

**PUBLIC REVIEW DRAFT**  
**ENVIRONMENTAL IMPACT REPORT**

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**ANTIOCH WALMART EXPANSION PROJECT**

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**STATE CLEARINGHOUSE No. 2005062009**

**CITY OF ANTIOCH**  
**THIRD AND 'H' STREETS**  
**ANTIOCH, CA 94509**

**DECEMBER 2009**

**VOLUME II OF II**  
**TECHNICAL APPENDICES C THROUGH H**



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# **APPENDIX C**

## **Air Quality Report**

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***WAL-MART EXPANSION WILLIAMSON RANCH PLAZA  
DRAFT AIR QUALITY STUDY  
ANTIOCH, CALIFORNIA***

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## **INTRODUCTION**

This report assesses potential air quality impacts resulting from the proposed Wal-Mart expansion at Williamson Ranch Plaza in Antioch, California. The project proposes to expand the existing 141,498 square feet Wal-Mart by adding an additional 33,575 square feet. The project is located at the corner of Lone Tree Way and Hillcrest Avenue in Antioch, California.

This analysis evaluates the air quality impacts of the proposed project. The impact associated with the proposed development was evaluated in terms of operational and construction impacts to air quality. The primary focus of the air quality study was to evaluate future project-related emissions on regional air quality. This analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD)<sup>1</sup>.

## **OVERALL REGULATORY SETTING**

The Federal Clean Air Act governs air quality in the United States. In addition to being subject to Federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act. At the Federal level, the United States Environmental Protection Agency (USEPA) administers the Federal Clean Air Act. The California Clean Air Act is administered by the California Air Resources Board (CARB) at the State level and by the Air Quality Management Districts at the regional and local levels. The Bay Area Air Quality Management District (BAAQMD) regulates air quality at the regional level, which includes the nine-county Bay Area.

### **United States Environmental Protection Agency**

The US EPA is responsible for enforcing the Federal CAA. The US EPA is also responsible for establishing the National Ambient Air Quality Standards (NAAQS). NAAQS are required under the 1977 Clean Air Act and subsequent amendments. The US EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by CARB.

### **California Air Resources Board**

In California, CARB which is part of the California Environmental Protection Agency, is responsible for meeting the state requirements of the Federal Clean Air Act, administering the California Clean Air Act, and establishing the California Ambient Air Quality Standards (CAAQS). The California Clean Air Act requires all air districts in the State to endeavor to achieve and maintain CAAQS. CARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB has established passenger vehicle fuel specifications and oversees the functions of local

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<sup>1</sup> BAAQMD CEQA Guidelines for Assessing Air Quality Impacts from Projects and Plans, 1996, revised 1999.

air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level. CARB also conducts or supports research into the effects of air pollution on the public and develops innovative approaches to reducing air pollutant emissions.

### **Bay Area Air Quality Management District**

BAAQMD is primarily responsible for assuring that the National and State ambient air quality standards are attained and maintained in the Bay Area. BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, as well as many other activities. BAAQMD has jurisdiction over much of the nine-county Bay Area counties.

### **National and State Ambient Air Quality Standards**

As required by the Federal Clean Air Act, NAAQS have been established for six major air pollutants: carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), ozone (O<sub>3</sub>), respirable particulate matter (PM<sub>10</sub>), fine particulate matter (PM<sub>2.5</sub>), sulfur oxides, and lead. Pursuant to the California Clean Air Act, the State of California has also established ambient air quality standards. These standards are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. Both State and Federal standards are summarized in Table 1. The “primary” standards have been established to protect the public health. The “secondary” standards are intended to protect the nation’s welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare. CAAQS are more stringent than NAAQS. Thus, CAAQS are used as the comparative standard in this analysis.

