Memo

Date:	Tuesday, April 23, 2019
Project:	Azusa Consolidated Ready Mix
To:	Matt Marquez Economic and Community Development Director
From:	Keith Lay, HDR
Subject:	Air Quality and Greenhouse Gas Analysis

This memorandum presents the air quality and greenhouse gas (GHG) emissions associated with the Consolidated Ready Mix facility in Azusa, California. This analysis concludes that the project's operational emissions would not exceed the South Coast Air Quality Management District's (SCAQMD) daily criteria pollutant thresholds, localized significance thresholds, or greenhouse gas threshold.

Project Description

Existing Site Conditions
The proposed project site, APN 8615-018-005 is 0.91-acre in size. The site is located within an existing industrialized area of the City of Azusa (City), and properties adjacent to the site are developed.

Proposed Project
Consolidated Ready Mix is a dry material handling batch plant that utilizes an innovative way of mixing materials for concrete on-site and then transporting the mixed materials to the customer by concrete mixing trucks where concrete is produced on-route or at the delivery site. At the plant, sand, rock and cement are weighed and delivered via a conveyor belt to one of the mixing trucks to be mixed in transit and delivered to designated sites for concrete production.

Unlike traditional on-site wet mix concrete plants, Consolidated Ready Mix is a dry mix plant (also known as transit mix plant) which weighs sand, gravel and cement in weigh batchers via digital or manual scales. All the materials are then discharged into a chute which in turn discharges into a truck. At the same time, water is either weighed or volumetrically metered and discharged through the same charging chute into the mixer truck. The ingredients are then mixed for a minimum of 70 to 100 revolutions during their transportation to the job site.

Consolidated Ready Mix will utilize a maximum of 7 cement trucks, 1 dump truck, and 1 semi-truck. The proposed use will have a total of 9 employees working one shift seven days a week as follows: from 5:30 a.m. to 7:00 p.m. Monday to Friday, from 5:30 a.m. to 1:00 p.m. on Saturday, and from 7:00 a.m. to 10:00 a.m. on Sunday.

The following operational schedules are provided by Consolidated Ready Mix for the proposed operations on a typical day:

- Business office will open at 5:30 am Monday through Saturdays and at 7:00 a.m. on Sundays.
- Business office will close at 4:30 p.m. Monday through Friday, at 1:00 p.m. on Saturdays, and 10:00 a.m. on Sundays.
- Trucks will start to arrive at 6:00 a.m. and leave at 7:00 p.m. on weekdays.
- Trucks will start to load/operate during 6:30 a.m. to 7:00 p.m.
- Trucks load once every 15 minutes at the busiest time.
- The busiest truck departures will be between 7:00 a.m. and 9:30 a.m. Monday through Saturday.
- One supplies delivery truck will arrive once per day.

Consolidated Ready Mix facility is currently operating on the project site. The basic operation of the plant involves weighing and delivering materials and water via a conveyor belt or chute to trucks to be mixed in transit and delivered to designated construction sites in Southern California.

Proposed operations involve processing (producing) an average of 50 yards of concrete per day, with a maximum output of 125 yards per day. The following equipment is utilized at the site:

- Dry batch Plant w/ Conveyer Belt
- Storage Bins and Scales for Aggregate (Attached to Plant)
- 1-SCIENTIFIC 3,000 cubic feet per minute (cfm) pulse-jet bag house-type dust collection system
- 50 foot, 25 nozzle 1000 psi nylon mist kit (Bag House Unit)
- 1-Loader
- 7-Cement Mixer Trucks
- 1-Powder Truck/Trailer
- 1-Dump Truck
- 1-Bobcat with Quick Connect Sweeper with Sprayers
- Tennant Sweeper

The project site has applied for, but not received, a permit to operate from the SCAQMD.

Regulatory Setting

Federal Clean Air Act

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act is its companion state law. These laws, and related regulations by the U.S. Environmental Protection Agency (U.S. EPA) and California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA. In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies.

The FCAA requires U.S. EPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved. The federal standards are summarized in Table A. The U.S. EPA has classified the South Coast Air Basin (SCAB) as attainment/maintenance for CO, PM_{10}, and NO_2, and nonattainment for O_3 and $PM_{2.5}$.

California Clean Air Act

In California, the California Clean Air Act (CCAA) is administered by the ARB at the State level and by the air quality management districts and air pollution control districts at the regional and local levels. The ARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the State requirements of the FCAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. CAAQS are generally more stringent than the corresponding federal standards summarized in Table A. The CCAA requires ARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard and are not used as a basis for designating areas as nonattainment. Under the CCAA, the Los Angeles County portion of the SCAB is designated as a nonattainment area for O_3, Pb, $PM_{2.5}$, and PM_{10}.

