uses three steps to preprocess and combine the surface and upper-air soundings to output the data in a format which is compatible with the AERMOD model. The first step extracts the data and performs a brief quality assurance check of the data. The second step merges the meteorological data sets. The third step creates an AERMOD-compatible format while also incorporating surface characteristics surrounding the collection or application site.

The output from the AERMET model consists of two separate files: the surface conditions file and a vertical profile dataset. AERMOD utilizes these two files in the dispersion modeling algorithm to predict pollutant concentrations resulting from a source's emissions.

2.3.3 Model Options

Technical options selected for the AERMOD model used regulatory default. Use of these options follows the USEPA modeling guidance (USEPA, 2005).

The following temporal distribution of emissions was modeled for peak 1-hour, peak 8-hour, peak 24-hour, and annual average concentrations:

Source Type	Emissions Schedule
Construction (SCIG)	Uniform distribution of emissions 8am – 6pm
Offsite Trucks and Gasoline Vehicles (SCIG), Locomotives (SCIG), Cargo Handling Equipment (SCIG), Emergency Generator (SCIG), Onsite Gasoline Vehicles (SCIG)	Uniform distribution of emissions 24 hr/day
Offsite Gasoline Vehicles (Businesses), Offsite Trucks (California Cartage and Fastlane)	Uniform distribution of emissions 6am – 6pm
Offsite Trucks (All Businesses Other Than California Cartage and Fastlane)	Uniform distribution of emissions 8am – 4pm
Construction (Businesses)	Uniform distribution of emissions 9am – 5pm
Onsite Sources (Businesses)	Variable by Business Operation Schedule, Uniform distribution of emissions during operating hours

These emission distributions are based on the Baseline and Project operation schedules of SCIG and the affected businesses.

2.3.4 Receptor Locations Used in the AERMOD

Receptor and source base elevations were determined from USGS National Elevation Dataset (NED) using the 1 arc-second format (i.e., 30-meter spacing between grid nodes). All coordinates were referenced to UTM North American Datum 1983 (NAD-83), zone 11.

Cartesian coordinate receptor grids were used to provide adequate spatial coverage surrounding the project area to assess ground-level pollution concentrations, to identify the extent of significant impacts, and to identify maximum-impact locations. For construction and operational emission modeling:

- a 50-meter spacing fine receptor grid covered the area that extended outwards to 250 meters (m) from the boundaries of the Project, alternate business sites, ICTF facility, and the segment of highway I-710 between West Ocean Blvd and CA-91,
- a 500-m spacing medium receptor grid extended up to approximately 48,000 m from the fine grid, and
- a 1000-m spacing coarse receptor grid extended up to approximately 16 km from the medium grid.

The grid receptors on water were not included in the dispersion analysis (SCAQMD, 2005).

AERMAP, version 09040, was used to calculate source elevations, receptor elevations and the controlling hill height for each receptor.

2.4 Significance Criteria for Project Air Quality Impacts

The SCAQMD has established thresholds to determine the significance of ambient air quality impacts from proposed land use development projects (SCAQMD, 2011). The criteria for project construction and operation are listed in Tables C2.4-1 and C2.4-2, respectively.

Table C2.4-1. SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Project Construction.

Air Pollutant	Ambient Concentration Threshold
Nitrogen Dioxide (NO_2) [a]	
1-hour average	0.18 ppm (338 µg/m^3)
1-hour average [b]	0.100 ppm (189 µg/m^3)
Annual average	0.03 ppm (56 µg/m^3)
Sulfur Dioxide (SO_2) [a]	
1-hour average	0.25 ppm (655 µg/m^3)
1-hour average [c]	0.075 ppm (196 µg/m^3)
24-hour average	0.04 ppm (105 µg/m^3)
Carbon Monoxide (CO) [a]	
1-hour average	20 ppm (23,000 µg/m^3)
8-hour average	9 ppm (10,000 µg/m^3)
Particulates (PM_{10}) [d]	
24-hour average	10.4 µg/m^3
Annual average	1.0 µg/m^3
Particulates ($PM_{2.5}$) [d]	
24-hour average	10.4 µg/m^3

Notes:

a) The NO_2 and CO thresholds are absolute thresholds; the maximum predicted impact from Project operations is added to the background concentration for the Project vicinity and compared to the threshold.

b) This threshold is the National Ambient Air Quality Standard (NAAQS), which has not yet been adopted by SCAQMD. It is a 98th percentile threshold.

c) This threshold is the National Ambient Air Quality Standard (NAAQS), which has not yet been adopted by SCAQMD. It is a 99th percentile threshold.

d) The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds. For significance, the maximum increase in concentration relative to the 2010 Baseline (i.e., Project impact minus Baseline impact) is compared to each threshold.

e) The SCAQMD has also established thresholds for sulfates, but is currently not requiring a quantitative comparison to this threshold (SCAQMD, 2005).

f) µg/m^3 micrograms per cubic meter

Source: SCAQMD, 2011.

Table C2.4-2. SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Project Operation.

Air Pollutant	Ambient Concentration Threshold
Nitrogen Dioxide (NO_2) [a]	
1-hour average	0.18 ppm (338 µg/m^3)
1-hour average [b]	0.100 ppm (189 µg/m^3)
Annual average	0.03 ppm (56 µg/m^3)
Sulfur Dioxide (SO_2) [a]	
1-hour average	0.25 ppm (655 µg/m^3)
1-hour average [c]	0.075 ppm (196 µg/m^3)
24-hour average	0.04 ppm (105 µg/m^3)
Carbon Monoxide (CO) [a]	
1-hour average	20 ppm (23,000 µg/m^3)
8-hour average	9 ppm (10,000 µg/m^3)
Particulates (PM_{10}) [d]	
24-hour average	2.5 µg/m^3
Annual average	1.0 µg/m^3
Particulates ($PM_{2.5}$) [d]	
24-hour average	2.5 µg/m^3

Notes:

a) The NO_2 and CO thresholds are absolute thresholds; the maximum predicted impact from Project operations is added to the background concentration for the Project vicinity and compared to the threshold.

b) This threshold is the National Ambient Air Quality Standard (NAAQS), which has not yet been adopted by SCAQMD. It is a 98th percentile threshold.

c) This threshold is the National Ambient Air Quality Standard (NAAQS), which has not yet been adopted by SCAQMD. It is a 99th percentile threshold.

d) The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds. For significance, the maximum increase in concentration relative to the 2010 Baseline (i.e., Project impact minus Baseline impact) is compared to each threshold.

e) The SCAQMD has also established thresholds for sulfates, but is currently not requiring a quantitative comparison to this threshold (SCAQMD, 2005).

f) µg/m^3 micrograms per cubic meter

Source: SCAQMD, 2011.

In this analysis, annual NO_2 concentrations were estimated from the AERMOD-predicted NO_X concentrations using a 75% conversion rate for the annual averaging period and an 80% conversion rate for the hourly averaging period (USEPA, 2011). For construction and operational emissions, NO_2, SO_2, and CO ground-level concentrations that were predicted by AERMOD for each project alternative were added to the background concentrations of each pollutant, and the total concentrations were compared to the SCAQMD thresholds. To assess the significance of construction and operational PM_{10} and $PM_{2.5}$ impacts, the incremental increase in PM_{10} and $PM_{2.5}$ concentrations relative to Baseline concentrations were determined. The PM_{10} and $PM_{2.5}$ incremental concentration increases (e.g., unmitigated Project minus Baseline) were compared to the SCAQMD incremental PM_{10} and $PM_{2.5}$ thresholds, respectively.

2.5 Predicted Air Quality Impacts

2.5.1 Construction Impacts

Construction impacts were evaluated for the unmitigated Project, the mitigated Project, the unmitigated Reduced Project Alternative, and the mitigated Reduced Project Alternative.

2.5.1.1 Unmitigated Project

Tables C2.5-1 and C2.5-2 summarize the AERMOD modeling results of unmitigated Project construction emissions, including operational emissions of the alternate business sites. With the exception of the federal 1-hour NO_2 and SO_2 National Ambient Air Quality Standard (NAAQS) comparisons, the NO_2 and SO_2 concentrations due to construction were added to the maximum background concentrations monitored at North Long Beach Station during the last 3 years (2008 through 2010). The federal 1-hour NO_2 and SO_2 NAAQS are 98^{th} and 99^{th} percentile thresholds, respectively; therefore, the concentrations due to construction were added to the 3-year average of the 8^{th} or 4^{th} highest daily maximum 1-hour concentration, respectively, over the years 2008-2010. The CO concentrations due to construction were added to the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). The total ground-level concentrations were compared with the SCAQMD thresholds. The AERMOD modeling results for PM_{10} and $PM_{2.5}$, which represent the incremental increases relative to the Baseline (which is assumed to be zero for construction impacts), were compared directly to the PM_{10} and $PM_{2.5}$ thresholds without adding a background concentration.

Locations of the maximum NO_2, CO, and SO_2 concentrations, as well as the locations of the maximum PM_{10} and $PM_{2.5}$ increments, for unmitigated Project construction are shown in Figure C2.5-1.

Table C2.5-1 shows that the maximum 1-hour NO_2 concentration of 1,274 micrograms per cubic meter ($\mu g/m^3$) exceeds the SCAQMD threshold for construction and that the maximum annual NO_2 concentration of 74 $\mu g/m^3$ exceeds the SCAQMD threshold for construction. The 98^{th} percentile 1-hour NO_2 concentration of 1,171 $\mu g/m^3$ would also exceed the NAAQS of 189 $\mu g/m^3$, a standard not yet adopted as a threshold of significance by SCAQMD. Both 1-hour and 8-hour CO and 1-hour and 24-hour SO_2 concentrations are below the SCAQMD thresholds. The 99^{th} percentile 1-hour SO_2 concentration of 53 $\mu g/m^3$ would also be below the NAAQS of 196 $\mu g/m^3$, a standard not yet adopted by SCAQMD.

Table C2.5-2 shows that the maximum 24-hour PM_{10} and $PM_{2.5}$ concentration increments due to construction are 61.8 $\mu g/m^3$ and 11.9 $\mu g/m^3$ respectively. The PM_{10} and $PM_{2.5}$ concentration increments exceed the SCAQMD-recommended PM_{10} and $PM_{2.5}$ significance thresholds of 10.4 $\mu g/m^3$ for construction. The maximum annual PM_{10} concentration of 13.1 $\mu g/m^3$ would exceed the SCAQMD significance threshold of 1.0 $\mu g/m^3$.

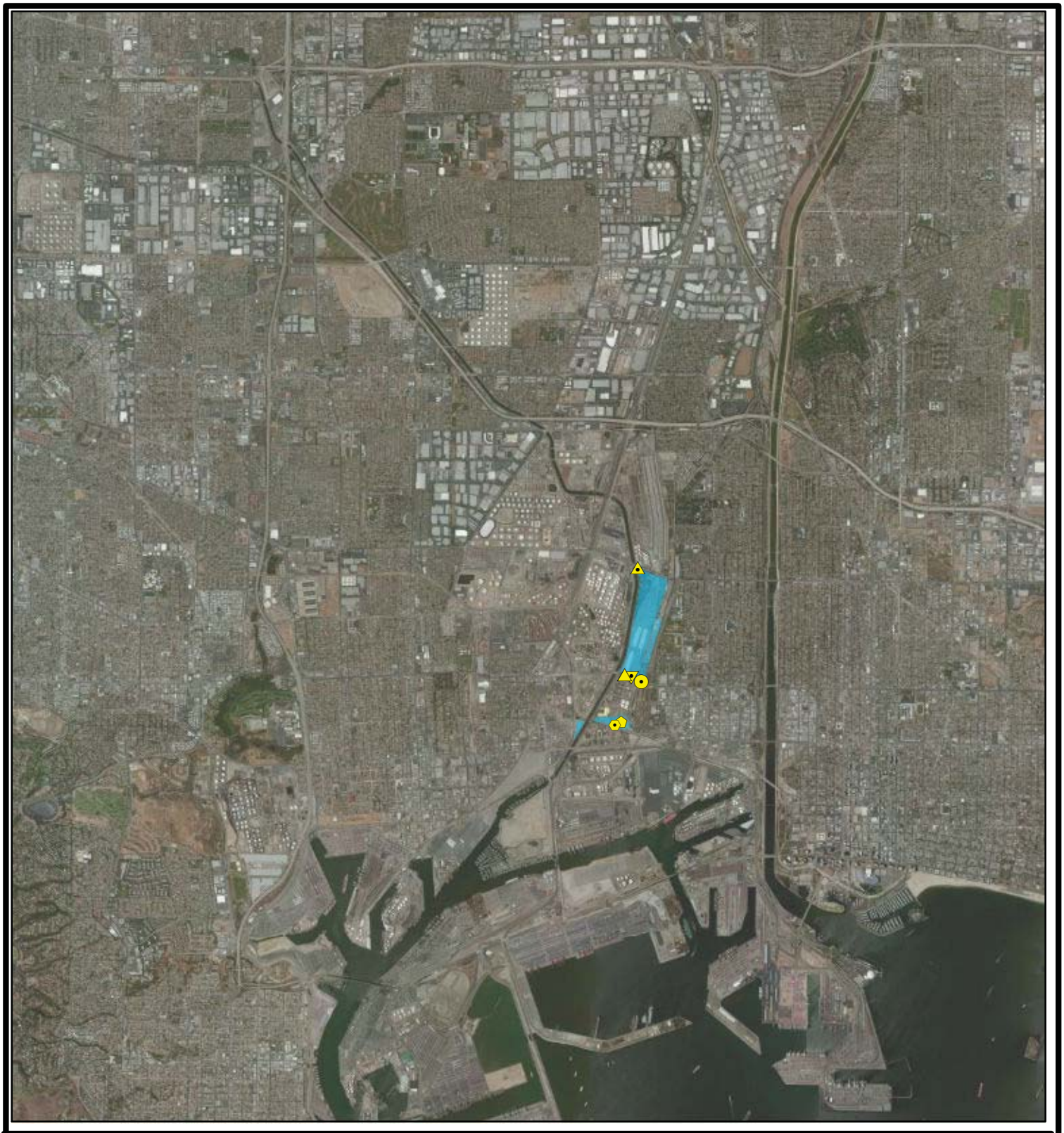


Figure C2.5-1
Maximum Air Quality Impact Locations

Construction (without Mitigation)

ENVIRON

Table C2.5-1. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Construction of the Unmitigated Project and the Unmitigated Reduced Project Alternative (With Alternative Business Location Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project Alternative ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration[a] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	1,029	245	**1,274**	338
	1-hour [d]	1,029	142	**1,171**	(189)[f]
	Annual	34	40	**74**	56
CO	1-hour	1,244	5,842	7,086	23,000
	8-hour	287	4,467	4,754	10,000
SO_2	1-hour	2.0	236	238	655
	1-hour [e]	2.0	51	53	(196)[f]
	24-hour	0.3	31	32	105

Notes:

a) Exceedances of the thresholds are indicated in **bold**. Modeled concentrations of NO_2 , SO_2, and CO are absolute Unmitigated Project Alternative concentrations.

b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.

d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

f) A standard not yet adopted as a threshold of significance by SCAQMD.

Table C2.5-2. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Construction of the Unmitigated Project and the Unmitigated Reduced Project Alternative (With Alternative Business Location Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project Alternative[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment[a,b] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	61.8	--	**61.8**	10.4
	Annual	13.1	--	**13.1**	1.0
$PM_{2.5}$	24-hour	11.9	--	**11.9**	10.4

Notes:

a) Exceedances of the threshold are indicated in **bold**. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The CEQA Increment represents Unmitigated Project Alternative minus CEQA baseline. However, because there is no construction for the CEQA baseline, the CEQA increment for PM_{10} and $PM_{2.5}$ is equivalent to the modeled project concentration.

For informational purposes, Tables C2.5-3 and C2.5-4 present the maximum offsite ground level concentrations of criteria pollutants estimated for unmitigated Project construction, excluding alternate business location operations.

Table C2.5-3. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Construction of the Unmitigated Project and the Unmitigated Reduced Project Alternative (No Alternate Business Location Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project Alternative ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration[a] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	652	245	**897**	338
	1-hour [d]	652	142	**794**	(189)[f]
	Annual	33	40	**73**	56
CO	1-hour	433	5,842	6,275	23,000
	8-hour	169	4,467	4,636	10,000
SO_2	1-hour	1.3	236	237	655
	1-hour [e]	1.3	51	52	(196)[f]
	24-hour	0.3	31	32	105

Notes:
a) Exceedances of the thresholds are indicated in **bold**. Modeled concentrations of NO_2 , SO_2, and CO are absolute Unmitigated Project Alternative concentrations.
b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.
c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.
d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
f) A standard not yet adopted as a threshold of significance by SCAQMD.

Table C2.5-4. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Construction of the Unmitigated Project and the Unmitigated Reduced Project Alternative (No Alternate Business Site Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project Alternative[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment[a,b] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	61.8	--	**61.8**	10.4
	Annual	13.1	--	**13.1**	1.0
$PM_{2.5}$	24-hour	11.7	--	**11.7**	10.4

Notes:
a) Exceedances of the threshold are indicated in **bold**. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.
b) The CEQA Increment represents Unmitigated Project Alternative minus CEQA baseline. However, because there is no construction for the CEQA baseline, the CEQA increment for PM_{10} and $PM_{2.5}$ is equivalent to the modeled project concentration.

2.5.1.2 Mitigated Project

Tables C2.5-5 and C2.5-6 summarize the AERMOD modeling results of mitigated Project construction emissions. The NO_2, CO, and SO_2 concentrations due to construction were added to the background concentrations and compared to the SCAQMD thresholds. The AERMOD modeling result for PM_{10} and $PM_{2.5}$ represent the incremental increase due to the project and was compared directly to the SCAQMD thresholds without adding a background concentration.

Locations of the maximum NO_2, CO, and SO_2 concentrations, as well as the locations of the maximum PM_{10} and $PM_{2.5}$ increment for construction of the Mitigated Project are shown in Figure C2.5-2.

Table C2.5-5 shows that the maximum 1-hour NO_2 concentration of 1,240 µg/m^3 exceeds the SCAQMD threshold for construction and that the maximum annual NO_2 concentration of 71 µg/m^3 exceeds the SCAQMD threshold for construction. The 98th percentile 1-hour NO_2 concentration of 1,137 µg/m^3 would also exceed the NAAQS of 189 µg/m^3, a standard not yet adopted as a threshold of significance by SCAQMD. Both 1-hour and 8-hour CO and 1-hour and 24-hour SO_2 concentrations are below the SCAQMD thresholds. The 99th percentile 1-hour SO_2 concentration of 53 µg/m^3 would also be below the NAAQS of 196 µg/m^3, a standard not yet adopted by SCAQMD.

Table C2.5-6 shows that the maximum 24-hour PM_{10} and $PM_{2.5}$ concentration increments due to construction are 35.9 µg/m^3 and 5.3 µg/m^3 respectively. The PM_{10} concentration increment exceeds the SCAQMD-recommended PM_{10} significance threshold of 10.4 µg/m^3 for construction. The maximum annual PM_{10} concentration of 8.5 µg/m^3 would exceed the SCAQMD significance threshold of 1.0 µg/m^3.

Table C2.5-5. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Construction of the Mitigated Project and the Mitigated Reduced Project Alternative (With Alternate Business Site Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project Alternative (µg/m^3)	Background Concentration[b] (µg/m^3)	Total Ground Level Concentration[a] (µg/m^3)	SCAQMD Threshold (µg/m^3)
NO_2 [c]	1-hour	995	245	**1,240**	338
	1-hour [d]	995	142	**1,137**	(189)[f]
	Annual	31	40	**71**	56
CO	1-hour	1,242	5,842	7,084	23,000
	8-hour	286	4,467	4,754	10,000
SO_2	1-hour	2.0	236	238	655
	1-hour [e]	2.0	51	53	(196)[f]
	24-hour	0.3	31	32	105

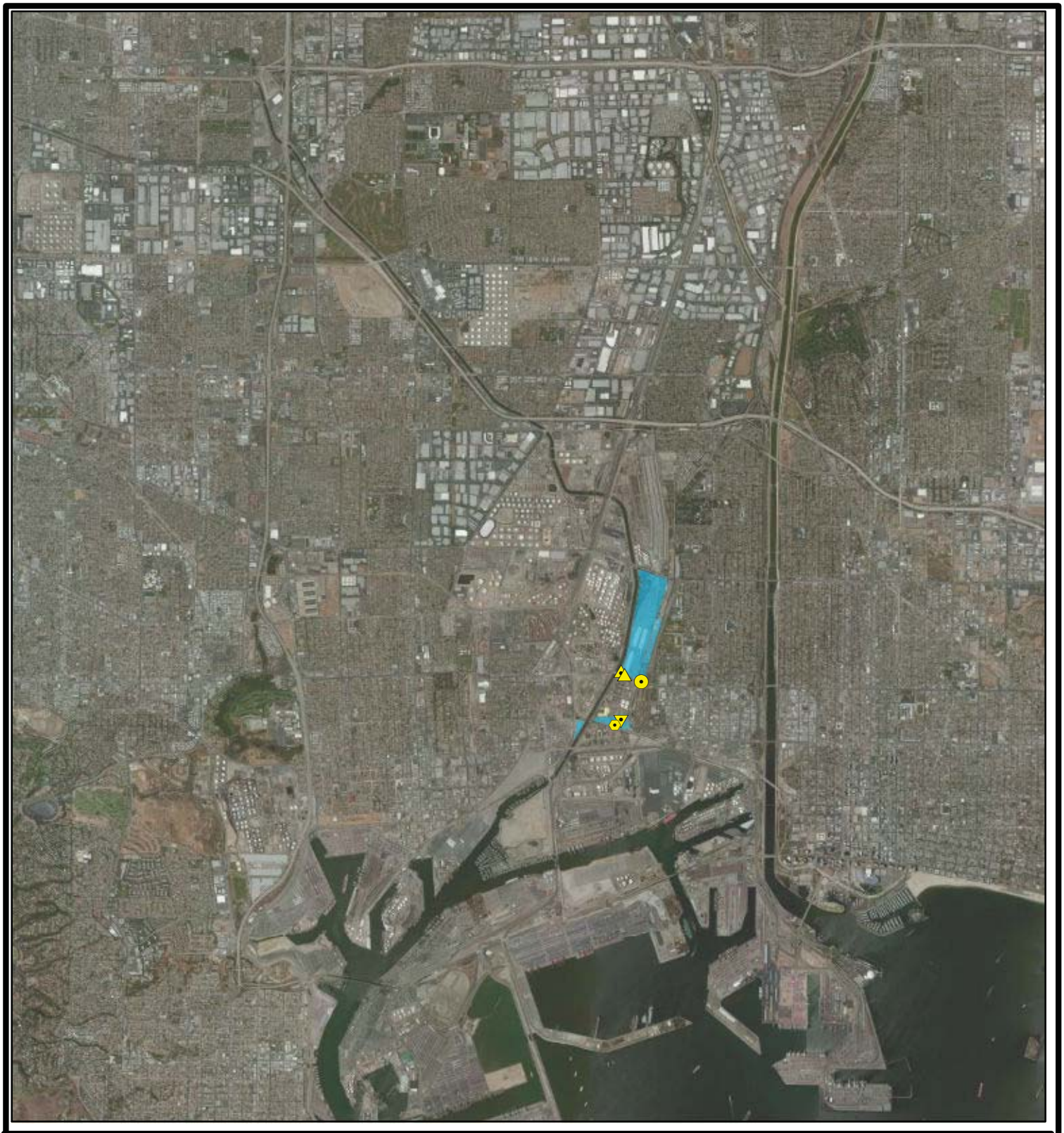
Notes:

a) Exceedances of the thresholds are indicated in bold. Modeled concentrations of NO_2, SO_2, and CO are absolute Mitigated Project Alternative concentrations.

b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.

d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.



