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ALLIANCE CALIFORNIA GATEWAY SOUTH BUILDING 3
GREENHOUSE GAS ANALYSIS
CITY OF SAN BERNARDINO, CALIFORNIA

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1.0 INTRODUCTION

This report presents the results of the greenhouse gas analysis (GHGA) for the proposed Alliance California Gateway South Building 3 (Project) generally located at the southeast corner of Waterman Avenue and Orange Show Road in the City of San Bernardino as shown on Exhibit 1-1.

The purpose of this GHGA is to evaluate Project-related construction and operational emissions and determine the level of greenhouse gas (GHG) impacts as a result of constructing and operating the proposed Project. This GHGA quantifies the GHG emissions associated with the Project for two scenarios: first, as if no actions to reduce emissions were taken as compared to the assumptions used in preparing the baseline 2020 emissions for the California Air Resources Board Scoping Plan (referred to herein as "Business as Usual") to implement Assembly Bill (AB) 32, and second as designed with applicable design features.

1.1 PROJECT OVERVIEW

The Project is proposed to consist of approximately 1,199,360 square feet of high-cube distribution warehouse use within a single building. It is assumed that the Project will be constructed and occupied by 2015.

1.2 EXISTING PROJECT SITE GREENHOUSE GAS EMISSIONS

The Project site is currently vacant, and therefore does not generate quantifiable GHG emissions.

1.3 SUMMARY OF FINDINGS

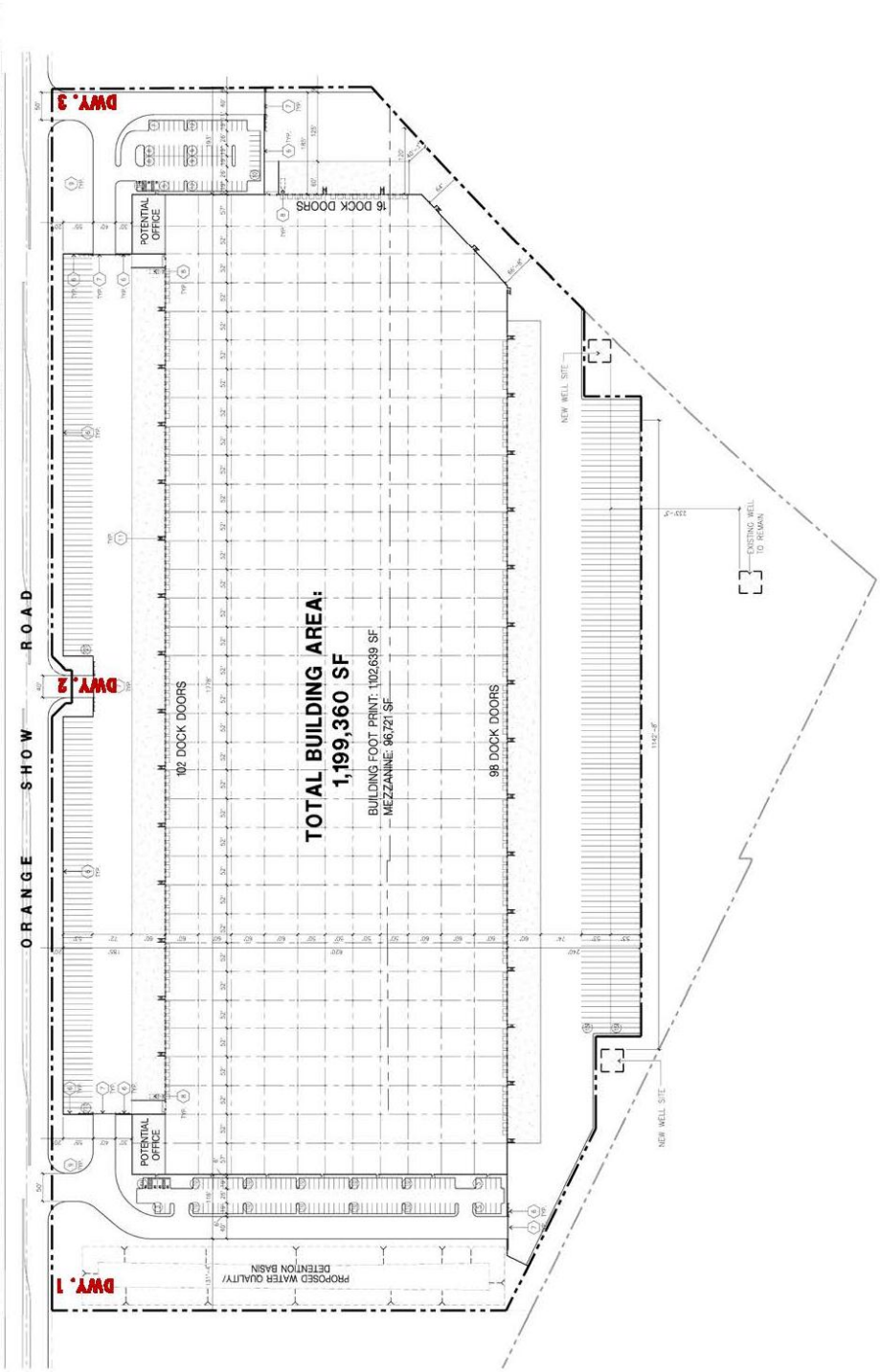
Impact GHG-1: The Project would generate direct or indirect greenhouse gas emissions that would result in a significant impact on the environment.

To date, the South Coast Air Quality Management District (SCAQMD) and CARB have not established significance thresholds for GHG emissions under the California Environmental Quality Act (CEQA)[1] or a methodology for quantifying GHG emissions. To evaluate the Project's GHG emissions the proposed Project's emissions are compared with a "Business as Usual"

[1] SCAQMD has adopted interim significance thresholds for industrial sources of 10,000 metric tons of carbon dioxide equivalents per year. The Board adopted these December 5, 2008. This threshold however was adopted by SCAQMD for projects where it is the lead agency.

EXHIBIT 1-1

SITE PLAN



scenario to determine if the development is likely to be consistent with the Scoping Plan designed to implement AB 32 in California which calls for an approximate 28.5% reduction from "Business as Usual[2]".

The total amount of Project-related GHG emissions for BAU without accounting for any project design features or regulatory developments that would reduce GHG emissions from direct and indirect sources combined would total 11,708.55 MTCO2e.The total amount of Project-related GHG emissions when accounting for applicable regulatory developments, project design features, and mitigation measures that would reduce GHG emissions from direct and indirect sources combined would total 8,297.48 MMTCO2e. This results in a 29.13% reduction from BAU, thus with implementation of the Project's design features and regulatory developments, the Project's GHG reduction would exceed the AB 32 reduction target of 28.5% and a less than significant impact would occur.

An individual project like the proposed Project evaluated in this GHGA cannot generate enough greenhouse gas emissions to effect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of greenhouse gasses combined with the cumulative increase of all other sources of greenhouse gases, which when taken together constitute potential influences on GCC. Therefore, using the numeric threshold identified above, the Project would result in less than significant cumulative impacts on global climate change.

As shown in Table 1-1, the Project's GHG emissions result in an emissions reduction of 29.13% when compared to the BAU scenario which would exceed the AB 32 reduction target of 28.5% and a less than significant impact would occur.

TABLE 1-1

SUMMARY OF GHG EMISSIONS BAU/PROJECT

Category	CO2e Emissions	
	BAU	Project
	Metric Tons per Year	
Construction	47.38	47.38
Area	0.03	0.03
Energy	1,257.33	895.36
Mobile Source	9,604.12	6,907.39
Solid Waste	512.87	256.44
Water Usage	334.21	238.26
Total	11,708.55	8,297.48
Project Improvement over BAU	29.13%	

[2] BAU is defined as analysis year 2005 which represents conditions absent the adoption of AB 32.

Impact GHG-2: The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

As discussed in Section 3.6 of this report, the Project will not conflict with any applicable plan, policy, or regulation adopted to reduce greenhouse gases and a less than significant impact will occur with respect to this threshold.

1.4 REQUIREMENTS

The Project would be required to comply with all mandatory regulatory requirements imposed by the State of California and the South Coast Air Quality Management District aimed at the reduction of air quality emissions. Those that are applicable to the Project and that would assist in the reduction of greenhouse gas emissions include: are:

- Global Warming Solutions Act of 2006 (AB32)
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (SB 375)
- Pavely Fuel Efficiency Standards (AB1493). Establishes fuel efficiency ratings for new vehicles.
- Title 24 California Code of Regulations (California Building Code). Establishes energy efficiency requirements for new construction.
- Title 20 California Code of Regulations (Appliance Energy Efficiency Standards). Establishes energy efficiency requirements for appliances.
- Title 17 California Code of Regulations (Low Carbon Fuel Standard). Requires carbon content of fuel sold in California to be 10% less by 2020.
- California Water Conservation in Landscaping Act of 2006 (AB1881). Requires local agencies to adopt the Department of Water Resources updated Water Efficient Landscape Ordinance or equivalent by January 1, 2010 to ensure efficient landscapes in new development and reduced water waste in existing landscapes.
- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions.
- Renewable Portfolio Standards (SB 1078). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 percent by 2010 and 33 percent by 2020.

Although the Project results in a less than significant impact for Greenhouse Gas Emissions as evaluated herein, the following mitigation measures will be implemented since they are required to reduce criteria pollutant air quality emissions.

1.5 CONSTRUCTION ACTIVITY MITIGATION MEASURES

MM AQ-3

Only "Zero-Volatile Organic Compounds" paints (no more than 125 gram/liter of VOC) and/or High Pressure Low Volume (HPLV) applications consistent with South Coast Air Quality Management District Rule 1113 shall be used.

MM AQ-4

During construction activity, all off-road diesel construction equipment (≥ 100 horsepower) shall be California Air Resources Board (CARB) Tier 3 Certified or better.

MM AQ-5

During construction activity, the operating time of all pieces of off-road diesel powered equipment shall not exceed a combined total of 147 operating hours per day.

MM AQ-6

During site grading, no more than five (5) acres (surface area) of land or its topsoil shall be actively disturbed on any given day. This includes, but is not limited to: surface area disturbance to clear, excavate, or level the land or to deposit any stockpiled material to fill or cover the land.

1.6 OPERATIONAL ACTIVITY MITIGATION MEASURES

MM AQ-7

The truck access gates and loading docks within the truck court on the Project site shall be posted with signs which state:

- **a)** Truck drivers shall turn off engines when not in use;
- **b)** Diesel trucks servicing the Project shall not idle for more than five (5) minutes[3]; and
- **c)** Telephone numbers of the building facilities manager and the CARB to report violations.

MM AQ-8

In order to reduce Project-related air pollutant and greenhouse gas (GHG) emissions, and promote sustainability through conservation of energy and other natural resources, building and site plan designs shall ensure that the Project energy efficiencies surpass (exceed) applicable (2008) California

[3] While restricted idling is required per MM AQ-5, the analysis presented here takes no quantified credit or reduction in emissions for restricted idling, and reflects an assumed 15-minute "worst case" idling condition.

Title 24 Energy Efficiency Standards by a minimum of 20 percent. Verification of increased energy efficiencies shall be shall be documented in Title 24 Compliance Reports provided by the Applicant, and reviewed and approved by the City prior to the issuance of the first building permit. Example of measures that reduce energy consumption include, but are not limited to, the following (it being understood that the items listed below are not all required and merely present examples; the list is not all-inclusive and other features that reduce energy consumption also are acceptable):

a) Increase in insulation such that heat transfer and thermal bridging is minimized;

b) Limit air leakage through the structure and/or within the heating and cooling distribution system;

c) Use of energy-efficient space heating and cooling equipment;

d) Installation of electrical hook-ups at loading dock areas;

e) Installation of dual-paned or other energy efficient windows;

f) Use of interior and exterior energy efficient lighting that exceeds the 2008 California Title 24 Energy Efficiency performance standards;

g) Installation of automatic devices to turn off lights where they are not needed;

h) Application of a paint and surface color palette that emphasizes light and off-white colors that reflect heat away from buildings;

i) Design of buildings with "cool roofs" using products certified by the Cool Roof Rating Council, and/or exposed roof surfaces using light and off-white colors;

j) Design of buildings to accommodate photo-voltaic solar electricity systems or the installation of photo-voltaic solar electricity systems;

k) Installation of ENERGY STAR-qualified energy-efficient appliances, heating and cooling systems, office equipment, and/or lighting products; and/or

MM AQ-9

To reduce energy demand associated with potable water conveyance, the Project shall implement the following:

- Landscaping palette emphasizing drought tolerant plants;
- Use of water-efficient irrigation techniques;
- U.S. EPA Certified WaterSense labeled or equivalent faucets, high-efficiency toilets (HETs), and water-conserving shower heads.

MM AQ-10

The Project will reduce vehicle miles traveled and emissions associated with trucks and vehicles by implementing the following measures:

- Pedestrian and bicycle connections shall be provided to surrounding areas consistent with the City's General Plan.

- Implement a voluntary trip reduction program, for which all employees shall be eligible to participate.
- Implement a voluntary ride sharing program, for which all employees shall be eligible to participate.

2.0 BACKGROUND

2.1 INTRODUCTION TO GLOBAL CLIMATE CHANGE

Global Climate Change (GCC) is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. GCC is currently one of the most controversial environmental issues in the United States, and much debate exists within the scientific community about whether or not GCC is occurring naturally or as a result of human activity. Some data suggests that GCC has occurred in the past over the course of thousands or millions of years. These historical changes to the Earth's climate have occurred naturally without human influence, as in the case of an ice age. However, many scientists believe that the climate shift taking place since the industrial revolution (1900) is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of greenhouse gases in the earth's atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. Many scientists believe that this increased rate of climate change is the result of greenhouse gases resulting from human activity and industrialization over the past 200 years.

An individual project like the proposed Project evaluated in this GHGA cannot generate enough greenhouse gas emissions to effect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of greenhouse gasses combined with the cumulative increase of all other sources of greenhouse gases, which when taken together constitute potential influences on GCC. Section 3.0 will evaluate the potential for the proposed Project to have an effect upon the environment as a result of its potential contribution to the greenhouse effect.

2.2 GREENHOUSE GAS EMISSIONS INVENTORIES

Global

Worldwide anthropogenic (man-made) GHG emissions are tracked by the Intergovernmental Panel on Climate Change for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Man-made GHG emissions data for Annex I nations are available through 2011. For the Year 2011 the sum of these emissions totaled approximately 25,285,543 Gg CO2e.[4] The GHG emissions in more recent years may differ from the inventories presented in Table 2-1; however, the data is representative of currently available inventory data.

[4] The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2005 data, the UNFCCC data for the most recent year were used. United Nations Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF," http://unfccc.int/ghg_emissions_data/ghg_data_from_unfccc/time_series_annex_i/items/3841.php and "Flexible GHG Data Queries" with selections for total GHG emissions excluding LULUCF/LUCF, all years, and non-Annex I countries, http://unfccc.int/di/FlexibleQueries/Event.do?event= showProjection. n.d.

United States

As noted in Table 2-1, the United States, as a single country, was the number two producer of GHG emissions in 2011. The primary greenhouse gas emitted by human activities in the United States was CO_2, representing approximately 83 percent of total greenhouse gas emissions.[5] Carbon dioxide from fossil fuel combustion, the largest source of US greenhouse gas emissions, accounted for approximately 78 percent of the GHG emissions.[6]

TABLE 2-1

TOP GHG PRODUCER COUNTRIES AND THE EUROPEAN UNION[7]

Emitting Countries	GHG Emissions (Gg CO2e)
China	8,715,307
United States	6,665,700
European Union (27 member countries)	4,550,212
Russian Federation	2,320,834
India	1,725,762
Japan	1,307,728
Total	**25,285,543**

State of California

CARB compiles GHG inventories for the State of California. Based upon the 2008 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2008 greenhouse gas emissions inventory, California emitted 474 MMTCO2e ***including*** emissions resulting from imported electrical power in 2008.[8] Based on the CARB inventory data and GHG inventories compiled by the World Resources Institute[9], California's total statewide GHG emissions rank second in the United States (Texas is number one) with emissions of 417 MMTCO2e ***excluding*** emissions related to imported power.

2.3 GLOBAL CLIMATE CHANGE DEFINED

Global Climate Change (GCC) refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO_2 (Carbon Dioxide), N_2O (Nitrous

[5] US Environmental Protection Agency, "Inventory of US Greenhouse Gas Emissions and Sinks 1990–20011," http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2013-Main-Text.pdf 2011.
[6] *ibid*
[7] Used http://unfccc.int data for Annex I countries. Consulted the http://www.eia.gov site to reference Non-Annex I countries such as China and India.
[8] California Air Resources Board, "California Greenhouse Gas 2000-2008 Inventory by Scoping Plan Category - Summary," http://www.arb.ca.gov/cc/inventory/data/data.htm. 2010.
[9] World Resources Institute, " Climate Analysis Indicator Tool (CAIT)-US – Yearly Emissions Inventory," http://cait.wri.org

Oxide), CH_4 (Methane), hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the Earth's atmosphere, but prevent radioactive heat from escaping, thus warming the Earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages. According to the California Air Resources Board (CARB), the climate change since the industrial revolution differs from previous climate changes in both rate and magnitude (CARB, 2004, Technical Support document for Staff Proposal Regarding Reduction of Greenhouse Gas Emissions from Motor Vehicles).

Gases that trap heat in the atmosphere are often referred to as greenhouse gases. Greenhouse gases are released into the atmosphere by both natural and anthropogenic (human) activity. Without the natural greenhouse gas effect, the Earth's average temperature would be approximately 61° Fahrenheit (F) cooler than it is currently. The cumulative accumulation of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

Although California's rate of growth of greenhouse gas emissions is slowing, the state is still a substantial contributor to the U.S. emissions inventory total. In 2004, California is estimated to have produced 492 million gross metric tons of carbon dioxide equivalent (CO_2e) greenhouse gas emissions. Despite a population increase of 16 percent between 1990 and 2004, California has significantly slowed the rate of growth of greenhouse gas emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls.[10]

2.4 GREENHOUSE GASES

For the purposes of this analysis, emissions of carbon dioxide, methane, and nitrous oxide were evaluated (see Table 3-4 later in this report) because these gasses are the primary contributors to GCC from development projects. Although other substances such as fluorinated gases also contribute to GCC, sources of fluorinated gases are not well defined and no accepted emissions factors or methodology exist to accurately calculate these gases.

Greenhouse gases have varying global warming potential (GWP) values; GWP values represent the potential of a gas to trap heat in the atmosphere. Carbon dioxide is utilized as the reference gas for GWP, and thus has a GWP of 1.

The atmospheric lifetime and GWP of selected greenhouse gases are summarized in the following Table. As shown in the table below, GWP range from 1 for carbon dioxide to 23,900 for sulfur hexafluoride.

[10] California Energy Commission, "Inventory of California Greenhouse Gas Emissions and Sinks," http://www.energy.ca.gov/2005publications/CEC-600-2005-025/CEC-600-2005-025.PDF. 2005.

TABLE 2-2 GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIME OF SELECT GHGS		
Gas	**Atmospheric Lifetime (years)**	**Global Warming Potential (100 year time horizon)**
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Tetrafluoromethane (CH_4)	50,000	6,500
PFC: Hexafluoroethane (C_2F_6)	10,000	9,200
Sulfur Hexafluoride (SF_6)	3,200	23,900
Source: EPA 2006 (URL: http://www.epa.gov/nonco2/econ-inv/table.html)		

Water Vapor: Water vapor (H_20) is the most abundant, important, and variable greenhouse gas in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. A climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is critically important to projecting future climate change.

As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there are also dynamics that hold the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up).

There are no human health effects from water vapor itself; however, when some pollutants come in contact with water vapor, they can dissolve and the water vapor can then act as a pollutant-carrying agent. The main source of water vapor is evaporation from the oceans (approximately 85 percent).[11]

[11] ibid.

Other sources include: evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.

Carbon Dioxide: Carbon dioxide (CO_2) is an odorless and colorless GHG. Outdoor levels of carbon dioxide are not high enough to result in negative health effects. Carbon dioxide is emitted from natural and manmade sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include: the burning of coal, oil, natural gas, and wood. Carbon dioxide is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks[12].

Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO_2 concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30 percent. Left unchecked, the concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources.[13]

Methane: Methane (CH_4) is an extremely effective absorber of radiation, though its atmospheric concentration is less than carbon dioxide and its lifetime in the atmosphere is brief (10-12 years), compared to other GHGs. No health effects are known to occur from exposure to methane.

Methane has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric sources include fossil-fuel combustion and biomass burning. [14]

Nitrous Oxide: Nitrous oxide (N_2O), also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage)[15].

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[12] On a warmer Earth, chemical weathering is promoted by more vigorous cycling of water through the atmosphere and higher temperatures. "More chemical weathering removes more CO2 from the atmosphere as carbonic acid reacts with silicate minerals, producing bicarbonate ion." *Carbon Cycle and Climate Change* – J Bret Bennington, Hofstra University. http://www.cengage.com/custom/enrichment_modules/data/Carbon_Cycle_0495738557_LowRes.pdf

[13] International Panel on Climate Change 2007, "Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report," http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg1_report_the_physical_science_basis.htm

[14] ibid.

[15] U.S. Department of Labor. Occupational Safety and Health Guideline for Nitrous Oxide. http://www.osha.gov/SLTC/healthguidelines/nitrousoxide/recognition.html

Concentrations of nitrous oxide also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb).[16] Nitrous oxide is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. Nitrous oxide can be transported into the stratosphere, be deposited on the Earth's surface, and be converted to other compounds by chemical reaction

Chlorofluorocarbons: Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the Earth's surface). CFCs are no longer being used; therefore, it is not likely that health effects would be experienced. Nonetheless, in confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.

CFCs have no natural source, but were first synthesized in 1928. They were used for refrigerants, aerosol propellants and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons: Hydrofluorocarbons (HFCs) are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the greenhouse gases, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF_3), HFC-134a (CF_3CH_2F), and HFC-152a (CH_3CHF_2). Prior to 1990, the only significant emissions were of HFC-23. HFC-134a emissions are increasing due to its use as a refrigerant. The U.S. EPA estimates that concentrations of HFC-23 and HFC-134a are now about 10 parts per trillion (ppt) each; and that concentrations of HFC-152a are about 1 ppt.[17] No health effects are known to result from exposure to HFCs, which are manmade for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons: Perfluorocarbons (PFCs) have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above Earth's surface, are able to destroy the compounds. Because of this, PFCs have

[16] ibid.
[17] U.S. EPA. High Global Warming Potential (GWP) Gases. http://www.epa.gov/highgwp/scientific.html

very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). The U.S. EPA estimates that concentrations of CF_4 in the atmosphere are over 70 ppt.[18]

No health effects are known to result from exposure to PFCs. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur Hexafluoride: Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas evaluated (23,900). The U.S. EPA indicates that concentrations in the 1990s were about 4 ppt.[19] In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.

Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

2.5 ENVIRONMENTAL EFFECTS OF CLIMATE CHANGE IN CALIFORNIA

The California Environmental Protection Agency (CalEPA) published a report titled "Scenarios of Climate Change in California: An Overview" (Climate Scenarios report) in February 2006 (California Climate Change Center 2006), that while not adequate for a CEQA project-specific or cumulative analysis, is generally instructive about the statewide impacts of global warming.

The Climate Scenarios report uses a range of emissions scenarios developed by the Intergovernmental Panel on Climate Change (IPCC) to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21st century: lower warming range (3.0-5.5^{o}F); medium warming range (5.5-8.0^{o}F); and higher warming range (8.0-10.5^{o}F). The Climate Scenarios report then presents an analysis of future climate in California under each warming range, that while uncertain, present a picture of the impacts of global climate change trends in California.