South Coast Air Quality Management District

The 1977 Lewis Air Quality Management Act created the South Coast Air Quality Management District (SCAQMD) to coordinate air quality planning efforts throughout Southern California. This Act merged four county air pollution control agencies into one regional district to better address the issue of improving air quality in Southern California. Under the Act, renamed the Lewis-Presley Air Quality Management Act in 1988, the SCAQMD is the agency principally responsible for comprehensive air pollution control in the region. Specifically, the SCAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed

Table A. Federal and State Criteria Air Pollutant Standards, Effects, and Sources						
Pollutant	**Averaging Time**	**State Standard[8]**	**Federal Standard[9]**	**Principal Health and Atmospheric Effects**	**Typical Sources**	**SCAB Attainment Status**
Ozone (O_3)[2]	1 hour 8 hours	0.09 ppm 0.070 ppm	--- 0.070 ppm[4] (4th highest in 3 years)	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NO_X) in the presence of sunlight and heat. Major sources include motor vehicles and other mobile sources, solvent evaporation, and industrial and other combustion processes.	Federal: Extreme Nonattainment (8-hour) State: Nonattainment (1-hour and 8-hour)
Carbon Monoxide (CO)	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm[1] 6 ppm	35 ppm 9 ppm ---	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Federal: Attainment/ Maintenance State: Attainment
Respirable Particulate Matter (PM_{10})[2]	24 hours Annual	50 µg/m^3 20 µg/m^3	150 µg/m^3 ---[2] (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Federal: Attainment/ Maintenance State: Nonattainment
Fine Particulate Matter ($PM_{2.5}$)[2]	24 hours Annual Secondary Standard (annual)	--- 12 µg/m^3 ---	35 µg/m^3 12.0 µg/m^3 15 µg/m^3 (98th percentile over3 years)	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical (including	Federal: Nonattainment State: Nonattainment

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				range. Many toxic and other aerosol and solid compounds are part of $PM_{2.5}$.	photochemical) reactions involving other pollutants including NO_X, sulfur oxides (SO_X), ammonia, and ROG.	
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm 0.030 ppm	100 ppb[6] (98th percentile over 3 years) 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain. Part of the "NO_X" group of ozone precursors.	Motor vehicles and other mobile sources; refineries; industrial operations.	Federal: Attainment/ Maintenance State: Attainment
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual Arithmetic Mean	0.25 ppm --- 0.04 ppm ---	75 ppb[7] (99th percentile over 3 years) 0.5 ppm[9] 0.14 ppm 0.03 ppm	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	Federal: Attainment/ Unclassified State: Attainment/ Unclassified
Lead (Pb)[3]	Monthly Calendar Quarter Rolling 3-month average	1.5 $\mu g/m^3$ --- ---	--- 1.5 $\mu g/m^3$ 0.15 $\mu g/m^3$[10]	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from gasoline may exist in soils along major roads.	Federal: Nonattainment (Los Angeles County only) State: Nonattainment (Los Angeles County only)
Sulfate	24 hours	25 $\mu g/m^3$	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Federal: N/A State: Attainment/ Unclassified
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological	Industrial processes such as: refineries and oil fields, asphalt plants, livestock	Federal: N/A

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				damage and premature death. Headache, nausea.	operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	State: Attainment/ Unclassified
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70 percent	---	Reduces visibility. Produces haze. NOTE: not related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas.	See particulate matter above.	Federal: N/A State: Attainment/ Unclassified
Vinyl Chloride[3]	24 hours	0.01 ppm	---	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes	Federal: N/A State: Attainment/ Unclassified

Source 1: California Air Resources Board (ARB). Website: www.arb.ca.gov/research/aaqs/aaqs2.pdf (May 4, 2016).
Source 2: ARB, Area Designations. Website: http://www.arb.ca.gov/desig/desig.htm (accessed February 2018).

1 Rounding to an integer value is not allowed for the State 8-hour CO standard. Violation occurs at or above 9.05 ppm.

2 Annual PM_{10} NAAQS revoked October 2006; was 50 µg/m^3. 24-hour. $PM_{2.5}$ NAAQS tightened October 2006; was 65 µg/m^3. Annual $PM_{2.5}$ NAAQS tightened from 15 µg/m^3 to 12 µg/m^3 December 2012, and secondary standard set at 15 µg/m^3.

3 The ARB has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and the EPA have identified lead and various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There are no exposure criteria for substantial health effects due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

4 Prior to June 2005, the 1-hour NAAQS was 0.12 ppm. Emission budgets for 1-hour ozone are still in use in some areas where 8-hour ozone emission budgets have not been developed, such as the San Francisco Bay Area. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[5] The 0.08 ppm 1997 ozone standard is revoked FOR CONFORMITY PURPOSES ONLY when area designations for the 2008 0.75 ppm standard become effective for conformity use (July 20, 2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, SIP amendments for the newer NAAQS are approved with an emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the “Interim” period prior to availability of emission budgets, conformity tests may include some combination of build vs. no build, build vs. baseline, or compliance with prior emission budgets for the same pollutant.