Legend

- Max. 1-hr NO_2 / 1-hr SO_2 Impact
- Max. Annual NO_2 / Annual PM_{10} Impact
- Max. 1-hr CO Impact
- Max. 8-hr CO / 24-hr SO_2 / 24-hr $PM_{2.5}$ Impact
- Max. 24-hr PM_{10} Impact
- Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-2
Maximum Air Quality Impact Locations

Construction (with Mitigation)

ENVIRON

e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
f) A standard not yet adopted as a threshold of significance by SCAQMD.

Table C2.5-6. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Construction of the Mitigated Project and the Mitigated Reduced Project Alternative (With Alternate Business Site Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project Alternative[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment[a,b] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	35.9	--	**35.9**	10.4
	Annual	8.5	--	**8.5**	1.0
$PM_{2.5}$	24-hour	5.3	--	5.3	10.4

Notes:
a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.
b) The CEQA Increment represents Mitigated Project Alternative minus CEQA baseline. However, because there is no construction for the CEQA baseline, the CEQA increment for PM_{10} and $PM_{2.5}$ is equivalent to the modeled mitigated project concentration.

For informational purposes, Tables C2.5-7 and C2.5-8 present the maximum offsite ground level concentrations of criteria pollutants estimated for mitigated Project construction, excluding alternate business location operations.

Table C2.5-7. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Construction of the Mitigated Project and the Mitigated Reduced Project Alternative (No Alternate Business Site Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project Alternative ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration[a] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	**1-hour**	612	245	**857**	**338**
	1-hour [d]	612	142	**754**	**(189)f**
	Annual	31	40	**71**	**56**
CO	**1-hour**	430	5,842	6,271	**23,000**
	8-hour	168	4,467	4,636	**10,000**
SO_2	**1-hour**	1.3	236	237	**655**
	1-hour [e]	1.3	51	52	**(196)[f]**
	24-hour	0.3	31	32	**105**

Notes:
a) Exceedances of the thresholds are indicated in bold. Modeled concentrations of NO_2, SO_2, and CO are absolute Mitigated Project Alternative concentrations.
b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were

obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.

d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010

e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010 .

f) A standard not yet adopted as a threshold of significance by SCAQMD.

Table C2.5-8. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Construction of the Mitigated Project and the Mitigated Reduced Project Alternative (No Alternate Business Site Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project Alternative[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment[a,b] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	35.8	--	**35.8**	10.4
	Annual	8.5	--	**8.5**	1.0
$PM_{2.5}$	24-hour	4.7	--	4.7	10.4

Notes:

a) Exceedances of the threshold are indicated in **bold**. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The CEQA Increment represents Mitigated Project Alternative minus CEQA baseline. However, because there is no construction for the CEQA baseline, the CEQA increment for PM_{10} and $PM_{2.5}$ is equivalent to the modeled mitigated project concentration.

2.5.1.3 Unmitigated Reduced Project Alternative

Construction emissions associated with the Unmitigated Reduced Project Alternative are identical to those associated with the Unmitigated Project. Therefore, the conclusions drawn above regarding impacts due to construction of the Unmitigated Project, as summarized in Tables C2.5-1 through C2.5-4, apply to the Unmitigated Reduced Project Alternative.

2.5.1.4 Mitigated Reduced Project Alternative

Construction emissions associated with the Mitigated Reduced Project Alternative are identical to those associated with the Mitigated Project. Therefore, the conclusions drawn above regarding impacts due to construction of the Mitigated Project, as summarized in Tables C2.5-5 through C2.5-8, apply to the Mitigated Reduced Project Alternative.

2.5.2 Operational Impacts

2.5.2.1 Baseline

Table C2.5-9 summarizes the maximum modeled concentrations of NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$ for the CEQA 2010 existing condition Baseline ("Baseline") scenario during

operations. A definition of the CEQA Baseline scenario may be found in Appendix C3. Locations of these maximum concentrations are shown in Figure C2.5-3.

The Baseline concentrations serve as the baseline levels against which the PM_{10} and $PM_{2.5}$ incremental concentrations are determined for the unmitigated Project, mitigated Project, No Project Alternative, Unmitigated Reduced Project Alternative, and Mitigated Reduced Project Alternative.

Table C2.5-9. CEQA Baseline (2010) Ground-Level Concentrations during Operation.

Pollutant	Averaging Time	Maximum Modeled Concentration of CEQA Baseline ($\mu g/m^3$)	Background Concentration[a] ($\mu g/m^3$)	Total Ground Level Concentration ($\mu g/m^3$)
NO_2 [b]	1-hour	1,026	245	1,271
	1-hour [c]	1,026	142	1,168
	Annual	22	40	62
CO	1-hour	2,544	5,842	8,386
	8-hour	531	4,467	4,999
SO_2	1-hour	6.0	236	242
	1-hour [d]	6.0	51	57
	24-hour	0.9	31	32
PM_{10}	24-hour	6.5	--	6.5
	Annual	1.7	--	1.7
$PM_{2.5}$	24-hour	3.8	--	3.8

Notes:

a) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.

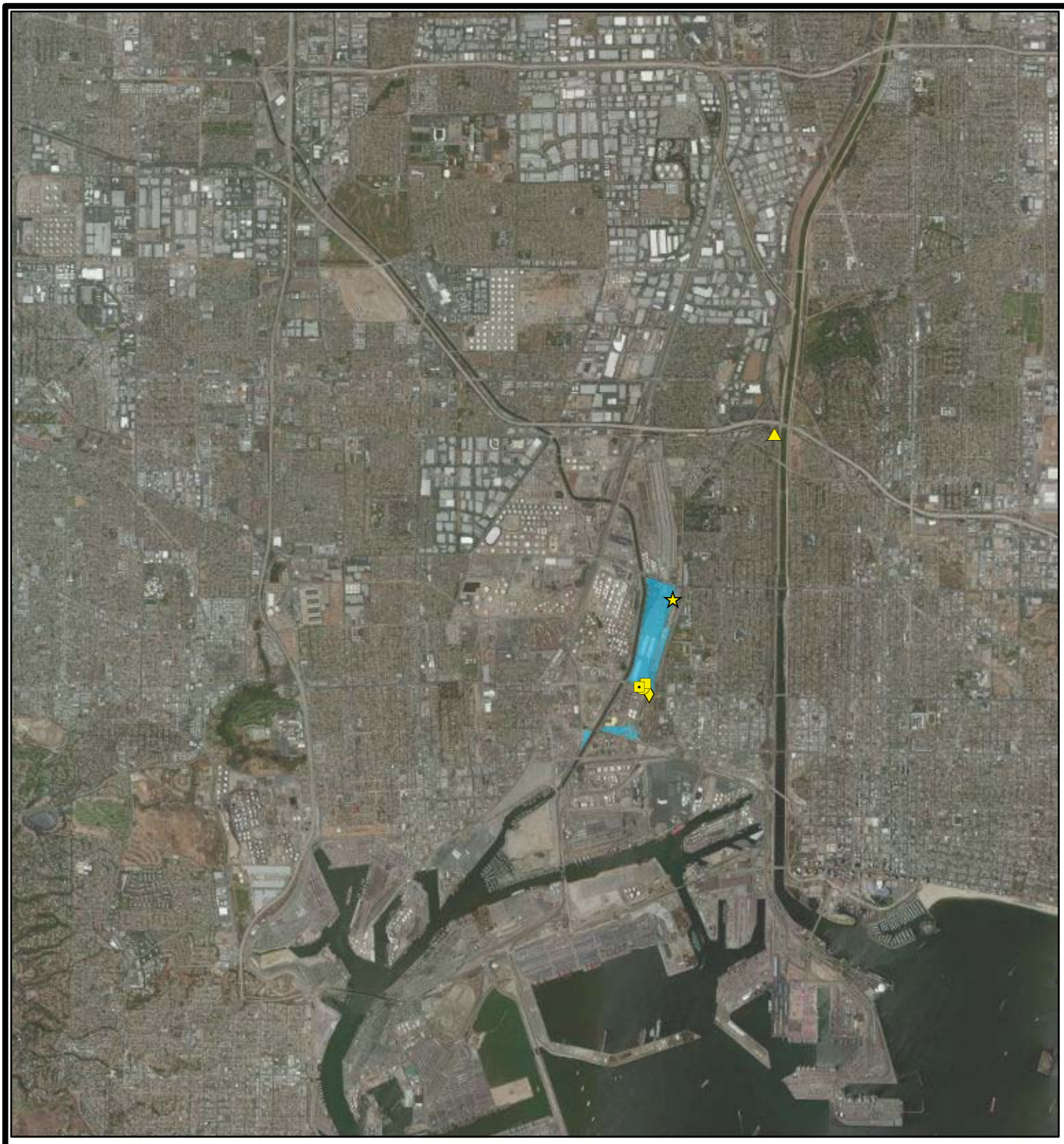
b) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.

c) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

d) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

2.5.2.2 Unmitigated Project

Tables C2.5-10 and C2.5-11 present a summary of the maximum ground-level concentrations of NO_2, SO_2, and CO due to operational emissions of the Project. With the exception of the federal 1-hour NO_2 and SO_2 NAAQS comparisons, the NO_2 and SO_2 concentrations due to operation were added to the maximum background concentrations monitored at North Long Beach Station during the last 3 years (2008 through 2010). The federal 1-hour NO_2 and SO_2 NAAQS are 98^{th} and 99^{th} percentile thresholds, respectively; therefore, the concentrations due to operation were added to the 3-year average of the 8^{th} or 4^{th} highest daily maximum 1-hour concentration, respectively, over the years 2008-2010. The CO concentrations due to operation were added to the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and



Legend

- Max. 1-hr NO_2 Impact
- Max. Annual NO_2 Impact
- Max. 1-hr CO / 8-hr CO Impact
- Max. 1-hr SO_2 / 24-hr SO_2 Impact
- Max. 24-hr PM_{10} / 24-hr $PM_{2.5}$ Impact
- Max. Annual PM_{10} Impact
- Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-3
Maximum Air Quality Impact Locations

Baseline

ENVIRON

2020 (all identical). The total ground-level concentrations were compared with SCAQMD thresholds.

Modeling results of maximum PM_{10} and $PM_{2.5}$ concentrations for the unmitigated Project and Baseline, as well as the increment (Project minus Baseline) are shown in Table C2.5-11. Worst-case increments of PM_{10} and $PM_{2.5}$ concentrations were obtained by subtracting the concentrations due to Baseline from the concentrations due to the unmitigated Project at each common receptor, and then selecting the receptor with the highest difference. The maximum increments among all receptors were compared to the SCAQMD thresholds. The results in Tables C2.5-10 and C2.5-11 represent the maximum impacts predicted for the unmitigated Project at the maximum impacted receptor locations. The impacts at all other receptors would be less than these values.

The receptor locations of maximum NO_2, SO_2, and CO concentrations and the PM_{10} and $PM_{2.5}$ increments for the Unmitigated Project are shown in Figure C2.5-4. The locations of maximum incremental increases of PM_{10} and $PM_{2.5}$ concentrations are not necessarily at the same locations as the maximum concentrations due to the unmitigated Project or Baseline alone.

Table C2.5-10. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Operation of the Unmitigated Project.

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project ($\mu g/m^3$)	Background Concentrationb ($\mu g/m^3$)	Total Ground Level Concentrationa ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	802	245	**1,047**	**338**
	1-hour [d]	802	142	**944**	**(189)**[f]
	Annual	27	40	**67**	**56**
CO	1-hour	1,531	5,842	7,373	**23,000**
	8-hour	639	4,467	5,106	**10,000**
SO_2	1-hour	1.9	236	238	**655**
	1-hour [e]	1.9	51	53	**(196)**[f]
	24-hour	0.3	31	32	**105**

Notes:

a) Exceedances of the thresholds are indicated in **bold**. Modeled concentrations of NO_2, SO_2, and CO are absolute Unmitigated Project concentrations.

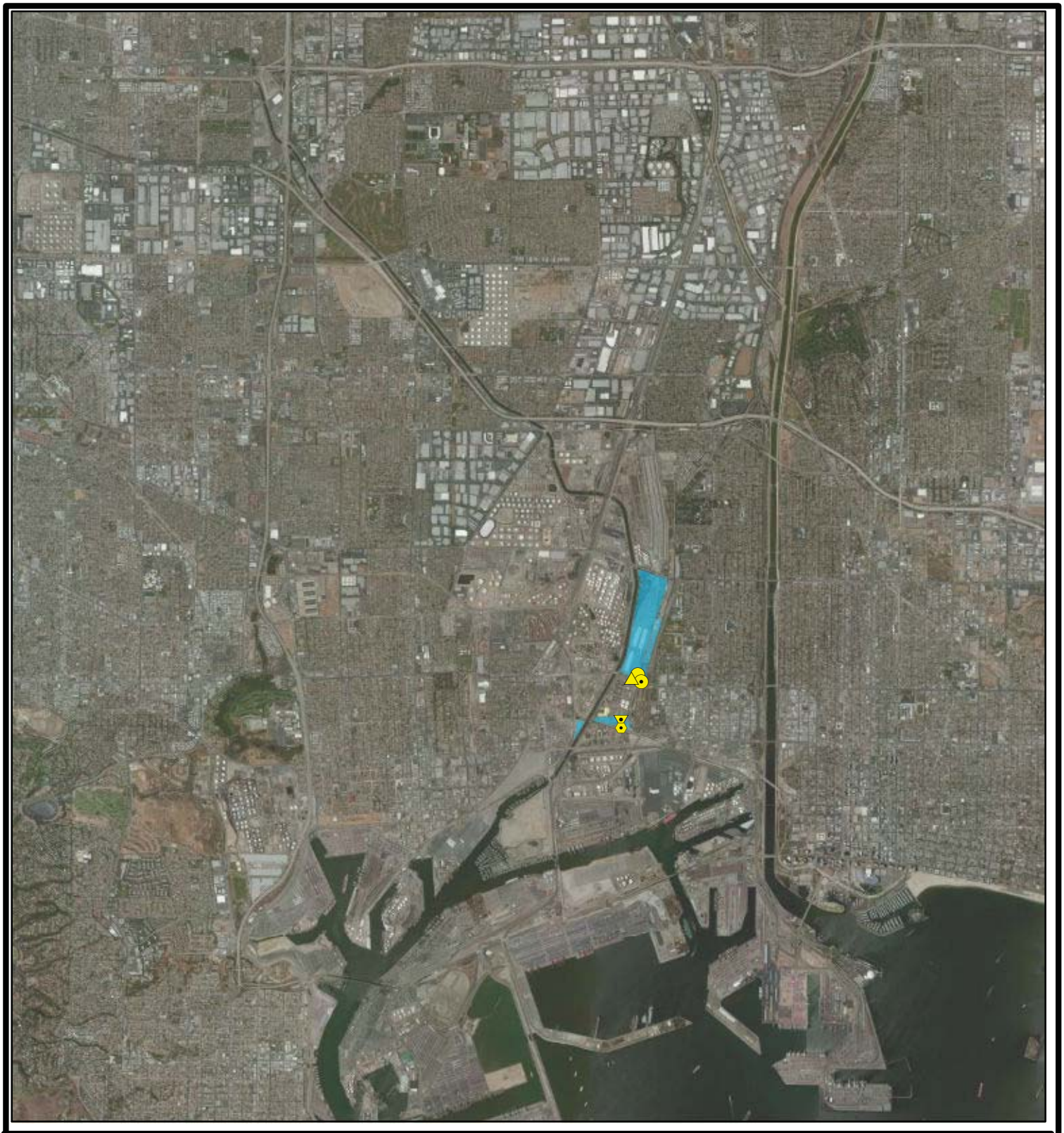
b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.

d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

f) A standard not yet adopted as a threshold of significance by SCAQMD.



Legend

- Max. 1-hr NO_2 / 1-hr SO_2 Impact
- Max. Annual NO_2 / 24-hr PM_{10} / Annual PM_{10} Impact
- Max. 1-hr CO Impact
- Max. 8-hr CO Impact
- Max. 24-hr SO_2 / 24-hr $PM_{2.5}$ Impact
- Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-4
Maximum Air Quality Impact Locations

Unmitigated Project Alternative

ENVIRON

Table C2.5-11. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Unmitigated Project.

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment[a,b,c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	15.0	6.5	**9.1**	2.5
	Annual	7.7	1.7	**6.2**	1.0
$PM_{2.5}$	24-hour	5.3	3.8	**4.5**	2.5

Notes:

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Unmitigated Project concentration.

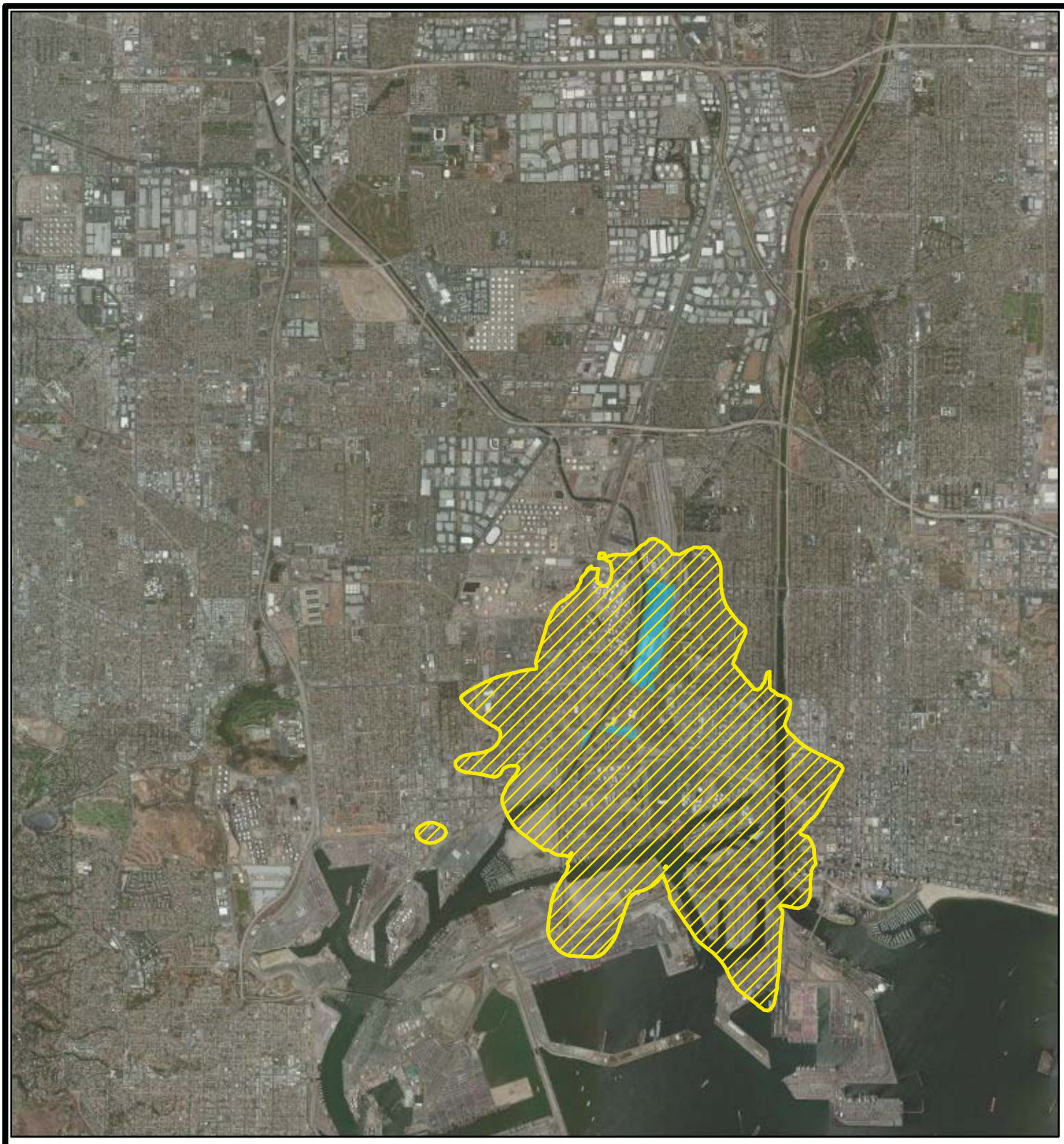
c) The CEQA Increment represents operation of the Unmitigated Project minus CEQA baseline.

Tables C2.5-10 and C2.5-11 show that the maximum 1-hour and annual concentrations of NO_2 associated with Project operations are 1,047 and 67 $\mu g/m^3$, respectively. The 1-hour and annual concentrations exceed the SCAQMD significance thresholds. The 98th percentile 1-hour NO_2 concentration of 944 $\mu g/m^3$ would also exceed the NAAQS of 189 $\mu g/m^3$, a standard not yet adopted as a threshold of significance by SCAQMD.