**Table 1 Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards	National Standards <sup>(a)</sup>	
			Primary <sup>(b,c)</sup>	Secondary <sup>(b,d)</sup>
Ozone	8-hour	0.070 ppm	0.075 ppm	—
	1-hour	0.09 ppm	— <sup>e</sup>	Same as primary
Carbon monoxide	8-hour	9.0 ppm	9 ppm	—
	1-hour	20 ppm	35 ppm	—
Nitrogen dioxide	Annual	0.03 ppm	0.053 ppm	Same as primary
	1-hour	0.18 ppm	0.030 ppm	—
Sulfur dioxide	Annual	—	0.03 ppm	—
	24-hour	0.04 ppm	0.14 ppm	—
	3-hour	—	—	0.5 ppm
	1-hour	0.25 ppm	—	—
PM <sub>10</sub>	Annual	20 µg/m <sup>3</sup>	-- <sup>f</sup>	Same as primary
	24-hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	Same as primary
PM <sub>2.5</sub>	Annual	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	
	24-hour	—	35 µg/m <sup>3</sup> <sup>f</sup>	
Lead	Calendar quarter	—	1.5 µg/m <sup>3</sup>	Same as primary
	30-day average	1.5 µg/m <sup>3</sup>	—	—

Notes: (a) Standards, other than for ozone and those based on annual averages, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

(b) Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

(c) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the EPA.

(d) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

(e) The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005. A new 8-hour standard was established in May 2008.

(f) The annual PM<sub>10</sub> standard was revoked by U.S. EPA on September 21, 2006 and a new PM<sub>2.5</sub> 24-hour standard was established.

## **PHYSICAL SETTING**

The ambient air quality in a given area depends on the quantities of pollutants emitted within the area, transport of pollutants to and from surrounding areas, local and regional meteorological conditions, as well as the surrounding topography of the air basin. Air quality is described by the concentration of various pollutants in the atmosphere. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). The significance of a pollutant concentration is determined by comparing the concentration to an appropriate ambient air quality standard. The standards represent the allowable pollutant concentrations designed to ensure that the public health and welfare are protected, while including a reasonable margin of safety to protect the more sensitive individuals in the population.

Antioch is located in the eastern portion of the San Francisco Bay Area Air Basin. The air basin includes the counties of San Francisco, Santa Clara, San Mateo, Marin, Napa, Contra Costa, and Alameda, along with the southeast portion of Sonoma County and the southwest portion of Solano County. The local air quality regulatory agency responsible for this basin is the Bay Area Air Quality Management District (BAAQMD).

### **Climate and Topography**

The project is located in Antioch, in the northeastern portion of Contra Costa County. The proximity of this location to both the Pacific Ocean, the San Francisco Bay, and the Delta has a moderating influence on the climate. Typical summer maximum temperatures for the region are in the 90's, while winter maximum temperatures are in the high 50's or low 60's. Minimum temperatures usually range from the high 50's in the summer to the 30's and low 40's in the winter. Annual rainfall in Antioch is only 10 to 15 inches, occurring mostly in the months of November through March. This low amount is due to the rain shadow effects of Mt Diablo and the surrounding high terrain southwest of Antioch. These mountains receive over twice as much rain.

Prevailing winds are from the west in the Carquinez Straits, particularly during the summer. During late spring, summer and early fall months, high pressure offshore, coupled with thermal low pressure in the Central Valley, affected by high inland temperatures, sets up a pressure pattern that draws marine air eastward through the Carquinez Straits almost every day. The wind is strongest in the afternoon, because that is when the pressure gradient between the semi-permanent high pressure offshore and the thermal low in the Central Valley is greatest. Afternoon wind speeds of 15 to 20 mph are common throughout the Carquinez Straits region, with gusty winds. Sometimes the pressure gradient reverses and flow from the east occurs. In the summer and fall months, this can cause elevated pollutant levels in the Bay Area. Typically, for this to occur, an area of high pressure is centered inland over the Great Basin or the Pacific Northwest. This displaces the thermal low to the west, setting up an east to west or northeast to southwest wind flow (an offshore flow event). These relatively infrequent offshore events have low wind speeds and shallow mixing depths, thereby allowing the localized emissions to build up. Furthermore, the air mass from the east is warmer, thereby increasing photochemical activity, and contains more pollutants than the usual maritime air blowing from the west. During the winter, easterly flow through the Carquinez Strait is more common. When migrating storm

systems are not affecting California, inland high-pressure systems tend to be stronger than the high-pressure systems over the eastern Pacific Ocean. This results in an easterly flow of cool interior air from the Central Valley into the Bay Area through the Carquinez Strait.