[6] Final 1-hour NO_2 NAAQS published in the Federal Register on February 9, 2010, effective March 9, 2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot-spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause redesignation to nonattainment in some areas after 2016.

[7] The EPA finalized a 1-hour SO_2 standard of 75 ppb in June 2010. Nonattainment areas have not yet been designated as of September 2012.

[8] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[9] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[10] Lead NAAQS are not considered in Transportation Conformity analysis.

to attain and maintain State and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations that regulate stationary sources, area sources, point sources, and certain mobile source emissions. The SCAQMD is also responsible for establishing stationary source permitting requirements and for ensuring that new, modified, or relocated stationary sources do not create net emission increases.

AIR QUALITY MANAGEMENT PLAN

All areas designated as nonattainment under the CCAA are required to prepare plans showing how the area would meet the CAAQS by its attainment dates. The Air Quality Management Plan (AQMP) is the SCAQMD plan for improving regional air quality. It addresses CCAA requirements and demonstrates attainment with State and federal ambient air quality standards. The AQMP is prepared by SCAQMD and the Southern California Association of Governments (SCAG). The AQMP provides policies and control measures that reduce emissions to attain both State and federal ambient air quality standards by their applicable deadlines. Environmental review of individual projects within the SCAB must demonstrate that daily construction and operational emissions thresholds, as established by the SCAQMD, would not be exceeded. The environmental review must also demonstrate that individual projects would not increase the number or severity of existing air quality violations.

The 2016 Air Quality Management Plan was adopted by the SCAQMD Governing Board on March 3, 2017. It incorporates the latest scientific and technological information and planning assumptions, including the 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and updated emission inventory methodologies for various source categories. The 2016 AQMP includes the integrated strategies and measures needed to meet the NAAQS.

Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), HFC-23 (fluoroform), HFC-134a (1,1,1,2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles) make up the largest source of GHG-emitting sources. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are typically two terms used when discussing the impacts of climate change: “Greenhouse Gas Mitigation” and “Adaptation.” "Greenhouse Gas Mitigation" is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. “Adaptation" refers to the effort of planning for and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).

There are four primary strategies for reducing GHG emissions from transportation sources: 1) improving the transportation system and operational efficiencies, 2) reducing travel activity, 3) transitioning to lower GHG-emitting fuels, and 4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued cooperatively.

Greenhouse gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere (“atmospheric lifetime”). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of “CO_2 equivalents” (CO_2e). Table B shows the GWPs for each type of GHG. For example, SF_6 is 23,900 times more potent at contributing to global warming than CO_2.

Table B. Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Carbon Dioxide (CO_2)	50–200	1
Methane (CH_4)	12	21
Nitrous Oxide (N_2O)	114	310
HFC-23	270	11,700
HFC-134a	14	1,300
HFC-152a	1.4	140
PFC: Tetrafluoromethane (CF_4)	50,000	6,500
PFC: Hexafluoromethane (C_2F_6)	10,000	9,200
Sulfur Hexafluoride (SF_6)	3,200	23,900

Source: Intergovernmental Panel on Climate Change, 2007.

Significance Criteria

For the purposes of this air quality analysis, the Project would have an adverse effect on air quality or global climate change if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for O_3 precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Generate greenhouse gas emissions, either directly or indirectly, that may have an adverse effect on the environment; or
- Conflict with applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

SCAQMD Guidelines

Specific criteria for determining whether the potential air quality impacts of a project are significant are set forth in the SCAQMD's *CEQA Air Quality Handbook*. Table C lists the daily thresholds for construction and operational emissions that have been established by the SCAQMD and will be used in the analysis of air quality impacts for the proposed Project to determine significance.

Table C. SCAQMD Air Quality Thresholds of Significance

Pollutant	Construction (pounds/day)	Operation (pounds/day)
Oxides of Nitrogen (NO_X)	100	55
Volatile Organic Compounds (VOC)	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
Oxides of Sulfur (SO_X)	150	150
CO	550	550

Source: SCAQMD CEQA Air Quality Handbook, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook, accessed February 2018.

LOCALIZED SIGNIFICANCE THRESHOLDS

SCAQMD has developed localized significance threshold (LST) methodology and mass rate look-up tables by source receptor area (SRA) that can be used by public agencies to determine whether or not a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area. LSTs are derived based on the location of the activity (i.e., the SRA); the emission rates of NO_x, CO, $PM_{2.5}$, and PM_{10}; the size of the Project Study Area, and the distance to the nearest exposed individual. The Project Study Area is located within SRA No. 9 (East San Gabriel Valley). As discussed in the project description, the project site is approximately 0.91 acres. The closest sensitive land uses to the project site, where individuals are expected to occupy for at least one hour, are the outdoor athletic areas for the Mountain View Elementary School. The western edge of the athletic areas is located within 80 feet (25 meters) from the on-site activities. Table D lists the LST emission rates for a 1 acre site located within 25 meters of a sensitive use.