The maximum 1-hour and 8-hour CO and 1-hour and 24-hour SO_2 concentrations due to the unmitigated Project are well below the SCAQMD significance thresholds. The 99th percentile 1-hour SO_2 concentration of 53 $\mu g/m^3$ would also be below the NAAQS of 196 $\mu g/m^3$, a standard not yet adopted by SCAQMD.

The 24-hour PM_{10} and $PM_{2.5}$ increments associated with unmitigated Project operations are predicted to be 9.1 and 4.5 $\mu g/m^3$, respectively. The increments exceed the SCAQMD 24-hour PM_{10} and $PM_{2.5}$ thresholds of 2.5 $\mu g/m^3$ for project operations. The annual PM_{10} increment associated with unmitigated Project operations is predicted to be 6.2 $\mu g/m^3$, which exceeds the SCAQMD annual PM_{10} threshold of 1.0 $\mu g/m^3$.

Figure C2.5-5 shows the area over which the unmitigated Project 1-hour NO_2 concentrations exceed the NAAQS. Similarly, Figures C2.5-6, C2.5-7, C2.5-8, and C2.5-9 show the areas over which the unmitigated Project concentrations exceed the SCAQMD thresholds for annual NO_2, 24-hour PM_{10}, annual PM_{10}, and 24-hour $PM_{2.5}$, respectively. Table C2.5-12 contains the source contributions at the location of the maximum modeled concentration of the unmitigated Project for the pollutants and averaging periods that are significant.



Legend

- Exceeds significance threshold of 189 μg/m^3
- Site

N

0 0.5 1 Miles

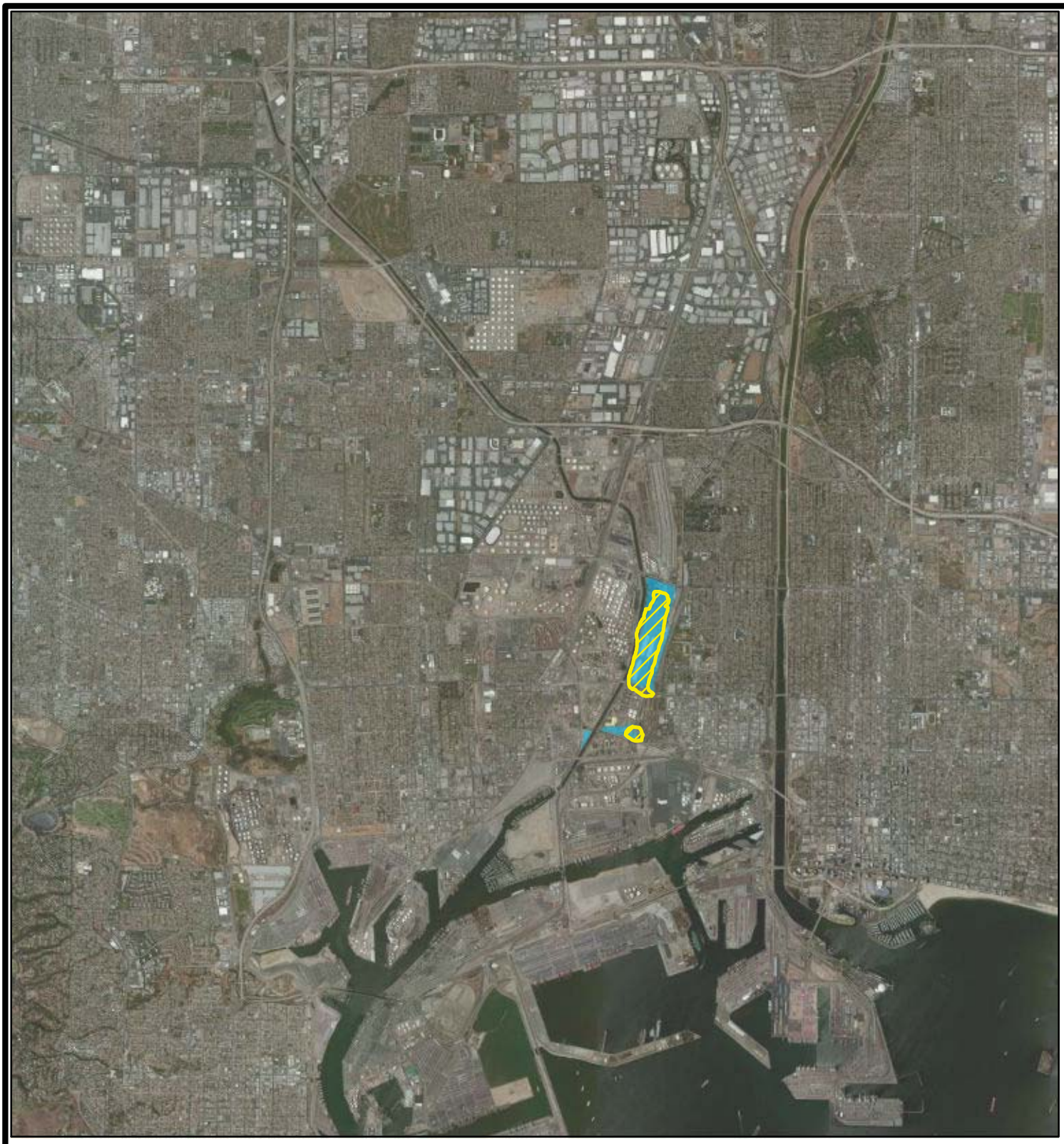
0 0.5 1 Kilometers

Note: The significance threshold shown is the federal NAAQS, which is a 98th percentile threshold. NO_2 concentrations were calculated assuming an 80 percent conversion rate from NO_x to NO_2. Background concentrations were obtained from the North Long Beach Monitoring Station. The background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

Figure C2.5-5
Unmitigated Project Alternative plus Background

Ground-Level Concentration
1-hour NO_2

ENVIRON



Legend

- Exceeds significance threshold of 56 μg/m^3
- Site

N

0 0.5 1 Miles

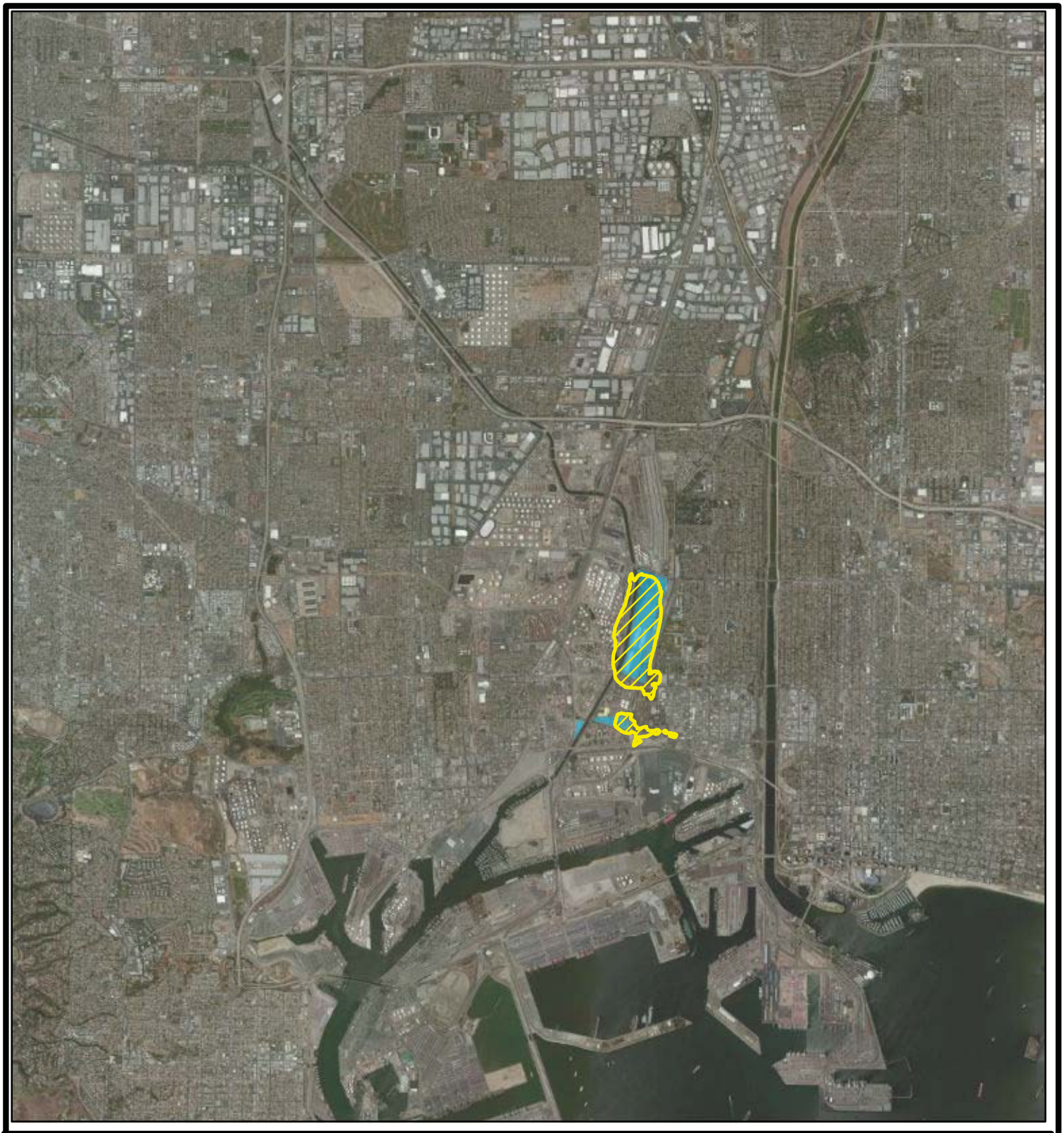
0 0.5 1 Kilometers

Note: NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_x to NO_2. Background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2008, 2009, and 2010 were used.

Figure C2.5-6
Unmitigated Project Alternative plus Background

Ground-Level Concentration
Annual NO_2

ENVIRON



Legend

Exceeds significance threshold of 2.5 μg/m^3

Site

N

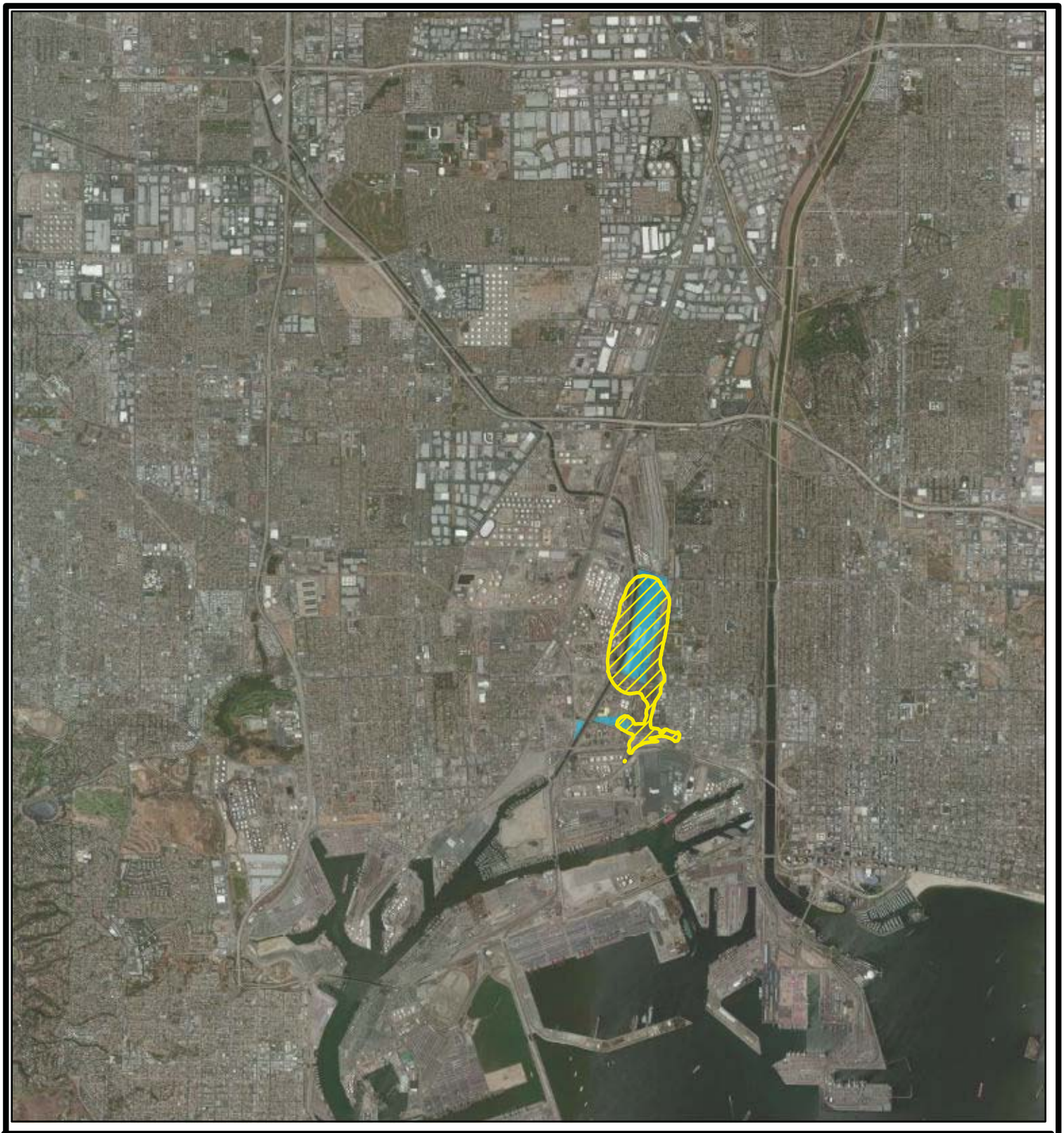
0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-7
Unmitigated Project Alternative minus CEQA Baseline

Ground-Level Concentration
24-hour PM_{10}

ENVIRON



Legend

Exceeds significance threshold of 1 μg/m^3

Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-8
Unmitigated Project Alternative minus CEQA Baseline

Ground-Level Concentration
Annual PM_{10}

ENVIRON

Legend

Exceeds significance threshold of 2.5 μg/m^3

Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-9
Unmitigated Project Alternative minus CEQA Baseline

Ground-Level Concentration
24-hour $PM_{2.5}$

ENVIRON

Table C2.5-12. Source Contributions at the Maximum Modeled Concentration of the Unmitigated Project.

Emission Source	Criteria Pollutants				
	1-Hour NO_2	Annual NO_2	24-Hour PM_{10}	Annual PM_{10}	24-Hour $PM_{2.5}$
Alternate Business Location CHE	51.7%	0.8%	0.9%	0.1%	68.7%
Alternate Business Location Onsite Trucks	40.6%	0.4%	0.5%	<0.1%	18.4%
SCIG Onsite Trucks	2.3%	46.0%	50.1%	52.6%	2.8%
Alternate Business Location Offsite Trucks	2.2%	0.4%	0.5%	0.1%	1.4%
SCIG Offsite Trucks	1.5%	48.9%	42.5%	42.0%	4.9%
SCIG Onsite Locomotives	0.7%	1.3%	0.2%	0.2%	0.7%
SCIG CHE/TRU	0.3%	<0.1%	0.3%	<0.1%	0.2%
Hostler	0.2%	0.5%	0.1%	<0.1%	<0.1%
Emergency Generator	0.1%	<0.1%	<0.1%	<0.1%	0.1%
SCIG Offsite Locomotives	0.1%	0.3%	<0.1%	<0.1%	<0.1%
Alternate Business Location Onsite Gasoline Vehicles	<0.1%	<0.1%	<0.1%	<0.1%	2.0%
Alternate Business Location Offsite Gasoline Vehicles	<0.1%	<0.1%	0.2%	<0.1%	0.4%
Onsite Refueling Trucks	<0.1%	1.1%	0.5%	0.7%	<0.1%
SCIG Onsite Gasoline Vehicles	<0.1%	<0.1%	0.2%	0.1%	<0.1%
Alternate Business Location Onsite Locomotives	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
SCIG Offsite Gasoline Vehicles	<0.1%	0.1%	3.7%	4.0%	0.2%

Notes:

a) The maximum modeled concentrations for different criteria pollutants of different averaging periods do not necessarily occur at the same location. The source contributions correspond to the locations of the maximum offsite criteria pollutant concentrations in Tables C2.5-10 and C2.5-11.

2.5.2.3 Mitigated Project

Tables C2.5-13 and C2.5-14 present a summary of the maximum ground-level concentrations of NO_2, SO_2, and CO, and the PM_{10} and $PM_{2.5}$ concentration increments due to the mitigated Project operations. The mitigation measures for project operations are discussed in Section 3.2.4.3 of the EIR. The NO_2, SO_2, and CO concentrations, as well as the PM_{10} and $PM_{2.5}$ concentration increments, were evaluated using the same methodologies that were used for the unmitigated Project.

Locations of the maximum NO_2, SO_2, and CO concentrations and the PM_{10} and $PM_{2.5}$ increments for the mitigated Project are shown in Figure C2.5-10.

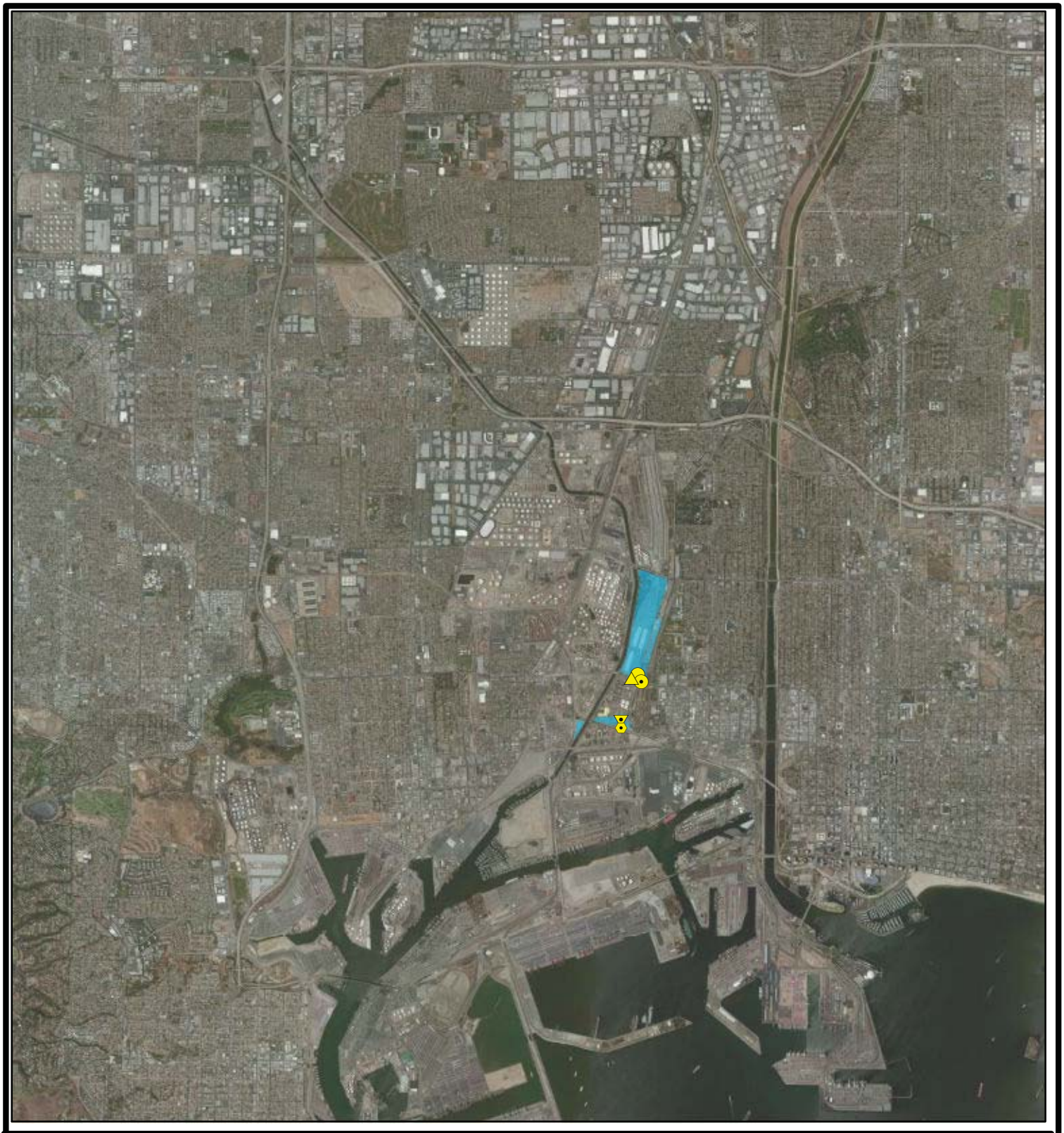


Figure C2.5-10
Maximum Air Quality Impact Locations

Mitigated Project Alternative

ENVIRON

Table C2.5-13. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Operation of the Mitigated Project.

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration[a] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	802	245	**1,047**	338
	1-hour [d]	802	142	**944**	(189)[f]
	Annual	27	40	**67**	56
CO	1-hour	1,531	5,842	7,373	23,000
	8-hour	639	4,467	5,106	10,000
SO_2	1-hour	1.9	236	238	655
	1-hour [e]	1.9	51	53	(196)[f]
	24-hour	0.3	31	32	105

Notes:
a) Exceedances of the thresholds are indicated in bold. Modeled concentrations of NO_2 , SO_2, and CO are iare absolute Mitigated Project concentrations.
b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.
c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.
d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
f) A standard not yet adopted as a threshold of significance by SCAQMD.

Table C2.5-14. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Mitigated Project.

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment[a,b,c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	13.2	6.5	**7.3**	2.5
	Annual	6.7	1.7	**5.2**	1.0
$PM_{2.5}$	24-hour	5.3	3.8	**4.5**	2.5

Notes:
a. Exceedances of the threshold are indicated in **bold**. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.
b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Mitigated Project concentration.
c) The CEQA Increment represents operation of the Unmitigated Project minus CEQA baseline.