Air quality standards for ozone traditionally are exceeded when relatively stagnant conditions in the region occur for periods of several days during the warmer months of the year. Weak wind flow patterns combined with strong inversions substantially reduces normal atmospheric mixing. Key components of ground-level ozone formation are sunlight and heat; therefore, significant ozone formation only occurs during the months from late spring through early fall. Prevailing winds during the summer and fall can transport and trap ozone precursors from the more urbanized portions of the Bay Area. The meteorological factors make air pollution potential in the project area quite high at times in summer are the persistent clear skies with relatively warm conditions that combine with transported and localized air pollutant emissions to elevate ozone levels. However, Antioch's proximity to the Carquinez Straits tends to result in more atmospheric mixing due to stronger winds and less stable atmospheric conditions. The strong typical winds in the Antioch area tend to transport localized emissions into the Central Valley and San Joaquin Valley air basins.

## **EXISTING AIR QUALITY CONDITIONS**

### **Criteria Air Pollutants and Their Health Effects**

Air quality studies generally focus on five pollutants that are most commonly measured and regulated. These are referred to as "criteria air pollutants," which include carbon monoxide (CO), ground level ozone, nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and suspended particulate matter, i.e., PM<sub>10</sub> and PM<sub>2.5</sub>. In Contra Costa County, ozone and particulate matter are the pollutants of greatest concern since measured air pollutant levels exceed these concentrations at times.

Carbon Monoxide. CO, a colorless and odorless gas, interferes with the transfer of oxygen to the brain. It can cause dizziness and fatigue, and can impair central nervous system functions. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. Automobile exhaust and residential wood burning in fireplaces and woodstoves emit most of the CO in the Bay Area. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follows the spatial and temporal distributions of vehicular traffic. The highest CO concentrations measured in the Bay Area are typically recorded during the winter.

Ozone. While O<sub>3</sub> serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing ultraviolet radiation potentially harmful to humans, when it reaches elevated concentrations in the lower atmosphere it can be harmful to the human respiratory system and to sensitive species of plants. O<sub>3</sub> concentrations build to peak levels during periods of light winds, bright sunshine, and high temperatures. Short-term O<sub>3</sub> exposure can reduce lung function in children, make persons susceptible to respiratory infection, and produce symptoms that cause people to seek medical treatment for respiratory distress. Long-term exposure can impair lung defense mechanisms and lead to emphysema and chronic bronchitis. Sensitivity to O<sub>3</sub> varies among individuals, but about 20 percent of the population is sensitive to O<sub>3</sub>, with exercising children

being particularly vulnerable. O<sub>3</sub> is formed in the atmosphere by a complex series of photochemical reactions that involve “ozone precursors” that are two families of pollutants: oxides of nitrogen (NO<sub>x</sub>) and reactive organic gases (ROG). NO<sub>x</sub> and ROG are emitted from a variety of stationary and mobile sources. While NO<sub>2</sub>, an oxide of nitrogen, is another criteria pollutant itself, ROGs are not in that category, but are included in this discussion as O<sub>3</sub> precursors. O<sub>3</sub> is present in relatively high concentrations within portions of the Bay Area on some days during late spring, summer and early autumn. Days with low wind speeds or stagnant air, warm temperatures, and cloudless skies are most likely to have high O<sub>3</sub> concentrations.

Nitrogen Dioxide. NO<sub>2</sub>, a reddish-brown gas, irritates the lungs. It can cause breathing difficulties at high concentrations. Exposures to unhealthy levels of NO<sub>2</sub> can lead to acute and chronic respiratory disease. Like O<sub>3</sub>, NO<sub>2</sub> is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO<sub>2</sub> are collectively referred to as NO<sub>x</sub> and are major contributors to O<sub>3</sub> formation. NO<sub>2</sub> also contributes to the formation of PM<sub>10</sub> (see discussion of PM<sub>10</sub> below). Levels of NO<sub>2</sub> in the Bay Area are relatively low.

Sulfur Oxides. Sulfur oxides, primarily SO<sub>2</sub>, are a product of high-sulfur fuel combustion. The main sources of SO<sub>2</sub> are coal and oil used in power stations, in industries, and for domestic heating. Industrial chemical manufacturing is another source of SO<sub>2</sub>. SO<sub>2</sub> is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. Although there are refineries up wind of Antioch, SO<sub>2</sub> is found at low concentrations in eastern Contra Costa County.