Table D. SCAQMD Localized Significance Thresholds

Pollutant	Construction (pounds/day)	Operation (pounds/day)
Oxides of Nitrogen (NO_X)	89	89
CO	623	623
PM_{10}	5	2
$PM_{2.5}$	3	1

Source: SCAQMD, 2018.

LOCAL CARBON MONOXIDE CONCENTRATIONS

The significance of localized project impacts under CEQA depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. If ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a State or federal standard, project emissions are considered significant if they increase 1-hour CO concentrations by 1.0 ppm or more or 8-hour CO concentrations by 0.45 ppm or more. The following are applicable local emission concentration standards for CO:

- California State 1-hour CO standard of 20.0 ppm
- California State 8-hour CO standard of 9.0 ppm

GREENHOUSE GAS EMISSION THRESHOLD

The SCAQMD's Interim Thresholds for commercial, residential, mixed use and industrial development projects are as follows:

- Industrial Projects – 10,000 metric tons (MT) of carbon monoxide equivalent (CO_2e) per year
- Residential, Commercial, and Mixed Use Projects (including parks, warehouses, etc.) 3,000 MT CO_2e per year

The Project is an industrial development. Therefore, for purposes of this analysis, both direct and indirect GHG emissions from the proposed Project are discussed in the context of the 10,000 MT threshold levels.

INCREMENTAL HEALTH RISK SIGNIFICANCE THRESHOLD

The SCAQMD CEQA Air Quality Handbook[1] lists significance thresholds for toxic air contaminants (TACs). TACs refer to a diverse group of air pollutants that are capable of causing chronic and acute adverse effects on human health. They include both organic and inorganic chemical substances that may be emitted from a variety of common sources including gasoline stations,

[1] http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook, Accessed February 2018.

motor vehicles, dry cleaners, and painting operations that may use substances such as ammonia, asbestos, benzene, cadmium, lead, and trichloroethylene. The SCAQMD's TAC thresholds are as follows:

- Maximum Incremental Cancer Risk ≥ 10 in 1 million
- Cancer Burden > 0.5 excess cancer cases
- Chronic & Acute Hazard Index ≥ 1.0

IMPACT ANALYSIS

Construction

Consolidated ready mix is currently in operation, utilizing existing on-site buildings. Minor site improvements are being considered to facilitate current operations; however, these are limited to small structural improvements and reconfiguration of parking and processing areas. No mass grading or extensive construction is required and therefore, is not analyzed as a component of this memorandum.

Operations

Long-term air pollutant emission impacts are those associated with stationary sources and mobile sources involving any Project-related changes. The proposed project would have potential long-term operational air quality impacts from on-site material handling, employee commutes, haul truck trips, and heavy equipment.

On-site Materials Handling (Fugitive Dust)

The on-site sources of fugitive dust include the aggregate delivery, sand delivery, aggregate transfer to the conveyor, sand delivery to the conveyor, aggregate transfer to elevated storage, sand transfer to elevated storage, cement delivery to the silo, hopper loading, truck mix loading, dust from the aggregate and sand piles, and road dust from the trucks and loader operating on-site. The emissions associated with each of these activities were calculated using the emissions published in Chapters 11 and 13 of the EPA AP-42: Compilation of Air Emission Factors.[1] Table E summarizes the peak daily and average annual fugitive dust emissions associated with the batch plant operations. The peak daily emissions were calculated using the maximum throughput of 125 yards of concrete produced per day and the annual emissions were calculated using the average daily production of 50 cubic yards of concrete per day, or 17,800 cubic yards per year.

The emissions listed in Table E assume that no dust control measures are in place other than the standard fabric filters. However, the conveyors are equipped with a misting system that would reduce the fugitive dust emissions by 62 percent and the storage piles are contained within a 3-sided enclosure that would reduce fugitive dust emissions by 75 percent[2]. Attachment B includes

[1] https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors, Accessed August 2018.

[2] http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies/fugitive-dust, accessed August 2018.

photos of the project site, including the storage pile enclosure. Table F lists the controlled on-site fugitive dust emissions.