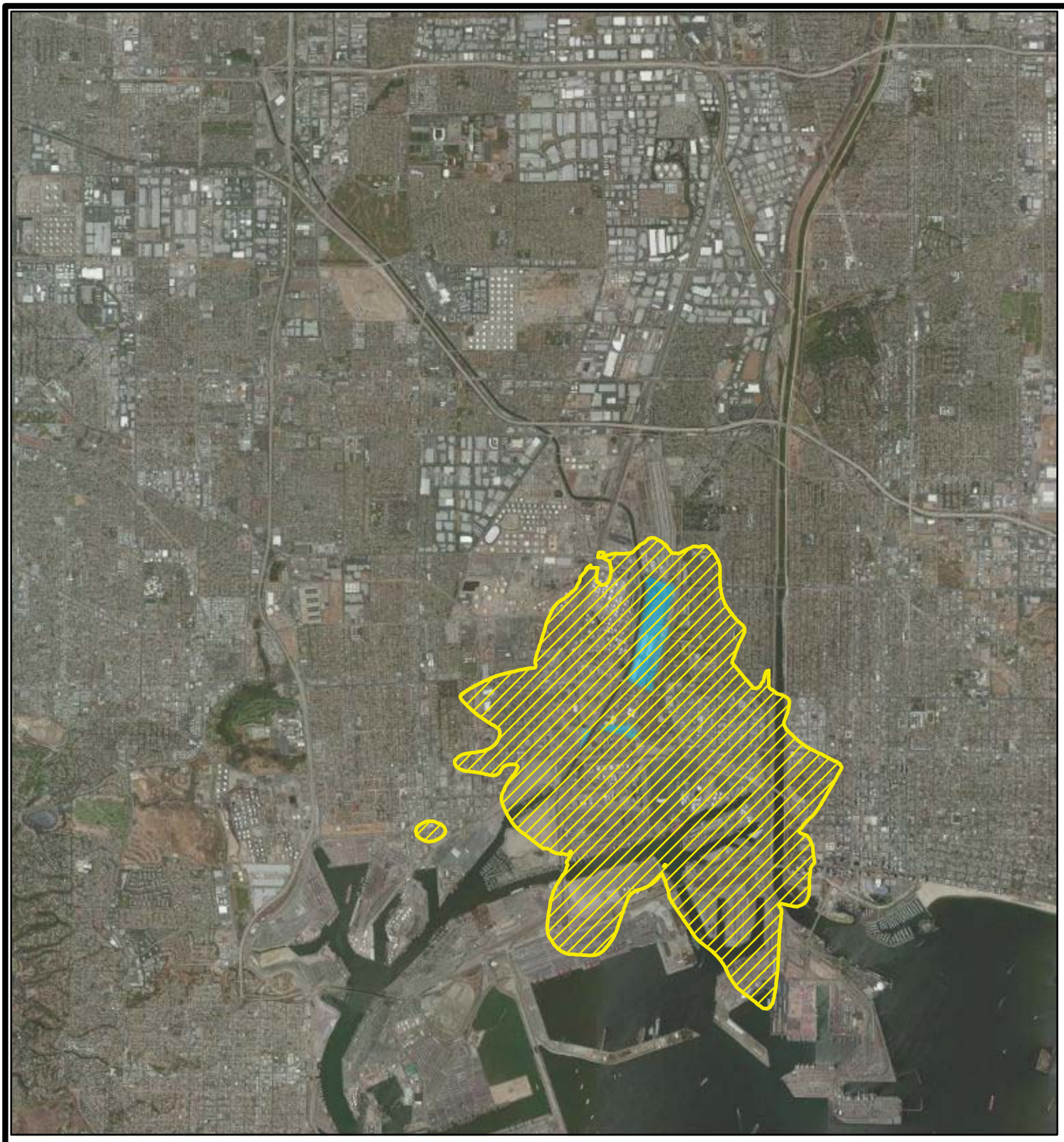
The data in Tables C2.5-13 and C2.5-14 show that the maximum 1-hour and annual concentrations of NO_2 associated with the mitigated Project are 1,047 and 67 $\mu g/m^3$,

respectively. The 1-hour and annual NO_2 concentrations exceed the SCAQMD significance thresholds. The 98th percentile 1-hour NO_2 concentration of 944 µg/m^3 would also exceed the NAAQS of 189 µg/m^3, a standard not yet adopted as a threshold of significance by SCAQMD.

The maximum 1-hour and 8-hour CO and 1-hour and 24-hour SO_2 concentrations due to the mitigated Project are well below the SCAQMD significance thresholds. The 99th percentile 1-hour SO_2 concentration of 53 µg/m^3 would also be below the NAAQS of 196 µg/m^3, a standard not yet adopted by SCAQMD.

The 24-hour PM_{10} and $PM_{2.5}$ increments associated with mitigated Project operations are predicted to be 7.3 and 4.5 µg/m^3, respectively. The increments exceed the SCAQMD 24-hour PM_{10} and $PM_{2.5}$ thresholds of 2.5 µg/m^3 for operations. The annual PM_{10} increment associated with mitigated Project operations is predicted to be 5.2 µg/m^3, which exceeds the SCAQMD annual PM_{10} threshold of 1.0 µg/m^3.

Figure C2.5-11 shows the area over which the mitigated Project 1-hour NO_2 concentrations exceed the NAAQS. Similarly, Figures C2.5-12, C2.5-13, C2.5-14, and C2.5-15 show the areas over which the mitigated Project concentrations exceed the SCAQMD thresholds for annual NO_2, 24-hour PM_{10}, annual PM_{10}, and 24-hour $PM_{2.5}$, respectively. Table C2.5-15 contains the source contributions at the location of the maximum modeled concentration of the mitigated Project for the pollutants and averaging periods that are significant.



Legend

- Exceeds significance threshold of 189 μg/m^3
- Site

N

0 0.5 1 Miles

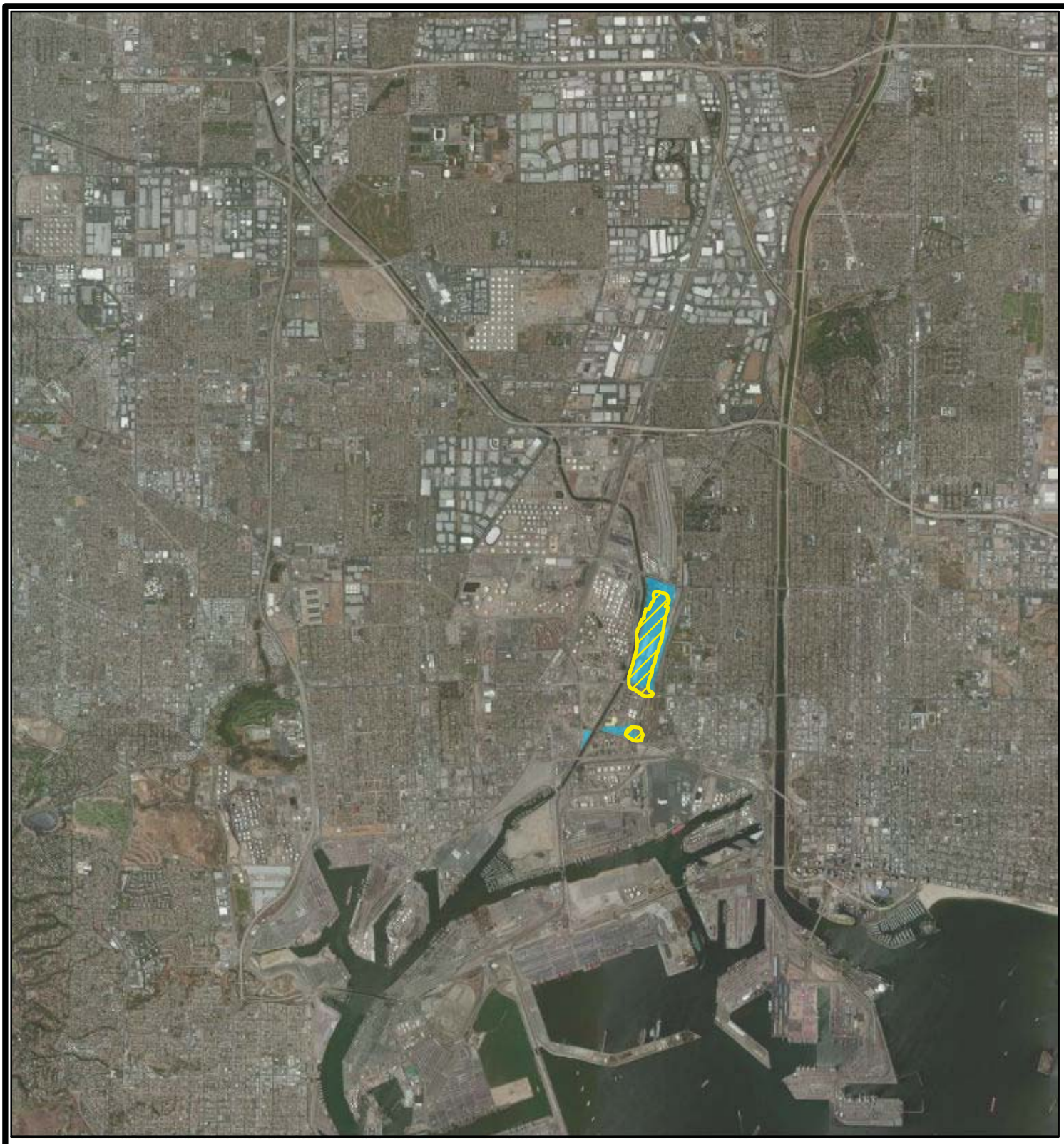
0 0.5 1 Kilometers

Note: The significance threshold shown is the federal NAAQS, which is a 98th percentile threshold. NO_2 concentrations were calculated assuming an 80 percent conversion rate from NO_x to NO_2. Background concentrations were obtained from the North Long Beach Monitoring Station. The background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

Figure C2.5-11
Mitigated Project Alternative plus Background

Ground-Level Concentration
1-hour NO_2

ENVIRON



Legend

- Exceeds significance threshold of 56 $\mu g/m^3$
- Site

N

0 0.5 1 Miles

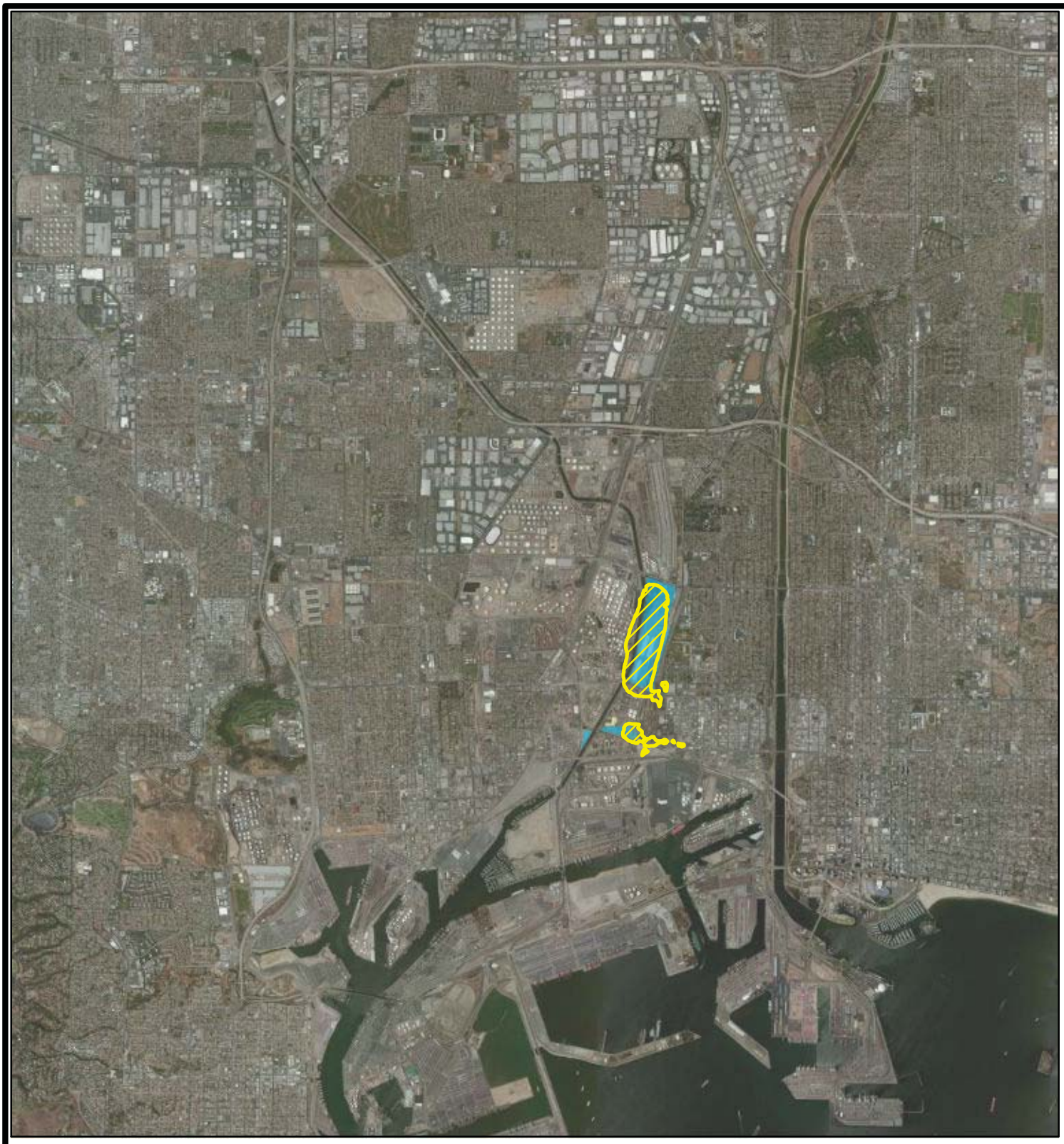
0 0.5 1 Kilometers

Note: NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_x to NO_2. Background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2008, 2009, and 2010 were used.

Figure C2.5-12
Mitigated Project Alternative plus Background

Ground-Level Concentration
Annual NO_2

ENVIRON



Legend

Exceeds significance threshold of 2.5 μg/m^3

Site

N

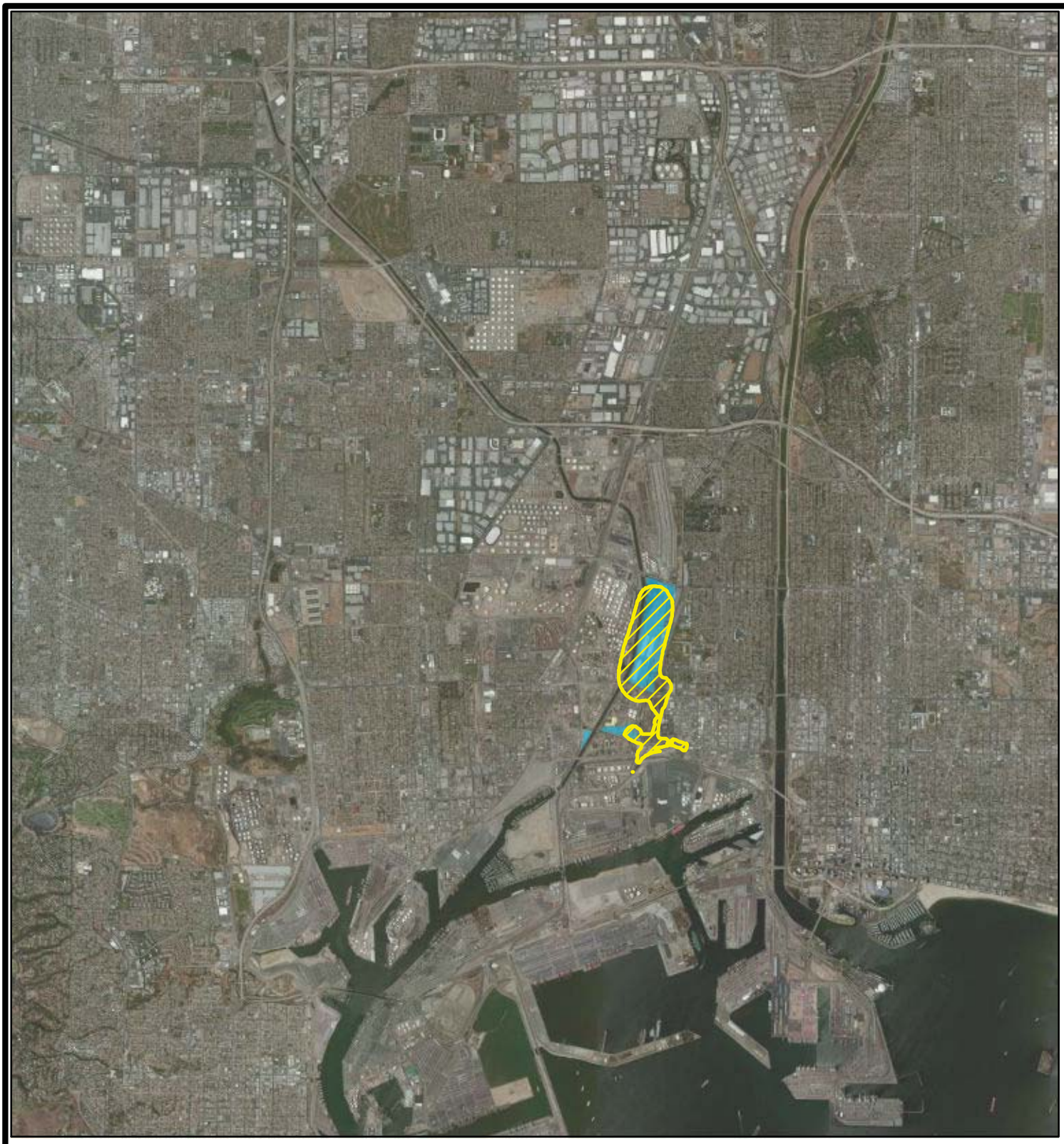
0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-13
Mitigated Project Alternative minus CEQA Baseline

Ground-Level Concentration
24-hour PM_{10}

ENVIRON



Legend

Exceeds significance threshold of 1 μg/m^3

Site

N

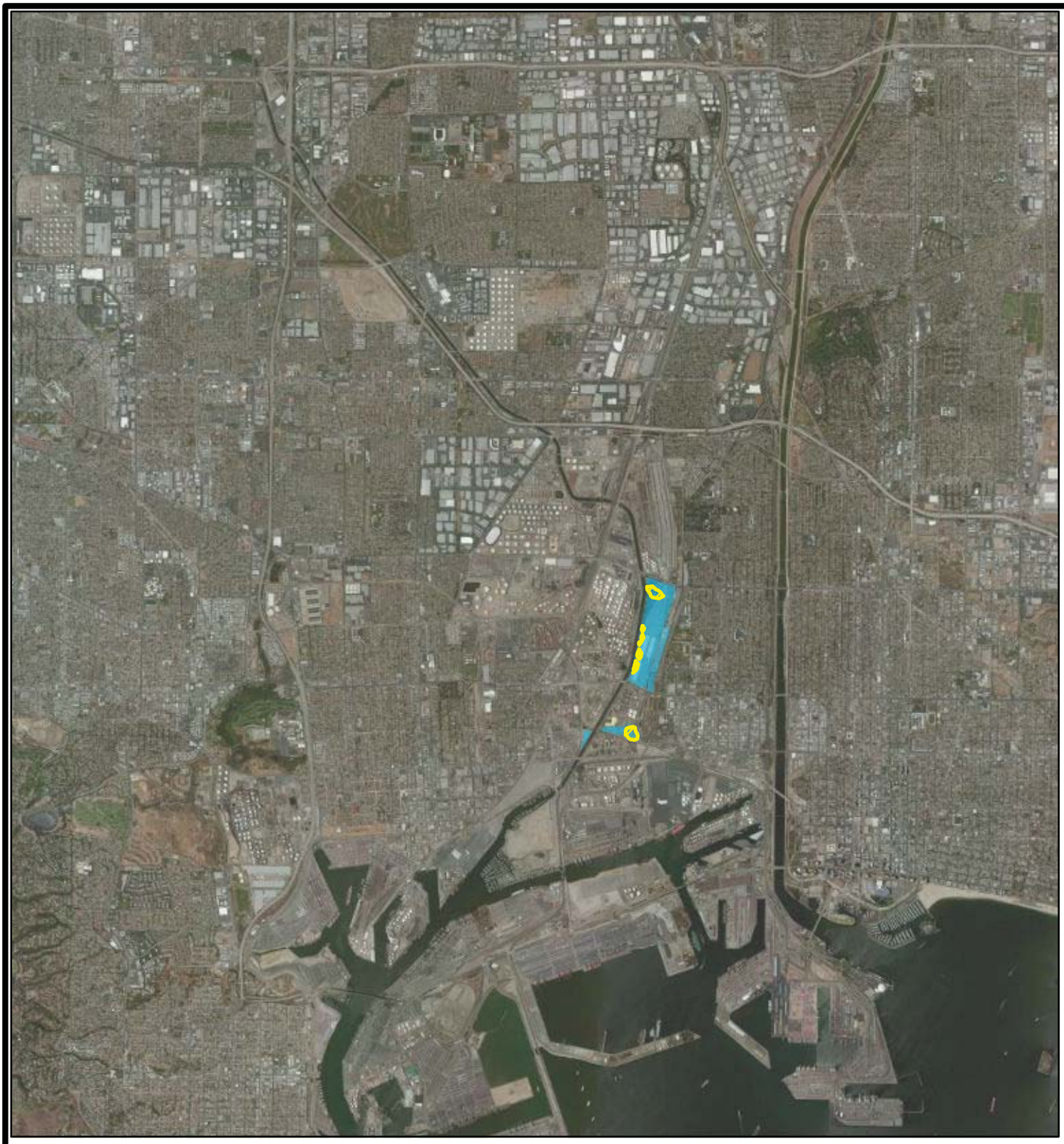
0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-14
Mitigated Project Alternative minus CEQA Baseline

Ground-Level Concentration Annual PM_{10}

ENVIRON



Legend

Exceeds significance threshold of 2.5 μg/m^3

Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-15
Mitigated Project Alternative minus CEQA Baseline

Ground-Level Concentration
24-hour $PM_{2.5}$

ENVIRON

Table C2.5-15. Source Contributions at the Maximum Modeled Concentration of the Mitigated Project.