In addition, most recently on August 5, 2009, the State's Natural Resources Agency released a public review draft of its "California Climate Adaptation Strategy" report that details many vulnerabilities arising from climate change with respect to matters such as temperature extremes, sea level rise, wildfires, floods and droughts and precipitation changes. This report responds to the Governor's Executive Order S-13-2008 that called on state agencies to develop California's strategy to identify and prepare for expected climate impacts

According to the reports, substantial temperature increases arising from increased GHG emissions potentially could result in a variety of impacts to the people, economy, and environment of California

[18] ibid.
[19] ibid.

associated with a projected increase in extreme conditions, with the severity of the impacts depending upon actual future emissions of GHGs and associated warming. Under the emissions scenarios of the Climate Scenarios report, the impacts of global warming in California have the potential to include, but are not limited to, the following areas:

Air Quality/General Thermal Effects

According to Cal EPA, higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35 percent under the lower warming range to 75 to 85 percent under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become difficult to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming range scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

Water Resources

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

Agriculture

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25 percent of the water supply they need. Although higher CO_2 levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate O_3 pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts.

In addition, continued global climate change could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued global climate change could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

Forests and Landscapes

Global climate change has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. In contrast, wildfires in northern California could increase by up to 90 percent due to decreased precipitation.

Moreover, continued global climate change has the potential to alter natural ecosystems and biological diversity within the state. For example, alpine and subalpine ecosystems could decline by as much as

60 to 80 percent by the end of the century as a result of increasing temperatures. The productivity of the state's forests has the potential to decrease as a result of global climate change.

Rising Sea Levels

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the state's coastal regions. Under the higher warming range scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

2.6 HUMAN HEALTH EFFECTS OF GHG EMISSIONS

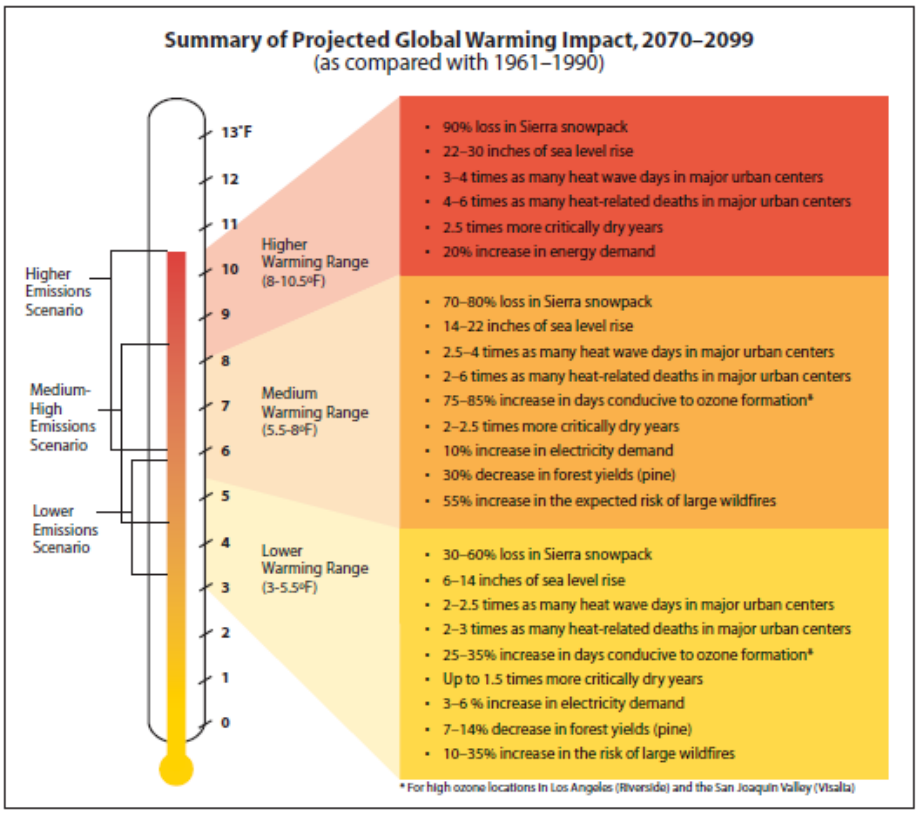
The potential health effects related directly to the emissions of carbon dioxide, methane, and nitrous oxide as they relate to development projects such as the proposed Project are still being debated in the scientific community. Their cumulative effects to global climate change have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (American Lung Association, 2004). Figure 1 presents the potential impacts of global warming.

Specific health effects associated with directly emitted GHG emissions are as follows:

Water Vapor: There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.

Carbon Dioxide: According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of carbon dioxide can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of carbon dioxide in the earth's atmosphere are estimated to be approximately 370 parts per million

Figure 1



Source: California Energy Commission, 2006. Our Changing Climate, Assessing the Risks to California, 2006 Biennial Report.

(ppm), the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000 ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000 ppm averaged over a 15 minute period (NIOSH 2005).

Methane: Methane is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Methane is also an asphyxiant and may displace oxygen in an enclosed space (OSHA 2003).

Nitrous Oxide: Nitrous Oxide is often referred to as laughing gas; it is a colorless greenhouse gas. The health effects associated with exposure to elevated concentrations of nitrous oxide include dizziness, euphoria, slight hallucinations, and in extreme cases of elevated concentrations nitrous oxide can also cause brain damage (OSHA 1999).

Fluorinated Gases: High concentrations of fluorinated gases can also result in adverse health effects such as asphyxiation, dizziness, headache, cardiovascular disease, cardiac disorders, and in extreme cases, increased mortality (NIOSH 1989, 1997).

Aerosols: The health effects of aerosols are similar to that of other fine particulate matter. Thus aerosols can cause elevated respiratory and cardiovascular diseases as well as increased mortality (NASA 2002).

2.7 REGULATORY SETTING

International Regulation and the Kyoto Protocol:

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling greenhouse gas emissions. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The Plan currently consists of more than 50 voluntary programs for member nations to adopt.

The Kyoto protocol is a treaty made under the UNFCCC and was the first international agreement to regulate GHG emissions. Some have estimated that if the commitments outlined in the Kyoto protocol are met, global GHG emissions could be reduced an estimated five percent from 1990 levels during the first commitment period of 2008-2012. Notably, while the United States is a signatory to the Kyoto protocol, Congress has not ratified the Protocol and the United States is not bound by the Protocol's commitments. In December 2009, international leaders from 192 nations met in Copenhagen to address the future of international climate change commitments post-Kyoto.

Federal Regulation and the Clean Air Act:

Coinciding 2009 meeting in Copenhagen, on December 7, 2009, the U.S. Environmental Protection Agency (EPA) issued an Endangerment Finding under Section 202(a) of the Clean Air Act, opening the door to federal regulation of GHGs. The Endangerment Finding notes that GHGs threaten public health and welfare and are subject to regulation under the Clean Air Act. To date, the EPA has not promulgated regulations on GHG emissions, but it has already begun to develop them.

Previously the EPA had not regulated GHGs under the Clean Air Act because it asserted that the Act did not authorize it to issue mandatory regulations to address global climate change and that such regulation would be unwise without an unequivocally established causal link between GHGs and the increase in global surface air temperatures. In *Massachusetts v. Environmental Protection Agency et al.* (127 S. Ct. 1438 (2007), however, the U.S. Supreme Court held that GHGs are pollutants under the Clean Air Act and directed the EPA to decide whether the gases endangered public health or welfare. The EPA had also not moved aggressively to regulate GHGs because it expected Congress to make progress on GHG legislation, primarily from the standpoint of a cap-and-trade system. However, proposals circulated in both the House of Representative and Senate have been controversial and it

may be some time before the U.S. Congress adopts major climate change legislation. The EPA's Endangerment Finding paves the way for federal regulation of GHGs with or without Congress.

Although global climate change did not become an international concern until the 1980s, efforts to reduce energy consumption began in California in response to the oil crisis in the 1970s, resulting in the incidental reduction of greenhouse gas emissions. In order to manage the state's energy needs and promote energy efficiency, AB 1575 created the California Energy Commission (CEC) in 1975.

Title 24 Energy Standards:

The California Energy Commission (CEC) first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods. The latest revisions were adopted in 2008 and became effective on January 1, 2010.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CALGreen Code). The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality."[20] The CALGreen Code is not intended to substitute or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission (CBSC). The CBSC has released the *2010 California Green Building Standards Code* on its Web site.[21] Unless otherwise noted in the regulation, all newly constructed buildings in California are subject of the requirements of the CALGreen Code.

California Assembly Bill No. 1493 (AB 1493):

AB 1493 requires CARB to develop and adopt the nation's first greenhouse gas emission standards for automobiles. The Legislature declared in AB 1493 that global warming was a matter of increasing concern for public health and environment in California. Further, the legislature stated that technological solutions to reduce greenhouse gas emissions would stimulate the California economy and provide jobs.

[20] California Building Standards Commission, 2008 California Green Building Standards Code, (2009).
[21] "CALGreen," http://www.bsc.ca.gov/CALGreen/default.htm. 2010

To meet the requirements of AB 1493, ARB approved amendments to the California Code of Regulations (CCR) adding GHG emission standards to California's existing motor vehicle emission standards in 2004. Amendments to CCR Title 13 Sections 1900 (CCR 13 1900) and 1961 (CCR 13 1961) and adoption of Section 1961.1 (CCR 13 1961.1) require automobile manufacturers to meet fleet average GHG emission limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes beginning with the 2009 model year. Emission limits are further reduced each model year through 2016.

In December 2004 a group of car dealerships, automobile manufacturers, and trade groups representing automobile manufacturers filed suit against ARB to prevent enforcement of CCR 13 1900 and CCR 13 1961 as amended by AB 1493 and CCR 13 1961.1 (*Central Valley Chrysler-Jeep et al. v. Catherine E. Witherspoon*, in her official capacity as Executive Director of the California Air Resources Board, et al.). The suit, heard in the U.S. District Court for the Eastern District of California, contended that California's implementation of regulations that in effect regulate vehicle fuel economy violates various federal laws, regulations, and policies. In January 2007, the judge hearing the case accepted a request from the State Attorney General's office that the trial be postponed until a decision is reached by the U.S. Supreme Court on a separate case addressing GHGs. In the Supreme Court Case, *Massachusetts vs. EPA*, the primary issue in question is whether the federal CAA provides authority for USEPA to regulate CO_2 emissions. In April 2007, the U.S. Supreme Court ruled in Massachusetts' favor, holding that GHGs are air pollutants under the CAA. On December 11, 2007, the judge in the *Central Valley Chrysler-Jeep* case rejected each plaintiff's arguments and ruled in California's favor. On December 19, 2007, the USEPA denied California's waiver request. California filed a petition with the Ninth Circuit Court of Appeals challenging USEPA's denial on January 2, 2008.

The Obama administration subsequently directed the USEPA to re-examine their decision. On May 19, 2009, challenging parties, automakers, the State of California, and the federal government reached an agreement on a series of actions that would resolve these current and potential future disputes over the standards through model year 2016. In summary, the USEPA and the U.S. Department of Transportation agreed to adopt a federal program to reduce GHGs and improve fuel economy, respectively, from passenger vehicles in order to achieve equivalent or greater greenhouse gas benefits as the AB 1493 regulations for the 2012–2016 model years. Manufacturers agreed to ultimately drop current and forego similar future legal challenges, including challenging a waiver grant, which occurred on June 30, 2009. The State of California committed to (1) revise its standards to allow manufacturers to demonstrate compliance with the fleet-average GHG emission standard by "pooling" California and specified State vehicle sales; (2) revise its standards for 2012–2016 model year vehicles so that compliance with USEPA-adopted GHG standards would also comply with California's standards; and (3) revise its standards, as necessary, to allow manufacturers to use emissions data from the federal CAFE program to demonstrate compliance with the AB 1493 regulations (CARB 2009, http://www.arb.ca.gov/regact/2009/ghgpv09/ghgpvisor.pdf) both of these programs are aimed at light-duty auto and light-duty trucks.

Executive Order S-3-05:

Executive Order S-3-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 1990 level by 2020, and to 80% below the 1990 level by 2050. The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce greenhouse gas emissions to the target levels. The Secretary also is required to submit biannual reports to the Governor and state Legislature describing: (1) progress made toward reaching the emission targets; (2) impacts of global warming on California's resources; and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of the CalEPA created a Climate Action Team (CAT) made up of members from various state agencies and commission. CAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government and community actions, as well as through state incentive and regulatory programs.

California Assembly Bill 32 (AB 32):

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Climate Solutions Act of 2006. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that CARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

In November 2007, CARB completed its estimates of 1990 GHG levels. Net emission 1990 levels were estimated at 427 MMTs (emission sources by sector were: transportation – 35 percent; electricity generation – 26 percent; industrial – 24 percent; residential – 7 percent; agriculture – 5 percent; and

commercial – 3 percent)[22]. Accordingly, 427 MMTs of CO_2 equivalent was established as the emissions limit for 2020. For comparison, CARB's estimate for baseline GHG emissions was 473 MMT for 2000 and 532 MMT for 2010. "Business as usual" conditions (without the 30 percent reduction to be implemented by CARB regulations) for 2020 were projected to be 596 MMTs.

In December 2007, CARB approved a regulation for mandatory reporting and verification of GHG emissions for major sources. This regulation covered major stationary sources such as cement plans, oil refineries, electric generating facilities/providers, and co-generation facilities, which comprise 94 percent of the point source CO_2 emissions in the State.

On December 11, 2008, CARB adopted a scoping plan to reduce GHG emissions to 1990 levels. The Scoping Plan's recommendations for reducing GHG emissions to 1990 levels by 2020 include emission reduction measures, including a cap-and-trade program linked to Western Climate Initiative partner jurisdictions, green building strategies, recycling and waste-related measures, as well as Voluntary Early Actions and Reductions. Implementation of individual measures must begin no later than January 1, 2012, so that the emissions reduction target can be fully achieved by 2020.

Table 2-3 shows the proposed reductions from regulations and programs outlined in the Scoping Plan. While local government operations were not accounted for in achieving the 2020 emissions reduction, local land use changes are estimated to result in a reduction of 5 MMTons of CO_2e, which is approximately 3 percent of the 2020 GHG emissions reduction goal. In recognition of the critical role local governments will play in successful implementation of AB 32, CARB is recommending GHG reduction goals of 15 percent of 2006 levels by 2020 to ensure that municipal and community-wide emissions match the state's reduction target. According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 MMTons tons of CO_2e (or approximately 1.2 percent of the GHG reduction target).

<u>California Senate Bill No. 1368 (SB 1368):</u>

In 2006, the State Legislature adopted Senate Bill 1368 ("SB 1368"), which was subsequently signed into law by the Governor. SB 1368 directs the California Public Utilities Commission ("CPUC") to adopt a greenhouse gas emission performance standard ("EPS") for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than five years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Due to the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law will effectively prevent California's utilities from investing in, otherwise financially supporting, or purchasing

[22] On a national level, the EPA's Endangerment Finding stated that electricity generation is the largest emitting sector (34%), followed by transportation (28%), and industry (19%).

power from new coal plants located in or out of the State. Thus, SB 1368 will lead to dramatically lower greenhouse gas emissions associated with California energy demand, as SB 1368 will effectively prohibit California utilities from purchasing power from out of state producers that cannot satisfy the EPS standard required by SB 1368.

TABLE 2-3

SCOPING PLAN GHG REDUCTION MEASURES TOWARD 2020 TARGET

Recommended Reduction Measures	*Reductions Counted toward 2020 Target of 169 MMT CO_2e*	*Percentage of Statewide 2020 Target*
Cap and Trade Program and Associated Measures		
California Light-Duty Vehicle GHG Standards	**31.7**	**19%**
Energy Efficiency	**26.3**	**16%**
Renewable Portfolio Standard (33 percent by 2020)	**21.3**	**13%**
Low Carbon Fuel Standard	**15**	**9%**
Regional Transportation-Related GHG Targets1	**5**	**3%**
Vehicle Efficiency Measures	**4.5**	**3%**
Goods Movement	**3.7**	**2%**
Million Solar Roofs	**2.1**	**1%**
Medium/Heavy Duty Vehicles	**1.4**	**1%**
High Speed Rail	**1.0**	**1%**
Industrial Measures	**0.3**	**0%**
Additional Reduction Necessary to Achieve Cap	**34.4**	**20%**
Total Cap and Trade Program Reductions	**146.7**	**87%**
Uncapped Sources/Sectors Measures		
High Global Warming Potential Gas Measures	**20.2**	**12%**
Sustainable Forests	**5**	**3%**
Industrial Measures (for sources not covered under cap and trade program)	**1.1**	**1%**
Recycling and Waste (landfill methane capture)	**1**	**1%**
Total Uncapped Sources/Sectors Reductions	**27.3**	**16%**
Total Reductions Counted toward 2020 Target	**174**	**100%**
Other Recommended Measures – Not Counted toward 2020 Target		
State Government Operations	**1.0 to 2.0**	**1%**
Local Government Operations	**To Be Determined2**	**NA**
Green Buildings	**26**	**15%**
Recycling and Waste	**9**	**5%**
Water Sector Measures	**4.8**	**3%**
Methane Capture at Large Dairies	**1**	**1%**
Total Other Recommended Measures – Not Counted toward 2020 Target	**42.8**	**NA**

Source: CARB. 2008, MMTons CO2e: million metric tons of CO2e 1 Reductions represent an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target. 2 According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 million metric tons of CO2e (or approximately 1.2 percent of the GHG reduction target). However, these reductions were not included in the Scoping Plan reductions to achieve the 2020 Target

Senate Bill 97 (SB 97):

Pursuant to the direction of SB 97, OPR released preliminary draft CEQA Guideline amendments for greenhouse gas emissions on January 8, 2009, and submitted its final proposed guidelines to the Secretary for Natural Resources on April 13, 2009. The Natural Resources Agency adopted the Guideline amendments and they became effective on March 18, 2010.

Of note, the new guidelines state that a lead agency shall have discretion to determine whether to use a quantitative model or methodology, or in the alternative, rely on a qualitative analysis or performance based standards. CEQA Guideline § 15064.4(a)"A lead agency shall have discretion to determine, in the context of a particular project, whether to: (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use . . .; or (2) Rely on a qualitative analysis or performance based standards."

CEQA emphasizes that the effects of greenhouse gas emissions are cumulative, and should be analyzed in the context of CEQA's requirements for cumulative impacts analysis. (See CEQA Guidelines Section 15130(f)).

Section 15064.4(b) of the CEQA Guidelines provides direction for lead agencies for assessing the significance of impacts of greenhouse gas emissions:

1. The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; or

3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

The CEQA Guideline amendments do not identify a threshold of significance for greenhouse gas emissions, nor do they prescribe assessment methodologies or specific mitigation measures. Instead, they call for a "good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." The amendments encourage lead agencies to consider many factors in performing a CEQA analysis and preserve lead agencies'

discretion to make their own determinations based upon substantial evidence. The amendments also encourage public agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses. Specific GHG language incorporated in the Guidelines' suggested Environmental Checklist (Guidelines Appendix G) is as follows:

VII. GREENHOUSE GAS EMISSIONS

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Executive Order S-01-07:

On January 18, 2007 California Governor Arnold Schwarzenegger, through Executive Order S-01-07, mandated a statewide goal to reduce the carbon intensity of California's transportation fuel by at least ten percent by 2020. The order also requires that a California specific Low Carbon Fuel Standard be established for transportation fuels.

Senate Bills 1078 and 107 and Executive Order S-14-08:

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20% of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008 Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Energy Standard to 33% renewable power by 2020.

Senate Bill 375:

SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a sustainable communities strategy (SCS) or alternative planning strategy (APS) that will prescribe land use allocation in that MPO's regional transportation plan. ARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every 8 years but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects will not be eligible for funding programmed after January 1, 2012.

This law also extends the minimum time period for the regional housing needs allocation cycle from 5 years to 8 years for local governments located within an MPO that meets certain requirements. City or county land use policies (including general plans) are not required being consistent with the regional transportation plan (and associated SCS or APS). However, new provisions of CEQA would incentivize (through streamlining and other provisions) qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

CARB's Preliminary Draft Staff Proposal for Interim Significance Thresholds:

Separate from its Scoping Plan approved in December of 2008, CARB issued a Staff Proposal in October 2008, as its first step toward developing recommended statewide interim thresholds of significance for GHGs that may be adopted by local agencies for their own use. CARB staff's objective in this proposal is to develop a threshold of significance that will result in the vast majority (approximately 90 percent statewide) of GHG emissions from new industrial projects being subject to CEQA's requirement to impose feasible mitigation. The proposal does not attempt to address every type of project that may be subject to CEQA, but instead focuses on common project types that, collectively, are responsible for substantial GHG emissions – specifically, industrial, residential, and commercial projects. CARB is developing these thresholds in these sectors to advance climate objectives, streamline project review, and encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the state. These draft thresholds are under revision in response to comments. There is currently no timetable for finalized thresholds at this time.

As currently proposed by CARB, the threshold consists of a quantitative threshold of 7,000 metric tons (MT) of CO_2e per year for operational emissions (excluding transportation), and performance standards for construction and transportation emissions. These performance standards have not yet been adopted.

However, CARB's proposal is not yet final, and thus cannot be applied to the Project. Further, CARB's proposal sets forth draft thresholds for industrial projects that have high operational stationary GHG emissions, such as manufacturing plants, or uses that utilize combustion engines. The Project does not propose or requires these types of uses. This Project's GHG emissions are mostly from mobile sources, and as such, the CARB proposal is not germane to the Project.[23]

South Coast Air Quality Management District Recommendations for Significance Thresholds:

In April 2008, the South Coast Air Quality Management District (SCAQMD), convened a "GHG CEQA Significance Threshold Working Group"[24] in order to provide guidance to local lead agencies on determining the significance of GHG emissions identified in CEQA documents, The goal of the working group is to develop and reach consensus on an acceptable CEQA significance threshold for GHG emissions that would be utilized on an interim basis until CARB (or some other state agency) develops statewide guidance on assessing the significance of GHG emissions under CEQA.

[23] http://www.arb.ca.gov/cc/localgov/ceqa/meetings/102708/prelimdraftproposal102408.pdf
[24] For more information visit: http://www.aqmd.gov/ceqa/handbook/GHG/GHG.html.

Initially, SCAQMD staff presented the working group with a significance threshold that could be applied to various types of projects—residential; non-residential; industrial; etc. However, final thresholds were never discussed or adopted for land use projects. Notwithstanding, in December 2008, staff presented the SCAQMD Governing Board with a significance threshold for "industrial projects" where the SCAQMD is the lead agency. This threshold utilizes a tiered approach to determine a project's significance, with 10,000 metric tons of carbon dioxide equivalent ($MTCO_2e$) as a screening numerical threshold for industrial projects. The City could apply this threshold, however based on documentation in the rulemaking for the threshold the "industrial" project types the threshold is intended for is for permitted equipment e.g., boilers, refineries, etc. and not traditional industrial projects within the context of land development, thus this threshold would not be applicable to the Project and has not been applied.

The working group last convened in 2010 and it is unclear if the SCAQMD will re-initiate the working group or if the process has been abandoned altogether.

City of San Bernardino:
The City of San Bernardino does not have any regulations in place applicable to the greenhouse gas impacts of this Project.

2.8 DISCUSSION ON ESTABLISHMENT OF SIGNIFICANCE THRESHOLDS

The proposed project could result in potentially significant impacts related to greenhouse gas emissions and global climate change if it would:

A. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

B. Conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing the emissions of greenhouse gases.

The GHG emission levels will be analyzed to determine whether project approval would impede compliance with the GHG emissions reduction mandate established by AB 32 which requires that California's GHG emissions limit be reduced to 1990 levels by 2020. As noted in the Scoping Plan[25], a reduction of 28.5 percent below the "business as usual" scenario is required to meet the goals of AB 32. [26] Therefore, should the project reduce its GHG emissions by 28.5 percent or greater, impacts would be less than significant.

[25] California Air Resources Board, *Climate Change Proposed Scoping Plan: A Framework for Change,* adopted December 2008.
[26] "Business as Usual" refers to emissions that would be expected to occur in the absence of GHG reductions.

3.0 PROJECT GREENHOUSE GAS IMPACT

3.1 PROJECT RELATED GREENHOUSE GAS EMISSIONS

CEQA Guidelines 15064.4 (a) states in pertinent part:

A lead agency shall have the discretion to determine, in the context of a particular project whether to:
(1) Use a model or methodology to quantify greenhouse gas emissions from a project, and which model or methodology to use. . . .