Table E. Fugitive Dust Emissions - Uncontrolled		
Pollutant	**Peak Day (pounds/day)**	**Annual (pounds/year)**
PM_{10}	3.8	732
$PM_{2.5}$	2.3	375

Table F. Fugitive Dust Emissions – Controlled		
Pollutant	**Peak Day (pounds/day)**	**Annual (pounds/year)**
PM_{10}	1.8	410
$PM_{2.5}$	1.0	175

Mobile Source Emissions

The proposed project mobile source emissions are associated with the concrete truck deliveries, the dump truck trips, the employee commutes, and the on-site front-end loader and bobcat. Table G summarizes the daily mobile source emissions. The on-site emissions not include the tennant sweeper. However, due to its size and operating characteristics it would not be a substantial contributor to the emission levels.

Table G. Daily Mobile Source Emissions (lb/day)							
Source	**CO**	**NO_X**	**ROG**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e**
Truck Trips	0.97	10.01	0.25	0.030	0.26	0.14	3,137.5
Employee Commutes	0.015	0.42	0.022	0.001	0.002	0.002	65.3
Loader	0.018	0.025	0.47	0.001	0.002	0.002	74.0
Bobcat	0.015	0.179	0.008	0.000	0.001	0.001	23.5
Total	1.02	11.08	0.30	0.03	0.26	0.14	3,300.3

Total Operational Emissions

Table H lists all of the emissions generated by the ready mix facility. Table H also lists the SCAQMD's operation significance thresholds. As shown, the proposed project operational emissions would be below a level of significance.

Table H. Total Daily Emissions (lb/day)							
Source	CO	NO_X	ROG	SO_X	PM_{10}	$PM_{2.5}$	CO_2e
Mobile Source	1.02	11.08	0.30	0.03	0.26	0.14	3,300.3
Fugitive Dust					1.8	1.0	
Total	1.02	11.08	0.30	0.03	2.07	1.11	3,300.3
SCAQMD Significance Threshold	550	55	55	150	150	55	NA

Note: Fugitive dust emissions are after mitigation

Localized Significance Threshold Analysis

Table I shows the operational emissions of CO, NO_X, PM_{10}, and $PM_{2.5}$ compared to the localized significance thresholds (LSTs) for the East San Gabriel Valley area at a distance of 25 m. As required by the SCAQMD's LST Methodology (Final Localized Significance Threshold Methodology, July 2008), only the on-site emissions are included in Table I. Table I includes all of the on-site fugitive dust emission, the front-end loader emissions, and five percent of the on-road emissions. As shown, the calculated emissions rates for the proposed on-site operation activities would not exceed the LSTs.

Table I. Summary of On-Site Emissions, Localized Significance				
Source	Emission Rates (lb/day)			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Fugitive Dust	-	-	1.81	0.97
Off-road equipment	0.03	0.65	0.003	0.003
On-road vehicles	0.003	0.017	0.00	0.00
Total	**0.04**	**0.67**	**1.81**	**0.97**
SCAQMD Thresholds	**623**	**89**	**2**	**1**
Exceeds Daily SCAQMD Threshold?	**No**	**No**	**No**	**No**

Note: Fugitive dust emissions are after mitigation

Greenhouse Gas Emissions

The annual operation-related GHG emissions associated with the proposed project are presented in Table J. As shown, the annual GHG emissions would not exceed the SCAQMD's 10,000 MT threshold for industrial projects. Therefore, the proposed Project's impact to greenhouse gases and global climate change is considered less than significant.

Table J. Annual GHG Emissions (metric tons)	
Source	**CO_2e**
Truck Trips	506.6
Employee Commutes	10.5
Loader	12.0
Bobcat	3.8
Total	**532.9**
SCAQMD Threshold	**10,000**

Hazardous Air Pollutant Emissions

Concrete batch plants can be sources of TACs that can result in localized health effects. The TAC emissions associated with the on-site activities were calculated using the emissions published in Chapter 11 of the EPA AP-42: Compilation of Air Emission Factors.[1] Table K summarizes the peak daily and average annual TAC emissions associated with the batch plant operations. The emissions listed in Table K assume that no dust control measures are in place other than the standard fabric filters.

In addition to the hourly and annual TAC emissions, Table K lists the TAC screening emission levels established by the SCAQMD[2]. Although these levels have not been established as thresholds, the SCAQMD states that exceedance of these levels indicate that a screening level health risk assessment should be performed. As shown in Table K, the annual and hourly screening levels were not exceeded. However, when the pollutant screening indexes (PSI) from all of the pollutants are combined the resulting application screening index (ASI) is 1.34, exceeding the screening threshold of 1.0. Therefore, a human health risk assessment (HRA) was conducted to assess the risk associated with the on-site emissions. An HRA consists of three parts: (1) a TAC emissions inventory, (2) air dispersion modeling to evaluate off-site concentrations of TAC emissions, and (3) assessment of risks associated with predicted concentrations. The HRA was conducted using the guidelines provided by OEHHA for the Air Toxics Hot Spots Program and the HRA guidelines developed by the California Air Pollution Control Officers Association (CAPCOA).