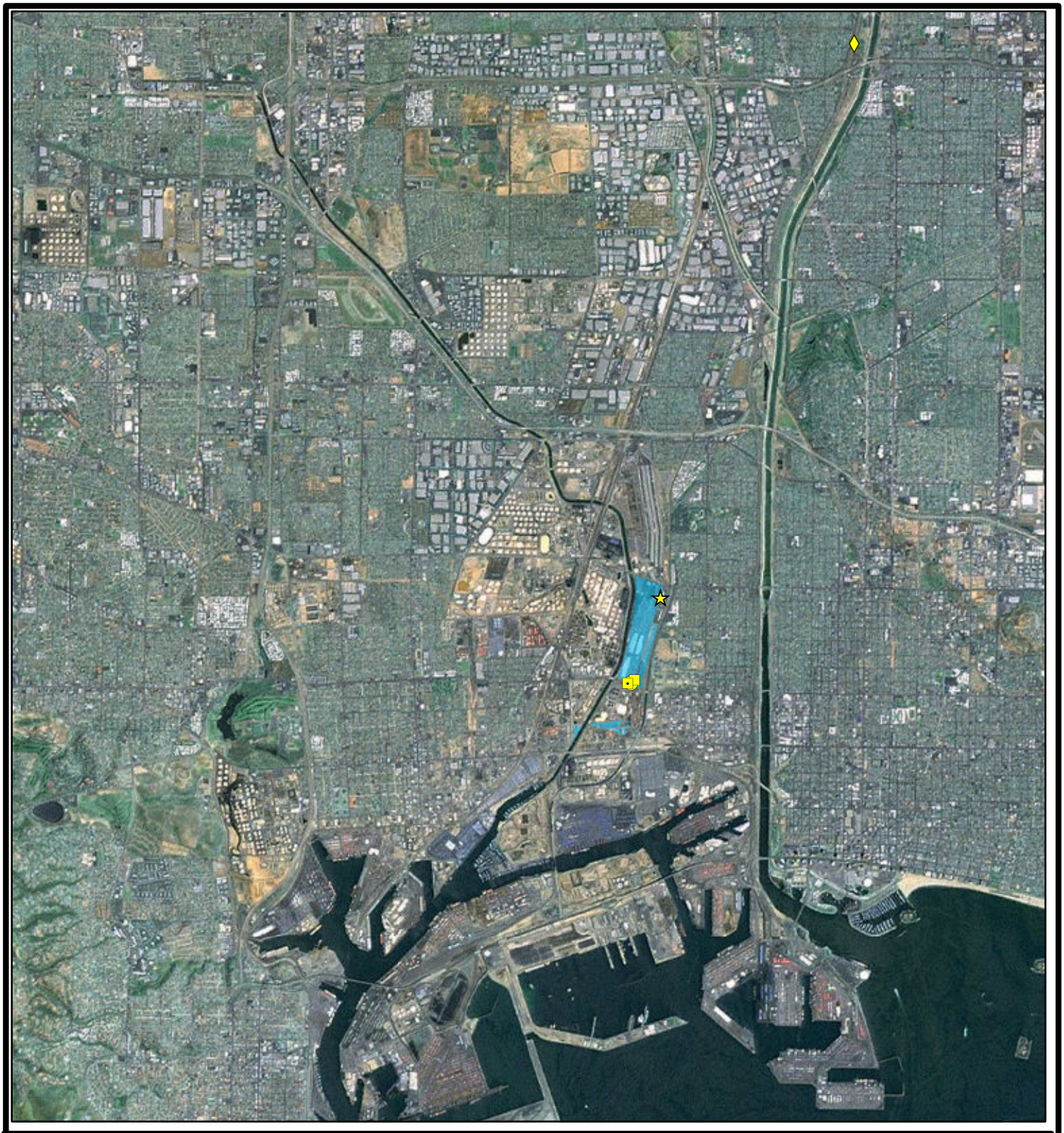
Emission Source	Criteria Pollutants				
	1-Hour NO_2	Annual NO_2	24-Hour PM_{10}	Annual PM_{10}	24-Hour $PM_{2.5}$
Alternate Business Location CHE	51.7%	0.8%	1.0%	0.1%	69.1%
Alternate Business Location Onsite Trucks	40.6%	0.4%	0.6%	0.1%	18.5%
SCIG Onsite Trucks	2.3%	46.0%	43.6%	46.0%	2.3%
Alternate Business Location Offsite Trucks	2.2%	0.4%	0.6%	0.2%	1.4%
SCIG Offsite Trucks	1.5%	48.9%	48.2%	48.0%	4.9%
SCIG Onsite Locomotives	0.7%	1.3%	0.3%	0.2%	0.7%
SCIG CHE/TRU	0.3%	<0.1%	0.3%	<0.1%	0.2%
Hostler	0.2%	0.5%	0.1%	<0.1%	<0.1%
Emergency Generator	0.1%	<0.1%	<0.1%	<0.1%	0.1%
SCIG Offsite Locomotives	0.1%	0.3%	<0.1%	<0.1%	<0.1%
Alternate Business Location Onsite Gasoline Vehicles	<0.1%	<0.1%	<0.1%	<0.1%	2.0%
Alternate Business Location Offsite Gasoline Vehicles	<0.1%	<0.1%	0.2%	<0.1%	0.4%
Onsite Refueling Trucks	<0.1%	1.1%	0.5%	0.6%	<0.1%
SCIG Onsite Gasoline Vehicles	<0.1%	<0.1%	0.2%	0.1%	<0.1%
Alternate Business Location Onsite Locomotives	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
SCIG Offsite Gasoline Vehicles	<0.1%	0.1%	4.2%	4.5%	0.2%

Note:
a) The maximum modeled concentrations for different criteria pollutants of different averaging periods do not necessarily occur at the same location. The source contributions correspond to the locations of the maximum offsite criteria pollutant concentrations in Tables C2.5-13 and C2.5-14.

2.5.2.4 No Project Alternative

Tables C2.5-16 and C2.5-17 present a summary of the maximum ground-level concentrations of NO_2, SO_2, and CO, and the PM_{10} and $PM_{2.5}$ concentration increments due to the No Project Alternative operations. The NO_2, SO_2, and CO concentrations, as well as the PM_{10} and $PM_{2.5}$ concentration increments, were evaluated using the same methodologies that were used for the Unmitigated Project.

Locations of the maximum NO_2, SO_2, and CO concentrations and the PM_{10} and $PM_{2.5}$ increments for the No Project Alternative are shown in Figure C2.5-16.



Legend

- Max. 1-hr NO_2 Impact
- Max. Annual NO_2 Impact
- Max. 1-hr CO / 8-hr CO Impact
- Max. 1-hr SO_2 / 24-hr SO_2 Impact
- Max. 24-hr PM_{10} / Annual PM_{10} / 24-hr $PM_{2.5}$ Impact
- Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-16
Maximum Air Quality Impact Locations

No Project Alternative

ENVIRON

Table C2.5-16. Maximum Offsite NO_2, CO, and SO2 Concentrations Associated with Operation of the No Project Alternative.

Pollutant	Averaging Time	Maximum Modeled Concentration of No Project Alternative ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration[a] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	904	245	**1,148**	338
	1-hour [d]	904	142	**1,045**	(189)[f]
	Annual	20	40	**59**	56
CO	1-hour	2,876	5,842	8,718	23,000
	8-hour	602	4,467	5,069	10,000
SO_2	1-hour	7.2	236	243	655
	1-hour [e]	7.2	51	58	(196)[f]
	24-hour	1.1	31	33	105

Notes:

a) Exceedances of the thresholds are indicated in **bold**. Modeled concentrations of NO_2, SO_2, and CO are absolute No Project Alternative concentrations.

b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.

d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

f) A standard not yet adopted as a threshold of significance by SCAQMD.

Table C2.5-17. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the No Project Alternative.

Pollutant	Averaging Time	Maximum Modeled Concentration of No Project Alternative[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment[a,b,c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	6.7	6.5	**2.9**	2.5
	Annual	2.8	1.7	**1.4**	1.0
$PM_{2.5}$	24-hour	3.5	3.8	0.9	2.5

Notes:

a) Exceedances of the threshold are indicated in **bold**. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the No Project Alternative concentration.

c) The CEQA Increment represents operation of the No Project Alternative minus CEQA baseline.

The data in Tables C2.5-16 and C2.5-17 show that the maximum 1-hour and annual concentrations of NO_2 associated with the No Project Alternative are 1,148 and 59 $\mu g/m^3$,

respectively. The 1-hour and annual NO_2 concentrations exceed the SCAQMD significance thresholds. The 98th percentile 1-hour NO_2 concentration of 1,045 µg/m^3 would also exceed the NAAQS of 189 µg/m^3, a standard not yet adopted as a threshold of significance by SCAQMD.

The maximum 1-hour and 8-hour CO and 1-hour and 24-hour SO_2 concentrations due to the No Project Alternative are well below the SCAQMD significance thresholds. The 99th percentile 1-hour SO_2 concentration of 58 µg/m^3 would also be below the NAAQS of 196 µg/m^3, a standard not yet adopted by SCAQMD.

The 24-hour PM_{10} and $PM_{2.5}$ increments associated with No Project Alternative operations are predicted to be 2.9 and 0.9 µg/m^3, respectively. The PM_{10} concentration increment exceeds the SCAQMD 24-hour PM_{10} threshold of 2.5 µg/m^3 for operations. The annual PM_{10} increment associated with No Project Alternative operations is predicted to be 1.4 µg/m^3, which exceeds the SCAQMD annual PM_{10} threshold of 1.0 µg/m^3.

Figure C2.5-17 shows the area over which the No Project Alternative 1-hour NO_2 concentrations exceed the NAAQS. Similarly, Figures C2.5-18, C2.5-19 and C2.5-20 show the areas over which the No Project Alternative concentrations exceed the SCAQMD thresholds for annual NO_2, 24-hour PM_{10}, and annual PM_{10}, respectively. As discussed earlier, the 24-hour $PM_{2.5}$ threshold is not exceeded and therefore no figure is presented. Table C2.5-18 contains the source contributions at the location of the maximum modeled concentration of the No Project Alternative for the pollutants and averaging periods that are significant.

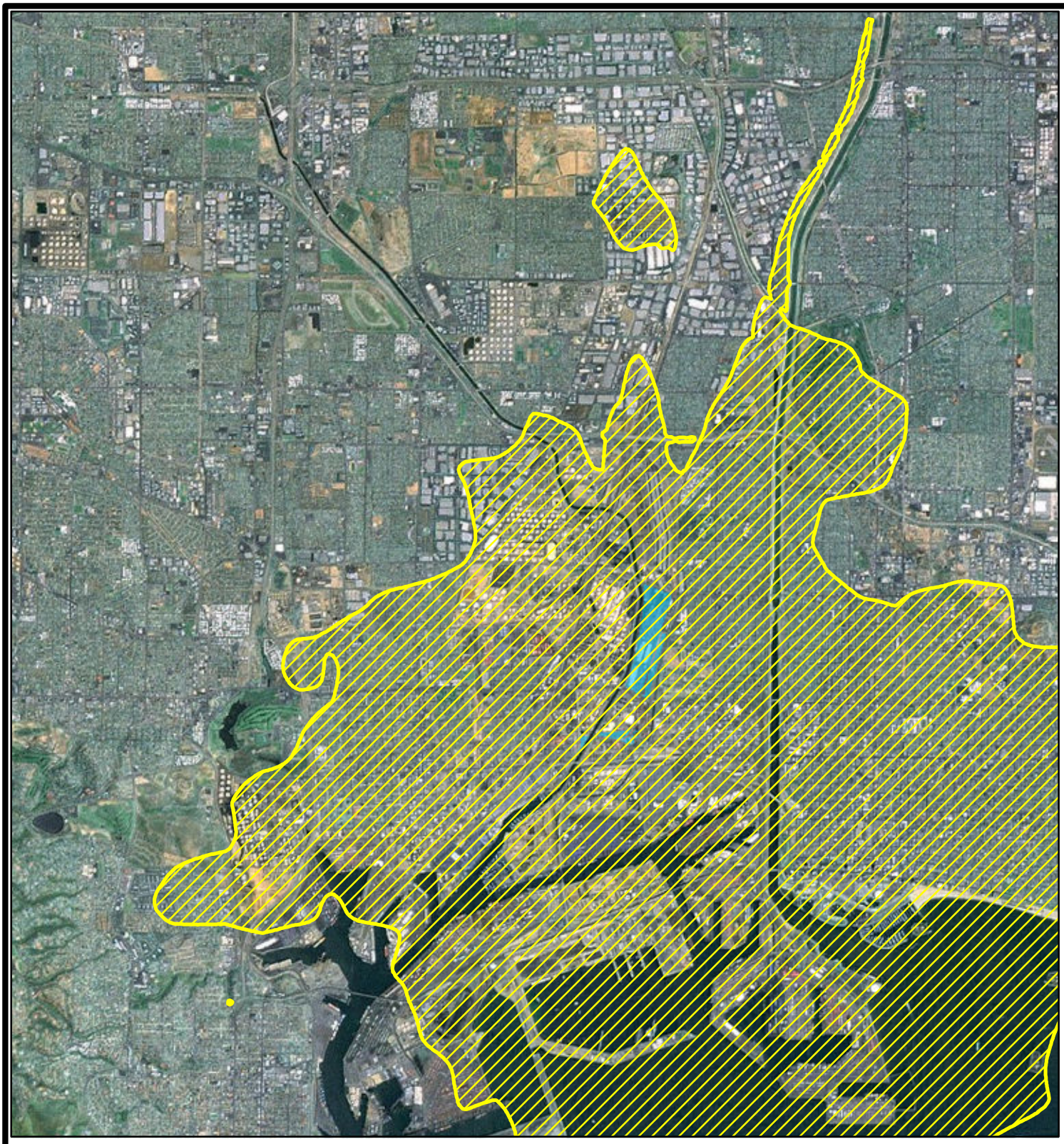
Table C2.5-18. Source Contributions at the Maximum Modeled Concentration of the No Project Alternative.

Emission Source	Criteria Pollutants			
	1-Hour NO_2	Annual NO_2	24-Hour PM_{10}	Annual PM_{10}
Business Onsite Trucks	41.3%	36.6%	<0.1%	<0.1%
Business CHE	41.0%	52.1%	0.2%	<0.1%
Business Offsite Trucks	15.4%	8.0%	0.4%	<0.1%
Hobart Trucks	1.1%	2.5%	98.9%	99.9%
Business Onsite Locomotives	0.9%	0.5%	<0.1%	<0.1%
Business Offsite Gasoline Vehicles	0.2%	<0.1%	0.4%	<0.1%
Business Onsite Gasoline Vehicles	<0.1%	<0.1%	<0.1%	<0.1%

Note:
a) The maximum modeled concentrations for different criteria pollutants of different averaging periods do not necessarily occur at the same location. The source contributions correspond to the locations of the maximum offsite criteria pollutant concentrations in Tables C2.5-16 and C2.5-17.

2.5.2.5 Unmitigated Reduced Project Alternative

Tables C2.5-19 and C2.5-20 present a summary of the maximum ground-level concentrations of NO_2, SO_2, and CO, and the PM_{10} and $PM_{2.5}$ concentration increments due to the Unmitigated Reduced Project Alternative operations. The NO_2, SO_2, and CO concentrations, as well as the PM_{10} and $PM_{2.5}$ concentration increments, were evaluated using the same methodologies that were used for the Unmitigated Project.



Legend

Exceeds significance threshold of 189 μg/m^3

Site

N

0 0.5 1 Miles

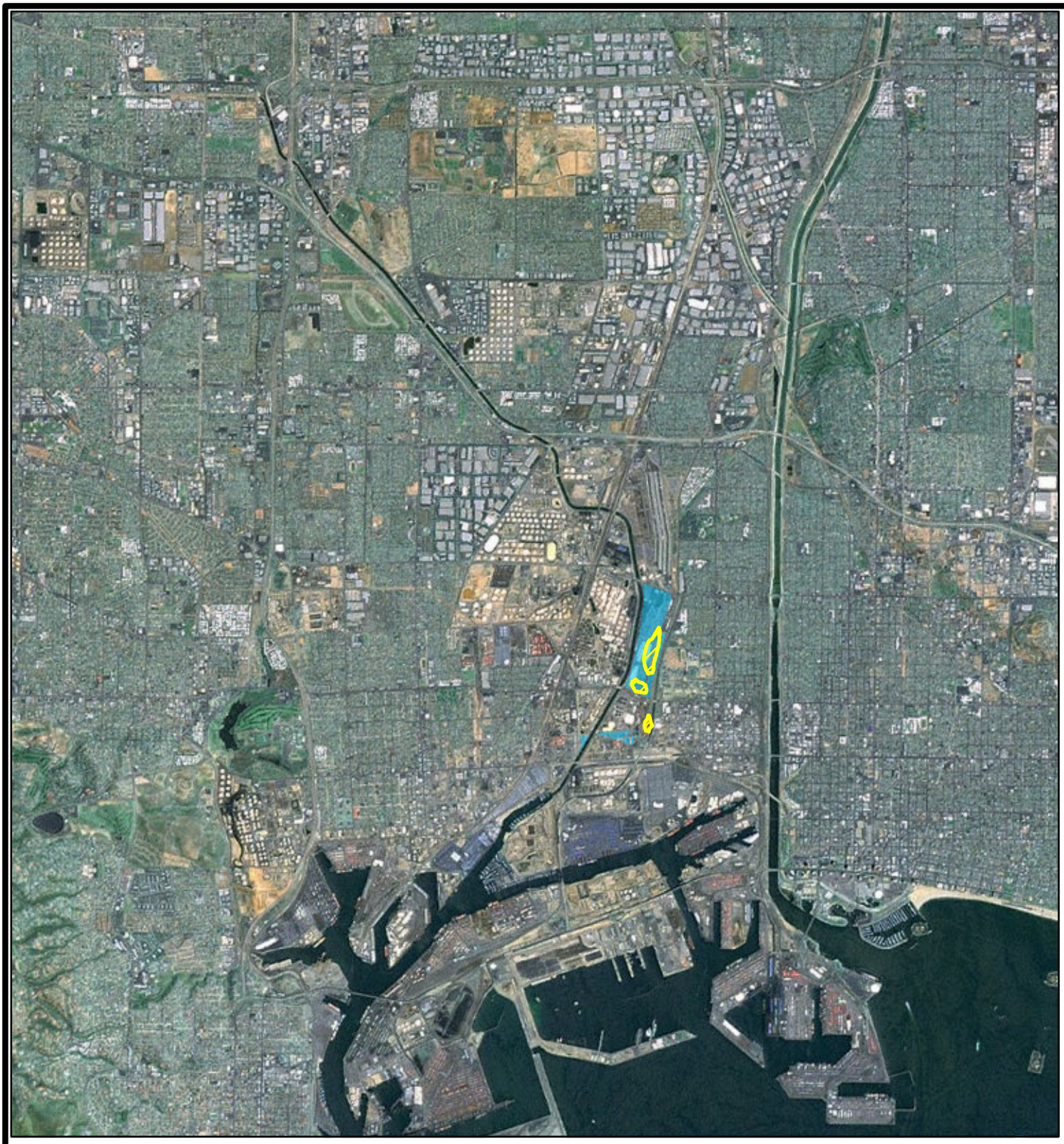
0 0.5 1 Kilometers

Note: The significance threshold shown is the federal NAAQS, which is a 98th percentile threshold. NO_2 concentrations were calculated assuming an 80 percent conversion rate from NO_x to NO_2. Background concentrations were obtained from the North Long Beach Monitoring Station. The background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

Figure C2.5-17
No Project Alternative plus Background

Ground-Level Concentration
1-hour NO_2

ENVIRON



Legend

- Exceeds significance threshold of 56 μg/m^3
- Site

N

0 0.5 1 Miles

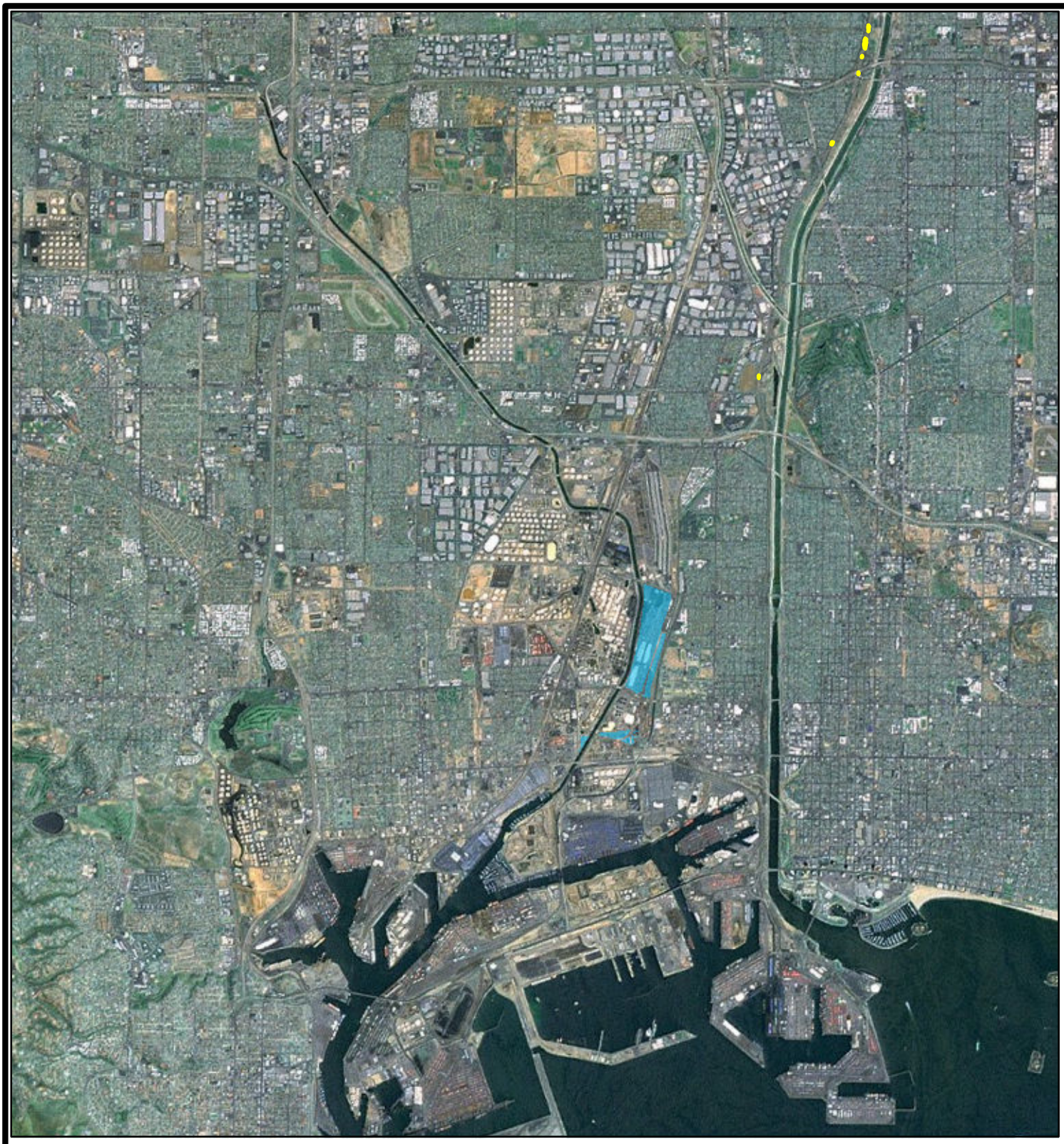
0 0.5 1 Kilometers

Note: NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_x to NO_2. Background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2008, 2009, and 2010 were used.