On July 26, 2013, the SCAQMD released the California Emissions Estimator Model (CALEEMOD) Emissions Inventory Model™. The purpose of this model is to more accurately calculate air quality and greenhouse gas (GHG) emissions from direct and indirect sources and quantify applicable air quality and GHG reductions achieved from mitigation measures. The July 2013 CalEEMod™ was employed to quantify GHG emissions for this Project. The CalEEMod™ model includes GHG emissions from the following source categories: construction, area, energy, mobile, waste, water.

3.2 LIFE-CYCLE ANALYSIS

A full life-cycle analysis (LCA) is not included in this analysis due to the lack of consensus guidance on CA methodology at this time.[27] Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development and infrastructure) depends on emission factors or econometric factors that are not well established for all processes. At this time a LCA would be extremely speculative and thus has not been prepared.

3.3 CONSTRUCTION EMISSIONS

Construction activities associated with the proposed Project will result in emissions of CO_2, CH_4, and N_2O from the following construction activities:

- Site Preparation
- Grading
- Paving
- Building Construction
- Architectural Coatings (Painting)
- Construction Workers Commuting

Applicant provided construction commencement dates which were entered for the duration of construction activity and are summarized on Table 3-1. Construction equipment assumptions are based on information from the applicant and CalEEMod model defaults and represent a reasonable approximation of the

[27] California Natural Resources Agency, *Final Statement of Reasons for Regulatory Action, Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97,* December 2009.

expected construction fleet as required per CEQA guidelines. A detailed summary of construction equipment assumptions by phase are provided on Table 3-2. Please refer to specific detailed modeling input/outputs contained in Appendix "A" of the analysis for further information.

TABLE 3-1 CONSTRUCTION SCHEDULE

Phase	# Days
Site Preparation	20
Grading	40
Paving	20
Building Construction	150
Architectural Coating	50

Construction emissions for construction worker vehicles traveling to and from the Project site, as well as vendor trips (construction materials delivered to the Project site) were estimated based on information from the applicant and the CalEEMod™ model.

For construction source emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total greenhouse gas emissions for the construction activities, dividing it by the project life (i.e., 30 years) then adding that number to the annual operational phase GHG emissions (SCAQMD, 2009). Accordingly, within this analysis construction-source emissions were amortized over a 30 year period and added to the annual operational phase GHG emissions.

TABLE 3-2 CONSTRUCTION EQUIPMENT ASSUMPTIONS

Operation	Scraper	Grader	Rubber Tired Dozer	Tractor / Loader / Backhoe	Excavator	Pavers	Paving Equipment	Rollers	Forklift	Cranes	Air Compressor	Generator Set	Welder	Water Truck
Site Preparation	3	1	2	4										2
Grading	6	2	2	2	1									2
Paving						2	2	2						1
Building Construction									5	2		2	2	1
Architectural Coating											2			

3.4 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of CO_2, CH_4, and N_2O from the following primary sources:

- Building Energy Use (Combustion Emissions Associated with Natural Gas and Electricity)
- Water Supply, Treatment and Distribution
- Solid Waste
- Vehicles

3.4.1 BUILDING ENERGY USE

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building. GHGs are also emitted during the off-site generation of electricity from fossil fuels; these emissions are considered to be indirect emissions. Unless otherwise noted, CalEEMod™ default parameters were used.

3.4.2 WATER SUPPLY, TREATMENT AND DISTRIBUTION

Indirect GHG emissions result from the off-site production of electricity used to convey, treat and distribute water and wastewater. The amount of electricity required to convey, treat and distribute water depends on the volume of water as well as the sources of the water.

The Project's water demand was estimated based on data available from the Project's Water Supply Assessment (WSA). The Project is estimated to result in a demand for approximately 259 acre-feet per year which includes 113 acre-feet per year of domestic (indoor) water use and 145 acre-feet per year of irrigation (outdoor) water use.

3.4.3 SOLID WASTE

The Project will result in the generation and disposal of solid waste. A large percentage of this waste will be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting. The remainder of the waste not diverted will be disposed of at a landfill. GHG emissions from landfills are associated with the anaerobic breakdown of material. Unless otherwise noted, CalEEMod™ default parameters were used.

3.4.4 VEHICLES

GHG emissions will also result from mobile sources associated with the Project. These mobile source GHG emissions are generated by typical daily operation of motor vehicles by visitors, employees, and customers.

Project operational (vehicular) impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations. Project-related operational air quality impacts derive predominantly from mobile sources. It should be noted that the Project's traffic study presents the total Project vehicle trips in terms of Passenger Car Equivalents (PCEs) in an effort to recognize and acknowledge the effects of heavy vehicles at the study area intersections. Notwithstanding, for purposes of the air quality study, the PCE trips were not used. Rather, to more accurately estimate and model vehicular-source emissions, the actual number of vehicles, by vehicle classification (e.g., passenger cars (including light trucks), heavy trucks) were used in the analysis. The vehicle fleet mix, in terms of actual vehicles, as derived from the traffic study for the Project, is comprised of approximately 79.57% passenger (1,603 vehicles) and approximately 20.43% total trucks (411 vehicles). The Project was input as a single category or type of land-use (Warehouse – No Rail) in the CalEEMod™ emissions inventory model and an opening year of 2015 was selected. The resulting estimated vehicle-source emissions are summarized at Table 3-3 and 3-4.

The SCAQMD has recently commented on numerous warehouse projects calling for the use of an inflated trip generation rate based on the 95th percentile of all high-cube warehouses, which the SCAQMD asserts is most appropriate according to a meta-analysis prepared by the SCAQMD as part of the CalEEMod™ emissions inventory model release[28], use of this inflated rate would mean that the Project would have a trip rate equivalent to the busiest 5% of all warehouses in the study conducted by the SCAQMD, and thus, would significantly overestimate total trips. The Project-generated daily passenger car and truck trips utilized in this analysis were obtained from the Project's traffic impact analysis report and are derived from trip generation rates specified in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, 2012. Use of the ITE rates are standard industry practice for the calculation of projected traffic volumes in traffic studies supporting CEQA documents throughout the State of California.

Furthermore, it is important to note that six (6) of the seven (7) trip generation studies included in the SCAQMD meta-analysis were also included as part of the dataset for estimating the daily and peak hour trip generation rates for ITE Land Use: 152 (high-cube warehouse) in ITE's 8th Edition of the *Trip Generation* manual. In addition, ITE also includes data from three (3) additional studies performed in

[28] CalEEMod™ *Appendix E Technical Source Documentation: Analysis of Warehouse Trip Generation Rates by SCAQMD*

Livermore, California, Manalapan, New Jersey and Tampa, Florida for the purposes of estimating peak hour trip rates, which further expands the number of buildings included in the sample.

The SCAQMD Study acknowledges that a lack historical photographic coverage and/or business history make it difficult to discern the degree of correlation between the variation in site specific observations and the conclusion that the ITE rates may be understated. In addition, the use of a 95th percentile trip generation rate is not standard traffic engineering practice nor required by CEQA, as this approach will tend to significantly overstate site specific vehicle trips estimates and associated emissions. Therefore, it was determined that the trip generation rates for high cube warehouse use (Land Use 152) as published in the 9th Edition of ITE's *Trip Generation* manual, and currently widely accepted throughout Riverside and San Bernardino Counties, are the most appropriate trip rates to be utilized to calculate vehicle trips for the Project.

Similarly, the City of Perris has provided a comprehensive response to the SCAQMD for a similar comment that was provided on the Stratford Ranch Environmental Impact Report (State Clearinghouse No. 2012011037), July 27, 2013. Appendix L-3 to the Stratford Ranch DEIR, includes a December 2011 study by Crain & Associates that identifies numerous technical flaws in the SCAQMD Study, essentially discrediting it as a viable reference for trip generation rates of high-cube warehouses. A copy of the Crain & Associates study is appended to this technical study for purposes of the administrative record (See Appendix "B").

The vehicle fleet mix utilized in the Traffic Study for the General Light Industrial and High-Cube Warehouse land uses are based upon the *City of Fontana Truck Trip Generation Study,* which provides vehicle fleet mix for two, three, and four-axle trucks based on surveyed data. This same methodology is employed in analyses for similar projects in the City and other jurisdictions within the County, and is considered by the Lead Agency to be appropriate and accurate.

3.4.4.1 TRIP LENGTH

BACKGROUND

A technical deficiency inherent in calculating mobile source GHG emissions associated with any project is related to the estimation of trip length and vehicle miles traveled (VMT). VMT for a given project is calculated by the total number of vehicle trips to/from the Project multiplied by the average trip length. This method of estimating VMT for use in calculating vehicle emissions likely results in the over-estimation and double-counting of emissions because, for a distribution warehouse center such as the Project, the land use is likely to attract (divert) existing vehicle trips that are already on the circulation system as opposed to generating new trips. In this regard, the Project would, to a large extent, redistribute existing mobile-source GHG emissions rather than generate new and additional mobile-source GHG emissions. As such, the estimation of the Fontana Industrial Development Project's

vehicular-source GHG emissions is likely overstated in that no credit for, or reduction in, emissions is assumed based on diversion of existing trips.

Provided below is a summary of the VMT recommendations of the SCAQMD and SCAG, followed by a description of the methodology used to calculate the VMT rates used in this AQIA.

SCAQMD RECOMMENDATION

Over the last several years, the SCAQMD has provided numerous comments on the trip length for warehouse/distribution and industrial land use projects[29]. The SCAQMD asserts that the model-default trip length in CalEEMod™ and the URBan EMISsions (URBEMIS) 2007 model (version 9.2.4) would underestimate emissions. The SCAQMD asserts that for warehouse/distribution center and industrial land use projects, most of the heavy-duty trucks would be hauling consumer goods, often from the Ports of Long Beach and Los Angeles (POLA and POLB) and/or to destinations outside of California. The SCAQMD states that for this reason, the model default trip length (approximately 12.6 miles) would not be representative of activities at like facilities. The SCAQMD generally recommends the use of a 40-mile one-way trip length.

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENT (SCAG) HEAVY DUTY TRUCK MODEL

SCAG is comprised of six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 190 cities in Southern California, and is the organization charged with addressing and resolving short- and long-term regional policy issues. The SCAG region also consists of 14 subregional entities recognized by the Regional Council as partners in the regional policy planning process. The SCAG region has more than 19 million residents and encompasses more than 38,000 square miles, representing the largest and most diverse region in the country.

SCAG maintains a regional transportation model. In its most recent (2008) transportation validation for the 2003 Regional Model, SCAG indicates the average internal truck trip length for the SCAG region is 5.92 miles for Light Duty Trucks, 13.06 miles for Medium Duty Trucks, and 24.11 miles for Heavy Duty Trucks.

APPROACH FOR ANALYSIS OF THE PROJECT

Trip lengths and VMT estimates employed in this AQIA report generate vehicular-source emissions that would represent a maximum impact scenario Other Environmental Impact Reports (EIRs) for similar land use projects within the region[30] have utilized these same or similar estimates. To maintain analytic consistency and establish the maximum impact scenario noted above, the following approach has been utilized in calculating emissions associated with vehicles accessing the Project.

[29] e.g, SCAQMD's *Review of the Draft Environmental Impact Report (Draft EIR) for the Oakmont Olive Grove Project* (http://www.aqmd.gov/ceqa/igr/2010/June/DEIROakmont.pdf).

[30] Environmental Impact Report (EIR) Highland Fairview Corporate Park & Environmental Impact Report (EIR) West Ridge Commerce Center.

For passenger car trips, a one-way trip length of 13.3 miles was assumed based on CalEEMod defaults which relies on data provided by SCAG for average trip length. For heavy duty trucks, an average trip length was derived from distances from the Project site to the far edges of the South Coast Air Basin (SCAB) based on the Project Traffic Study's Trip Distribution Patterns. It is appropriate to stop the VMT calculation at the boundary of the SCAB because any activity beyond that boundary would be speculative at best (the SCAB encompasses 6,745 square miles) and is not required under the provisions of CEQA (which requires Projects to evaluate impacts that are reasonable and foreseeable – not speculative), this approach is also consistent with professional industry practice. Further, the applicable regional emissions thresholds are relative to the air basin in which emissions occur – in other words, there are different emission thresholds for different air basins and it would be speculative to take trips outside of the air basin since the ultimate destinations are unknown and different thresholds would apply in other air basins.

- Project site to the Port of Los Angeles/Long Beach: 74 miles;
- Project site to Rail Yard: 5 miles;
- Project site to I-10 East to the edge of the SCAB: 40 miles;

Assuming that 55 percent of all delivery trips will travel to and from the Project and the Port of Los Angeles/Long Beach, 10% go to rail yard immediately northwest of the Project site, and the remainder of the distribution trips go east on the I-10 freeway to the edge of the SCAB, the average truck trip length is calculated to 55.19 miles. For analysis purposes, as a conservative measure, the average truck trip length was rounded to 60 miles. An overall weighted-average trip length for the Project was calculated using the percentage of trips associated with passenger cars (including light duty trucks) versus heavy trucks, the passenger car trip length of 13.3 miles and truck trip length of 60 miles is calculated. The resulting weighted average trip length of 22.84 miles was entered into the CalEEMod™ model calculations.

In order to convert the axle based fleet mix to the vehicle classes utilized by EMFAC, the SCAQMD recommends[31] the following method: 4+ axles = Heavy-Heavy-Duty Truck (HHDT), 3 axles = Medium-Heavy-Duty Truck (MHDT), 2 axles = Light-Heavy-Duty Truck 1 (LHDT1), all others Light-Duty Auto (LDA).

3.5 EMISSIONS SUMMARY

The summary of annual operational GHG emissions for BAU without Mitigation or State Requirements is reported in Table 3-3. The operational GHG emissions for the Project are estimated to be 11,708.55 MT per year.

[31] CalEEMod™ *Appendix E Technical Source Documentation: Analysis of Warehouse Trip Generation Rates by SCAQMD*

TABLE 3-3

TOTAL PROJECT GREENHOUSE GAS EMISSIONS BUSINESS AS USUAL (ANNUAL) (METRIC TONS PER YEAR) WITHOUT MITIGATION OR STATE REQUIREMENTS

	Emissions (metric tons per year)			
Emission Source	**CO_2**	**CH_4**	**N_2O**	**Total CO_2E**
Annual construction-related emissions amortized over 30 years	47.23	0.0072	--	47.38
Area	0.03	9.00e-5	--	0.03
Energy	1,252.08	0.05	0.01	1,257.33
Mobile Sources	9,589.03	0.72	--	9,604.12
Waste	228.85	13.52	--	512.87
Water Usage	31.81	0.23	5.69e-3	334.21
Total CO_2E (All Sources)		**11,708.55**		

Source: CalEEMod™ model output, See Appendix "A" for detailed model outputs.
Note: Totals obtained from CalEEMod™ and may not total 100% due to rounding.

The summary of annual operational GHG emissions for 2020 with Mitigation and State Requirements is reported in Table 3-4. The operational GHG emissions for the Project are estimated to be 8,297.48 MT per year.

TABLE 3-4

TOTAL PROJECT GREENHOUSE GAS EMISSIONS 2020 (ANNUAL) (METRIC TONS PER YEAR) WITH MITIGATION AND STATE REQUIREMENTS

	Emissions (metric tons per year)			
Emission Source	**CO_2**	**CH_4**	**N_2O**	**Total CO_2E**
Annual construction-related emissions amortized over 30 years	47.23	0.0072	--	47.38
Area	0.03	8.00e-5	--	0.03
Energy	890.88	0.05	0.01	895.36
Mobile Sources	6,904.21	0.15	--	6,907.39
Waste	114.43	6.76	--	256.44
Water Usage	21.10	0.18	4.55e-3	238.26
Total CO_2E (All Sources)		**8,297.48**		

Source: CalEEMod™ model output, See Appendix "A" for detailed model outputs.
Note: Totals obtained from CalEEMod™ and may not total 100% due to rounding.

3.6 GREENHOUSE GAS EMISSIONS FINDINGS AND RECOMMENDATIONS

Impact GHG-1: The Project would generate direct or indirect greenhouse gas emissions that would result in a significant impact on the environment.

To date, the South Coast Air Quality Management District (SCAQMD) and CARB have not established significance thresholds for GHG emissions under the California Environmental Quality Act (CEQA)[34] or a methodology for quantifying GHG emissions. Additionally, the City of San Bernardino does no have a quantitative CO2E significance threshold for GHG emissions. To evaluate the Project's GHG emissions the proposed Project's emissions are compared with a "Business as Usual" scenario to determine if the development is likely to be consistent with the Scoping Plan designed to implement AB 32 in California which calls for an approximate 28.5% reduction from "Business as Usual".

As shown above, the total amount of Project-related GHG emissions for BAU without accounting for any project design features or regulatory developments that would reduce GHG emissions from direct and indirect sources combined would total 11,708.55 MTCO2e.The total amount of Project-related GHG emissions when accounting for applicable regulatory developments, project design features, and mitigation measures that would reduce GHG emissions from direct and indirect sources combined would total 8,297.48 MTCO2e. This results in a 29.13% reduction from BAU, thus with implementation of the Project's design features and regulatory developments, the Project's GHG reduction would exceed the AB 32 reduction target of 28.5% and a less than significant impact would occur.

An individual project like the proposed Project evaluated in this GHGA cannot generate enough greenhouse gas emissions to effect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of greenhouse gasses combined with the cumulative increase of all other sources of greenhouse gases, which when taken together constitute potential influences on GCC. Therefore, using the numeric threshold identified above, the Project would result in less than significant cumulative impacts on global climate change.

[34] SCAQMD has adopted interim significance thresholds for industrial sources of 10,000 metric tons of carbon dioxide equivalents per year. The Board adopted these December 5, 2008. This threshold however was adopted by SCAQMD for projects where it is the lead agency.

TABLE 3-5

SUMMARY OF GHG EMISSIONS BAU/PROJECT

Category	CO2e Emissions	
	BAU	Project
	Metric Tons per Year	
Construction	47.38	47.38
Area	0.03	0.03
Energy	1,257.33	895.36
Mobile Source	9,604.12	6,907.39
Solid Waste	512.87	256.44
Water Usage	334.21	238.26
Total	11,708.55	8,297.48
Project Improvement over BAU	29.13%	

Impact GHG-2: The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

ARB's *Scoping Plan* identifies strategies to reduce California's greenhouse gas emissions in support of AB32. Many of the strategies identified in the Scoping Plan are not applicable at the project level, such as long-term technological improvements to reduce emissions from vehicles. Some measures are applicable and supported by the project, such as energy efficiency. Finally, while some measures are not directly applicable, the project would not conflict with their implementation. Reduction measures are grouped into 18 action categories, as follows:

1. **California Cap-and-Trade Program Linked to Western Climate Initiative Partner Jurisdictions.** Implement a broad-based California cap-and-trade program to provide a firm limit on emissions. Link the California cap–and-trade program with other Western Climate Initiative Partner programs to create a regional market system to achieve greater environmental and economic benefits for California.[35] Ensure California's program meets all applicable AB 32 requirements for market-based mechanisms.
2. **California Light-Duty Vehicle Greenhouse Gas Standards.** Implement adopted Pavley standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.
3. **Energy Efficiency.** Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities).
4. **Renewables Portfolio Standards.** Achieve 332 percent renewable energy mix statewide.
5. **Low Carbon Fuel Standard.** Develop and adopt the Low Carbon Fuel Standard.

[35] California Air Resources Board. California GHG Emissions – Forecast (2002-2020). October 2010

6. **Regional Transportation-Related Greenhouse Gas Targets.** Develop regional greenhouse gas emissions reduction targets for passenger vehicles.
7. **Vehicle Efficiency Measures.** Implement light-duty vehicle efficiency measures.
8. **Goods Movement.** Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.
9. **Million Solar Roofs Program.** Install 3,000 megawatts of solar-electric capacity under California's existing solar programs.
10. **Medium- and Heavy-Duty Vehicles.** Adopt medium- (MD) and heavy-duty (HD) vehicle efficiencies. Aerodynamic efficiency measures for HD trucks pulling trailers 53-feet or longer that include improvements in trailer aerodynamics and use of rolling resistance tires were adopted in 2008 and went into effect in 2010.[36] Future, yet to be determined improvements, includes hybridization of MD and HD trucks.
11. **Industrial Emissions.** Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.
12. **High Speed Rail.** Support implementation of a high speed rail system.
13. **Green Building Strategy.** Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.
14. **High Global Warming Potential Gases.** Adopt measures to reduce high warming global potential gases.
15. **Recycling and Waste.** Reduce methane emissions at landfills. Increase waste diversion, composting and other beneficial uses of organic materials, and mandate commercial recycling. Move toward zero-waste.
16. **Sustainable Forests.** Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation. The 2020 target for carbon sequestration is 5 million MTCO2E/YR.
17. **Water.** Continue efficiency programs and use cleaner energy sources to move and treat water.
18. **Agriculture.** In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.

Table 3-6 summarizes the project's consistency with the State Scoping Plan. As summarized, the project will not conflict with any of the provisions of the Scoping Plan and in fact supports seven of the action categories through energy efficiency, water conservation, recycling, and landscaping.

[36] California Air Resources Board. Scoping Plan Measures Implementation Timeline. October 2010

TABLE 3-6

SCOPING PLAN CONSISTENCY SUMMARY

Action	Supporting Measures	Consistency
Cap-and-Trade Program	--	**Not Applicable.** These programs involve capping emissions from electricity generation, industrial facilities, and broad scoped fuels. Caps do not directly affect light industrial projects.
Light-Duty Vehicle Standards	T-1	**Not Applicable.** This is a statewide measure establishing vehicle emissions standards.
Energy Efficiency	E-1 E-2 CR-1 CR-2	**Consistent.** The project will include a variety of building, water, and solid waste efficiencies consistent with 2011 CALGREEN requirements. Additionally, the Project will be required to comply with MM AQ-8 and MM AQ-9 that will further enhance energy efficiency.
Renewables Portfolio Standard	E-3	**Not Applicable.** Establishes the minimum statewide renewable energy mix.
Low Carbon Fuel Standard	T-2	**Not Applicable.** Establishes reduced carbon intensity of transportation fuels.
Regional Transportation-Related Greenhouse Gas Targets	T-3	**Consistent.** The project will include features that reduce greenhouse gas emissions, assisting the region in meeting emissions targets through the incorporation of MM AQ-10 which will reduce VMT.
Vehicle Efficiency Measures	T-4	**Not Applicable.** Identifies measures such as minimum tire-fuel efficiency, lower friction oil, and reduction in air conditioning use.
Goods Movement	T-5 T-6	**Not applicable.** Identifies measures to improve goods movement efficiencies such as advanced combustion strategies, friction reduction, waste heat recovery, and electrification of accessories. While these measures are yet to be implemented and will be voluntary, the proposed Project would not interfere with their implementation.
Million Solar Roofs Program	E-4	**Not Applicable.** Sets goal for use of solar systems throughout the state. While the project currently does not include solar energy generation, the building could support solar panels in the future.
Medium- & Heavy-Duty Vehicles	T-7	**Consistent.** MD and HD trucks and trailers working from the proposed warehouses will be subject to aerodynamic and hybridization requirements as established by ARB; no feature of

Action	Supporting Measures	Consistency
	T-8	the project would interfere with implementation of these requirements and programs.
Industrial Emissions	I-1	**Not Applicable.** These measures are applicable to large industrial facilities (> 500,000 MTCOE2/YR) and other intensive uses such as refineries.
	I-2	
	I-3	
	I-4	
	I-5	
High Speed Rail	T-9	**Not Applicable.** Supports increased mobility choice.
Green Building Strategy	GB-1	**Consistent.** The project will include a variety of building, water, and solid waste efficiencies consistent with 2011 CALGREEN requirements.
High Global Warming Potential Gases	H-1	**Not Applicable.** The proposed warehouses are not substantial sources of high GWP emissions and will comply with any future changes in air conditioning, fire protection suppressant, and other requirements.
	H-2	
	H-3	
	H-4	
	H-5	
	H-6	
	H-7	
Recycling and Waste	RW-1	**Consistent.** The project will be required recycle a minimum of 50 percent from construction activities and warehouse operations per State and County requirements.
	RW-2	
	RW-3	
Sustainable Forests	F-1	**Consistent.** The project will increase carbon sequestration by increasing on-site trees per the project landscaping plan.
Water	W-1	**Consistent.** The project will include use of low-flow fixtures and efficient landscaping per State requirements.
	W-2	
	W-3	
	W-4	
	W-5	
	W-6	
Agriculture	A-1	**Not Applicable.** The project is not an agricultural use.