As discussed above, the SCAQMD's TAC thresholds are as follows:

- Maximum Incremental Cancer Risk ≥ 10 in 1 million
- Chronic & Acute Hazard Index ≥ 1.0

[1] https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors, Accessed August 2018.
[2] http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1401/attachmentn_080717.pdf, Accessed August 2018.

Table K. Hazardous Air Pollutant Emissions (pounds)													
Scenario	Total Yards	Arsenic	Beryllium	Cadmium	Chlorine	Total Chromium	Chromium VI	Crystalline Silica	Lead	Manganese	Nickel	Phosphorus	Selenium
Annual Emissions	17,800	0.002	0.0003	0.00004	0.00002	0.011	0.00017	4.220	0.004	0.053	0.014	0.034	0.000
Screening Level		0.0027	0.038	0.021	43.2	NA	0.00039	NA	0.0666	8.755	0.3505	NA	22.10
Peak Hour	40	4.90E-6	7.21E-7	9.73E-8	4.60E-8	2.52E-5	3.78E-7	9.48E-3	9.52E-6	1.19E-4	3.07E-5	7.70E-5	7.42E-7
Screening Level		4.42E-5	NA	NA	4.64E-2	NA	NA	NA	NA	NA	4.42E-5	NA	NA

Notes:

1) Annual screening levels are calculated using the 75 meter distance to the Mountain View Elementary School buildings to the east of the project. The screening levels are interpolated from the 50 meter and 100 meter levels established by the SCAQMD.
2) Hourly screening levels are calculated using the 25 meter distance to the outdoor athletic areas for the Mountain View Elementary School.

Cancer risks are typically calculated for all carcinogenic TACs and summed to calculate the overall increase in cancer risk to an individual. The calculation procedure assumes that cancer risk is proportional to concentrations at any level of exposure and that risks from various TACs are additive. This is generally considered a conservative assumption at low doses and is consistent with the current OEHHA-recommended approach. Due to the long-term nature of health risks, the modeling used the average day emissions instead of the peak day emissions.

MODELING METHODOLOGY

The facility's dispersion was analyzed for the HRA directly within the Hotspots Analysis and Reporting Program (HARP) Air Dispersion Modeling and Risk Assessment Tool (ADMRT) software provided by the California Environmental Protection Agency Air Resources Board (CARB) (version 19044)[1]. The ADMRT software follows a three-step process to produce HRA results: 1) air dispersion modeling using USEPA's AERMOD dispersion model, 2) converting AERMOD results to Ground-Level Concentrations (GLC's), and 3) using GLC's to develop the Health Risk Analysis for selected pollutants.

For this analysis, AERMOD (version 18081) was setup and run directly in the ADMRT software. AERMOD View 9.6.5 (produced by Lakes Environmental) was used to produce the graphical layouts of the modeled information that appear later in this report.

All coordinates within the software are entered as World Geodetic System (WGS84) Universal Transversal Mercator (UTM) Zone 11 data. Preprocessed terrain data were obtained using the ADMRT, which includes a direct download menu for Digital Elevation Model (DEM) data in California[2]. Two areas were selected and downloaded into the ADMRT for processing using USEPA's AERMAP (version 18081) terrain processing tool: 1) Azusa, and 2) Baldwin Park.

Preprocessed meteorological data were obtained from SCAQMD[3] for the Azusa area. Data were processed by SCAQMD using USEPA's AERMET (version 16216) and USEPA's AERMINUTE (version 15272) where appropriate. The default ADJ_U* option was also incorporated into the production of the datasets. Surface data is from the Azusa CARB site (Station 3179) and upper air observation data is from KNKX-San Diego/Miramar (Station 3190), representing the years 2012 through 2016.

The urban dispersion option was selected, and the population of the Greater Los Angeles Metropolitan Statistical Area (MSA) was used to represent the surrounding area (total population 18,790,000).

Building downwash was considered for the building structures and the cement mix equipment at the site, and was calculated using the Building Profile Input Program Prime (BPIPPRM) within the ADMRT software.

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[1] https://www.arb.ca.gov/toxics/harp/harp.htm
[2] https://www.arb.ca.gov/toxics/harp/dems.htm
[3] http://www.aqmd.gov/home/air-quality/air-quality-data-studies/meteorological-data/aermod-table-1

Additional modeling inputs were developed in accordance with the Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (updated February 2015)[1] as described below.

Sources were placed at the facility, including point, area, and volume sources. One POINT source was used to characterize stack emissions from the cement mixing equipment. One AREA source was developed to represent emissions from the front-end loader and smaller bobcat loader moving back and forth between the material storage piles and the material hoppers on the cement mixing equipment. A line of VOLUME sources was used to represent emissions from truck traffic going to and from the cement mixer loadout area. Individual VOLUME sources were used to represent cement loadout from the mixer into the trucks, as well as material handling at the hopper drop points and the storage piles.