Figure C2.5-18
No Project Alternative plus Background

Ground-Level Concentration Annual NO_2

ENVIRON



Legend

Exceeds significance threshold of 2.5 μg/m^3

Site

N

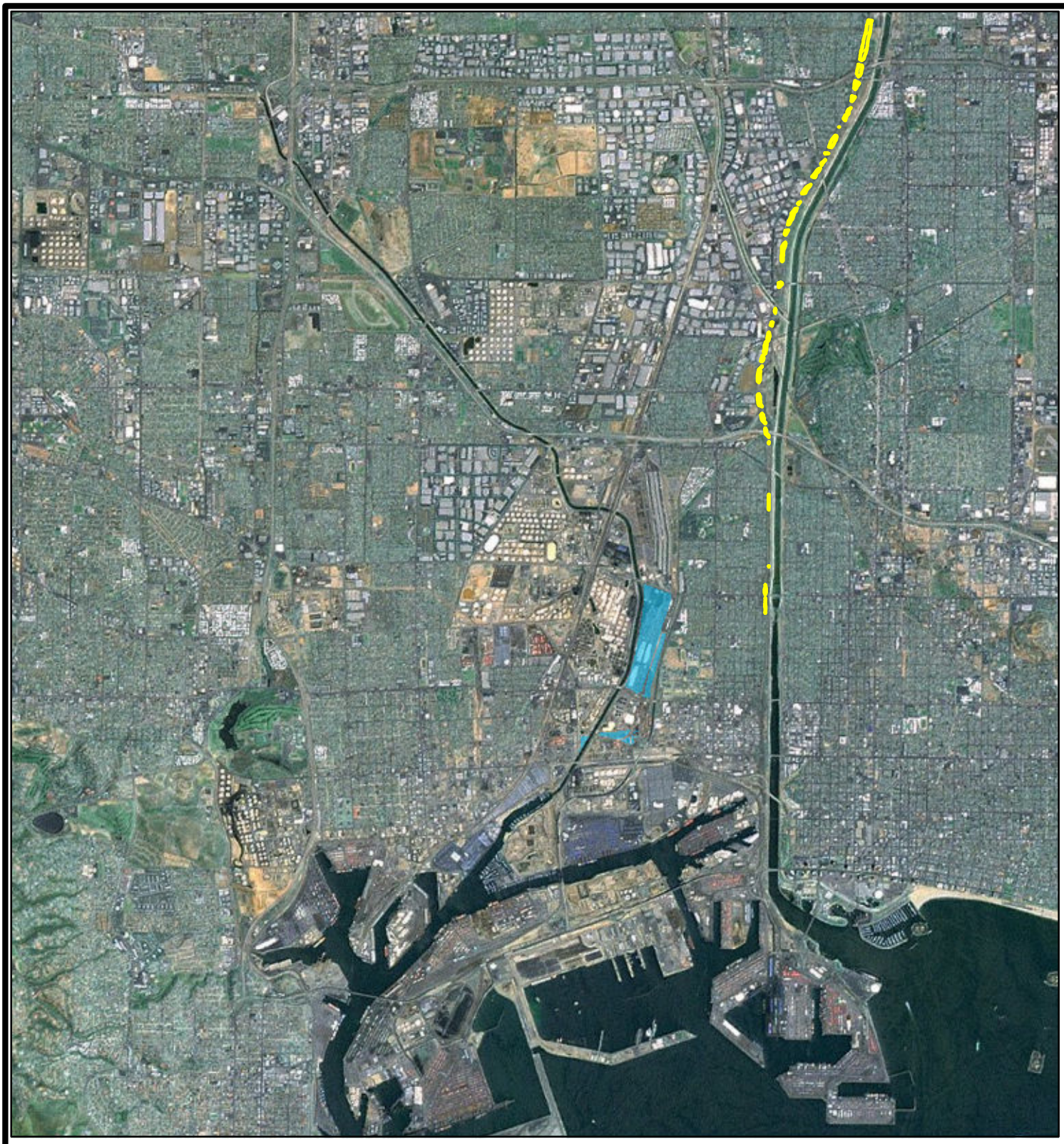
0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-19
No Project Alternative minus CEQA Baseline

Ground-Level Concentration
24-hour PM_{10}

ENVIRON



Legend

Exceeds significance threshold of 1 μg/m^3

Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-20
No Project Alternative minus CEQA Baseline

Ground-Level Concentration
Annual PM_{10}

ENVIRON

Locations of the maximum NO_2, SO_2, and CO concentrations and the PM_{10} and $PM_{2.5}$ increments for the Unmitigated Reduced Project Alternative are shown in Figure C2.5-21.

Table C2.5-19. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Operation of the Unmitigated Reduced Project Alternative.

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Reduced Project Alternative ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration[a] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	791	245	**1,036**	338
	1-hour [d]	791	142	**933**	(189)[f]
	Annual	22	40	**62**	56
CO	1-hour	1,358	5,842	7,200	23,000
	8-hour	464	4,467	4,931	10,000
SO_2	1-hour	1.9	236	238	655
	1-hour [e]	1.9	51	53	(196)[f]
	24-hour	0.3	31	32	105

Notes:

a) Exceedances of the thresholds are indicated in **bold**. Modeled concentrations of NO_2, SO_2, and CO are absolute Unmitigated Reduced Project Alternative concentrations.

b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.

d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

f) A standard not yet adopted as a threshold of significance by SCAQMD.

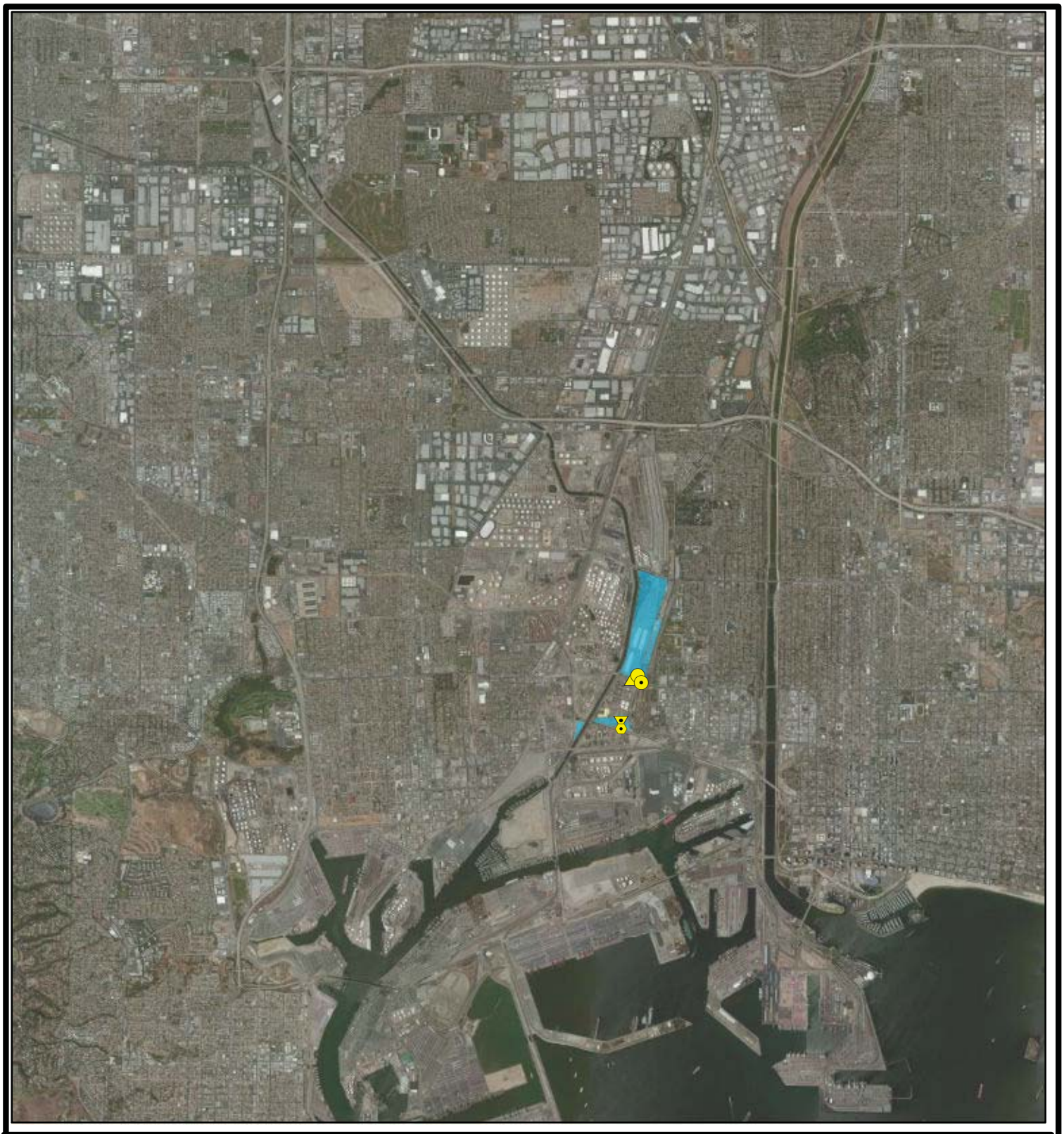


Figure C2.5-21
Maximum Air Quality Impact Locations

Unmitigated Reduced Project Alternative

ENVIRON

Table C2.5-20. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Unmitigated Reduced Project Alternative.

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Reduced Project Alternative[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment[a,b,c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	10.1	6.5	**6.6**	2.5
	Annual	5.1	1.7	**3.7**	1.0
$PM_{2.5}$	24-hour	5.2	3.8	**4.4**	2.5

Notes:

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Unmitigated Reduced Project Alternative concentration.

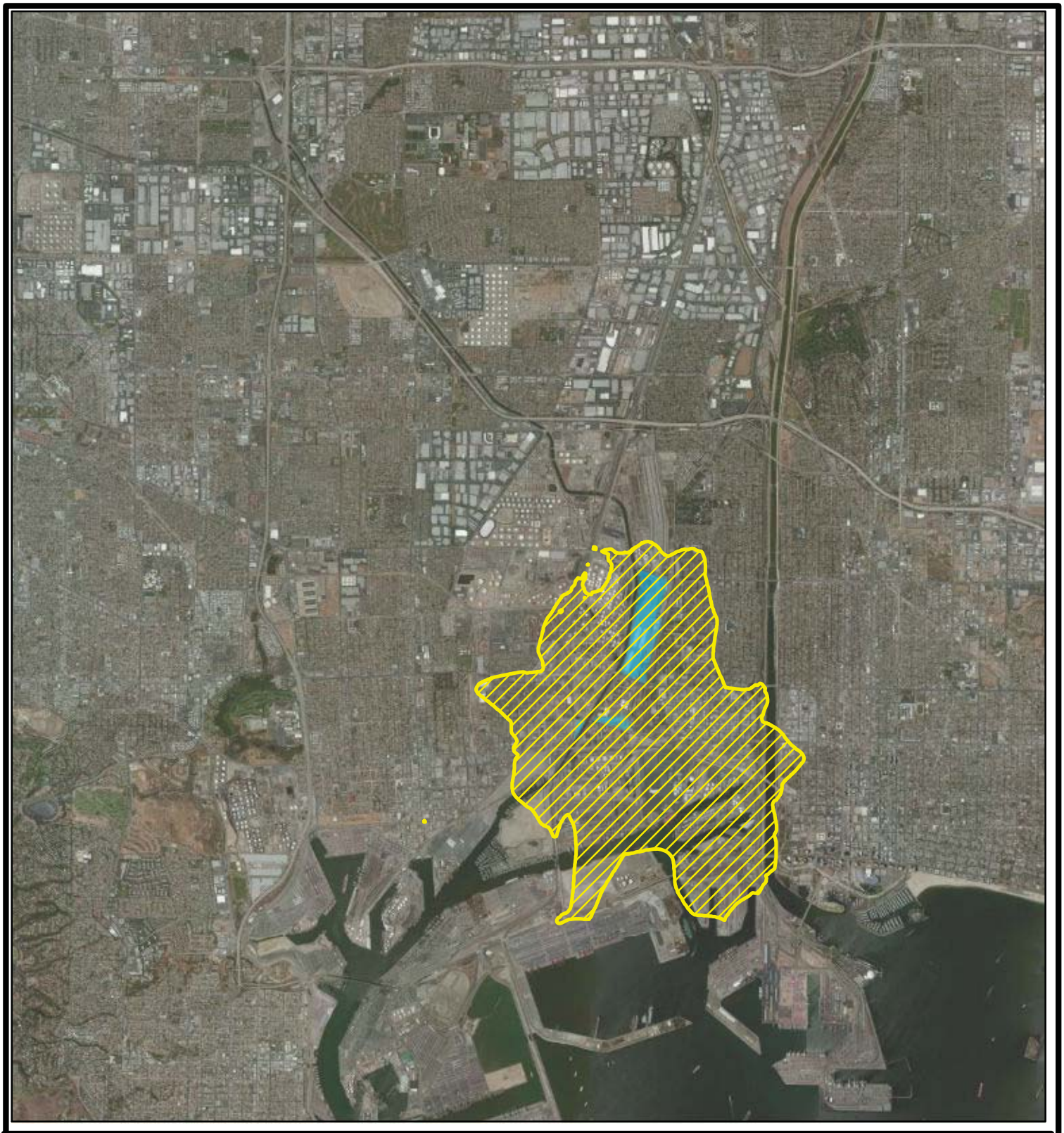
c) The CEQA Increment represents operation of the Unmitigated Proposed Project Alternative minus CEQA baseline.

The data in Tables C2.5-19 and C2.5-20 show that the maximum 1-hour and annual concentrations of NO_2 associated with the Unmitigated Reduced Project Alternative are 1,036 and 62 $\mu g/m^3$, respectively. The 1-hour and annual NO_2 concentrations exceed the SCAQMD significance thresholds. The 98th percentile 1-hour NO_2 concentration of 933 $\mu g/m^3$ would also exceed the NAAQS of 189 $\mu g/m^3$, a standard not yet adopted as a threshold of significance by SCAQMD.

The maximum 1-hour and 8-hour CO and 1-hour and 24-hour SO_2 concentrations due to the Unmitigated Reduced Project Alternative are well below the SCAQMD significance thresholds. The 99th percentile 1-hour SO_2 concentration of 53 $\mu g/m^3$ would also be below the NAAQS of 196 $\mu g/m^3$, a standard not yet adopted by SCAQMD.

The 24-hour PM_{10} and $PM_{2.5}$ increments associated with Unmitigated Reduced Project Alternative operations are predicted to be 6.6 and 4.4 $\mu g/m^3$, respectively. The increments exceed the SCAQMD 24-hour PM_{10} and $PM_{2.5}$ thresholds of 2.5 $\mu g/m^3$ for operations. The annual PM_{10} increment associated with Unmitigated Reduced Project Alternative operations is predicted to be 3.7 $\mu g/m^3$, which exceeds the SCAQMD annual PM_{10} threshold of 1.0 $\mu g/m^3$.

Figure C2.5-22 shows the area over which the Unmitigated Reduced Project Alternative 1-hour NO_2 concentrations exceed the NAAQS. Similarly, Figures C2.5-23, C2.5-24, C2.5-25, and C2.5-26 show the areas over which the Unmitigated Reduced Project Alternative concentrations exceed the SCAQMD thresholds for annual NO_2, 24-hour PM_{10}, annual PM_{10}, and 24-hour $PM_{2.5}$, respectively. Table C2.5-21 contains the source contributions at the location of the maximum modeled concentration of the Unmitigated Reduced Project Alternative for the pollutants and averaging periods that are significant.



Legend

- Exceeds significance threshold of 189 μg/m^3
- Site

N

0 0.5 1 Miles

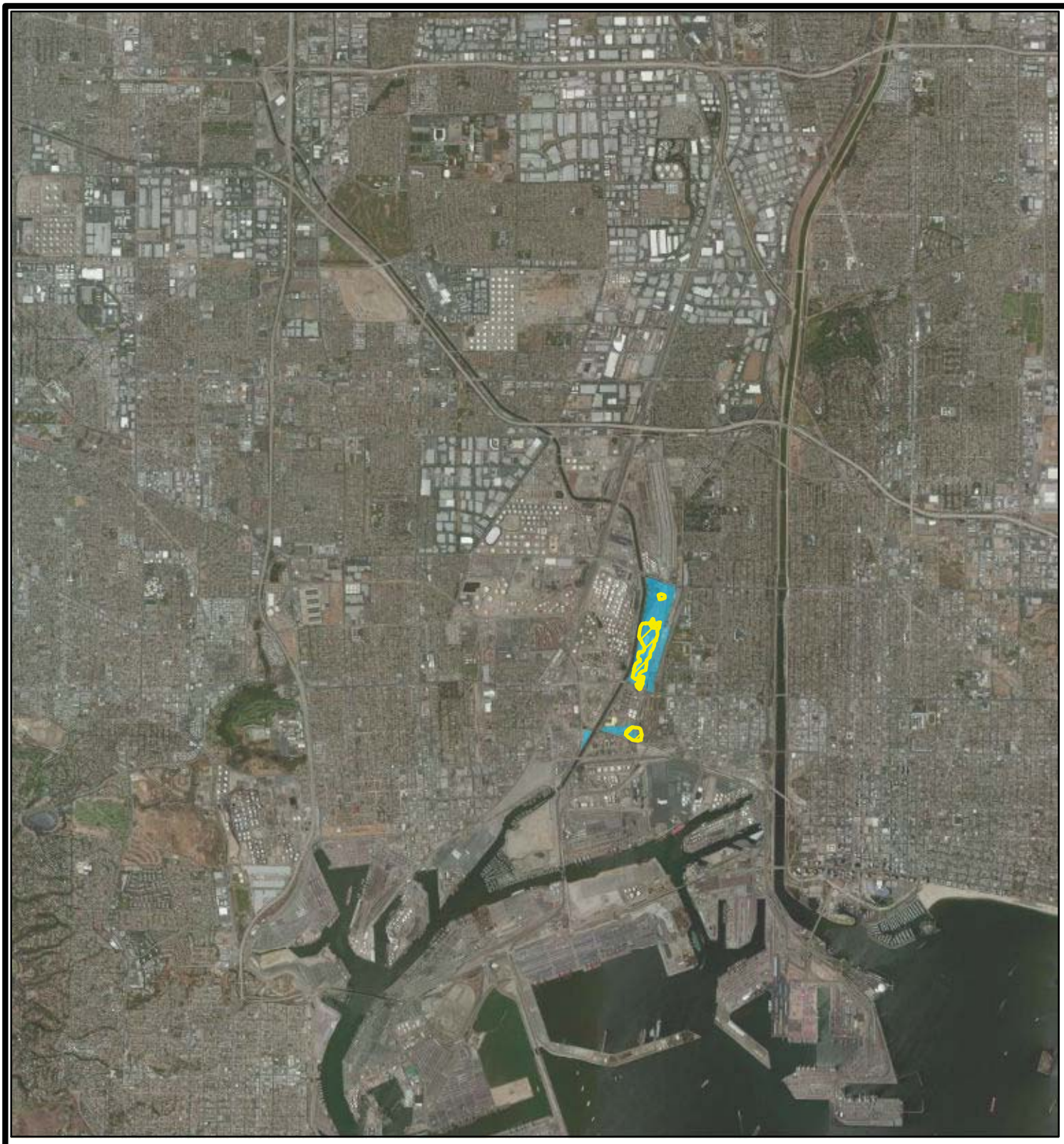
0 0.5 1 Kilometers

Note: The significance threshold shown is the federal NAAQS, which is a 98th percentile threshold. NO_2 concentrations were calculated assuming an 80 percent conversion rate from NO_x to NO_2. Background concentrations were obtained from the North Long Beach Monitoring Station. The background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

Figure C2.5-22
Unmitigated Reduced Project Alternative plus Background

Ground-Level Concentration
1-hour NO_2

ENVIRON



Legend

Exceeds significance threshold of 56 $\mu g/m^3$

Site

N

0 0.5 1 Miles

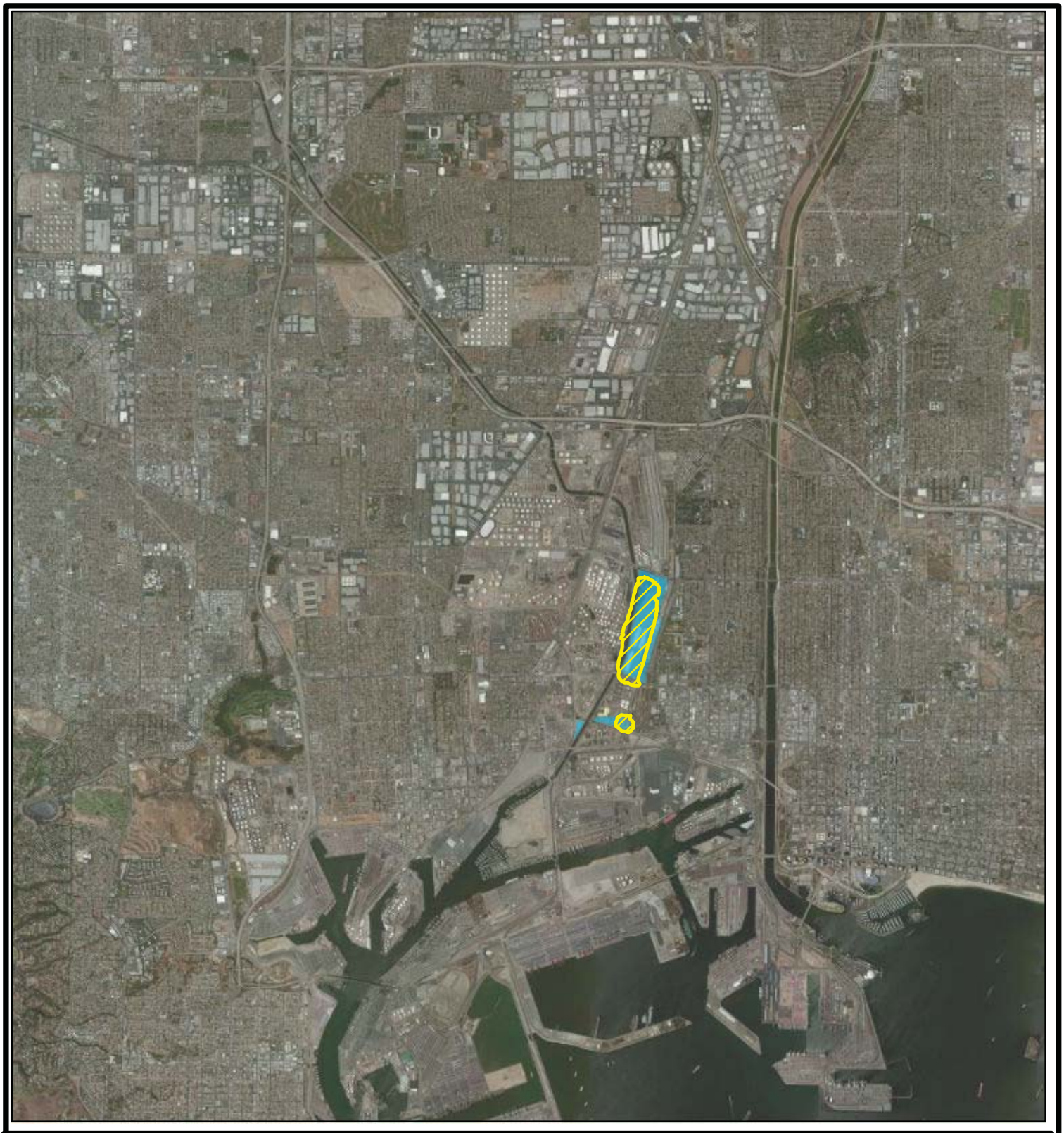
0 0.5 1 Kilometers

Note: NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_x to NO_2. Background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2008, 2009, and 2010 were used.