4.0 REFERENCES

1. California Air Resources Board, 2007. *California Air Resources Board Almanac.*

2. California Air Resources Board, 2007. *EMFAC 2007.*

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7. International Panel on Climate Change, 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report.*

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11. United States Environmental Protection Agency, 2011. *Inventory of US Greenhouse Gas Emissions and Sinks 1990-2011.*

12. United States Environmental Protection Agency, 2010. *High Global Warming Potential (GWP) Gases.*

13. World Resources Institute, 2011. *Climate Analysis Indicator Tool (CAIT) – US – Yearly Emissions Inventory.*

APPENDIX A

CalEEMod™ Input/Output
Construction and Operational Emissions

Orange Show (BAU)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,199.36	1000sqft	27.53	1,199,360.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2014
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction is modeled

Off-road Equipment - Construction is modeled seperately

Architectural Coating -

Vehicle Trips - TR based on traffic study. Truck TL based on the truck distribution from the TS. PC TL based on CalEEMod default

Vechicle Emission Factors - based on traffic study fleet mix

Vechicle Emission Factors - based on traffic study fleet mix

Vechicle Emission Factors - based on traffic study fleet mix

Area Coating -

Energy Use -

Water And Wastewater - Water usage based on WSA.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	100	250
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	50	100
tblConstructionPhase	NumDays	30.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblVehicleEF	HHD	0.02	0.14
tblVehicleEF	HHD	0.01	0.07
tblVehicleEF	HHD	0.00	0.19
tblVehicleEF	HHD	2.78	10.41
tblVehicleEF	HHD	2.10	7.57
tblVehicleEF	HHD	72.86	46.87
tblVehicleEF	HHD	576.70	1,300.12

tblVehicleEF	HHD	1,663.82	1,744.72
tblVehicleEF	HHD	67.36	31.40
tblVehicleEF	HHD	0.04	0.12
tblVehicleEF	HHD	5.80	19.72
tblVehicleEF	HHD	7.92	20.58
tblVehicleEF	HHD	4.33	2.82
tblVehicleEF	HHD	0.03	0.55
tblVehicleEF	HHD	0.06	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.15	0.99
tblVehicleEF	HHD	5.4390e-003	2.5000e-003
tblVehicleEF	HHD	0.03	0.55
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	8.6710e-003	0.03
tblVehicleEF	HHD	0.14	0.99
tblVehicleEF	HHD	4.3370e-003	2.5000e-003
tblVehicleEF	HHD	3.9220e-003	2.1000e-003
tblVehicleEF	HHD	0.20	0.06
tblVehicleEF	HHD	0.52	3.17
tblVehicleEF	HHD	2.1750e-003	8.0000e-004
tblVehicleEF	HHD	0.30	1.52
tblVehicleEF	HHD	0.76	0.77
tblVehicleEF	HHD	3.07	2.98
tblVehicleEF	HHD	5.5860e-003	0.10
tblVehicleEF	HHD	0.02	0.14
tblVehicleEF	HHD	1.9230e-003	1.1000e-003
tblVehicleEF	HHD	3.9220e-003	2.1000e-003
tblVehicleEF	HHD	0.20	0.06

tblVehicleEF	HHD	0.59	3.61
tblVehicleEF	HHD	2.1750e-003	8.0000e-004
tblVehicleEF	HHD	0.34	1.73
tblVehicleEF	HHD	0.76	0.77
tblVehicleEF	HHD	3.29	3.21
tblVehicleEF	HHD	0.02	0.13
tblVehicleEF	HHD	0.01	0.07
tblVehicleEF	HHD	0.00	0.16
tblVehicleEF	HHD	2.02	7.57
tblVehicleEF	HHD	2.11	7.61
tblVehicleEF	HHD	62.29	43.71
tblVehicleEF	HHD	610.97	1,374.22
tblVehicleEF	HHD	1,663.82	1,744.72
tblVehicleEF	HHD	67.36	31.40
tblVehicleEF	HHD	0.04	0.12
tblVehicleEF	HHD	5.98	20.42
tblVehicleEF	HHD	7.48	20.45
tblVehicleEF	HHD	4.15	2.68
tblVehicleEF	HHD	0.02	0.47
tblVehicleEF	HHD	0.06	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.15	0.99
tblVehicleEF	HHD	5.4390e-003	2.5000e-003
tblVehicleEF	HHD	0.02	0.47
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	8.6710e-003	0.03
tblVehicleEF	HHD	0.14	0.99
tblVehicleEF	HHD	4.3370e-003	2.5000e-003

tblVehicleEF	HHD	7.6010e-003	4.4000e-003
tblVehicleEF	HHD	0.23	0.07
tblVehicleEF	HHD	0.49	2.98
tblVehicleEF	HHD	4.8530e-003	2.2000e-003
tblVehicleEF	HHD	0.30	1.52
tblVehicleEF	HHD	0.77	0.78
tblVehicleEF	HHD	2.63	2.48
tblVehicleEF	HHD	5.9180e-003	0.11
tblVehicleEF	HHD	0.02	0.14
tblVehicleEF	HHD	1.7430e-003	1.0000e-003
tblVehicleEF	HHD	7.6010e-003	4.4000e-003
tblVehicleEF	HHD	0.23	0.07
tblVehicleEF	HHD	0.56	3.39
tblVehicleEF	HHD	4.8530e-003	2.2000e-003
tblVehicleEF	HHD	0.34	1.73
tblVehicleEF	HHD	0.77	0.78
tblVehicleEF	HHD	2.82	2.66
tblVehicleEF	HHD	0.03	0.15
tblVehicleEF	HHD	0.01	0.07
tblVehicleEF	HHD	0.00	0.18
tblVehicleEF	HHD	3.83	14.38
tblVehicleEF	HHD	2.09	7.55
tblVehicleEF	HHD	69.28	45.63
tblVehicleEF	HHD	529.39	1,196.40
tblVehicleEF	HHD	1,663.82	1,744.72
tblVehicleEF	HHD	67.36	31.40
tblVehicleEF	HHD	0.04	0.12
tblVehicleEF	HHD	5.54	18.74

tblVehicleEF	HHD	7.81	21.62
tblVehicleEF	HHD	4.29	2.80
tblVehicleEF	HHD	0.03	0.68
tblVehicleEF	HHD	0.06	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.15	0.99
tblVehicleEF	HHD	5.4390e-003	2.5000e-003
tblVehicleEF	HHD	0.03	0.68
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	8.6710e-003	0.03
tblVehicleEF	HHD	0.14	0.99
tblVehicleEF	HHD	4.3370e-003	2.5000e-003
tblVehicleEF	HHD	4.4690e-003	2.9000e-003
tblVehicleEF	HHD	0.27	0.08
tblVehicleEF	HHD	0.56	3.44
tblVehicleEF	HHD	2.3900e-003	9.0000e-004
tblVehicleEF	HHD	0.30	1.52
tblVehicleEF	HHD	0.80	0.81
tblVehicleEF	HHD	2.93	2.87
tblVehicleEF	HHD	5.1280e-003	0.09
tblVehicleEF	HHD	0.02	0.14
tblVehicleEF	HHD	1.8630e-003	1.1000e-003
tblVehicleEF	HHD	4.4690e-003	2.9000e-003
tblVehicleEF	HHD	0.27	0.08
tblVehicleEF	HHD	0.64	3.91
tblVehicleEF	HHD	2.3900e-003	9.0000e-004
tblVehicleEF	HHD	0.34	1.73
tblVehicleEF	HHD	0.80	0.81

tblVehicleEF	HHD	3.14	3.09
tblVehicleEF	LDA	0.01	0.04
tblVehicleEF	LDA	0.01	0.04
tblVehicleEF	LDA	1.45	4.09
tblVehicleEF	LDA	2.81	7.90
tblVehicleEF	LDA	305.44	380.86
tblVehicleEF	LDA	67.06	76.38
tblVehicleEF	LDA	0.48	0.80
tblVehicleEF	LDA	0.13	0.38
tblVehicleEF	LDA	0.19	0.51
tblVehicleEF	LDA	0.04	0.01
tblVehicleEF	LDA	1.9240e-003	0.01
tblVehicleEF	LDA	2.8840e-003	6.1000e-003
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	2.0000e-003	8.0000e-003
tblVehicleEF	LDA	1.7510e-003	0.01
tblVehicleEF	LDA	2.6220e-003	6.1000e-003
tblVehicleEF	LDA	0.08	0.19
tblVehicleEF	LDA	0.16	0.24
tblVehicleEF	LDA	0.06	0.10
tblVehicleEF	LDA	0.04	0.16
tblVehicleEF	LDA	0.37	1.00
tblVehicleEF	LDA	0.23	0.79
tblVehicleEF	LDA	3.4520e-003	3.8000e-003
tblVehicleEF	LDA	7.8500e-004	9.0000e-004
tblVehicleEF	LDA	0.08	0.19
tblVehicleEF	LDA	0.16	0.24
tblVehicleEF	LDA	0.06	0.10

tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	0.37	1.00
tblVehicleEF	LDA	0.25	0.84
tblVehicleEF	LDA	0.01	0.04
tblVehicleEF	LDA	0.01	0.03
tblVehicleEF	LDA	1.70	4.67
tblVehicleEF	LDA	2.19	6.09
tblVehicleEF	LDA	331.21	415.03
tblVehicleEF	LDA	67.06	76.38
tblVehicleEF	LDA	0.48	0.80
tblVehicleEF	LDA	0.11	0.37
tblVehicleEF	LDA	0.18	0.46
tblVehicleEF	LDA	0.04	0.01
tblVehicleEF	LDA	1.9240e-003	0.01
tblVehicleEF	LDA	2.8840e-003	6.1000e-003
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	2.0000e-003	8.0000e-003
tblVehicleEF	LDA	1.7510e-003	0.01
tblVehicleEF	LDA	2.6220e-003	6.1000e-003
tblVehicleEF	LDA	0.16	0.39
tblVehicleEF	LDA	0.19	0.32
tblVehicleEF	LDA	0.12	0.26
tblVehicleEF	LDA	0.04	0.17
tblVehicleEF	LDA	0.36	0.99
tblVehicleEF	LDA	0.19	0.65
tblVehicleEF	LDA	3.7470e-003	4.1000e-003
tblVehicleEF	LDA	7.7400e-004	8.0000e-004
tblVehicleEF	LDA	0.16	0.39

tblVehicleEF	LDA	0.19	0.32
tblVehicleEF	LDA	0.12	0.26
tblVehicleEF	LDA	0.06	0.22
tblVehicleEF	LDA	0.36	0.99
tblVehicleEF	LDA	0.21	0.69
tblVehicleEF	LDA	0.01	0.03
tblVehicleEF	LDA	0.01	0.04
tblVehicleEF	LDA	1.38	3.88
tblVehicleEF	LDA	2.79	7.93
tblVehicleEF	LDA	300.61	366.98
tblVehicleEF	LDA	67.06	76.38
tblVehicleEF	LDA	0.48	0.80
tblVehicleEF	LDA	0.12	0.41
tblVehicleEF	LDA	0.19	0.51
tblVehicleEF	LDA	0.04	0.01
tblVehicleEF	LDA	1.9240e-003	0.01
tblVehicleEF	LDA	2.8840e-003	6.1000e-003
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	2.0000e-003	8.0000e-003
tblVehicleEF	LDA	1.7510e-003	0.01
tblVehicleEF	LDA	2.6220e-003	6.1000e-003
tblVehicleEF	LDA	0.09	0.23
tblVehicleEF	LDA	0.18	0.31
tblVehicleEF	LDA	0.06	0.09
tblVehicleEF	LDA	0.04	0.16
tblVehicleEF	LDA	0.41	1.13
tblVehicleEF	LDA	0.23	0.78
tblVehicleEF	LDA	3.3960e-003	3.7000e-003

tblVehicleEF	LDA	7.8400e-004	9.0000e-004
tblVehicleEF	LDA	0.09	0.23
tblVehicleEF	LDA	0.18	0.31
tblVehicleEF	LDA	0.06	0.09
tblVehicleEF	LDA	0.06	0.20
tblVehicleEF	LDA	0.41	1.13
tblVehicleEF	LDA	0.24	0.84
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	3.40	5.95
tblVehicleEF	LDT1	6.44	8.11
tblVehicleEF	LDT1	354.66	460.53
tblVehicleEF	LDT1	77.31	90.04
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.33	0.56
tblVehicleEF	LDT1	0.37	0.46
tblVehicleEF	LDT1	0.04	0.01
tblVehicleEF	LDT1	4.5630e-003	0.01
tblVehicleEF	LDT1	5.8210e-003	5.4000e-003
tblVehicleEF	LDT1	0.02	0.01
tblVehicleEF	LDT1	2.0000e-003	8.0000e-003
tblVehicleEF	LDT1	4.1690e-003	0.01
tblVehicleEF	LDT1	5.3190e-003	5.4000e-003
tblVehicleEF	LDT1	0.22	0.18
tblVehicleEF	LDT1	0.32	0.26
tblVehicleEF	LDT1	0.14	0.11
tblVehicleEF	LDT1	0.10	0.29
tblVehicleEF	LDT1	1.12	1.21

tblVehicleEF	LDT1	0.51	0.74
tblVehicleEF	LDT1	4.0010e-003	5.9000e-003
tblVehicleEF	LDT1	9.5600e-004	1.0000e-003
tblVehicleEF	LDT1	0.22	0.18
tblVehicleEF	LDT1	0.32	0.26
tblVehicleEF	LDT1	0.14	0.11
tblVehicleEF	LDT1	0.14	0.33
tblVehicleEF	LDT1	1.12	1.21
tblVehicleEF	LDT1	0.55	0.80
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	3.92	6.50
tblVehicleEF	LDT1	5.01	6.45
tblVehicleEF	LDT1	382.36	498.63
tblVehicleEF	LDT1	77.31	90.04
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.30	0.54
tblVehicleEF	LDT1	0.35	0.43
tblVehicleEF	LDT1	0.04	0.01
tblVehicleEF	LDT1	4.5630e-003	0.01
tblVehicleEF	LDT1	5.8210e-003	5.4000e-003
tblVehicleEF	LDT1	0.02	0.01
tblVehicleEF	LDT1	2.0000e-003	8.0000e-003
tblVehicleEF	LDT1	4.1690e-003	0.01
tblVehicleEF	LDT1	5.3190e-003	5.4000e-003
tblVehicleEF	LDT1	0.42	0.38
tblVehicleEF	LDT1	0.40	0.33
tblVehicleEF	LDT1	0.29	0.27

tblVehicleEF	LDT1	0.11	0.28
tblVehicleEF	LDT1	1.11	1.19
tblVehicleEF	LDT1	0.43	0.61
tblVehicleEF	LDT1	4.3200e-003	6.3000e-003
tblVehicleEF	LDT1	9.3100e-004	1.0000e-003
tblVehicleEF	LDT1	0.42	0.38
tblVehicleEF	LDT1	0.40	0.33
tblVehicleEF	LDT1	0.29	0.27
tblVehicleEF	LDT1	0.14	0.33
tblVehicleEF	LDT1	1.11	1.19
tblVehicleEF	LDT1	0.46	0.66
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	3.28	5.70
tblVehicleEF	LDT1	6.38	8.13
tblVehicleEF	LDT1	349.47	445.10
tblVehicleEF	LDT1	77.31	90.04
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.32	0.60
tblVehicleEF	LDT1	0.37	0.47
tblVehicleEF	LDT1	0.04	0.01
tblVehicleEF	LDT1	4.5630e-003	0.01
tblVehicleEF	LDT1	5.8210e-003	5.4000e-003
tblVehicleEF	LDT1	0.02	0.01
tblVehicleEF	LDT1	2.0000e-003	8.0000e-003
tblVehicleEF	LDT1	4.1690e-003	0.01
tblVehicleEF	LDT1	5.3190e-003	5.4000e-003
tblVehicleEF	LDT1	0.23	0.22

tblVehicleEF	LDT1	0.39	0.35
tblVehicleEF	LDT1	0.13	0.09
tblVehicleEF	LDT1	0.10	0.28
tblVehicleEF	LDT1	1.31	1.38
tblVehicleEF	LDT1	0.51	0.74
tblVehicleEF	LDT1	3.9400e-003	5.8000e-003
tblVehicleEF	LDT1	9.5500e-004	1.0000e-003
tblVehicleEF	LDT1	0.23	0.22
tblVehicleEF	LDT1	0.39	0.35
tblVehicleEF	LDT1	0.13	0.09
tblVehicleEF	LDT1	0.13	0.33
tblVehicleEF	LDT1	1.31	1.38
tblVehicleEF	LDT1	0.54	0.79
tblVehicleEF	LDT2	0.02	0.04
tblVehicleEF	LDT2	0.02	0.04
tblVehicleEF	LDT2	1.94	4.60
tblVehicleEF	LDT2	3.97	9.37
tblVehicleEF	LDT2	429.07	464.39
tblVehicleEF	LDT2	93.19	91.03
tblVehicleEF	LDT2	0.17	0.00
tblVehicleEF	LDT2	0.23	0.66
tblVehicleEF	LDT2	0.38	0.84
tblVehicleEF	LDT2	0.04	0.01
tblVehicleEF	LDT2	1.9880e-003	0.02
tblVehicleEF	LDT2	2.9440e-003	0.01
tblVehicleEF	LDT2	0.02	0.01
tblVehicleEF	LDT2	2.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.8160e-003	0.02

tblVehicleEF	LDT2	2.6930e-003	0.01
tblVehicleEF	LDT2	0.10	0.16
tblVehicleEF	LDT2	0.18	0.20
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	0.05	0.15
tblVehicleEF	LDT2	0.57	0.98
tblVehicleEF	LDT2	0.30	0.84
tblVehicleEF	LDT2	4.7060e-003	4.6000e-003
tblVehicleEF	LDT2	1.0700e-003	1.0000e-003
tblVehicleEF	LDT2	0.10	0.16
tblVehicleEF	LDT2	0.18	0.20
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	0.07	0.20
tblVehicleEF	LDT2	0.57	0.98
tblVehicleEF	LDT2	0.32	0.89
tblVehicleEF	LDT2	0.02	0.04
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	2.28	5.26
tblVehicleEF	LDT2	3.07	7.12
tblVehicleEF	LDT2	464.12	504.91
tblVehicleEF	LDT2	93.19	91.03
tblVehicleEF	LDT2	0.17	0.00
tblVehicleEF	LDT2	0.21	0.64
tblVehicleEF	LDT2	0.35	0.77
tblVehicleEF	LDT2	0.04	0.01
tblVehicleEF	LDT2	1.9880e-003	0.02
tblVehicleEF	LDT2	2.9440e-003	0.01
tblVehicleEF	LDT2	0.02	0.01

tblVehicleEF	LDT2	2.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.8160e-003	0.02
tblVehicleEF	LDT2	2.6930e-003	0.01
tblVehicleEF	LDT2	0.18	0.34
tblVehicleEF	LDT2	0.21	0.27
tblVehicleEF	LDT2	0.14	0.23
tblVehicleEF	LDT2	0.05	0.17
tblVehicleEF	LDT2	0.56	0.96
tblVehicleEF	LDT2	0.25	0.69
tblVehicleEF	LDT2	5.0950e-003	5.0000e-003
tblVehicleEF	LDT2	1.0550e-003	1.0000e-003
tblVehicleEF	LDT2	0.18	0.34
tblVehicleEF	LDT2	0.21	0.27
tblVehicleEF	LDT2	0.14	0.23
tblVehicleEF	LDT2	0.08	0.22
tblVehicleEF	LDT2	0.56	0.96
tblVehicleEF	LDT2	0.27	0.73
tblVehicleEF	LDT2	0.02	0.04
tblVehicleEF	LDT2	0.02	0.04
tblVehicleEF	LDT2	1.86	4.38
tblVehicleEF	LDT2	3.94	9.41
tblVehicleEF	LDT2	422.50	447.98
tblVehicleEF	LDT2	93.19	91.03
tblVehicleEF	LDT2	0.17	0.00
tblVehicleEF	LDT2	0.22	0.71
tblVehicleEF	LDT2	0.38	0.85
tblVehicleEF	LDT2	0.04	0.01
tblVehicleEF	LDT2	1.9880e-003	0.02

tblVehicleEF	LDT2	2.9440e-003	0.01
tblVehicleEF	LDT2	0.02	0.01
tblVehicleEF	LDT2	2.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.8160e-003	0.02
tblVehicleEF	LDT2	2.6930e-003	0.01
tblVehicleEF	LDT2	0.10	0.20
tblVehicleEF	LDT2	0.21	0.26
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.05	0.15
tblVehicleEF	LDT2	0.66	1.15
tblVehicleEF	LDT2	0.30	0.83
tblVehicleEF	LDT2	4.6330e-003	4.4000e-003
tblVehicleEF	LDT2	1.0700e-003	1.0000e-003
tblVehicleEF	LDT2	0.10	0.20
tblVehicleEF	LDT2	0.21	0.26
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.07	0.20
tblVehicleEF	LDT2	0.66	1.15
tblVehicleEF	LDT2	0.32	0.89
tblVehicleEF	LHD1	1.2400e-003	1.5000e-003
tblVehicleEF	LHD1	0.01	0.03
tblVehicleEF	LHD1	0.03	0.05
tblVehicleEF	LHD1	0.18	0.21
tblVehicleEF	LHD1	1.49	5.78
tblVehicleEF	LHD1	4.93	11.57
tblVehicleEF	LHD1	8.65	8.13
tblVehicleEF	LHD1	555.61	594.45
tblVehicleEF	LHD1	40.95	35.14

tblVehicleEF	LHD1	0.06	0.03
tblVehicleEF	LHD1	0.06	0.02
tblVehicleEF	LHD1	1.81	2.96
tblVehicleEF	LHD1	1.40	1.62
tblVehicleEF	LHD1	6.3800e-004	2.0000e-004
tblVehicleEF	LHD1	0.05	0.01
tblVehicleEF	LHD1	9.2780e-003	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	1.3250e-003	2.7000e-003
tblVehicleEF	LHD1	5.8700e-004	2.0000e-004
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	2.3190e-003	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	1.2150e-003	2.7000e-003
tblVehicleEF	LHD1	2.9930e-003	4.6000e-003
tblVehicleEF	LHD1	0.06	0.06
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	1.5160e-003	1.3000e-003
tblVehicleEF	LHD1	0.12	0.31
tblVehicleEF	LHD1	0.33	0.74
tblVehicleEF	LHD1	0.47	0.88
tblVehicleEF	LHD1	9.0000e-005	2.0000e-004
tblVehicleEF	LHD1	5.5800e-003	0.01
tblVehicleEF	LHD1	5.0700e-004	5.0000e-004
tblVehicleEF	LHD1	2.9930e-003	4.6000e-003
tblVehicleEF	LHD1	0.06	0.06
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	1.5160e-003	1.3000e-003

tblVehicleEF	LHD1	0.14	0.36
tblVehicleEF	LHD1	0.33	0.74
tblVehicleEF	LHD1	0.50	0.95
tblVehicleEF	LHD1	1.2400e-003	1.5000e-003
tblVehicleEF	LHD1	0.01	0.04
tblVehicleEF	LHD1	0.03	0.04
tblVehicleEF	LHD1	0.18	0.21
tblVehicleEF	LHD1	1.52	5.92
tblVehicleEF	LHD1	3.96	8.81
tblVehicleEF	LHD1	8.65	8.13
tblVehicleEF	LHD1	555.61	594.45
tblVehicleEF	LHD1	40.95	35.14
tblVehicleEF	LHD1	0.06	0.03
tblVehicleEF	LHD1	0.06	0.02
tblVehicleEF	LHD1	1.68	2.90
tblVehicleEF	LHD1	1.34	1.55
tblVehicleEF	LHD1	6.3800e-004	2.0000e-004
tblVehicleEF	LHD1	0.05	0.01
tblVehicleEF	LHD1	9.2780e-003	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	1.3250e-003	2.7000e-003
tblVehicleEF	LHD1	5.8700e-004	2.0000e-004
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	2.3190e-003	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	1.2150e-003	2.7000e-003
tblVehicleEF	LHD1	5.5520e-003	9.3000e-003
tblVehicleEF	LHD1	0.08	0.08

tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	3.2270e-003	3.7000e-003
tblVehicleEF	LHD1	0.12	0.32
tblVehicleEF	LHD1	0.33	0.74
tblVehicleEF	LHD1	0.41	0.74
tblVehicleEF	LHD1	9.0000e-005	2.0000e-004
tblVehicleEF	LHD1	5.5800e-003	0.01
tblVehicleEF	LHD1	4.9000e-004	5.0000e-004
tblVehicleEF	LHD1	5.5520e-003	9.3000e-003
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	3.2270e-003	3.7000e-003
tblVehicleEF	LHD1	0.14	0.37
tblVehicleEF	LHD1	0.33	0.74
tblVehicleEF	LHD1	0.44	0.79
tblVehicleEF	LHD1	1.2400e-003	1.5000e-003
tblVehicleEF	LHD1	0.01	0.03
tblVehicleEF	LHD1	0.03	0.05
tblVehicleEF	LHD1	0.18	0.21
tblVehicleEF	LHD1	1.49	5.76
tblVehicleEF	LHD1	4.64	11.17
tblVehicleEF	LHD1	8.65	8.13
tblVehicleEF	LHD1	555.61	594.45
tblVehicleEF	LHD1	40.95	35.14
tblVehicleEF	LHD1	0.06	0.03
tblVehicleEF	LHD1	0.06	0.02
tblVehicleEF	LHD1	1.78	3.15
tblVehicleEF	LHD1	1.38	1.61

tblVehicleEF	LHD1	6.3800e-004	2.0000e-004
tblVehicleEF	LHD1	0.05	0.01
tblVehicleEF	LHD1	9.2780e-003	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	1.3250e-003	2.7000e-003
tblVehicleEF	LHD1	5.8700e-004	2.0000e-004
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	2.3190e-003	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	1.2150e-003	2.7000e-003
tblVehicleEF	LHD1	3.3200e-003	6.5000e-003
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	1.5880e-003	1.3000e-003
tblVehicleEF	LHD1	0.12	0.31
tblVehicleEF	LHD1	0.35	0.80
tblVehicleEF	LHD1	0.45	0.86
tblVehicleEF	LHD1	9.0000e-005	2.0000e-004
tblVehicleEF	LHD1	5.5800e-003	0.01
tblVehicleEF	LHD1	5.0200e-004	5.0000e-004
tblVehicleEF	LHD1	3.3200e-003	6.5000e-003
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	1.5880e-003	1.3000e-003
tblVehicleEF	LHD1	0.14	0.36
tblVehicleEF	LHD1	0.35	0.80
tblVehicleEF	LHD1	0.48	0.92
tblVehicleEF	LHD2	9.5000e-004	1.3000e-003

tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	0.02	0.04
tblVehicleEF	LHD2	0.14	0.18
tblVehicleEF	LHD2	1.07	3.75
tblVehicleEF	LHD2	2.92	8.21
tblVehicleEF	LHD2	9.50	8.75
tblVehicleEF	LHD2	540.34	577.73
tblVehicleEF	LHD2	27.28	31.10
tblVehicleEF	LHD2	9.0620e-003	0.00
tblVehicleEF	LHD2	0.11	0.05
tblVehicleEF	LHD2	2.64	4.94
tblVehicleEF	LHD2	0.88	1.18
tblVehicleEF	LHD2	1.2020e-003	8.0000e-004
tblVehicleEF	LHD2	0.07	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	8.3800e-004	2.1000e-003
tblVehicleEF	LHD2	1.1060e-003	8.0000e-004
tblVehicleEF	LHD2	0.03	0.01
tblVehicleEF	LHD2	2.5760e-003	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.4500e-004	2.1000e-003
tblVehicleEF	LHD2	1.7980e-003	3.3000e-003
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	9.1100e-004	9.0000e-004
tblVehicleEF	LHD2	0.11	0.24
tblVehicleEF	LHD2	0.21	0.57

tblVehicleEF	LHD2	0.28	0.72
tblVehicleEF	LHD2	9.6000e-005	3.0000e-004
tblVehicleEF	LHD2	5.3560e-003	0.02
tblVehicleEF	LHD2	3.3100e-004	4.0000e-004
tblVehicleEF	LHD2	1.7980e-003	3.3000e-003
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	9.1100e-004	9.0000e-004
tblVehicleEF	LHD2	0.13	0.27
tblVehicleEF	LHD2	0.21	0.57
tblVehicleEF	LHD2	0.30	0.77
tblVehicleEF	LHD2	9.5000e-004	1.3000e-003
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	0.14	0.18
tblVehicleEF	LHD2	1.09	3.81
tblVehicleEF	LHD2	2.39	6.53
tblVehicleEF	LHD2	9.50	8.75
tblVehicleEF	LHD2	540.34	577.73
tblVehicleEF	LHD2	27.28	31.10
tblVehicleEF	LHD2	9.0620e-003	0.00
tblVehicleEF	LHD2	0.11	0.05
tblVehicleEF	LHD2	2.48	4.88
tblVehicleEF	LHD2	0.85	1.12
tblVehicleEF	LHD2	1.2020e-003	8.0000e-004
tblVehicleEF	LHD2	0.07	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02

tblVehicleEF	LHD2	8.3800e-004	2.1000e-003
tblVehicleEF	LHD2	1.1060e-003	8.0000e-004
tblVehicleEF	LHD2	0.03	0.01
tblVehicleEF	LHD2	2.5760e-003	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.4500e-004	2.1000e-003
tblVehicleEF	LHD2	3.3440e-003	6.6000e-003
tblVehicleEF	LHD2	0.05	0.07
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.9450e-003	2.6000e-003
tblVehicleEF	LHD2	0.11	0.24
tblVehicleEF	LHD2	0.22	0.57
tblVehicleEF	LHD2	0.25	0.60
tblVehicleEF	LHD2	9.6000e-005	3.0000e-004
tblVehicleEF	LHD2	5.3560e-003	0.02
tblVehicleEF	LHD2	3.2200e-004	4.0000e-004
tblVehicleEF	LHD2	3.3440e-003	6.6000e-003
tblVehicleEF	LHD2	0.05	0.07
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.9450e-003	2.6000e-003
tblVehicleEF	LHD2	0.13	0.27
tblVehicleEF	LHD2	0.22	0.57
tblVehicleEF	LHD2	0.27	0.65
tblVehicleEF	LHD2	9.5000e-004	1.3000e-003
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	0.02	0.04
tblVehicleEF	LHD2	0.14	0.18
tblVehicleEF	LHD2	1.07	3.72

tblVehicleEF	LHD2	2.76	7.95
tblVehicleEF	LHD2	9.50	8.75
tblVehicleEF	LHD2	540.34	577.73
tblVehicleEF	LHD2	27.28	31.10
tblVehicleEF	LHD2	9.0620e-003	0.00
tblVehicleEF	LHD2	0.11	0.05
tblVehicleEF	LHD2	2.60	5.19
tblVehicleEF	LHD2	0.87	1.17
tblVehicleEF	LHD2	1.2020e-003	8.0000e-004
tblVehicleEF	LHD2	0.07	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	8.3800e-004	2.1000e-003
tblVehicleEF	LHD2	1.1060e-003	8.0000e-004
tblVehicleEF	LHD2	0.03	0.01
tblVehicleEF	LHD2	2.5760e-003	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.4500e-004	2.1000e-003
tblVehicleEF	LHD2	1.9840e-003	4.6000e-003
tblVehicleEF	LHD2	0.05	0.08
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	9.4900e-004	1.0000e-003
tblVehicleEF	LHD2	0.11	0.24
tblVehicleEF	LHD2	0.23	0.61
tblVehicleEF	LHD2	0.27	0.70
tblVehicleEF	LHD2	9.6000e-005	3.0000e-004
tblVehicleEF	LHD2	5.3560e-003	0.02
tblVehicleEF	LHD2	3.2800e-004	4.0000e-004

tblVehicleEF	LHD2	1.9840e-003	4.6000e-003
tblVehicleEF	LHD2	0.05	0.08
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	9.4900e-004	1.0000e-003
tblVehicleEF	LHD2	0.13	0.27
tblVehicleEF	LHD2	0.23	0.61
tblVehicleEF	LHD2	0.29	0.75
tblVehicleEF	MCY	0.00	0.26
tblVehicleEF	MCY	0.00	0.17
tblVehicleEF	MCY	25.41	57.63
tblVehicleEF	MCY	9.80	9.53
tblVehicleEF	MCY	143.59	114.79
tblVehicleEF	MCY	46.26	54.96
tblVehicleEF	MCY	4.8310e-003	0.00
tblVehicleEF	MCY	1.22	1.34
tblVehicleEF	MCY	0.31	0.31
tblVehicleEF	MCY	0.04	6.3000e-003
tblVehicleEF	MCY	8.0000e-003	4.0000e-003
tblVehicleEF	MCY	6.4500e-004	0.04
tblVehicleEF	MCY	1.9060e-003	0.01
tblVehicleEF	MCY	0.02	6.3000e-003
tblVehicleEF	MCY	2.0000e-003	4.0000e-003
tblVehicleEF	MCY	5.1800e-004	0.04
tblVehicleEF	MCY	1.5060e-003	0.01
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.50	0.60
tblVehicleEF	MCY	0.61	0.61
tblVehicleEF	MCY	2.55	3.92

tblVehicleEF	MCY	1.66	3.55
tblVehicleEF	MCY	2.16	2.54
tblVehicleEF	MCY	1.9370e-003	2.1000e-003
tblVehicleEF	MCY	6.9200e-004	7.0000e-004
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.50	0.60
tblVehicleEF	MCY	0.61	0.61
tblVehicleEF	MCY	2.80	4.24
tblVehicleEF	MCY	1.66	3.55
tblVehicleEF	MCY	2.33	2.74
tblVehicleEF	MCY	0.00	0.25
tblVehicleEF	MCY	0.00	0.14
tblVehicleEF	MCY	25.09	56.30
tblVehicleEF	MCY	8.82	8.98
tblVehicleEF	MCY	143.59	114.79
tblVehicleEF	MCY	46.26	54.96
tblVehicleEF	MCY	4.8310e-003	0.00
tblVehicleEF	MCY	1.05	1.25
tblVehicleEF	MCY	0.29	0.29
tblVehicleEF	MCY	0.04	6.3000e-003
tblVehicleEF	MCY	8.0000e-003	4.0000e-003
tblVehicleEF	MCY	6.4500e-004	0.04
tblVehicleEF	MCY	1.9060e-003	0.01
tblVehicleEF	MCY	0.02	6.3000e-003
tblVehicleEF	MCY	2.0000e-003	4.0000e-003
tblVehicleEF	MCY	5.1800e-004	0.04
tblVehicleEF	MCY	1.5060e-003	0.01
tblVehicleEF	MCY	2.25	2.35

tblVehicleEF	MCY	0.72	0.80
tblVehicleEF	MCY	1.49	1.64
tblVehicleEF	MCY	2.48	3.70
tblVehicleEF	MCY	1.63	3.49
tblVehicleEF	MCY	1.88	2.14
tblVehicleEF	MCY	1.9300e-003	2.1000e-003
tblVehicleEF	MCY	6.6700e-004	7.0000e-004
tblVehicleEF	MCY	2.25	2.35
tblVehicleEF	MCY	0.72	0.80
tblVehicleEF	MCY	1.49	1.64
tblVehicleEF	MCY	2.72	4.00
tblVehicleEF	MCY	1.63	3.49
tblVehicleEF	MCY	2.03	2.31
tblVehicleEF	MCY	0.00	0.25
tblVehicleEF	MCY	0.00	0.16
tblVehicleEF	MCY	24.74	56.62
tblVehicleEF	MCY	9.51	9.35
tblVehicleEF	MCY	143.59	114.79
tblVehicleEF	MCY	46.26	54.96
tblVehicleEF	MCY	4.8310e-003	0.00
tblVehicleEF	MCY	1.18	1.46
tblVehicleEF	MCY	0.30	0.31
tblVehicleEF	MCY	0.04	6.3000e-003
tblVehicleEF	MCY	8.0000e-003	4.0000e-003
tblVehicleEF	MCY	6.4500e-004	0.04
tblVehicleEF	MCY	1.9060e-003	0.01
tblVehicleEF	MCY	0.02	6.3000e-003
tblVehicleEF	MCY	2.0000e-003	4.0000e-003

tblVehicleEF	MCY	5.1800e-004	0.04
tblVehicleEF	MCY	1.5060e-003	0.01
tblVehicleEF	MCY	1.31	1.44
tblVehicleEF	MCY	0.68	0.85
tblVehicleEF	MCY	0.58	0.53
tblVehicleEF	MCY	2.53	3.89
tblVehicleEF	MCY	1.92	3.97
tblVehicleEF	MCY	2.10	2.48
tblVehicleEF	MCY	1.9260e-003	2.1000e-003
tblVehicleEF	MCY	6.8500e-004	7.0000e-004
tblVehicleEF	MCY	1.31	1.44
tblVehicleEF	MCY	0.68	0.85
tblVehicleEF	MCY	0.58	0.53
tblVehicleEF	MCY	2.77	4.21
tblVehicleEF	MCY	1.92	3.97
tblVehicleEF	MCY	2.26	2.68
tblVehicleEF	MDV	0.03	0.05
tblVehicleEF	MDV	0.03	0.05
tblVehicleEF	MDV	2.59	5.13
tblVehicleEF	MDV	5.48	10.41
tblVehicleEF	MDV	556.85	637.89
tblVehicleEF	MDV	119.72	125.40
tblVehicleEF	MDV	0.16	0.00
tblVehicleEF	MDV	0.34	0.77
tblVehicleEF	MDV	0.54	0.90
tblVehicleEF	MDV	0.04	0.01
tblVehicleEF	MDV	2.1690e-003	0.01
tblVehicleEF	MDV	3.3270e-003	9.7000e-003

tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	2.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.9910e-003	0.01
tblVehicleEF	MDV	3.0600e-003	9.7000e-003
tblVehicleEF	MDV	0.10	0.14
tblVehicleEF	MDV	0.19	0.16
tblVehicleEF	MDV	0.08	0.08
tblVehicleEF	MDV	0.07	0.19
tblVehicleEF	MDV	0.59	0.78
tblVehicleEF	MDV	0.48	1.00
tblVehicleEF	MDV	5.9730e-003	6.3000e-003
tblVehicleEF	MDV	1.3600e-003	1.4000e-003
tblVehicleEF	MDV	0.10	0.14
tblVehicleEF	MDV	0.19	0.16
tblVehicleEF	MDV	0.08	0.08
tblVehicleEF	MDV	0.10	0.24
tblVehicleEF	MDV	0.59	0.78
tblVehicleEF	MDV	0.51	1.07
tblVehicleEF	MDV	0.03	0.05
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	3.04	5.79
tblVehicleEF	MDV	4.23	7.97
tblVehicleEF	MDV	601.82	695.01
tblVehicleEF	MDV	119.72	125.40
tblVehicleEF	MDV	0.16	0.00
tblVehicleEF	MDV	0.30	0.74
tblVehicleEF	MDV	0.50	0.82
tblVehicleEF	MDV	0.04	0.01

tblVehicleEF	MDV	2.1690e-003	0.01
tblVehicleEF	MDV	3.3270e-003	9.7000e-003
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	2.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.9910e-003	0.01
tblVehicleEF	MDV	3.0600e-003	9.7000e-003
tblVehicleEF	MDV	0.19	0.29
tblVehicleEF	MDV	0.22	0.22
tblVehicleEF	MDV	0.15	0.20
tblVehicleEF	MDV	0.08	0.20
tblVehicleEF	MDV	0.58	0.77
tblVehicleEF	MDV	0.40	0.82
tblVehicleEF	MDV	6.4610e-003	6.9000e-003
tblVehicleEF	MDV	1.3380e-003	1.3000e-003
tblVehicleEF	MDV	0.19	0.29
tblVehicleEF	MDV	0.22	0.22
tblVehicleEF	MDV	0.15	0.20
tblVehicleEF	MDV	0.11	0.26
tblVehicleEF	MDV	0.58	0.77
tblVehicleEF	MDV	0.43	0.88
tblVehicleEF	MDV	0.03	0.05
tblVehicleEF	MDV	0.03	0.05
tblVehicleEF	MDV	2.49	4.88
tblVehicleEF	MDV	5.44	10.45
tblVehicleEF	MDV	548.43	614.75
tblVehicleEF	MDV	119.72	125.40
tblVehicleEF	MDV	0.16	0.00
tblVehicleEF	MDV	0.32	0.82

tblVehicleEF	MDV	0.54	0.90
tblVehicleEF	MDV	0.04	0.01
tblVehicleEF	MDV	2.1690e-003	0.01
tblVehicleEF	MDV	3.3270e-003	9.7000e-003
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	2.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.9910e-003	0.01
tblVehicleEF	MDV	3.0600e-003	9.7000e-003
tblVehicleEF	MDV	0.10	0.17
tblVehicleEF	MDV	0.22	0.21
tblVehicleEF	MDV	0.07	0.07
tblVehicleEF	MDV	0.07	0.18
tblVehicleEF	MDV	0.68	0.91
tblVehicleEF	MDV	0.48	1.00
tblVehicleEF	MDV	5.8810e-003	6.1000e-003
tblVehicleEF	MDV	1.3590e-003	1.4000e-003
tblVehicleEF	MDV	0.10	0.17
tblVehicleEF	MDV	0.22	0.21
tblVehicleEF	MDV	0.07	0.07
tblVehicleEF	MDV	0.10	0.24
tblVehicleEF	MDV	0.68	0.91
tblVehicleEF	MDV	0.51	1.07
tblVehicleEF	MH	0.00	0.07
tblVehicleEF	MH	0.00	0.12
tblVehicleEF	MH	5.19	23.55
tblVehicleEF	MH	10.08	25.27
tblVehicleEF	MH	644.71	710.29
tblVehicleEF	MH	32.73	48.76

tblVehicleEF	MH	2.9060e-003	0.00
tblVehicleEF	MH	1.89	3.60
tblVehicleEF	MH	0.96	1.72
tblVehicleEF	MH	0.05	0.01
tblVehicleEF	MH	8.6130e-003	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	1.9070e-003	1.6000e-003
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	2.1530e-003	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	1.6460e-003	1.6000e-003
tblVehicleEF	MH	1.64	2.81
tblVehicleEF	MH	0.09	0.16
tblVehicleEF	MH	0.58	0.90
tblVehicleEF	MH	0.17	0.62
tblVehicleEF	MH	2.07	2.14
tblVehicleEF	MH	0.63	1.92
tblVehicleEF	MH	6.5450e-003	0.01
tblVehicleEF	MH	5.1000e-004	9.0000e-004
tblVehicleEF	MH	1.64	2.81
tblVehicleEF	MH	0.09	0.16
tblVehicleEF	MH	0.58	0.90
tblVehicleEF	MH	0.20	0.70
tblVehicleEF	MH	2.07	2.14
tblVehicleEF	MH	0.67	2.07
tblVehicleEF	MH	0.00	0.07
tblVehicleEF	MH	0.00	0.09
tblVehicleEF	MH	5.34	24.04

tblVehicleEF	MH	8.01	20.03
tblVehicleEF	MH	644.71	710.29
tblVehicleEF	MH	32.73	48.76
tblVehicleEF	MH	2.9060e-003	0.00
tblVehicleEF	MH	1.72	3.46
tblVehicleEF	MH	0.92	1.64
tblVehicleEF	MH	0.05	0.01
tblVehicleEF	MH	8.6130e-003	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	1.9070e-003	1.6000e-003
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	2.1530e-003	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	1.6460e-003	1.6000e-003
tblVehicleEF	MH	2.95	5.55
tblVehicleEF	MH	0.11	0.20
tblVehicleEF	MH	1.20	2.37
tblVehicleEF	MH	0.17	0.61
tblVehicleEF	MH	2.05	2.12
tblVehicleEF	MH	0.53	1.54
tblVehicleEF	MH	6.5470e-003	0.01
tblVehicleEF	MH	4.7400e-004	8.0000e-004
tblVehicleEF	MH	2.95	5.55
tblVehicleEF	MH	0.11	0.20
tblVehicleEF	MH	1.20	2.37
tblVehicleEF	MH	0.20	0.70
tblVehicleEF	MH	2.05	2.12
tblVehicleEF	MH	0.57	1.66

tblVehicleEF	MH	0.00	0.07
tblVehicleEF	MH	0.00	0.11
tblVehicleEF	MH	5.14	23.30
tblVehicleEF	MH	9.48	24.05
tblVehicleEF	MH	644.71	710.29
tblVehicleEF	MH	32.73	48.76
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tblVehicleEF	MH	1.85	3.88
tblVehicleEF	MH	0.95	1.71
tblVehicleEF	MH	0.05	0.01
tblVehicleEF	MH	8.6130e-003	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	1.9070e-003	1.6000e-003
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	2.1530e-003	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	1.6460e-003	1.6000e-003
tblVehicleEF	MH	1.98	3.91
tblVehicleEF	MH	0.13	0.23
tblVehicleEF	MH	0.65	0.99
tblVehicleEF	MH	0.17	0.61
tblVehicleEF	MH	2.17	2.26
tblVehicleEF	MH	0.60	1.84
tblVehicleEF	MH	6.5440e-003	0.01
tblVehicleEF	MH	4.9900e-004	9.0000e-004
tblVehicleEF	MH	1.98	3.91
tblVehicleEF	MH	0.13	0.23
tblVehicleEF	MH	0.65	0.99

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tblVehicleEF	MH	2.17	2.26
tblVehicleEF	MH	0.64	1.98
tblVehicleEF	MHD	9.1490e-003	9.0000e-004
tblVehicleEF	MHD	7.4060e-003	0.02
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tblVehicleEF	MHD	1.98	0.13
tblVehicleEF	MHD	1.40	3.87
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tblVehicleEF	MHD	1,012.77	1,402.13
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tblVehicleEF	MHD	4.62	12.44
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tblVehicleEF	MHD	0.04	2.9000e-003
tblVehicleEF	MHD	0.12	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	0.13	0.22
tblVehicleEF	MHD	5.1990e-003	1.4000e-003
tblVehicleEF	MHD	0.04	2.9000e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	2.8570e-003	0.01
tblVehicleEF	MHD	0.12	0.22
tblVehicleEF	MHD	4.2960e-003	1.4000e-003
tblVehicleEF	MHD	5.1830e-003	1.6000e-003
tblVehicleEF	MHD	0.20	0.04