Impacts were modeled on both a 24-hour and annual average time period. Variable emissions scenarios were developed for each source based on actual facility operation. Cement truck traffic and cement mixing was limited to the hours of 6AM – 7PM weekdays, 6AM – 12PM Saturdays, and 7AM-10AM Sundays. Bobcat and loader traffic was also limited to three hours per day (9AM-12PM) every day of the week.

An initial receptor grid was established at ground level (h=0) to identify the location of the point of maximum impact (PMI) from the entire facility. The initial grid was developed in two tiers: 100 meter grid spacing from the facility out to a 2 km radius, and 1,000 meter grid spacing from a 2 km to 20 km radius. The PMI was identified along the facility fence line, and was added to a group of sensitive receptors that were placed in accordance with OEHHA's 2015 modeling guidance. Based on the guidance within the Air Toxics Hot Spots Program Guidance Manual, sensitive receptors were placed at a breathing height of 1.8 meters above ground level (AGL).

Sensitive receptors were placed for all five points below:

- The maximum estimated off-site impact or point of maximum impact (PMI)
- The maximum exposed individual at an existing residential receptor (MEIR)
- The maximum exposed individual at an existing occupational worker receptor (MEIW)
- The maximum exposed individual at a nearby school
- The maximum exposed individual at a nearby sports field

The results of the modeling demonstration were directly fed into the second step of the ADMRT software, which translates AERMOD outputs directly to GLC's. AERMOD is executed with a 1.0 g/s emission rate for all sources to create a generalized dispersion field for each source. This general dispersion field is then subject to an emission factor for each pollutant, developed within the ADMRT software's Emission Inventory table. Emissions were calculated separately and added to the software on a source-by-source basis. The complete emission inventory input is attached in the Project Report Summary file in Attachment C. The emission calculation spreadsheets are also included in Attachment A.

[1] https://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0

The final step in the ADMRT software is the risk analysis calculation. Cancer, Chronic, and Acute analyses were selected, with Individual Resident receptor type over the default Tier 1 30-year exposure duration, and the OEHHA Derived Method was selected to develop the intake rate percentile. From the ADMRT software documentation[1]:

> **OEHHA Derived Method** – In cancer risk assessments, the derived method uses the high-end point estimate (i.e., 95th percentile) for the two driving (dominant) exposure pathways (e.g., soil and breast milk) and the mean (65th percentile) point estimate for the remaining pathways. In non-cancer chronic assessments, the inhalation pathway is always considered a driving pathway, the next two risk driving pathways will use the 95th percentile, and the remaining pathways will use the mean intake rate.

The ADMRT includes a default to analyze the default mandatory minimum pathways, including Inhalation, Soil, Dermal, and Mother's Milk. The default deposition rate for noninhalation pathways of 0.05 m/s for uncontrolled sources was also selected.

A fraction of time at home adjustment factor was applied to age bins greater than or equal to 16 years. Age bins less than 16 years were assumed to have 100% residence time due to the proximity of the school to the facility. Default breathing rate percentiles and exposure frequencies were assessed, and there were no adjustments to age sensitivity factors from the default settings included in the ADMRT.

MODEL RESULTS

Table L identifies the total cancer risks and chronic and acute hazard indexes, from all of the hazardous pollutant emissions listed in Table K, at the closest land uses to the project site. The fence line receptor represents the location with the maximum impact. Figure 1 shows the locations of the sensitive receptors relative to the project site. As shown, the peak cancer risks during construction would be less than the threshold of 10 in 1 million. In addition, the chronic and acute hazard indexes would be less than the threshold of 1.0. Therefore, the project operation would not expose sensitive receptors to substantial pollutant concentrations.

Table L. Modeled Cancer Risks and Chronic and Acute Hazard Indexes

Receptor	Cancer Risks (per million)	Chronic Hazard Index	Acute Hazard Index
School	0.26	0.01	0.00
Worksite	2.95	0.10	0.01
Sports field	6.29	0.17	0.02
Resident	0.61	0.02	0.00
Fence line	8.52	0.25	0.03
Threshold	**10**	**1.0**	**1.0**