PM<sub>10</sub> and PM<sub>2.5</sub>: Respirable particulate matter, PM<sub>10</sub>, and fine particulate matter, PM<sub>2.5</sub>, consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. PM<sub>10</sub> and PM<sub>2.5</sub> represent fractions of particulate matter that can be inhaled and cause adverse health effects. PM<sub>10</sub> and PM<sub>2.5</sub> are a health concern, particularly at levels above the Federal and State ambient air quality standards. PM<sub>2.5</sub> (including diesel exhaust particles) is thought to have greater effects on health because minute particles are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Children are more susceptible to the health risks of PM<sub>2.5</sub> because their immune and respiratory systems are still developing. Very small particles of certain substances (e.g., sulfates and nitrates) can also directly cause lung damage or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health.

Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as mining and demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. In addition to being directly emitted, PM<sub>2.5</sub> is formed in the atmosphere from gases such as SO<sub>2</sub>, NO<sub>x</sub>, and volatile organic compounds (VOCs) that react to form aerosols. In addition to health effects, particulates also can damage materials and reduce visibility. Dust comprised of large particles (diameter greater than 10 microns) settles out rapidly and is more easily filtered

by human breathing passages. This type of dust is considered more of a soiling nuisance rather than a health hazard.

In 1983, CARB replaced the standard for “suspended particulate matter” with a standard for suspended PM<sub>10</sub> or “respirable particulate matter.” This standard was set at 50 µg/m<sup>3</sup> for a 24-hour average and 30 µg/m<sup>3</sup> for an annual average. CARB revised the annual PM<sub>10</sub> standard in 2002, pursuant to the Children’s Environmental Health Protection Act. The revised PM<sub>10</sub> standard is 20 µg/m<sup>3</sup> for an annual average. PM<sub>2.5</sub> standards were first promulgated by the EPA in 1997 and were recently revised in late 2006 to lower the 24-hour PM<sub>2.5</sub> standard to 35 µg/m<sup>3</sup> for 24-hour exposures. That same action by EPA revoked the annual PM<sub>10</sub> standard due to lack of scientific evidence correlating long-term exposures of ambient PM<sub>10</sub> with health effects. CARB has only adopted an annual average PM<sub>2.5</sub> standard, which is set at 12 µg/m<sup>3</sup>. This is more stringent than the NAAQS of 15 µg/m<sup>3</sup>.

### **Toxic Air Contaminants (TAC)**

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Hazardous Air Pollutants (HAPs) under the Federal Clean Air Act and Toxic Air Contaminants (TACs) under the California Clean Air Act. These contaminants tend to be localized and are found in relatively low concentrations in ambient air. However, they can result in adverse chronic health effects if exposure to low concentrations occurs for long periods. They are regulated at the local, State, and Federal level.

HAPs are the air contaminants identified by US EPA as known or suspected to cause cancer, serious illness, birth defects, or death. Many of these contaminants originate from human activities, such as fuel combustion and solvent use. Mobile source air toxics (MSATs) are a subset of the 188 HAPs. Of the 21 HAPs identified by EPA as MSATs, priority lists of six HAPs were identified that include: diesel exhaust, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. While vehicle miles traveled in the United States is expected to increase by 64 percent over the period 2000 to 2020, emissions of MSATs are anticipated to decrease substantially as a result of efforts to control mobile source emissions (by 57 percent to 67 percent depending on the contaminant)<sup>2</sup>.

California developed a program under the Tanner Toxics Act (AB 1807) to identify, characterize and control toxic air contaminants (TACs). Subsequently, AB 2728 incorporated all 188 HAPs into the AB 1807 process. TACs include all HAPs plus other contaminants identified by CARB. These are a broad class of compounds known to cause morbidity or mortality (cancer risk). TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Particulate matter from diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average).

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<sup>2</sup> Federal Highway Administration, 2006. Interim Guidance on Air Toxic Analysis in NEPA Documents.

According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by ARB, and are listed as carcinogens either under State Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB reports that recent air pollution studies have shown an association that diesel exhaust and other cancer-causing toxic air contaminants emitted from vehicles are responsible for much of the overall cancer risk from TACs in California. Particulate matter emitted from diesel-fueled engines (diesel particulate matter [DPM]) was found to comprise much of that risk. In August 1998, CARB formally identified DPM as a TAC. Diesel particulate matter is of particular concern since it can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by EPA as HAPs, and by CARB as TACs. Diesel engines emit particulate matter at a rate about 20 times greater than comparable gasoline engines. The vast majority of diesel exhaust particles (over 90 percent) consist of PM<sub>2.5</sub>, which are particles that can be inhaled deep into the lung. Like other particles of this size, a portion will eventually become trapped within the lung possibly leading to adverse health effects. While the gaseous portion of diesel exhaust also contains TACs, CARB's 1998 action was specific to DPM, which accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction program to reduce 2000 DPM emissions 85 percent by 2020. The U.S. EPA and CARB adopted low sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially.