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tblVehicleEF	MHD	2.5950e-003	6.0000e-004
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tblVehicleEF	MHD	0.74	0.41
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tblVehicleEF	MHD	1.0800e-003	4.0000e-004
tblVehicleEF	MHD	5.1830e-003	1.6000e-003
tblVehicleEF	MHD	0.20	0.04
tblVehicleEF	MHD	0.22	0.02
tblVehicleEF	MHD	2.5950e-003	6.0000e-004
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tblVehicleEF	MHD	0.74	0.41
tblVehicleEF	MHD	1.86	1.07
tblVehicleEF	MHD	8.6220e-003	9.0000e-004
tblVehicleEF	MHD	7.4060e-003	0.02
tblVehicleEF	MHD	0.00	0.05
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tblVehicleEF	MHD	1.41	3.91
tblVehicleEF	MHD	20.05	8.79
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tblVehicleEF	MHD	7.43	0.19
tblVehicleEF	MHD	4.34	12.35
tblVehicleEF	MHD	2.22	0.69

tblVehicleEF	MHD	0.04	2.9000e-003
tblVehicleEF	MHD	0.12	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	0.13	0.22
tblVehicleEF	MHD	5.1990e-003	1.4000e-003
tblVehicleEF	MHD	0.03	2.9000e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	2.8570e-003	0.01
tblVehicleEF	MHD	0.12	0.22
tblVehicleEF	MHD	4.2960e-003	1.4000e-003
tblVehicleEF	MHD	9.8130e-003	3.3000e-003
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tblVehicleEF	MHD	0.19	0.01
tblVehicleEF	MHD	5.6820e-003	1.6000e-003
tblVehicleEF	MHD	0.19	0.25
tblVehicleEF	MHD	0.74	0.41
tblVehicleEF	MHD	1.50	0.82
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tblVehicleEF	MHD	9.8590e-003	0.11
tblVehicleEF	MHD	1.0100e-003	4.0000e-004
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tblVehicleEF	MHD	0.23	0.04
tblVehicleEF	MHD	0.21	0.02
tblVehicleEF	MHD	5.6820e-003	1.6000e-003
tblVehicleEF	MHD	0.22	0.29
tblVehicleEF	MHD	0.74	0.41
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tblVehicleEF	MHD	9.8770e-003	9.0000e-004

tblVehicleEF	MHD	7.4060e-003	0.02
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tblVehicleEF	MHD	0.05	2.9000e-003
tblVehicleEF	MHD	0.12	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	0.13	0.22
tblVehicleEF	MHD	5.1990e-003	1.4000e-003
tblVehicleEF	MHD	0.05	2.9000e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	2.8570e-003	0.01
tblVehicleEF	MHD	0.12	0.22
tblVehicleEF	MHD	4.2960e-003	1.4000e-003
tblVehicleEF	MHD	5.9690e-003	2.3000e-003
tblVehicleEF	MHD	0.25	0.05
tblVehicleEF	MHD	0.21	0.01
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tblVehicleEF	MHD	0.79	0.43

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tblVehicleEF	MHD	5.3940e-003	9.0000e-004
tblVehicleEF	MHD	9.8580e-003	0.11
tblVehicleEF	MHD	1.0580e-003	4.0000e-004
tblVehicleEF	MHD	5.9690e-003	2.3000e-003
tblVehicleEF	MHD	0.25	0.05
tblVehicleEF	MHD	0.24	0.02
tblVehicleEF	MHD	2.8190e-003	6.0000e-004
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tblVehicleEF	OBUS	0.06	1.9000e-003
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tblVehicleEF	SBUS	0.02	0.12
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tblVehicleEF	SBUS	0.01	1.2000e-003
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tblVehicleEF	SBUS	0.01	0.10
tblVehicleEF	SBUS	2.0710e-003	3.0000e-004
tblVehicleEF	SBUS	0.11	0.02
tblVehicleEF	SBUS	0.54	0.10
tblVehicleEF	SBUS	0.12	0.82
tblVehicleEF	SBUS	0.05	0.01
tblVehicleEF	SBUS	0.54	0.72
tblVehicleEF	SBUS	3.17	0.69
tblVehicleEF	SBUS	3.03	0.69
tblVehicleEF	SBUS	5.8270e-003	0.03
tblVehicleEF	SBUS	7.8700e-003	0.03
tblVehicleEF	SBUS	0.00	0.05
tblVehicleEF	SBUS	1.44	5.40
tblVehicleEF	SBUS	6.75	10.38
tblVehicleEF	SBUS	37.79	8.46
tblVehicleEF	SBUS	533.99	546.29
tblVehicleEF	SBUS	1,167.98	1,407.43
tblVehicleEF	SBUS	144.04	20.86
tblVehicleEF	SBUS	7.3600e-004	0.00
tblVehicleEF	SBUS	7.83	8.54
tblVehicleEF	SBUS	8.57	12.31
tblVehicleEF	SBUS	2.36	0.42
tblVehicleEF	SBUS	0.03	0.12
tblVehicleEF	SBUS	0.60	0.01
tblVehicleEF	SBUS	0.01	0.01

tblVehicleEF	SBUS	0.09	0.38
tblVehicleEF	SBUS	0.01	1.2000e-003
tblVehicleEF	SBUS	0.03	0.12
tblVehicleEF	SBUS	0.26	0.01
tblVehicleEF	SBUS	2.7950e-003	0.01
tblVehicleEF	SBUS	0.08	0.38
tblVehicleEF	SBUS	0.01	1.2000e-003
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	0.63	0.12
tblVehicleEF	SBUS	0.13	0.75
tblVehicleEF	SBUS	0.03	4.1000e-003
tblVehicleEF	SBUS	0.49	0.66
tblVehicleEF	SBUS	4.01	0.87
tblVehicleEF	SBUS	3.29	0.78
tblVehicleEF	SBUS	5.1720e-003	0.03
tblVehicleEF	SBUS	0.01	0.10
tblVehicleEF	SBUS	2.1580e-003	4.0000e-004
tblVehicleEF	SBUS	0.08	0.01
tblVehicleEF	SBUS	0.63	0.12
tblVehicleEF	SBUS	0.14	0.82
tblVehicleEF	SBUS	0.03	4.1000e-003
tblVehicleEF	SBUS	0.54	0.73
tblVehicleEF	SBUS	4.01	0.87
tblVehicleEF	SBUS	3.54	0.84
tblVehicleEF	UBUS	0.00	0.06
tblVehicleEF	UBUS	0.00	0.13
tblVehicleEF	UBUS	6.19	8.21
tblVehicleEF	UBUS	21.48	31.42

tblVehicleEF	UBUS	1,730.18	1,458.18
tblVehicleEF	UBUS	63.40	98.23
tblVehicleEF	UBUS	1.3460e-003	0.00
tblVehicleEF	UBUS	10.02	9.15
tblVehicleEF	UBUS	3.04	3.82
tblVehicleEF	UBUS	0.49	0.01
tblVehicleEF	UBUS	8.0000e-003	0.01
tblVehicleEF	UBUS	0.15	0.14
tblVehicleEF	UBUS	9.3900e-004	8.3000e-003
tblVehicleEF	UBUS	0.21	0.01
tblVehicleEF	UBUS	2.0000e-003	0.01
tblVehicleEF	UBUS	0.13	0.14
tblVehicleEF	UBUS	8.7200e-004	8.3000e-003
tblVehicleEF	UBUS	0.01	0.01
tblVehicleEF	UBUS	0.20	0.21
tblVehicleEF	UBUS	6.6050e-003	6.4000e-003
tblVehicleEF	UBUS	0.79	0.89
tblVehicleEF	UBUS	1.14	0.97
tblVehicleEF	UBUS	1.75	2.32
tblVehicleEF	UBUS	0.02	0.08
tblVehicleEF	UBUS	1.0350e-003	1.5000e-003
tblVehicleEF	UBUS	0.01	0.01
tblVehicleEF	UBUS	0.20	0.21
tblVehicleEF	UBUS	6.6050e-003	6.4000e-003
tblVehicleEF	UBUS	0.88	0.99
tblVehicleEF	UBUS	1.14	0.97
tblVehicleEF	UBUS	1.86	2.48
tblVehicleEF	UBUS	0.00	0.06

tblVehicleEF	UBUS	0.00	0.11
tblVehicleEF	UBUS	6.31	8.39
tblVehicleEF	UBUS	17.91	25.75
tblVehicleEF	UBUS	1,730.18	1,458.18
tblVehicleEF	UBUS	63.40	98.23
tblVehicleEF	UBUS	1.3460e-003	0.00
tblVehicleEF	UBUS	9.34	9.01
tblVehicleEF	UBUS	2.89	3.62
tblVehicleEF	UBUS	0.49	0.01
tblVehicleEF	UBUS	8.0000e-003	0.01
tblVehicleEF	UBUS	0.15	0.14
tblVehicleEF	UBUS	9.3900e-004	8.3000e-003
tblVehicleEF	UBUS	0.21	0.01
tblVehicleEF	UBUS	2.0000e-003	0.01
tblVehicleEF	UBUS	0.13	0.14
tblVehicleEF	UBUS	8.7200e-004	8.3000e-003
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.23	0.25
tblVehicleEF	UBUS	0.01	0.01
tblVehicleEF	UBUS	0.80	0.91
tblVehicleEF	UBUS	1.11	0.95
tblVehicleEF	UBUS	1.57	2.07
tblVehicleEF	UBUS	0.02	0.08
tblVehicleEF	UBUS	9.7300e-004	1.4000e-003
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.23	0.25
tblVehicleEF	UBUS	0.01	0.01
tblVehicleEF	UBUS	0.89	1.01

tblVehicleEF	UBUS	1.11	0.95
tblVehicleEF	UBUS	1.68	2.21
tblVehicleEF	UBUS	0.00	0.06
tblVehicleEF	UBUS	0.00	0.13
tblVehicleEF	UBUS	6.19	8.20
tblVehicleEF	UBUS	20.86	30.80
tblVehicleEF	UBUS	1,730.18	1,458.18
tblVehicleEF	UBUS	63.40	98.23
tblVehicleEF	UBUS	1.3460e-003	0.00
tblVehicleEF	UBUS	9.83	9.70
tblVehicleEF	UBUS	3.03	3.82
tblVehicleEF	UBUS	0.49	0.01
tblVehicleEF	UBUS	8.0000e-003	0.01
tblVehicleEF	UBUS	0.15	0.14
tblVehicleEF	UBUS	9.3900e-004	8.3000e-003
tblVehicleEF	UBUS	0.21	0.01
tblVehicleEF	UBUS	2.0000e-003	0.01
tblVehicleEF	UBUS	0.13	0.14
tblVehicleEF	UBUS	8.7200e-004	8.3000e-003
tblVehicleEF	UBUS	0.01	0.01
tblVehicleEF	UBUS	0.25	0.28
tblVehicleEF	UBUS	7.2990e-003	7.0000e-003
tblVehicleEF	UBUS	0.79	0.89
tblVehicleEF	UBUS	1.32	1.12
tblVehicleEF	UBUS	1.72	2.30
tblVehicleEF	UBUS	0.02	0.08
tblVehicleEF	UBUS	1.0240e-003	1.5000e-003
tblVehicleEF	UBUS	0.01	0.01

tblVehicleEF	UBUS	0.25	0.28
tblVehicleEF	UBUS	7.2990e-003	7.0000e-003
tblVehicleEF	UBUS	0.88	0.99
tblVehicleEF	UBUS	1.32	1.12
tblVehicleEF	UBUS	1.84	2.46
tblVehicleTrips	CNW_TL	6.90	22.84
tblVehicleTrips	CW_TL	16.60	22.84
tblVehicleTrips	ST_TR	2.59	1.68
tblVehicleTrips	SU_TR	2.59	1.68
tblVehicleTrips	WD_TR	2.59	1.68
tblWater	IndoorWaterUseRate	277,352,000.00	36,821,211.40
tblWater	OutdoorWaterUseRate	0.00	47,248,457.10

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.7253	1.6000e-004	0.0160	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	9.0000e-005	0.0000	0.0316
Energy	0.0162	0.1476	0.1240	8.9000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	1,252.0765	1,252.0765	0.0533	0.0133	1,257.3255
Mobile	8.0956	63.1910	90.0497	0.4534	5.4314	2.4773	7.9087	1.6204	2.4773	4.0977	0.0000	9,589.0298	9,589.0298	0.7185	0.0000	9,604.1187
Waste						0.0000	0.0000		0.0000	0.0000	228.8520	0.0000	228.8520	13.5248	0.0000	512.8721
Water						0.0000	0.0000		0.0000	0.0000	11.6817	287.4201	299.1018	1.2130	0.0311	334.2052
Total	**13.8371**	**63.3387**	**90.1897**	**0.4543**	**5.4314**	**2.4885**	**7.9199**	**1.6204**	**2.4885**	**4.1090**	**240.5337**	**11,128.5562**	**11,369.0898**	**15.5097**	**0.0444**	**11,708.5531**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.7253	1.6000e-004	0.0160	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	9.0000e-005	0.0000	0.0316
Energy	0.0162	0.1476	0.1240	8.9000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	1,252.0765	1,252.0765	0.0533	0.0133	1,257.3255
Mobile	8.0956	63.1910	90.0497	0.4534	5.4314	2.4773	7.9087	1.6204	2.4773	4.0977	0.0000	9,589.0298	9,589.0298	0.7185	0.0000	9,604.1187
Waste						0.0000	0.0000		0.0000	0.0000	228.8520	0.0000	228.8520	13.5248	0.0000	512.8721
Water						0.0000	0.0000		0.0000	0.0000	11.6817	287.4201	299.1018	1.2128	0.0310	334.1866
Total	**13.8371**	**63.3387**	**90.1897**	**0.4543**	**5.4314**	**2.4885**	**7.9199**	**1.6204**	**2.4885**	**4.1090**	**240.5337**	**11,128.5562**	**11,369.0898**	**15.5094**	**0.0444**	**11,708.5345**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.09**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2014	1/1/2014	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	162	0.38
Demolition	Rubber Tired Dozers	0	8.00	255	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.0956	63.1910	90.0497	0.4534	5.4314	2.4773	7.9087	1.6204	2.4773	4.0977	0.0000	9,589.0298	9,589.0298	0.7185	0.0000	9,604.1187
Unmitigated	8.0956	63.1910	90.0497	0.4534	5.4314	2.4773	7.9087	1.6204	2.4773	4.0977	0.0000	9,589.0298	9,589.0298	0.7185	0.0000	9,604.1187

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Unrefrigerated Warehouse-No Rail	2,014.92	2,014.92	2014.92	15,623,068	15,623,068
Total	2,014.92	2,014.92	2,014.92	15,623,068	15,623,068

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Unrefrigerated Warehouse-No Rail	22.84	8.40	22.84	59.00	0.00	41.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.795700	0.000000	0.000000	0.000000	0.034600	0.000000	0.046400	0.123300	0.000000	0.000000	0.000000	0.000000	0.000000

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,091.4305	1,091.4305	0.0502	0.0104	1,095.7018
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,091.4305	1,091.4305	0.0502	0.0104	1,095.7018
NaturalGas Mitigated	0.0162	0.1476	0.1240	8.9000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	160.6461	160.6461	3.0800e-003	2.9500e-003	161.6237
NaturalGas Unmitigated	0.0162	0.1476	0.1240	8.9000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	160.6461	160.6461	3.0800e-003	2.9500e-003	161.6237

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	3.01039e+006	0.0162	0.1476	0.1240	8.9000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	160.6461	160.6461	3.0800e-003	2.9500e-003	161.6237
Total		**0.0162**	**0.1476**	**0.1240**	**8.9000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**	**0.0000**	**160.6461**	**160.6461**	**3.0800e-003**	**2.9500e-003**	**161.6237**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	3.01039e+006	0.0162	0.1476	0.1240	8.9000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	160.6461	160.6461	3.0800e-003	2.9500e-003	161.6237
Total		**0.0162**	**0.1476**	**0.1240**	**8.9000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**	**0.0000**	**160.6461**	**160.6461**	**3.0800e-003**	**2.9500e-003**	**161.6237**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Unrefrigerated Warehouse-No Rail	3.81396e+006	1,091.4305	0.0502	0.0104	1,095.7018
Total		**1,091.4305**	**0.0502**	**0.0104**	**1,095.7018**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Unrefrigerated Warehouse-No Rail	3.81396e+006	1,091.4305	0.0502	0.0104	1,095.7018
Total		**1,091.4305**	**0.0502**	**0.0104**	**1,095.7018**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.7253	1.6000e-004	0.0160	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	9.0000e-005	0.0000	0.0316
Unmitigated	5.7253	1.6000e-004	0.0160	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	9.0000e-005	0.0000	0.0316

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.3898					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3339					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.6200e-003	1.6000e-004	0.0160	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	9.0000e-005	0.0000	0.0316
Total	**5.7253**	**1.6000e-004**	**0.0160**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.0298**	**0.0298**	**9.0000e-005**	**0.0000**	**0.0316**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Consumer Products	4.3339					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.6200e-003	1.6000e-004	0.0160	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	9.0000e-005	0.0000	0.0316
Architectural Coating	1.3898					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.7253**	**1.6000e-004**	**0.0160**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.0298**	**0.0298**	**9.0000e-005**	**0.0000**	**0.0316**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	299.1018	1.2128	0.0310	334.1866
Unmitigated	299.1018	1.2130	0.0311	334.2052

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Unrefrigerated Warehouse-No Rail	36.8212 / 47.2485	299.1018	1.2130	0.0311	334.2052
Total		**299.1018**	**1.2130**	**0.0311**	**334.2052**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Unrefrigerated Warehouse-No Rail	36.8212 / 47.2485	299.1018	1.2128	0.0310	334.1866
Total		**299.1018**	**1.2128**	**0.0310**	**334.1866**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	228.8520	13.5248	0.0000	512.8721
Mitigated	228.8520	13.5248	0.0000	512.8721

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Unrefrigerated Warehouse-No Rail	1127.4	228.8520	13.5248	0.0000	512.8721
Total		**228.8520**	**13.5248**	**0.0000**	**512.8721**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Unrefrigerated Warehouse-No Rail	1127.4	228.8520	13.5248	0.0000	512.8721
Total		**228.8520**	**13.5248**	**0.0000**	**512.8721**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Orange Show (2020)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,199.36	1000sqft	27.53	1,199,360.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	505	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - The RPS of 33% (for 2020) is based on SCE's 2007 PUP Report of 631 lb/MWhr and 13% Renewable Portfolio.

Land Use -

Construction Phase - Construction modeled seperately

Off-road Equipment - Construction modeled seperately

Vehicle Trips - TR based on traffic study. Truck TL based on the truck distribution from the TS. PC TL based on CalEEMod default

Vechicle Emission Factors - based on traffic study fleet mix

Vechicle Emission Factors - based on traffic study fleet mix

Vechicle Emission Factors - based on traffic study fleet mix

Water And Wastewater - Water usage based on WSA.

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Mobile Commute Mitigation -

Area Mitigation - Use low VOC Paints (125 g/L) on interior and exterior

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	125
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	125
tblConstructionPhase	NumDays	30.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	630.89	505
tblProjectCharacteristics	OperationalYear	2014	2020
tblVehicleEF	HHD	0.04	0.12
tblVehicleEF	HHD	0.04	0.12

tblVehicleEF	HHD	0.04	0.12
tblVehicleEF	LDA	0.47	0.80
tblVehicleEF	LDA	0.47	0.80
tblVehicleEF	LDA	0.47	0.80
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT2	0.17	0.00
tblVehicleEF	LDT2	0.17	0.00
tblVehicleEF	LDT2	0.17	0.00
tblVehicleEF	LHD1	0.06	0.03
tblVehicleEF	LHD1	0.06	0.03
tblVehicleEF	LHD1	0.06	0.03
tblVehicleEF	LHD2	9.0790e-003	0.00
tblVehicleEF	LHD2	9.0790e-003	0.00
tblVehicleEF	LHD2	9.0790e-003	0.00
tblVehicleEF	MCY	5.0120e-003	0.00
tblVehicleEF	MCY	5.0120e-003	0.00
tblVehicleEF	MCY	5.0120e-003	0.00
tblVehicleEF	MDV	0.16	0.00
tblVehicleEF	MDV	0.16	0.00
tblVehicleEF	MDV	0.16	0.00
tblVehicleEF	MH	2.9620e-003	0.00
tblVehicleEF	MH	2.9620e-003	0.00
tblVehicleEF	MH	2.9620e-003	0.00
tblVehicleEF	MHD	0.02	0.05
tblVehicleEF	MHD	0.02	0.05
tblVehicleEF	MHD	0.02	0.05

tblVehicleEF	OBUS	1.1080e-003	0.00
tblVehicleEF	OBUS	1.1080e-003	0.00
tblVehicleEF	OBUS	1.1080e-003	0.00
tblVehicleEF	SBUS	6.7200e-004	0.00
tblVehicleEF	SBUS	6.7200e-004	0.00
tblVehicleEF	SBUS	6.7200e-004	0.00
tblVehicleEF	UBUS	1.3370e-003	0.00
tblVehicleEF	UBUS	1.3370e-003	0.00
tblVehicleEF	UBUS	1.3370e-003	0.00
tblVehicleTrips	CNW_TL	6.90	22.84
tblVehicleTrips	CW_TL	16.60	22.84
tblVehicleTrips	ST_TR	2.59	1.68
tblVehicleTrips	SU_TR	2.59	1.68
tblVehicleTrips	WD_TR	2.59	1.68
tblWater	IndoorWaterUseRate	277,352,000.00	36,821,211.40
tblWater	OutdoorWaterUseRate	0.00	47,248,457.10

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.7251	1.4000e-004	0.0154	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	8.0000e-005	0.0000	0.0314
Energy	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003	0.0000	966.6509	966.6509	0.0503	0.0124	971.5409
Mobile	1.4266	13.0663	22.7558	0.0938	6.0026	0.2569	6.2594	1.6123	0.2365	1.8488	0.0000	6,885.4571	6,885.4571	0.1511	0.0000	6,888.6303
Waste						0.0000	0.0000		0.0000	0.0000	228.8520	0.0000	228.8520	13.5248	0.0000	512.8721
Water						0.0000	0.0000		0.0000	0.0000	11.6817	230.0673	241.7490	1.2130	0.0311	276.8524
Total	**7.1655**	**13.1923**	**22.8769**	**0.0946**	**6.0026**	**0.2665**	**6.2690**	**1.6123**	**0.2461**	**1.8584**	**240.5337**	**8,082.2051**	**8,322.7388**	**14.9393**	**0.0434**	**8,649.9271**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.0302	1.4000e-004	0.0154	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	8.0000e-005	0.0000	0.0314
Energy	0.0111	0.1010	0.0848	6.1000e-004		7.6800e-003	7.6800e-003		7.6800e-003	7.6800e-003	0.0000	890.8772	890.8772	0.0470	0.0113	895.3644
Mobile	1.4288	13.0994	22.7982	0.0941	6.0192	0.2576	6.2767	1.6167	0.2371	1.8539	0.0000	6,904.2063	6,904.2063	0.1515	0.0000	6,907.3879
Waste						0.0000	0.0000		0.0000	0.0000	114.4260	0.0000	114.4260	6.7624	0.0000	256.4361
Water						0.0000	0.0000		0.0000	0.0000	9.3453	200.7676	210.1129	0.9712	0.0250	238.2625
Total	**6.4701**	**13.2006**	**22.8984**	**0.0947**	**6.0192**	**0.2653**	**6.2845**	**1.6167**	**0.2449**	**1.8616**	**123.7714**	**7,995.8809**	**8,119.6523**	**7.9321**	**0.0363**	**8,297.4823**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**9.70**	**-0.06**	**-0.09**	**-0.12**	**-0.28**	**0.44**	**-0.25**	**-0.28**	**0.50**	**-0.17**	**48.54**	**1.07**	**2.44**	**46.90**	**16.42**	**4.07**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2014	1/1/2014	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	162	0.38
Demolition	Rubber Tired Dozers	0	8.00	255	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

Improve Pedestrian Network

Implement Trip Reduction Program

Provide Riade Sharing Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4288	13.0994	22.7982	0.0941	6.0192	0.2576	6.2767	1.6167	0.2371	1.8539	0.0000	6,904.2063	6,904.2063	0.1515	0.0000	6,907.3879
Unmitigated	1.4266	13.0663	22.7558	0.0938	6.0026	0.2569	6.2594	1.6123	0.2365	1.8488	0.0000	6,885.4571	6,885.4571	0.1511	0.0000	6,888.6303

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Unrefrigerated Warehouse-No Rail	2,014.92	2,014.92	2014.92	15,623,068	15,666,270
Total	2,014.92	2,014.92	2,014.92	15,623,068	15,666,270

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Unrefrigerated Warehouse-No	22.84	8.40	22.84	59.00	0.00	41.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.795700	0.000000	0.000000	0.000000	0.034600	0.000000	0.046400	0.123300	0.000000	0.000000	0.000000	0.000000	0.000000

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	780.9211	780.9211	0.0448	9.2800e-003	784.7391
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	829.6857	829.6857	0.0477	9.8600e-003	833.7422
NaturalGas Mitigated	0.0111	0.1010	0.0848	6.1000e-004		7.6800e-003	7.6800e-003		7.6800e-003	7.6800e-003	0.0000	109.9562	109.9562	2.1100e-003	2.0200e-003	110.6253
NaturalGas Unmitigated	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003	0.0000	136.9652	136.9652	2.6300e-003	2.5100e-003	137.7987