[1] https://www.arb.ca.gov/toxics/harp/docs2/harp2admrtuserguide.pdf

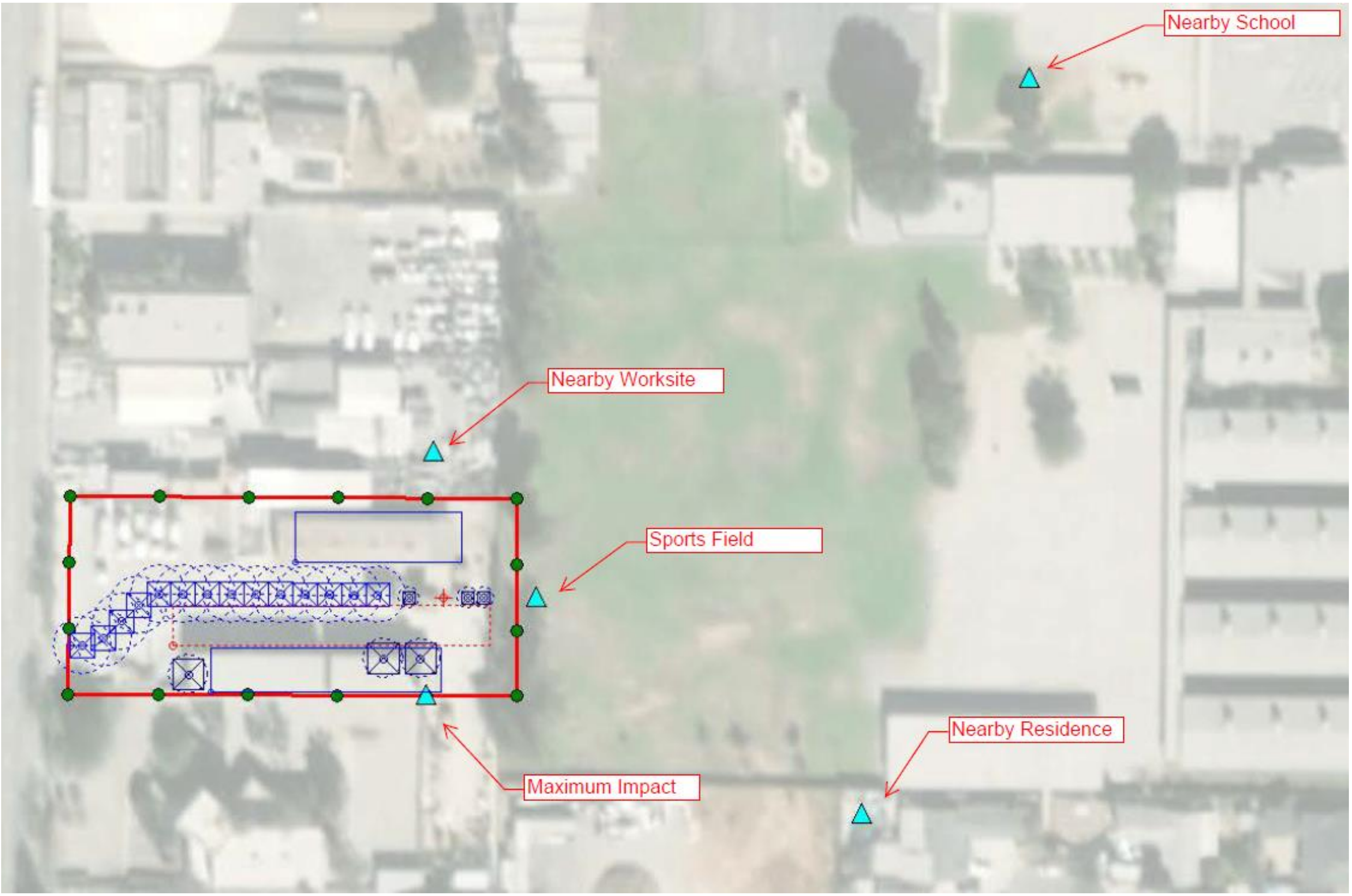

Figure 1: Modeled Receptor Locations

AQMP Consistency
An AQMP describes air pollution control strategies to be taken by counties or regions classified as nonattainment areas. The AQMP's main purpose is to bring the area into compliance with the requirements of Federal and State air quality standards. The AQMP uses the assumptions and projections by local planning agencies to determine control strategies for regional compliance status. Therefore, any projects causing a significant impact on air quality would impede the progress of the AQMP.

Air quality models are used to demonstrate that the Project's emissions will not contribute to the deterioration or impede the progress of air quality goals stated in the local AQMPs. The air quality models use project-specific data to estimate the quantity of pollutants generated from the implementation of a project.

As identified in Tables H and I, the proposed Project would not substantially contribute to or cause deterioration of existing air quality; therefore, mitigation measures are not required for the long-term operation of the Project. Hence, the proposed Project is considered consistent with the objectives of the AQMP and would not affect implementation of the AQMP.

Odor Impacts
The SCAQMD lists land uses primarily associated with odor complaints as waste transfer and recycling stations, wastewater treatment plants, landfills, composting operations, petroleum operations, food and byproduct processes, factories, and agricultural activities, such as livestock operations. The proposed project does not include any of these land uses.

Attachment A

Operational Emission Calculations

Attachment B

Site Photos

Attachment C

Health Risk Assessment