Smoke from residential wood combustion can be a source of TACs. Wood smoke is typically emitted during wintertime when dispersion conditions are poor. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and, with no wind; the pollution can persist for many hours, especially in sheltered valleys during winter. Wood smoke also contains a significant amount of PM<sub>10</sub> and PM<sub>2.5</sub>. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems.

Exposure to TACs is usually evaluated in terms of health risk or cancer risk. For cancer health effects, the risk is expressed as the number of chances in a population of a million people who might be expected to get cancer over a 70-year lifetime. CARB estimates 2001 lifetime cancer risk at about 100 to 250 excess cases per million people in Antioch. This is a lower risk than the calculated overall 2000 San Francisco Bay Area basin-wide cancer risk of 480 cancer cases per million people. The cancer risk in Antioch is expected to be just above 100 cases per million people in 2010, and less than 100 cases per million if CARB adopts most of the diesel risk reduction measures. These estimates of lifetime cancer risk are based on emissions from major roadways, inventoried industrial and areas sources, and off road equipment (except aircraft).

While Antioch and the rest of eastern Contra Costa County have experienced substantial development since these maps were generated, levels of TACs in the air have decreased due to more stringent standards on automobiles, trucks, construction equipment and industry. The Federal Highway Administration reports that while vehicle miles traveled in the United States is expected to increase by 64% over the period 2000 to 2020, emissions of MSATs (mobile source

air toxics) are anticipated to decrease substantially as a result of efforts to control mobile source emissions (by 57% to 67% depending on the contaminant)<sup>3</sup>. Although DPM is the greatest contributor to cancer risk posed by TACs, there are no reliable methods to measure airborne concentrations. However, CARB modeling data indicates composite exhaust emission rates of PM<sub>2.5</sub> in motor vehicles (indicative of DPM emissions) have decreased by 19 percent from 2000 through 2005. These emission rates are expected decrease 80 percent from 2000 through 2040.<sup>4</sup>

### **Air Monitoring Data**

The BAAQMD monitors air quality conditions at over 30 locations throughout the Bay Area. The Pittsburg air monitoring station is the nearest station to Antioch, and thus is the most representative of air quality conditions at the project area. Criteria pollutants monitored include O<sub>3</sub>, CO, NO<sub>2</sub>, and PM<sub>10</sub>. The gaseous pollutants (i.e., O<sub>3</sub>, CO, and NO<sub>2</sub>) are monitored continuously, while PM<sub>10</sub> is sampled for 24 hours every sixth day. PM<sub>2.5</sub> is not measured at this site. A summary of the data recorded at this station is shown in Table 2 for the period 2003 through 2007.

Table 3 shows the number of days per year that air pollutant levels exceeded national or State standards in Pittsburg and the entire Bay Area monitoring network. The NAAQS for O<sub>3</sub> (8-hour concentrations) was exceeded once in 2006. No other exceedances of the NAAQS for O<sub>3</sub> have occurred at this station. The 1-hour CAAQS for O<sub>3</sub> was exceeded on 3 days in 2006 during a heat wave and one day in 2007. Exceedances of that standard did not occur in 2003 through 2005. The new State 8-hour O<sub>3</sub> standard was exceeded on 2 days in 2005, 10 days in 2006 and 2 days in 2007. Measured concentrations of CO and NO<sub>2</sub> did not exceed the NAAQS or CAAQS. Measured exceedances of the 24-hour PM<sub>10</sub> State standard occurred on 1 to 4 sampling days annually during the 5-year period. PM<sub>2.5</sub> is not measured at this station.

Data from all stations throughout the Bay Area indicate that the 1-hour NAAQS for O<sub>3</sub> concentrations (recently revoked) was exceeded on one day in 2003. The 8-hour NAAQS for O<sub>3</sub> was exceeded 0 to 12 days annually. The more stringent State 1-hour O<sub>3</sub> standard was exceeded on 4 to 19 days annually and the new State 8-hour standard was exceeded on 9 to 22 days annually. The State PM<sub>10</sub> standard was exceeded on 3 to 15 sampling days annually. The new 2006 PM<sub>2.5</sub> national standard was exceeded on 10 days in 2006 and 14 days in 2007.