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	2.56663e+006	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003	0.0000	136.9652	136.9652	2.6300e-003	2.5100e-003	137.7987
Total		**0.0138**	**0.1258**	**0.1057**	**7.5000e-004**		**9.5600e-003**	**9.5600e-003**		**9.5600e-003**	**9.5600e-003**	**0.0000**	**136.9652**	**136.9652**	**2.6300e-003**	**2.5100e-003**	**137.7987**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	2.0605e+006	0.0111	0.1010	0.0848	6.1000e-004		7.6800e-003	7.6800e-003		7.6800e-003	7.6800e-003	0.0000	109.9562	109.9562	2.1100e-003	2.0200e-003	110.6253
Total		**0.0111**	**0.1010**	**0.0848**	**6.1000e-004**		**7.6800e-003**	**7.6800e-003**		**7.6800e-003**	**7.6800e-003**	**0.0000**	**109.9562**	**109.9562**	**2.1100e-003**	**2.0200e-003**	**110.6253**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Unrefrigerated Warehouse-No Rail	3.62207e+006	829.6857	0.0477	9.8600e-003	833.7422
Total		**829.6857**	**0.0477**	**9.8600e-003**	**833.7422**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Unrefrigerated Warehouse-No Rail	3.40918e+006	780.9211	0.0448	9.2800e-003	784.7391
Total		**780.9211**	**0.0448**	**9.2800e-003**	**784.7391**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.0302	1.4000e-004	0.0154	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	8.0000e-005	0.0000	0.0314
Unmitigated	5.7251	1.4000e-004	0.0154	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	8.0000e-005	0.0000	0.0314

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.3898					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3339					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4500e-003	1.4000e-004	0.0154	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	8.0000e-005	0.0000	0.0314
Total	**5.7251**	**1.4000e-004**	**0.0154**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.0298**	**0.0298**	**8.0000e-005**	**0.0000**	**0.0314**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Consumer Products	4.3339					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4500e-003	1.4000e-004	0.0154	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0298	0.0298	8.0000e-005	0.0000	0.0314
Architectural Coating	0.6949					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.0302**	**1.4000e-004**	**0.0154**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.0298**	**0.0298**	**8.0000e-005**	**0.0000**	**0.0314**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	210.1129	0.9712	0.0250	238.2625
Unmitigated	241.7490	1.2130	0.0311	276.8524

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Unrefrigerated Warehouse-No Rail	36.8212 / 47.2485	241.7490	1.2130	0.0311	276.8524
Total		**241.7490**	**1.2130**	**0.0311**	**276.8524**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Unrefrigerated Warehouse-No Rail	29.457 / 44.3663	210.1129	0.9712	0.0250	238.2625
Total		**210.1129**	**0.9712**	**0.0250**	**238.2625**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	228.8520	13.5248	0.0000	512.8721
Mitigated	114.4260	6.7624	0.0000	256.4361

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Unrefrigerated Warehouse-No Rail	1127.4	228.8520	13.5248	0.0000	512.8721
Total		**228.8520**	**13.5248**	**0.0000**	**512.8721**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Unrefrigerated Warehouse-No Rail	563.7	114.4260	6.7624	0.0000	256.4361
Total		**114.4260**	**6.7624**	**0.0000**	**256.4361**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

APPENDIX B

Appendix L-3 to the Stratford Ranch DEIR
Crain & Associates Letter

L-3: Response to the South Coast Air Quality Management District White Paper

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CRAIN & ASSOCIATES

VIA EMAIL

December 1, 2011

Mr. Robert Evans
Executive Director
NAIOP Inland Empire
25241 Paseo de Alicia, Suite 120
Laguna Hills, CA 92653

RE: Response to the South Coast Air Quality Management District White Paper

Dear Mr. Evans,

As requested, Crain & Associates has reviewed the South Coast Air Quality Management District (SCAQMD) white paper entitled *Large Warehouse and Distribution Center Trip Rates*. In the paper, large warehouse and distribution centers are defined as having floor areas greater than 100,000 square feet. The main thrust of the white paper is to question the use of industry-standard Institute of Transportation Engineers (ITE) Trip Generation (8th Edition, 2008) trip rates for large centers via Land Use Code (LUC) 152, High-Cube Warehouse, and present alternative trip rates based on a meta-analysis of seven trip generation studies of centers in California and Florida. As summarized below, it is our professional opinion that the SCAQMD's white paper contains technical flaws. The ITE Trip Generation manual is based on a more rigorous set of data and program of analysis. Accordingly, we recommend that in performing California Environmental Quality Act (CEQA) analyses for high cube warehouse uses, including traffic, air quality, noise, and greenhouse gas analyses, the ITE Trip Generation manual should continued to be used by lead agencies rather than the SCAQMD's rates.

ITE TRIP GENERATION MANUAL

The Institute of Transportation Engineers is a professional body which has collected studies for a large variety of land uses and calculated average trip generation results in the summary report entitled Trip Generation, 8th edition, 2008 (ITE), also known as the ITE manual. The report is based on the results of generation counts which were collected at representative sites located

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throughout the country. Accordingly, the ITE manual is the accepted source for trip generation rates relied upon by jurisdictions across the country. As described in the ITE manual, Land Use Code (LUC) 152, High-cube Warehouses have a typical ceiling height of 24 to 30 feet and are often characterized by "a small employment count due to high level of mechanization, truck activities frequently occurring outside the peak hour of the adjacent street system and good freeway access." All of the studies used to develop the ITE trip rates for LUC 152 surveyed high-cube warehouses had building areas greater than 100,000 gross square feet.

SCAQMD WHITE PAPER METHODOLOGY

The SCAQMD white paper challenges the accuracy of the ITE manual analysis. This paper reviews the validity of the concerns expressed in the SCAQMD white paper. Our conclusion is that the white paper is deficient as follows:

(i) Fails to understand the difference between High-Cube and traditional warehouses or that total trip generation and percentage trucks are inter-related and should be based on the same data base;

(ii) Provides no explanation how the 7 studies utilized were chosen or why the particular subset of sites is more representative of High Cube Warehouses than those in the ITE manual under LUC 152;

(iii) Advocates the use of 95th percentile trip rates for all environmental studies even though it overstates the expected trip generation, VMT and impacts for most analyses in the environmental studies;

(iv) By using post-facto (2010) aerial photographs of the 2005 study sites rather than timely data in order to question the occupancy of a study buildings, the white paper relies on speculation rather than scientific methods.

(v) Recommends the use of 40% truck trips based on a weighted average of only two studies selected from a set, some of which have very different results;

(vi) Dismisses the use of "average" trip generation. The emphasis should be on a cumulative analysis of a large number of sites over the long period of time. Projecting activity of a single site on a single day is not applicable to the type of analyses SCAQMD is recommending their rates be used for; and

(vii) Does not properly review the adequacy of the data to be subdivided into with and without rail service categories or if alternative subdivisions may be more appropriate.

The concerns expressed in the white paper, our conclusions, and the basis for those conclusions is detailed on the following pages.

VACANCIES

One factor cited in the SCAQMD white paper as leading to a lower-than-expected ITE trip generation rate relates to partial or full vacancies of centers surveyed for the LUC 152 trip rate studies. The SCAQMD white paper claims to have reviewed aerial photography of the sites included in six studies used in developing the ITE LUC 152 rates and the sites included in the *City of Fontana Truck Trip Generation Study* (August 2003). Across the seven total studies, 68 different warehouse and distribution centers in California and Florida were surveyed. Many of the problems associated with using an aerial photography method for determining vacancies are described within the white paper. The photographs provide only "circumstantial evidence," the vacancies are "difficult to verify," and the correlation between recent photographs and vacancy levels when the trip studies were conducted in previous years is "difficult to validate."

As an example of the inaccurate nature of this vacancy analysis, center occupancy levels were confirmed by our firm immediately prior to the counts at all 13 sites where counts were performed for the November and December 2006 for the *Western Riverside County Warehouse/Distribution Center Trip Generation Study* (Crain and Associates, September 2008). However, the SCAQMD concluded that at least one of these 13 sites may have been partially or fully vacant, based on the 2010 Google image included as Figure 2 of the white paper. This circumstantial screening of data performed ex post facto is inaccurate and can skew the results of a trip generation study. Attachment 1 contains supporting documentation that the "vacant" center depicted in the paper's Figure 2, (located at 11600 Iberia Street in Mira Loma, CA) was fully occupied at the time of trip counts on November 28 and 29, 2006.

Not all large warehouses and distribution centers will have the same trip generation rate. Instead centers will have a range of trip rates centered on an average rate. For centers on the lower end of this trip-rate range, lower trip activity would likely result in fewer passenger vehicles and heavy trucks appearing on-site at a given time. Centers on the lower end of the trip rate range may include warehouses that operate with materials/goods that require a longer storage time. The elimination of sites with assumed partial or full vacancies could, in fact, be the elimination of sites with lower trip rates, thereby leading to the estimation of an artificially inflated average trip rate.

Further one should consider that the degree of vacancy of each facility will likely vary over time. While care was taken in our counts (as it was for most if not all ITE counts) to ensure full occupancy, actual average generation of each facility will be lower than the ITE rates during these periods of full or partial vacancy. To be conservative, these periods of low trip generation are not accounted for in most current environmental analyses.

CHOICE OF STATISTIC

Another area of concern with the assumptions in the white paper is the recommended trip rates calculations. Table 1 of the white paper provides a summary of weekday daily trip rates for warehouse and distribution centers, based on the independent variables of "rail service? (yes, no, or some)" and "potential vacancy? (yes, no, or some)." Although average trip rates are calculated for different combinations of these independent variables, the white paper recommends the use of 95th percentile trip rates for use in project-specific California Environmental Quality Act (CEQA) air quality and corresponding environmental analyses. In line with comments provided by Fehr & Peers in their August 23, 2010 memorandum reviewing the white paper, the use of 95th percentile trip rates may be "overly conservative." It should be noted that these trip rates are used for a range of environmental analyses under CEQA, including traffic and noise impact analyses, and consistency in the use of trip rates between these analyses is recommended. The used rates should not vary between sections of an EIR.

Based on the 95th percentile assumption, the white paper recommends weekday daily rates of 2.59 and 1.63 trips per 1,000 square feet of gross floor area for centers without and with rail service, respectively. It should be noted that the average weekday daily trip rate for warehouse sites with no rail service (and some circumstantial "potential vacancy") was 1.79 trips per 1,000 square feet of gross floor area, which is much closer to the ITE LUC 152, High-Cube Warehouse, average trip rate of 1.44 trips per 1,000 square feet of gross floor area than the 2.59 rate SCAQMD purposes. Further, the ITE rates is based on a much larger and more representative sample. Rather the choice of statistic is crucial to the usefulness of the estimate.

From a traffic analysis perspective, average trip generation levels for land uses are typically used for both project and cumulative off-site impact analyses. Absent empirical data or preferred, locally developed rates, the ITE Trip Generation manual is heavily relied upon. In the manual, the ITE has developed average trip rates (and, in some cases, fitted curve equations) for each land use and time period. The ITE uses a weighted average in order to limit the effect of sites with trip rates that have a large variance from the mean. The use of 95th percentile trip rates for a specific land-use project and, by extension, the cumulative projects in an off-site traffic impact analysis would present an unrealistic traffic condition from which to determine project impacts.

It should also be noted that traffic analyses already account for variations in generation by focusing on project impacts during the peak hours (not average hours) of traffic within a study area. The results of traffic impact analyses during the peak hours of traffic, using the 95th percentile trip rates applied to both the project and cumulative development, would be overly conservative. Consequently, the traffic and/or other CEQA environmental analyses could be dismissed by decision makers for not reflecting conditions reliably.

The project traffic generation forecasts are direct inputs for a project's air quality analysis. It is worth noting that the white paper found that the ITE average weekday trip rate was considered acceptable for multiple (10+) centers, based on the assumption that across several centers some would operate at varying levels of vacancy. However, no such variation is assumed for individual centers and 95th percentile rates are recommended for them instead. The use of these rates for individual centers would, in the vast majority of cases, overstate the center's air quality impacts on an area-wide basis -- including, greenhouse gas emissions. Using the ITE average rate would, therefore, be more appropriate for area-wide impacts and should be included so that decision makers do not rely solely on speculative estimates that are more likely to be dismissed. However, a factor for variations between time periods may be applied, if appropriate, for certain localized environmental analyses. For example, the level of parking demand on an individual site is only influenced by a single use. Daily variations of all users are taken into account. However, there is no reason to expect all warehouses in the United States will generate at the 95th percentile level over extended periods, as the White Paper implies.

FLEET MIX

The fleet mix calculations provided in the white paper are also a cause for concern. In the analysis preceding the Fleet Mix section of the white paper, the SCAQMD argues that the use of the ITE trip rates may underestimate large warehouse and distribution center vehicle trips. However, it is not clear from the white paper if the alleged underestimation of trips is due to more passenger vehicle trips or more heavy truck trips. As cited above, the ITE Trip Generation manual description of high-cube warehouses (LUC 152) makes clear, (based on ITE's analysis of the empirical data) that this land-use type has a particular trip generation profile due, in large part, to lower employment numbers than are expected with smaller buildings. In the Fleet Mix section, the white paper uses truck trip percentage data from studies it found fault with in preceding sections to determine that 40 percent of the weekday daily trip generation of a center would be truck trips. This calculation is based on data culled from two studies: the San Bernardino/Riverside County Warehouse/Distribution Center Vehicle Trip Generation Study (Crain and Associates, January 2005) and the City of Fontana Truck Trip Generation Study

(August 2003). Based on the 95th percentile trip rates, the white paper recommends weekday daily truck trip rates of 1.04 and 0.65 trips per 1,000 square feet of gross floor area for centers without and with rail service, respectively. In contrast, the weekday daily truck trip rates from the two abovementioned studies were 0.53 and 0.72 trips per 1,000 square feet of gross floor area, irrespective of rail service. Applying a similar calculation to these rates as the one utilized in the white paper would yield a weighted truck trip rate of 0.58 trips per 1,000 square feet of gross floor area [((0.53*10)+(0.72*4))/(10+4)]. Additionally, the ITE manual recommends a weekday daily truck trip rate of 0.64 trips per 1,000 square feet of gross floor area based on five sites from three studies, all of which are different from the two used in the white paper analysis. The percentage of trucks and total vehicle generation must come from the same data source. The analysis should not apply the percentage from one set of sites to the total generation from a different set. Accordingly, the SCAQMD white paper overstates the percentage that trucks represent in the fleet mix in the databases used to establish the trip rates.

RAIL SERVICE

The white paper's point regarding the effect that rail service adjacent to the loading dock could have on the number of truck trips generated by such centers is not properly analyzed. In particular, there do not appear to be sufficient sites with data concerning rail availability to make a split. Further, merely the availability of rail service for the transport of materials/goods to and from a center does not necessarily equate active usage of the rail spur. Moreover, if rail is actively used and lower truck trip generation result, the air quality benefits would be offset by the emissions of the locomotive that moves the rail cars into place, as well by the idling vehicles at rail crossings waiting for the locomotive and boxcar(s) to clear the road. Similar traffic and noise off-sets would occur. Therefore, recommending that the High-Cube Warehouse land use be subdivided into categories of High-Cube Warehouse With Rail Service and High-Cube Warehouse Without Rail Service is inappropriate.

SUMMARY

A review of the white paper document raises a myriad of questions about the analysis therein. The white paper is brief. and the analysis lacks any documentation of valid statistical methods (unlike that for other sources such as the ITE manual). It would be useful to obtain clarification regarding the following information:

- The white paper sets forward that SCAQMD staff analyzed the trip rates at 68 warehouse and distribution centers, while the ITE Trip Generation weekday daily rates are based on

35 sites. The white paper does not describe the 33 other sites used to develop the rates that were set forward.

- The white paper does not explain how the active use at the time of the trip counts of the rail spurs running adjacent to the center loading docks was verified.
- The white paper does not justify how the *San Bernardino/Riverside County Warehouse/Distribution Center Vehicle Trip Generation Study* (Crain and Associates, January 2005) and the *City of Fontana Truck Trip Generation Study* (August 2003) were determined to be inappropriate for estimating vehicle trips, yet appropriate for estimating vehicle fleet mix.
- The comments provided by Fehr & Peers in their August 23, 2010 memorandum reviewing the white paper make reference to centers with building sizes as small as 64,000 square feet being included in the meta-analysis. However, this size would fall below the 100,000 square-foot threshold established for "large" warehouse and distribution centers. The fundamental distinction from ITE on the number and type of employees needed should be included in any distinction between warehouse types.
- At the bottom of the first page of the white paper there is mention of an attached spreadsheet, but no such spreadsheet has been circulated. Review of detailed data could point to additional issues.

In conclusion, although project occupancy/vacancy is always an important factor in determining project trip generation, the aerial photo based vacancy analysis included in the white paper is unsubstantiated. Beyond the unsupported vacancy conclusions, the white paper's average weekday trip rate calculated for centers without rail service is similar to the trip rate provided in the ITE Trip Generation manual. The white paper, however, recommends using 95th percentile trip rates for use in air quality and associated CEQA environmental analyses. We caution against the use of 95th percentile rates, given that it will result in overstating the impacts on both a project and cumulative development level. Instead, the application of safety factor for certain analyses when found warranted would be more appropriate. The fleet mix (heavy truck percentage) for high-cube warehouses may be different than standard warehouses, but developing that mix by selectively drawing percentages from studies while ignoring the actual truck trip rates from those sites would be inappropriate. It should also be noted that different truck percentages may be appropriate to use for peak and off-peak hours (ITE identified truck trips as accounting for only 9 to 29 percent of the peak-hour traffic at surveyed sites). ,

For all of these reasons, we recommend that in performing CEQA analyses, including traffic, air quality, noise, and greenhouse gas, for high cube warehouse uses, the ITE Trip Generation manual should continue to be used by lead agencies rather than the SCAQMD's ad hoc rates based on partial or unsupported data and inappropriate analyses assumptions.

Sincerely,

George Rhyner
Senior Transportation Engineer

GR:rjk
C20187

Attachment

Attachment 1

TOYO TIRES®
driven to perform®

Toyo Tire Holdings of Americas, Inc.
Logistics Department
2151 S. Vintage Avenue
Ontario, CA 91761

April 19, 2011

Mr. Graham Tingler
Space Center Mira Loma, Inc.
Leasing Office
3401 Etiwanda Avenue
Mira Loma, CA 91752

RE: 11600 Iberia Street, Mira Loma, CA 91752

Mr. Tingler:

Per your request that we independently verify the terns of our lease and occupancy at the above referenced property, I am happy to supply the following factual information:

Toyo Tire subleased this approximately 408,806 SF building from Continental Tire Corporation from March 1, 2004 through February 11, 2011. As you know, the building lease required that this sublease was approved by the Landlord, your firm, which we did obtain. Toyo Tire is an importer and distributer of automobile, SUV, light truck and racing tires to the United States market and used this facility as a Distribution Center.

In 2009, Toyo Tire began consolidating its business to a single facility in Southern California. Toyo Tires commence downsizing their operations at the above referenced property in October 2009 and completely vacated the property in May 2010, which was prior to the end of the lease term.

During November 2006, the period when we understand that a traffic study analyzing the trip and traffic impacts, this Toyo Tire facility was operating at full capacity and occupied the entire 408,806 SF building.

I trust this information answers any questions about our occupancy at this property.

Sincerely,

Steve Morgan

Steve Morgan
Logistics Operations Manager
Toyo Tires Holdings of Americas Inc.

Large Warehouse and Distribution Center Trip Rates

Introduction

New large warehouse projects and distribution centers (>100,000 square feet) have become a more common project type in the past several years, especially in the western Riverside County and San Bernardino County area. As an example, at least 8 new EIRs for warehouse projects totaling 17.75 million square feet have been reviewed by SCAQMD staff since late 2008 just in the vicinity of the city of Perris in Riverside County. These warehouse projects are commonly associated with substantial diesel emissions due to the high volume of heavy duty trucks that serve them. Diesel Particulate Matter (DPM) from internal combustion engines has been classified as a carcinogen by the California Air Resources Board (CARB). This white paper has been prepared because the number of truck trips associated with warehousing projects is a key component in determining the potential impact of DPM emissions on surrounding communities. Due to concern about these emissions, the CARB in its *Air Quality and Land Use Handbook* recommended providing a 1,000 foot setback from any distribution center serving more than 100 trucks per day.

For CEQA purposes, the volume of truck traffic predicted to serve a new large warehouse project is typically derived using the Institute of Transportation Engineers Trip Generation manual. This is the same source of traffic data used in the URBEMIS air quality model. The trip rate value used in URBEMIS is 4.96 trips per 1,000 square feet (TSF) for warehouse projects (land use type 150). This value is from the 7th Edition of the Trip Generation manual, published in 2003. Several developers of high-cube warehouses in recent years have questioned the validity of this value for modern warehousing operations and have commissioned local studies to investigate these trip rates. As a result, in the most recent version of the Trip Generation manual (8th Edition, 2008), additional data has been included to provide a new high-cube warehouse (land use 152) trip rate of 1.44 trips/TSF.

SCAQMD staff and other interested parties have questioned lead agencies about this lower rate because of concern that industrial warehouse project analyses may be underestimating the number of trucks serving them. If this were true, air quality impacts may be underreported in the corresponding CEQA analyses. This memo and attached spreadsheet presents a meta-analysis of available traffic studies that have targeted high-cube warehouses.

Studies

The seven studies included in this meta-analysis are listed below. Studies marked with an (*) are included in the 8th Edition of the ITE Trip Generation manual.

1. **Westside Industrial Park, Warehouse Trip Generation Study – Twenty Five Buildings, Duval County Florida*, December 5, 2008. King Engineering Associates, Inc.
2. **Westside Industrial Park, Warehouse Trip Generation Study – Eight Buildings, Duval County Florida*, December 5, 2008. King Engineering Associates, Inc.
3. **Trip Generation Study. High-Cube Warehouse Buildings, Fresno California*, January 19, 2007. Peters Engineering Group
4. **Trip Generation Study. Existing High-Cube Warehouse Buildings, Visalia California*, October 1, 2008. Peters Engineering Group
5. **Western Riverside County Warehouse/Distribution Center Trip Generation Study*, May 2008. Crain and Associates
6. **San Bernardino/Riverside County Warehouse/Distribution Center Vehicle Trip Generation Study (Inland Empire Study)*, January 2005. Crain and Associates
7. *Truck Trip Generation Study, City of Fontana*, August 2003. Transportation Engineering and Planning, Inc.

Together these seven studies include traffic counts for 68 different warehouse buildings. 35 of those warehouses are in California, and 25 are in the South Coast Basin. As a comparison, a total of 35 individual buildings were included in the ITE Trip Generation 8th Edition.

Data Analysis

In the ITE 8th Edition manual the trip rates range from 0.20-2.88 trips/TSF with an average of 1.44 and a standard deviation of 1.39. In order to investigate the high standard deviation and range of rates, all 68 warehouses from the above mentioned studies were investigated using overhead and oblique aerial photography to determine site-specific characteristics. Table 1 and Chart 1 present a statistical summary of trip rates determined from all seven studies. Based on this aerial reconnaissance, two factors were identified that may lower the reported trip rate for individual warehouses including the presence of a rail line serving the facility, and the potential partial vacancy of a facility.

Statistical Measure	Rail Service?	Potential Vacancy?	Number of Buildings	Trips/TSF
Minimum trip rate	No	Yes	68	0.17
Maximum trip rate	No	No	68	5.25
Average of all trip rates	Some	Some	68	1.57
Standard Deviation of all trip rates	Some	Some	68	0.81
95th Percentile of all trip rates	Some	Some	68	2.57
Average for CA warehouses	Some	Some	35	1.44
Average for SCAB warehouses	Some	Some	25	1.57
Average for all warehouses	Yes	Yes	14	0.73
Average for all warehouses	Yes	No	8	0.81
Average for all warehouses	No	Some	58	1.79
Average for all warehouses	No	No	54	1.91
95th Percentile for SCAB warehouses	No	No	13	3.68
95th Percentile for all warehouses	No	No	54	2.59
95th Percentile for all warehouses	Yes	No	8	1.63
ITE High-Cube warehouses	Some	Some	35	1.44

Table 1 Statistical summary of trip rates *CA= California, SCAB=South Coast Air Basin*

Rail lines are expected to lower the truck trip rate by diverting the transportation of goods from trucks to trains that directly service the facility. Rail service must include spurs that are adjacent to loading docks at the facility (Figure 1). Vacancies or partial vacancies in the trip rate studies are difficult to verify, however analysis of aerial photographs provides circumstantial evidence that anomalously low trip rates are associated with facilities with virtually no trucks parked at the loading docks at the time that the photograph was taken (Figure 2). While this accounts for the majority of the anomalously low trip rates, the lack of adequate business histories or historical photographic coverage make this correlation difficult to validate. Trip rates were also investigated in comparison to building size; however no correlation was identified (Chart 2).