Figure C2.5-23
Unmitigated Reduced Project Alternative plus Background

Ground-Level Concentration
Annual NO_2

ENVIRON



Legend

Exceeds significance threshold of 2.5 μg/m^3

Site

N

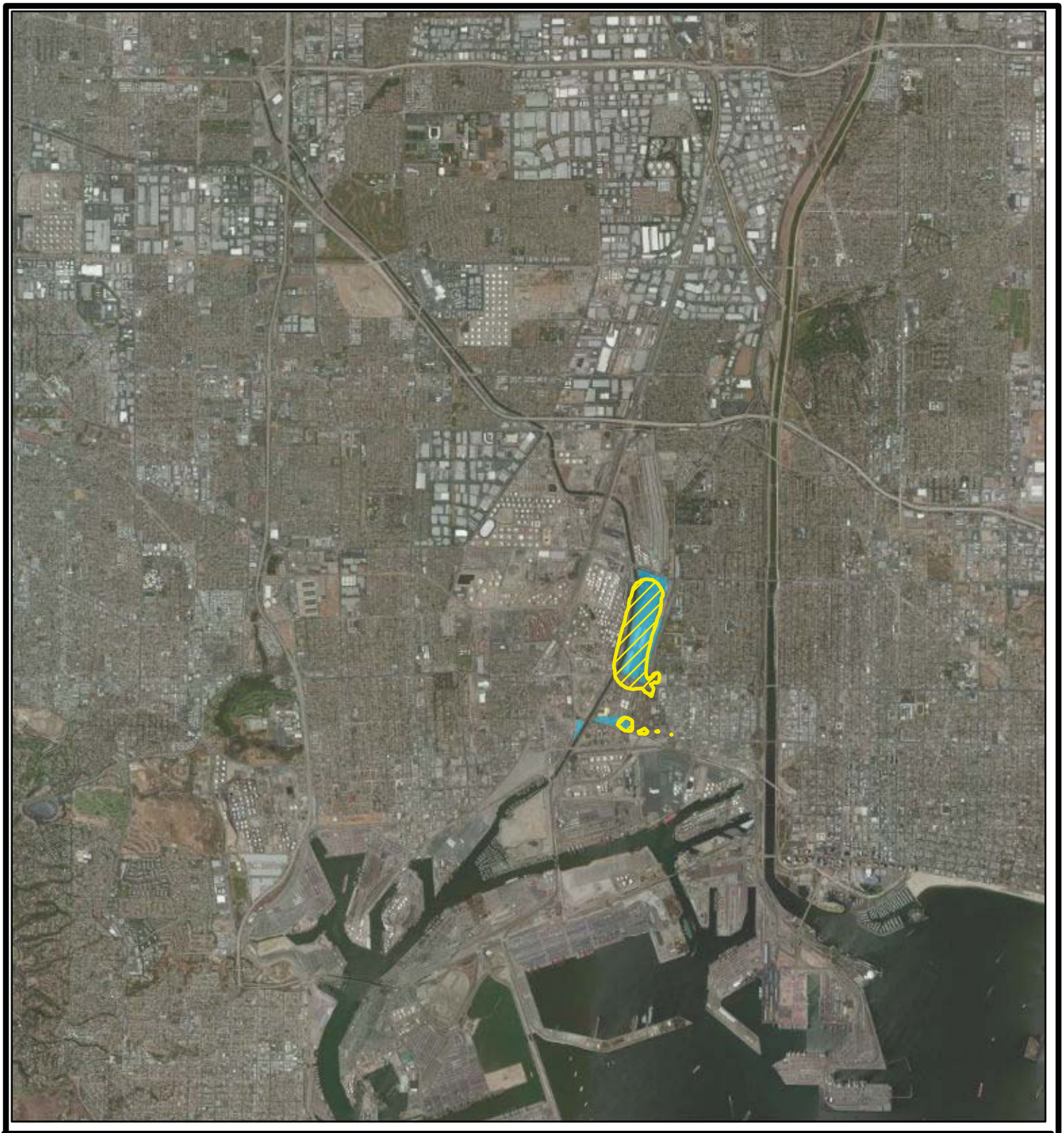
0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-24
Unmitigated Reduced Project Alternative minus CEQA Baseline

Ground-Level Concentration
24-hour PM_{10}

ENVIRON



Legend

Exceeds significance threshold of 1 μg/m^3

Site

N

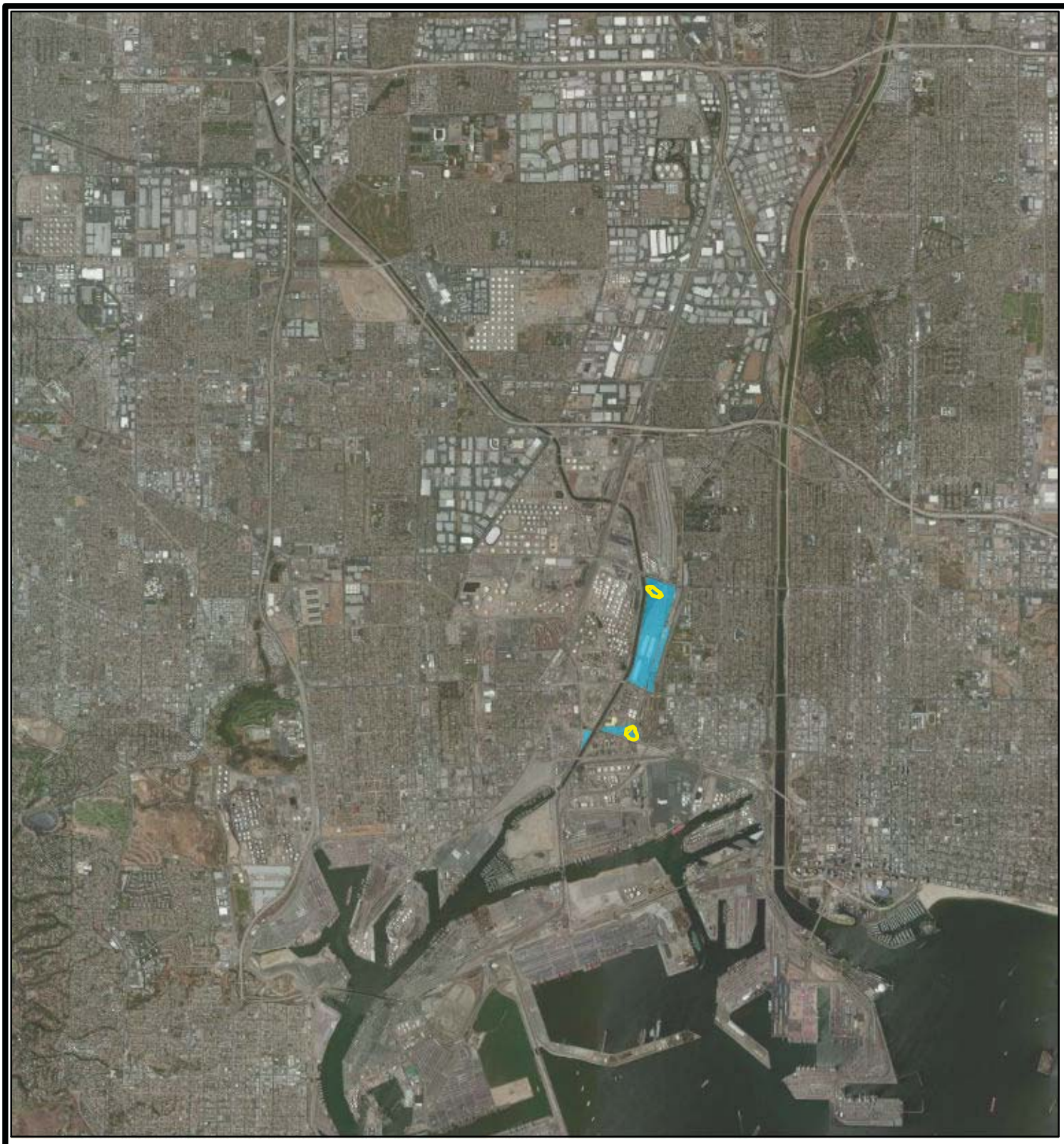
0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-25
Unmitigated Reduced Project Alternative minus CEQA Baseline

Ground-Level Concentration
Annual PM_{10}

ENVIRON



Legend

Exceeds significance threshold of 2.5 μg/m^3

Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-26
Unmitigated Reduced Project Alternative minus CEQA Baseline

Ground-Level Concentration
24-hour $PM_{2.5}$

ENVIRON

Table C2.5-21. Source Contributions at the Maximum Modeled Concentration of the Unmitigated Reduced Project Alternative.

Emission Source	Criteria Pollutants				
	1-Hour NO_2	Annual NO_2	24-Hour PM_{10}	Annual PM_{10}	24-Hour $PM_{2.5}$
Alternate Business Location CHE	52.4%	51.5%	50.4%	0.2%	70.6%
Alternate Business Location Onsite Trucks	41.2%	38.1%	29.1%	0.1%	18.9%
Alternate Business Location Offsite Trucks	2.2%	1.8%	2.5%	0.2%	1.5%
SCIG Onsite Trucks	1.5%	2.4%	4.4%	52.4%	1.9%
SCIG Offsite Trucks	1.0%	3.8%	6.3%	41.8%	3.3%
SCIG Onsite Locomotives	0.7%	1.8%	0.5%	0.2%	0.7%
SCIG CHE/TRU	0.3%	<0.1%	0.1%	<0.1%	0.2%
Hostler	0.2%	<0.1%	<0.1%	<0.1%	<0.1%
Emergency Generator	0.1%	<0.1%	<0.1%	<0.1%	0.1%
SCIG Offsite Locomotives	0.1%	0.3%	<0.1%	<0.1%	<0.1%
Alternate Business Location Onsite Gasoline Vehicles	<0.1%	<0.1%	5.0%	<0.1%	2.1%
Alternate Business Location Offsite Gasoline Vehicles	<0.1%	<0.1%	1.0%	<0.1%	0.4%
Onsite Refueling Trucks	<0.1%	<0.1%	<0.1%	0.8%	<0.1%
Alternate Business Location Onsite Locomotives	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
SCIG Onsite Gasoline Vehicles	<0.1%	<0.1%	<0.1%	0.2%	<0.1%
SCIG Offsite Gasoline Vehicles	<0.1%	<0.1%	0.4%	4.0%	0.1%

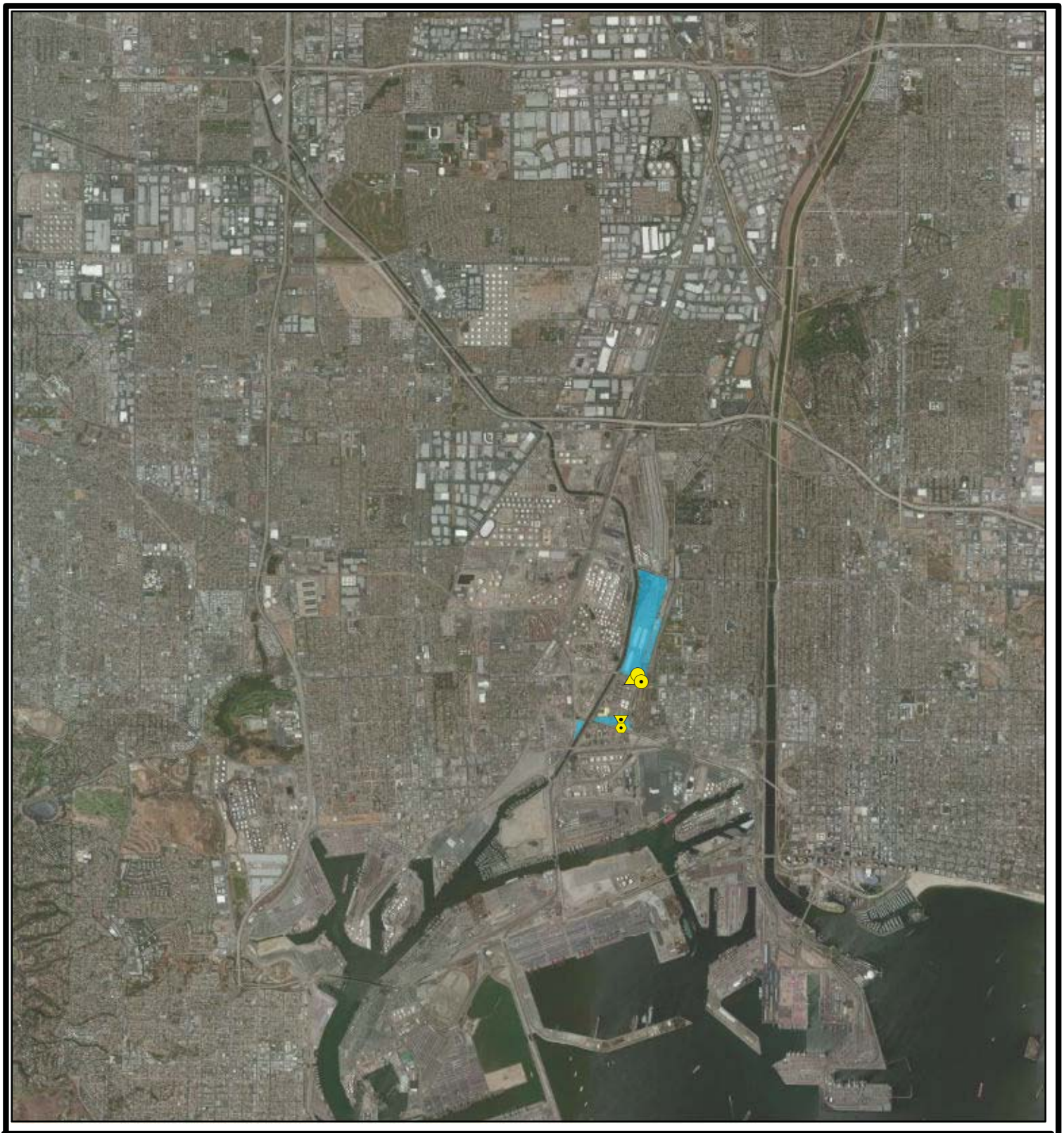
Note:

a) The maximum modeled concentrations for different criteria pollutants of different averaging periods do not necessarily occur at the same location. The source contributions correspond to the locations of the maximum offsite criteria pollutant concentrations in Tables C2.5-19 and C2.5-20.

2.5.2.6 Mitigated Reduced Project Alternative

Tables C2.5-22 and C2.5-23 present a summary of the maximum ground-level concentrations of NO_2, SO_2, and CO, and the PM_{10} and $PM_{2.5}$ concentration increments due to the Mitigated Reduced Project Alternative operations. The NO_2, SO_2, and CO concentrations, as well as the PM_{10} and $PM_{2.5}$ concentration increments, were evaluated using the same methodologies that were used for the unmitigated Project Alternative.

Locations of the maximum NO_2, SO_2, and CO concentrations and the PM_{10} and $PM_{2.5}$ increments for the Mitigated Reduced Project Alternative are shown in Figure C2.5-27.



Legend

- Max. 1-hr NO_2 / 1-hr SO_2 Impact
- Max. Annual NO_2 / 24-hr SO_2 / 24-hr PM_{10} / 24-hr $PM_{2.5}$ Impact
- Max. 1-hr CO Impact
- Max. 8-hr CO Impact
- Max. Annual PM_{10} Impact
- Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-27
Maximum Air Quality Impact Locations

Mitigated Reduced Project Alternative

ENVIRON

Table C2.5-22. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Operation of the Mitigated Reduced Project Alternative.

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Reduced Project Alternative ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration[a] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	791	245	**1,036**	**338**
	1-hour [d]	791	142	**933**	**(189)**[f]
	Annual	22	40	**62**	**56**
CO	1-hour	1,358	5,842	7,200	**23,000**
	8-hour	464	4,467	4,931	**10,000**
SO_2	1-hour	1.9	236	238	**655**
	1-hour [e]	1.9	51	53	**(196)**[f]
	24-hour	0.3	31	32	**105**

Notes:

a) Exceedances of the thresholds are indicated in bold. Modeled concentrations of NO_2, SO_2, and CO are absolute Mitigated Reduced Project Alternative concentrations.

b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.

d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

f) A standard not yet adopted as a threshold of significance by SCAQMD.

Table C2.5-23. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations As.sociated with Operation of the Mitigated Reduced Project Alternative.

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Reduced Project Alternative[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment[a,b,c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	8.9	6.5	**6.5**	2.5
	Annual	4.5	1.7	**3.0**	1.0
$PM_{2.5}$	24-hour	5.1	3.8	**4.3**	2.5

Notes:

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Mitigated Reduced Project Alternative concentration.

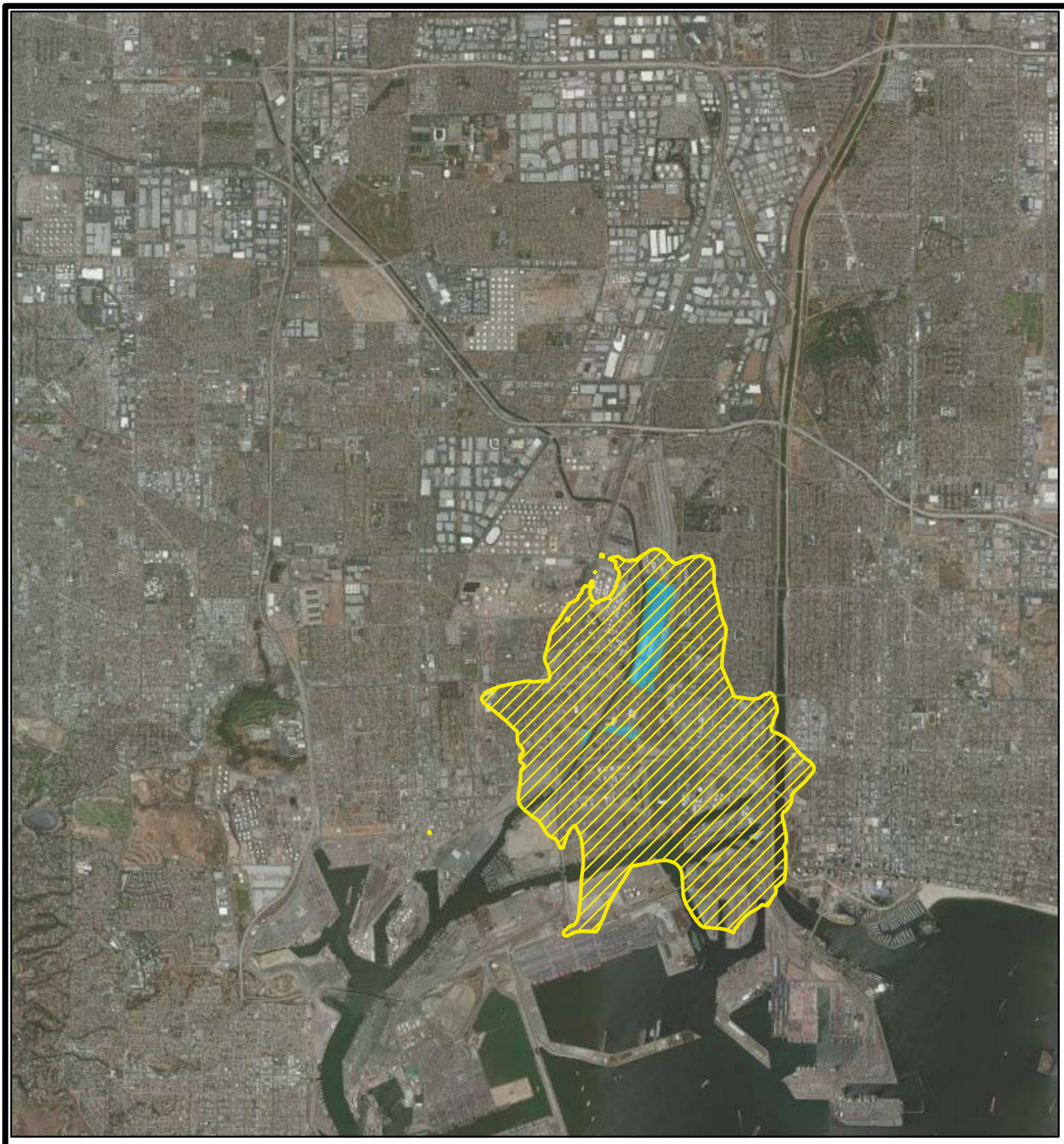
c) The CEQA Increment represents operation of the Unmitigated Proposed Project minus CEQA baseline.