In order to avoid underestimating the number of trips associated with large warehouse / distribution center operations without rail service, AQMD staff recommends that lead agencies utilize a rate of 2.59 trips per TSF for large warehouse air quality analyses on a project specific basis. The value of 2.59 from the nationwide dataset is preferable instead of the SCAB rate of 3.68 due to the greater reliability of data based on the larger sample size. For warehouses with rail service, a rate of 1.63 trips per TSF may be used. These values provide reasonable worst case default rates for individual new warehouses in the absence of more project-specific data.

In the case that air quality is evaluated for multiple warehouses (>10), such as in an analysis for a general plan, the average rate of 1.44 trips per TSF from the ITE 8th Edition Trip Generation manual is acceptable. This lower value may be more appropriate as on average, a small portion

of warehouses can be expected to operate at varying levels of service, including some warehouses experiencing temporary partial or complete vacancy.

Fleet Mix

The fleet mix used in the URBEMIS model is derived from the regional average distribution of trips obtained from the EMFAC model. While this fleet mix may be appropriate for the majority of land uses, it may not be appropriate for specialized uses such as warehouses. For example, as reported in the ITE 8th Edition Trip Generation manual, truck trips may account for 9 to 29 percent of total trips. Five of the seven studies analyzed here did not report specific truck traffic data, though some generally reported similar rates. The Inland Empire study (#6) found that trucks accounted for 28 to 65 percent of total trips for the ten warehouses in the study, with an average of 48%. The Fontana study (#7) found that trucks make up approximately 20% of total trips for the four warehouses evaluated. This study also broke down the trip distribution among 2, 3, and 4+ axle trucks (3.46%, 4.64%, 12.33%, respectively). In order to avoid underestimating the number of trucks visiting warehouse facilities, AQMD staff recommends that lead agencies conservatively assume that an average of 40% of total trips are truck trips [(0.48*10 + 0.2*4)/(10+4)=0.4)]. Without more project-specific data (such as detailed trip rates based on a known tenant schedule), this average rate of 40% provides a reasonably conservative value based on currently available data.

The fleet mix from the Fontana study as quoted above may be used to determine the distribution of truck type. In order to convert the axle based fleet mix to the vehicle classes utilized by EMFAC, one of two methods may be used.

1. 4+ axles=HHDT, 3 axles=MHDT, 2 axles=LHDT1, all others=LDA
2. Caltrans *Transportation Project-Level Carbon Monoxide Protocol* Appendix B (illustrated below).
   %HDGT = 0.50(%2-axle) + 0.25(%3-axle) + 0.10(%4 axle)
   %HDDT = 0.50(%2-axle) + 0.75(%3-axle) + 0.90(%4-axle) + 1.0(%5-axle)
   All others=LDA

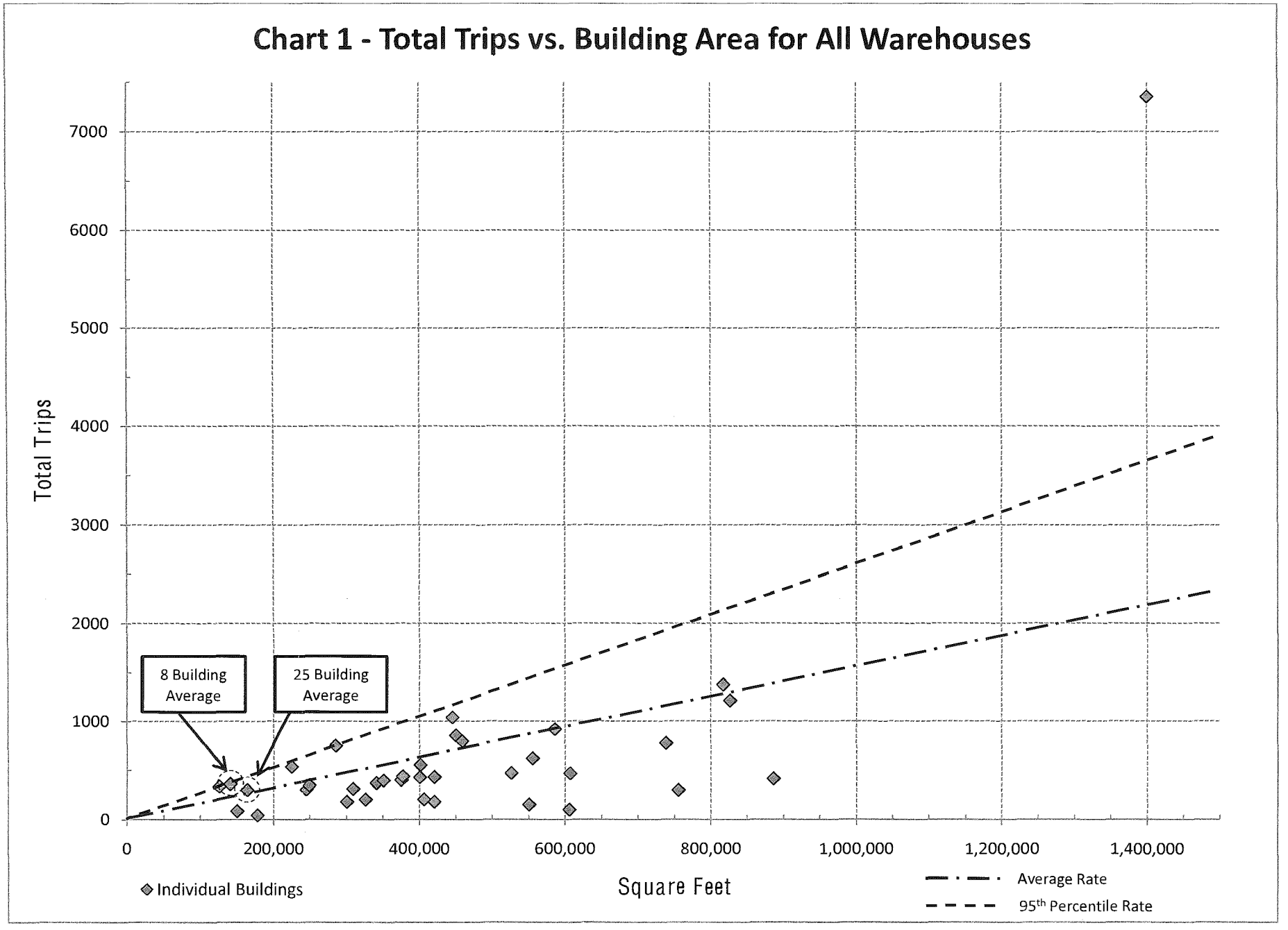
Chart 1 - Total Trips vs. Building Area for All Warehouses
Total Trips
7000
6000
5000
4000
3000
2000
1000
0
0
200,000
400,000
600,000
800,000
1,000,000
1,200,000
1,400,000
Square Feet
8 Building Average
25 Building Average
Individual Buildings
Average Rate
95th Percentile Rate

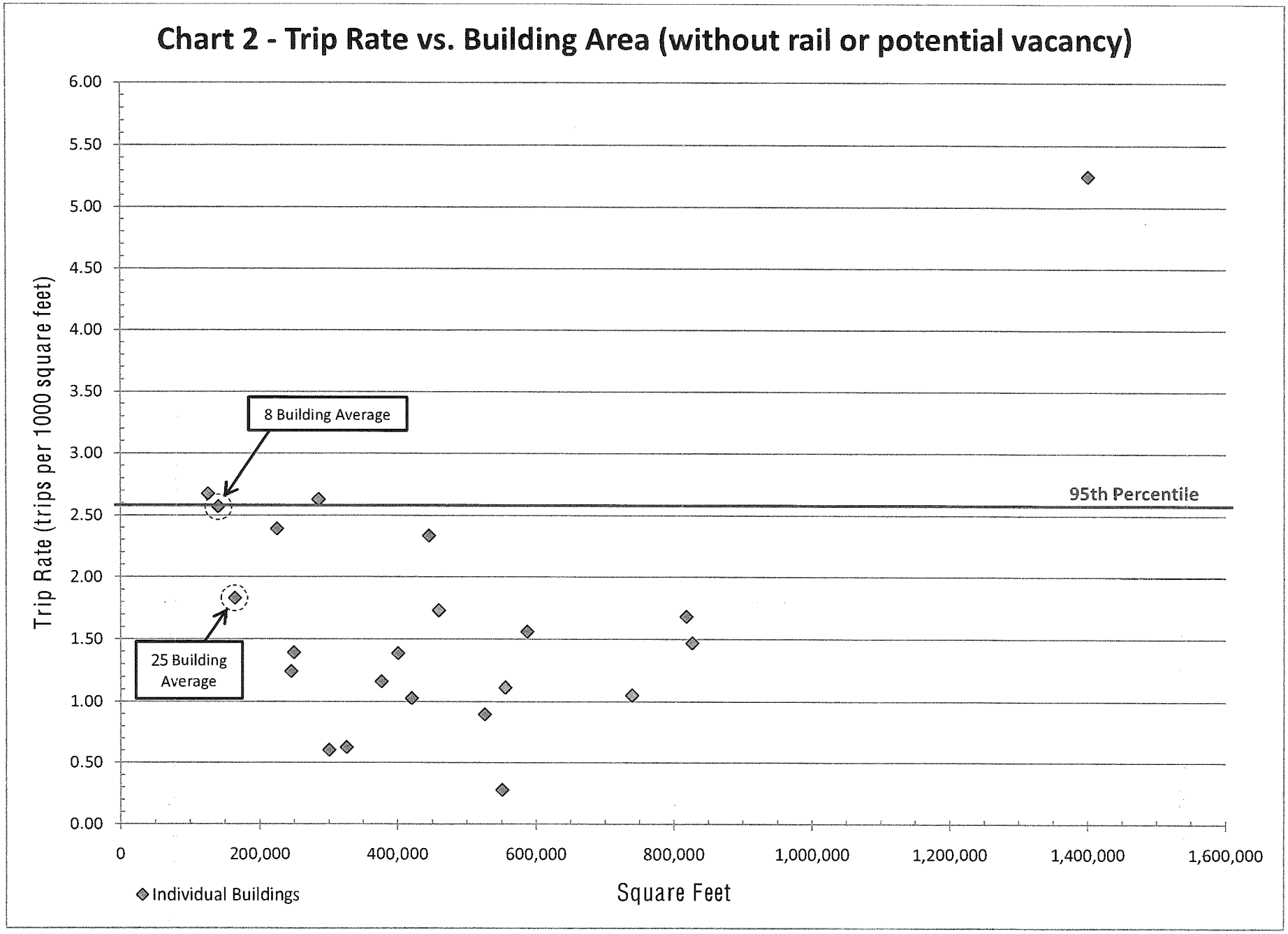
Chart 2 - Trip Rate vs. Building Area (without rail or potential vacancy)
Trip Rate (trips per 1000 square feet)
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
8 Building Average
95th Percentile
25 Building Average
0
200,000
400,000
600,000
800,000
1,000,000
1,200,000
1,400,000
1,600,000
Square Feet
Individual Buildings

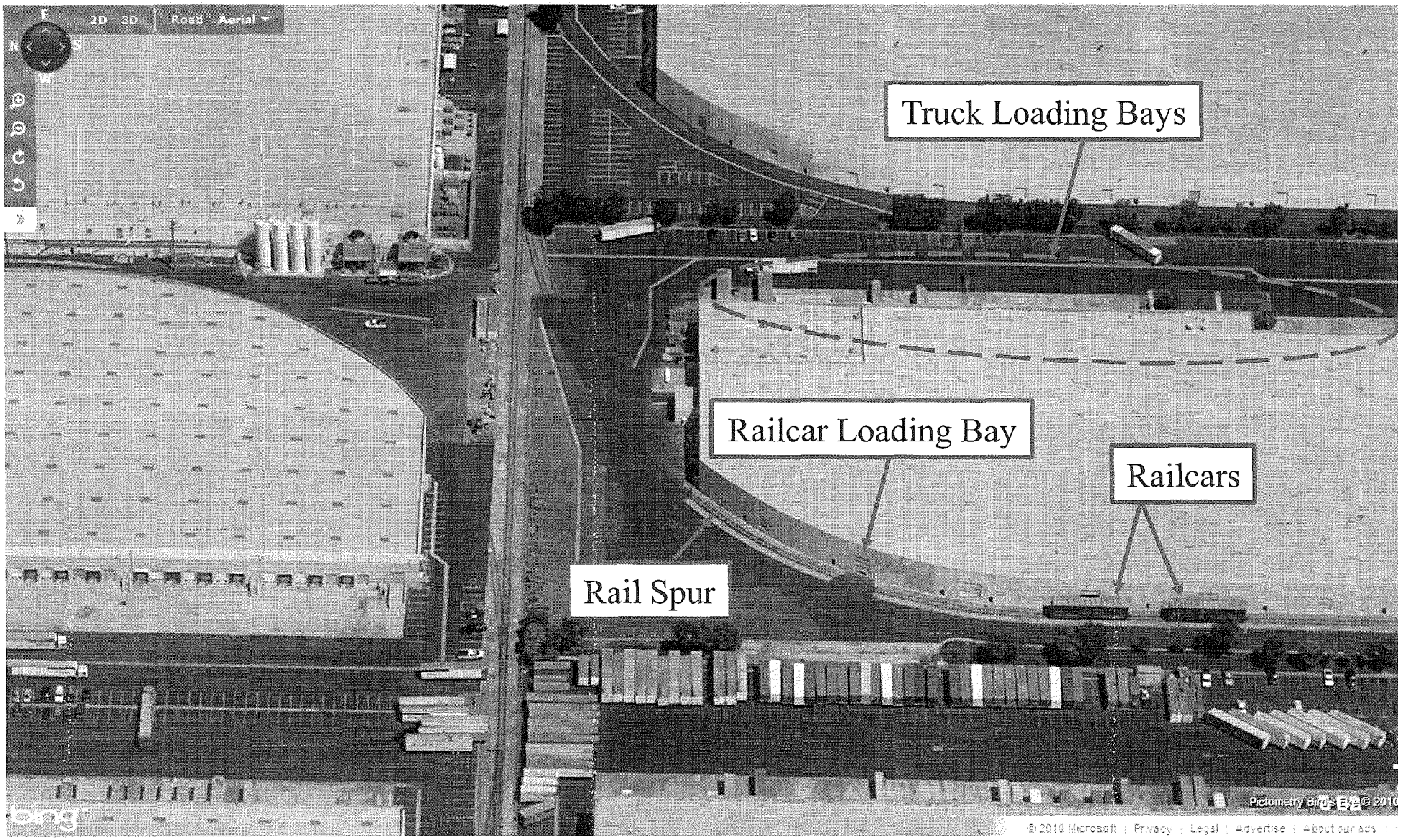

Figure 1 Oblique aerial photograph showing an example of a facility evaluated in the NAIOP San Bernardino County Truck Study. The truck trip rate for this facility was 1.13/TSF

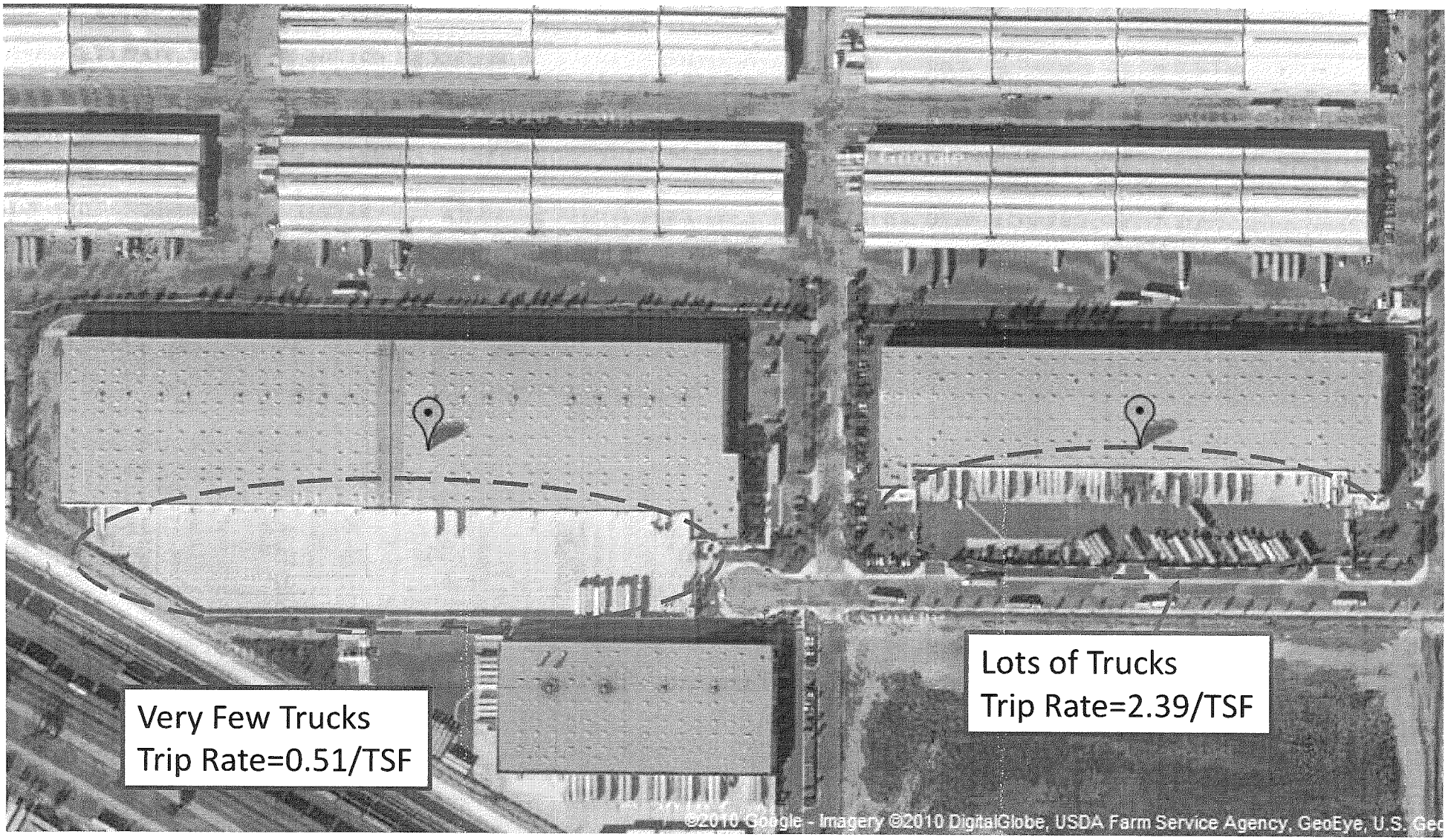

Figure 2 Aerial photograph showing an example of two facilities evaluated in the NAIOP Riverside County Truck Study. The facility on the left is suspected to be at least partially vacant.

FEHR & PEERS
TRANSPORTATION CONSULTANTS

MEMORANDUM

Date: August 23, 2010

To: Jennifer Schulte, ENVIRON

From: David Robinson, Meghan Mitman, Fehr & Peers

Subject: ***Large Warehouse and Distribution Center Trip Rates***

SF10-0495

Fehr & Peers completed its review of the Large Warehouse and Distribution Center Trip Rates white paper prepared by the Southern California Air Quality Management District (SCAQMD). The white paper presents the results of a meta-analysis of seven trip generation studies of warehouse and distribution centers located in California and Florida.

Our review of the white paper focused on the recommended trip generation rates presented in Table 1 (Statistical Summary of Trip Rates) and the statistical analysis provided in file SCAQMD Trip Rate Study_7-21-10.xlsx). We have the following observations based on our review:

- Use of 95 Percentile – The recommended trip generation rates are based on the 95 percentile of trip generation rate observations. The 95 percentile trip generation rate can be defined as the lowest trip generation rate that is greater than 95 percent of the observed trip generation rates. The use of the 95 percentile may be overly conservative. Another approach would be to base the recommended trip generation rate on the 95 percentile confidence interval, which would result in a trip generation rate between the average and 95 percentile rates for all warehouses.

- Observations – Both studies from Florida (i.e., reference 1 and 2 on Page 2) were treated as single observations to calculate the average trip generation rate for all warehouses, but were treated as multiple observations for the standard deviation calculation, which would affect the calculation of the confidence interval (discussed above). These studies and corresponding trip generation rates are based on the combined trip generation and building area of multiple buildings/uses in the same industrial park. One study included 31 buildings and the other included 9 buildings. The building size ranged from about 64,000 to about 440,000 square-feet.

- Outliers – One observation from the Fontana study (i.e., reference 7 on Page 2) is considerably higher than the other observations. Eliminating this observation results in a 20% decrease in the average trip generation rate for all warehouses.

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Clarification Responses by SCAQMD regarding Fehr and Peers August 23, 2010 Memorandum
Large Warehouse and Distribution Center Trip Rates

Use of 95 Percentile

- AQMD STAFF RESPONSE – A CONFIDENCE INTERVAL APPROACH IS INAPPROPRIATE FOR A CEQA AIR QUALITY ANALYSIS AS THIS GIVES THE ODDS THAT A NEW POPULATION WILL RETURN AN AVERAGE WITHIN THE CONFIDENCE INTERVAL. IN THE CONTEXT OF CEQA, AIR QUALITY ANALYSES SHOULD EVALUATE A REASONABLE WORST CASE SCENARIO SO AS NOT TO UNDERESTIMATE IMPACTS. THIS CONERVATIVE APPROACH IS SUPPORTED BY CEQA CASE LAW AND IS CONSISTENT WITH AQMD GUIDANCE ON PREPARING AIR QUALITY ANALYSES. ALSO, IT IS WORTH NOTING THAT 11 OUT OF 54 BUILDINGS ARE ALREADY AT OR ABOVE THE 95TH PERCENTILE.

Observations

- AQMD STAFF RESPONSE – THE STATISTACAL APPROACH DESCRIBED IN THIS COMMENT DOES NOT MAKE AFFECT THE TRIP RATE. SPLITTING OUT INDIVIDUAL BUILDINGS FOR THE AVERAGE DOESN'T ALTER THE TRIP RATE SINCE THE AVERAGE IS TRIPS/SQ. FT. HOWEVER, THE NUMBER OF INDIVIDUAL BUILDINGS ARE NEEDED FOR THE STANDARD DEVIATION, SO THE FLORIDA STUDIES WERE SPLIT UP TO OBTAIN A CORRECT 'N' (EVERY BUILDING WAS ASSIGNED THE SAME RATE).

Outliers

- AQMD STAFF RESPONSE - THIS IS EXACTLY THE POINT, IF WE KNOW THAT SOME BUILDINGS HAVE A RATE CONSIDERABLY HIGHER THAN OTHER BUILDINGS, THEN THE USE OF AVERAGES MAY CONSIDERABLY UNDERESTIMATE POTENTIAL AIR QUALITY IMPACTS. THIS IS ESPECIALLY IMPORTANT FOR ANY SENSITIVE RECEPTORS THAT MAY BE LOCATED IN CLOSE PROXIMITY TO EITHER THE FACILITIES OR THE TRUCK ROUTES SERVING THEM. UNLIKE SOME OTHER STATISTICAL STUDIES, THIS SINGULAR HIGH RATE (FROM A SMALL DATASET) IS NOT A MEASUREMENT ERROR, HENCE IT SHOULD NOT BE DISCARDED AS IT IS A REAL FACILITY WITH REAL IMPACTS IN THE COMMUNITY.