The data in Tables C2.5-22 and C2.5-23 show that the maximum 1-hour and annual concentrations of NO_2 associated with the mitigated Reduced Project Alternative are 1,036 and 62 µg/m^3, respectively. The 1-hour and annual NO_2 concentrations exceed the SCAQMD significance thresholds. The 98th percentile 1-hour NO_2 concentration of 933 µg/m^3 would also exceed the NAAQS of 189 µg/m^3, a standard not yet adopted as a threshold of significance by SCAQMD.

The maximum 1-hour and 8-hour CO and 1-hour and 24-hour SO_2 concentrations due to the mitigated Reduced Project Alternative are well below the SCAQMD significance thresholds. The 99th percentile 1-hour SO_2 concentration of 53 µg/m^3 would also be below the NAAQS of 196 µg/m^3, a standard not yet adopted by SCAQMD.

The 24-hour PM_{10} and $PM_{2.5}$ increments associated with mitigated Reduced Project Alternative operations are predicted to be 6.5 and 4.3 µg/m^3, respectively. The increments exceed the SCAQMD 24-hour PM_{10} and $PM_{2.5}$ thresholds of 2.5 µg/m^3 for operations. The annual PM_{10} increment associated with mitigated Reduced Project Alternative operations is predicted to be 3.0 µg/m^3, which exceeds the SCAQMD annual PM_{10} threshold of 1.0 µg/m^3.

Figure C2.5-28 shows the area over which the Mitigated Reduced Project Alternative 1-hour NO_2 concentrations exceed the NAAQS. Similarly, Figures C2.5-29, C2.5-30, C2.5-31, and C2.5-32 show the areas over which the Mitigated Reduced Project Alternative concentrations exceed the SCAQMD thresholds for annual NO_2, 24-hour PM_{10}, annual PM_{10}, and 24-hour $PM_{2.5}$, respectively. Table C2.5-24 contains the source contributions at the location of the maximum modeled concentration of the mitigated Reduced Project Alternative for the pollutants and averaging periods that are significant.



Legend

- Exceeds significance threshold of 189 μg/m^3
- Site

N

0 0.5 1 Miles

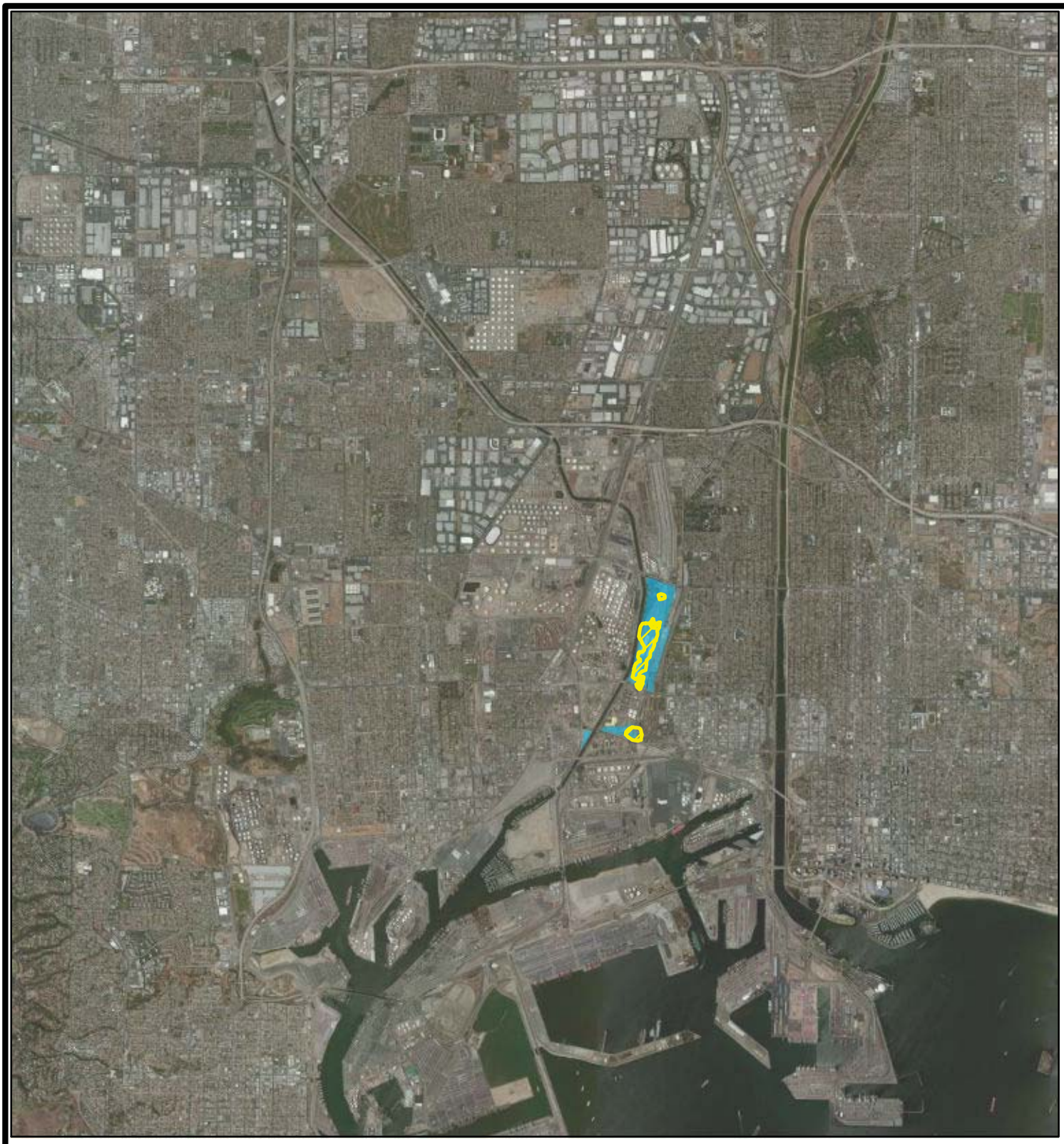
0 0.5 1 Kilometers

Note: The significance threshold shown is the federal NAAQS, which is a 98th percentile threshold. NO_2 concentrations were calculated assuming an 80 percent conversion rate from NO_x to NO_2. Background concentrations were obtained from the North Long Beach Monitoring Station. The background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

Figure C2.5-28
Mitigated Reduced Project Alternative plus Background

Ground-Level Concentration
1-hour NO_2

ENVIRON



Legend

- Exceeds significance threshold of 56 μg/m^3
- Site

N

0 0.5 1 Miles

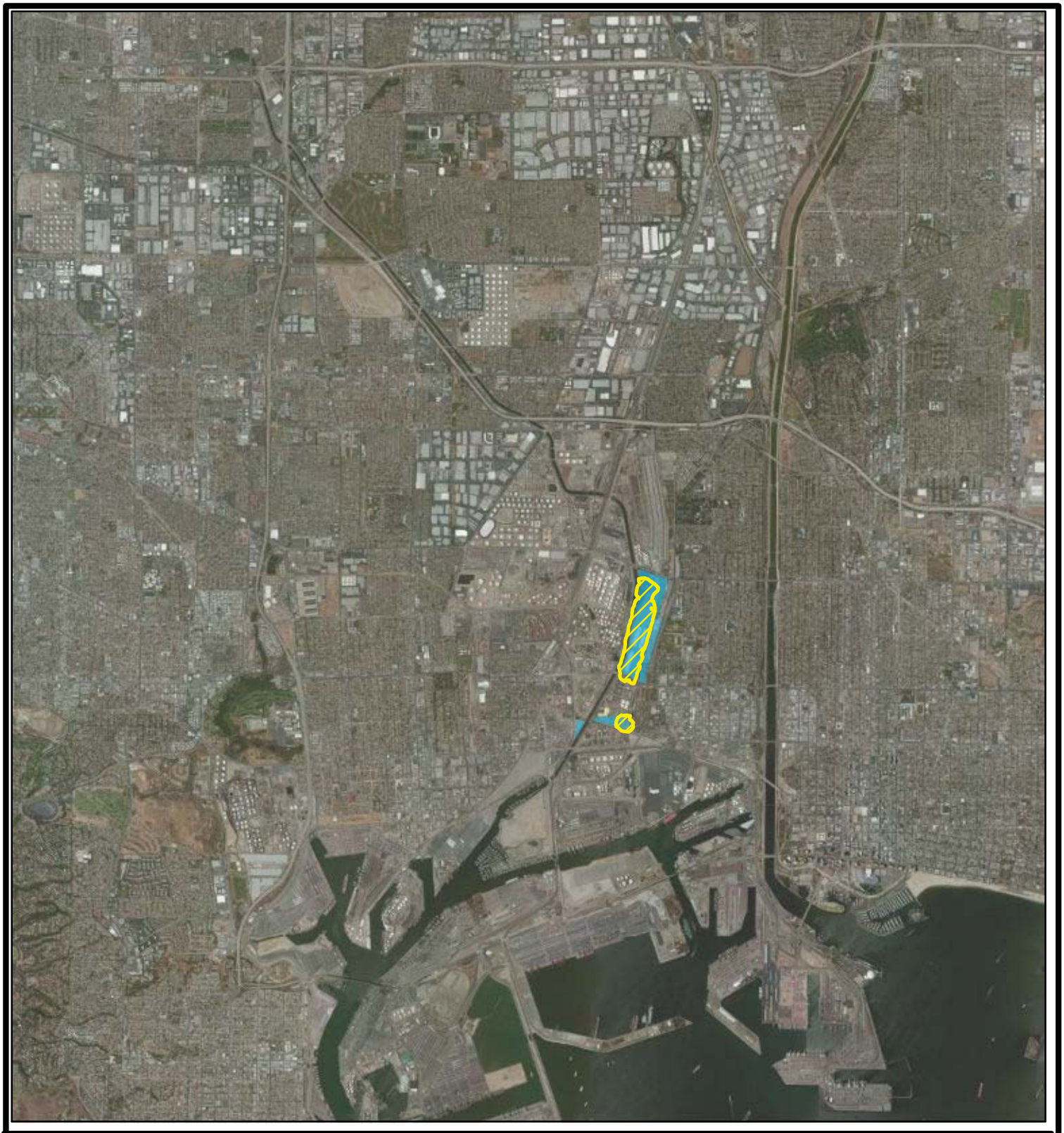
0 0.5 1 Kilometers

Note: NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_x to NO_2. Background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2008, 2009, and 2010 were used.

Figure C2.5-29
Mitigated Reduced Project Alternative plus Background

Ground-Level Concentration
Annual NO_2

ENVIRON



Legend

Exceeds significance threshold of 2.5 μg/m^3

Site

N

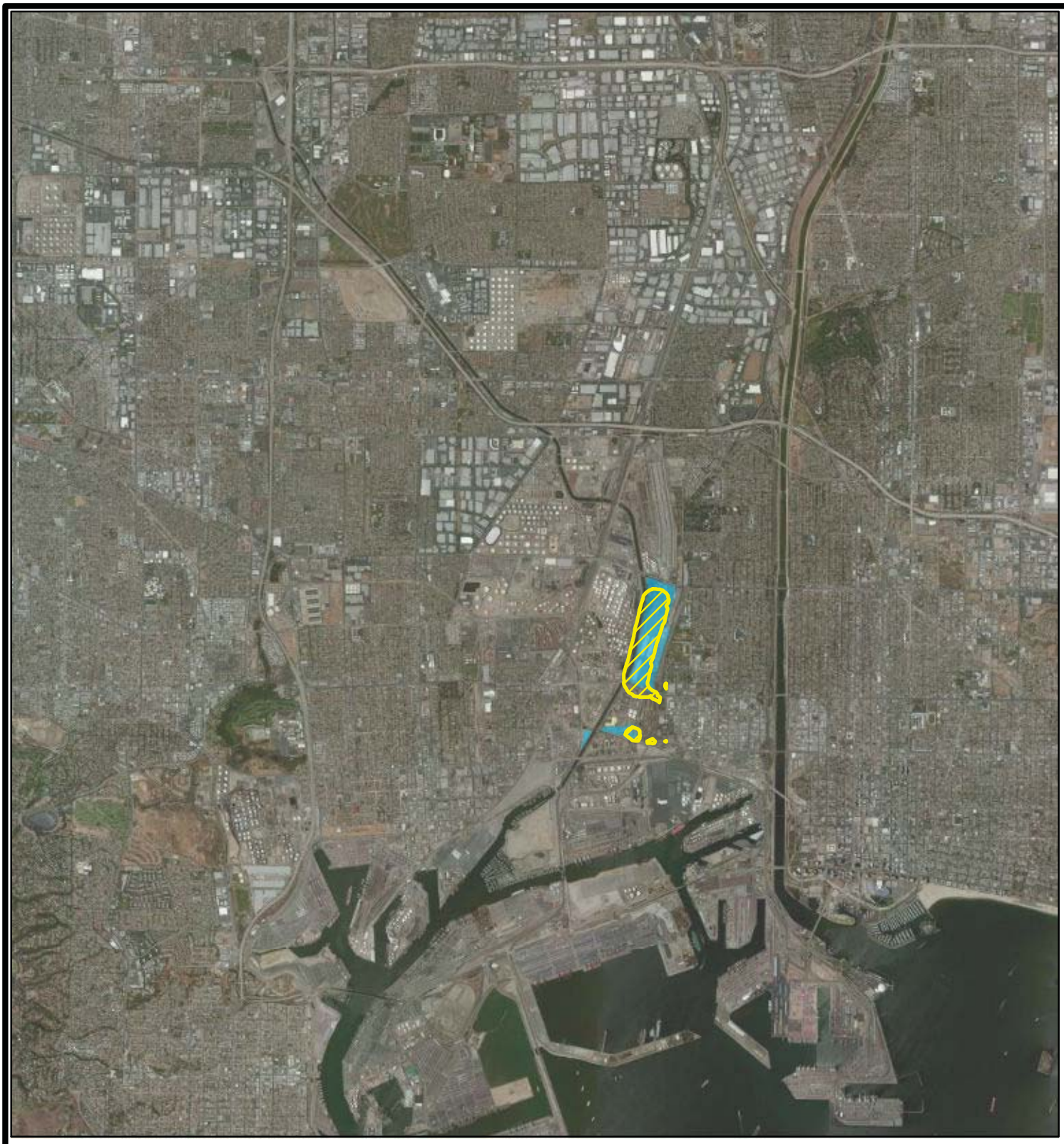
0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-30
Mitigated Reduced Project Alternative minus CEQA Baseline

Ground-Level Concentration
24-hour PM_{10}

ENVIRON



Legend

Exceeds significance threshold of 1 μg/m^3

Site

N

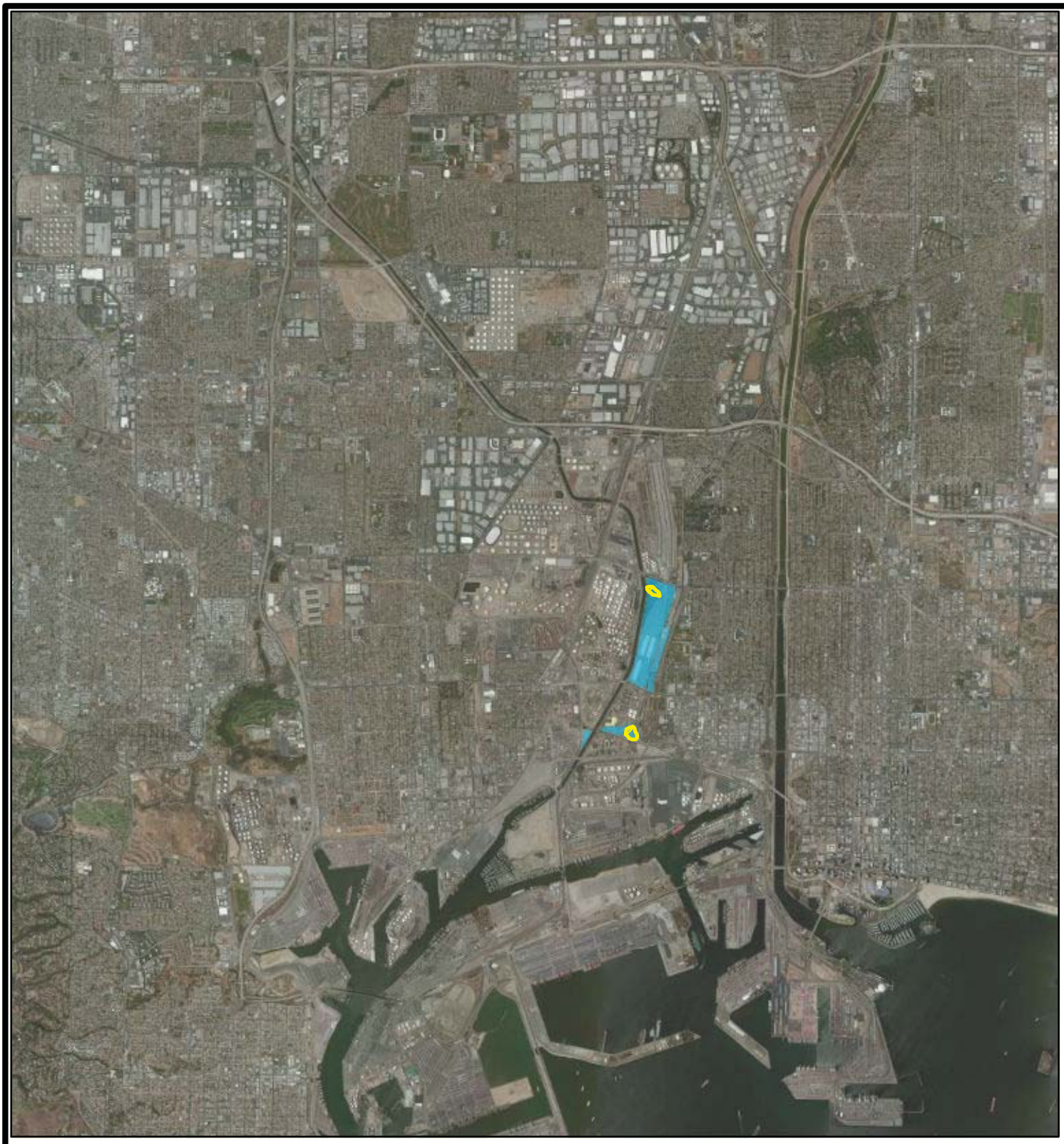
0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-31
Mitigated Reduced Project Alternative minus CEQA Baseline

Ground-Level Concentration
Annual PM_{10}

ENVIRON



Legend

Exceeds significance threshold of 2.5 μg/m^3

Site

N

0 0.5 1 Miles

0 0.5 1 Kilometers

Figure C2.5-32
Mitigated Reduced Project Alternative minus CEQA Baseline

Ground-Level Concentration
24-hour $PM_{2.5}$

ENVIRON

Table C2.5-24. Source Contributions at the Maximum Modeled Concentration of the Mitigated Reduced Project Alternative.

Emission Source	Criteria Pollutants				
	1-Hour NO_2	Annual NO_2	24-Hour PM_{10}	Annual PM_{10}	24-Hour $PM_{2.5}$
Alternate Business Location CHE	52.4%	51.5%	50.9%	0.2%	70.8%
Alternate Business Location Onsite Trucks	41.2%	38.1%	29.4%	0.2%	18.9%
Alternate Business Location Offsite Trucks	2.2%	1.8%	2.5%	0.2%	1.5%
SCIG Onsite Trucks	1.5%	2.4%	3.4%	45.8%	1.6%
SCIG Offsite Trucks	1.0%	3.8%	6.4%	47.8%	3.3%
SCIG Onsite Locomotives	0.7%	1.8%	0.5%	0.3%	0.7%
SCIG CHE/TRU	0.3%	<0.1%	0.1%	<0.1%	0.2%
Hostler	0.2%	<0.1%	<0.1%	<0.1%	<0.1%
Emergency Generator	0.1%	<0.1%	<0.1%	<0.1%	0.1%
SCIG Offsite Locomotives	0.1%	0.3%	<0.1%	<0.1%	<0.1%
Alternate Business Location Onsite Gasoline Vehicles	<0.1%	<0.1%	5.1%	<0.1%	2.1%
Alternate Business Location Offsite Gasoline Vehicles	<0.1%	<0.1%	1.0%	<0.1%	0.4%
Onsite Refueling Trucks	<0.1%	<0.1%	<0.1%	0.7%	<0.1%
Alternate Business Location Onsite Locomotives	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
SCIG Onsite Gasoline Vehicles	<0.1%	<0.1%	<0.1%	0.2%	<0.1%
SCIG Offsite Gasoline Vehicles	<0.1%	<0.1%	0.4%	4.5%	0.1%

Notes:

a) The maximum modeled concentrations for different criteria pollutants of different averaging periods do not necessarily occur at the same location. The source contributions correspond to the locations of the maximum offsite criteria pollutant concentrations in Tables C2.5-22 and C2.5-23.

b) The maximum modeled concentration of 24-hour $PM_{2.5}$ for the Mitigated Reduced Project Alternative is near a business site, while the maximum modeled concentrations of 24-hour $PM_{2.5}$ for the Unmitigated and Mitigated Proposed Project and the Unmitigated Reduced Project Alternative are near the SCIG site.

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