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<sup>3</sup> Federal Highway Administration, 2006. Interim Guidance on Air Toxic Analysis in NEPA Documents.

<sup>4</sup> Based on emission rates modeled with EMFAC2007/BURDEN for annual conditions in the Bay Area

**Table 2 Highest Measured Air Pollutant Concentrations**

Pollutant	Average Time	Measured Air Pollutant Levels				
		2003	2004	2005	2006	2007
<b>Pittsburg</b>						
Ozone (O <sub>3</sub> )	1-Hour	0.09 ppm	0.09ppm	0.09 ppm	<b>0.11 ppm</b>	<b>0.10 ppm</b>
	8-Hour	0.08 ppm	0.08 ppm	0.08 ppm	<b>0.09 ppm</b>	0.07 ppm
Carbon Monoxide (CO)	8-Hour	1.7 ppm	1.9 ppm	1.7 ppm	1.9 ppm	1.5 ppm
Nitrogen Dioxide (NO <sub>2</sub> )	1-Hour	0.06 ppm	0.05 ppm	0.06 ppm	0.05 ppm	0.05 ppm
	Annual	0.01 ppm	0.01 ppm	0.01 ppm	0.01 ppm	0.01 ppm
Fine Particulate Matter (PM <sub>2.5</sub> )	24-Hour	NA	NA	NA	NA	NA
	Annual	NA	NA	NA	NA	NA
Respirable Particulate Matter (PM <sub>10</sub> )	24-Hour	<b>58 µg/m<sup>3</sup></b>	<b>64 µg/m<sup>3</sup></b>	<b>57 µg/m<sup>3</sup></b>	<b>59 µg/m<sup>3</sup></b>	<b>59 µg/m<sup>3</sup></b>
	Annual	NA	<b>22 µg/m<sup>3</sup></b>	NA	20 µg/m <sup>3</sup>	19 µg/m <sup>3</sup>
<b>Bay Area (Basin Summary)</b>						
Ozone (O <sub>3</sub> )	1-Hour	<b>0.12 ppm</b>	<b>0.11 ppm</b>	<b>0.12 ppm</b>	<b>0.12 ppm</b>	<b>0.12 ppm</b>
	8-Hour	<b>0.10 ppm</b>	<b>0.08 ppm</b>	<b>0.09 ppm</b>	<b>0.11 ppm</b>	<b>0.09 ppm</b>
Carbon Monoxide (CO)	8-Hour	4.0 ppm	3.4 ppm	3.1 ppm	2.9 ppm	2.7 ppm
Nitrogen Dioxide (NO <sub>2</sub> )	1-Hour	0.09 ppm	0.07 ppm	0.07 ppm	0.11 ppm	0.07 ppm
	Annual	0.021ppm	0.019ppm	0.019ppm	0.018ppm	0.017ppm
Fine Particulate Matter (PM <sub>2.5</sub> )	24-Hour	56 ug/m <sup>3</sup>	52 ug/m <sup>3</sup>	55 ug/m <sup>3</sup>	<b>75 ug/m<sup>3</sup></b>	<b>58 ug/m<sup>3</sup></b>
	Annual	12 ug/m <sup>3</sup>	12 ug/m <sup>3</sup>	12 ug/m <sup>3</sup>	11 ug/m <sup>3</sup>	11 ug/m <sup>3</sup>
Respirable Particulate Matter (PM <sub>10</sub> )	1-Hour	<b>60 ug/m<sup>3</sup></b>	<b>65 ug/m<sup>3</sup></b>	<b>81 ug/m<sup>3</sup></b>	<b>73 ug/m<sup>3</sup></b>	<b>78 ug/m<sup>3</sup></b>
	Annual	<b>25 ug/m<sup>3</sup></b>	<b>26 ug/m<sup>3</sup></b>	<b>24 ug/m<sup>3</sup></b>	<b>23 ug/m<sup>3</sup></b>	<b>26 ug/m<sup>3</sup></b>

Source: BAAQMD Air Quality Summaries for 2003, 2004, 2005, 2006, and 2007.

Note: ppm = parts per million and ug/m<sup>3</sup> = micrograms per cubic meter

Values reported in bold exceed ambient air quality standard

NA = data not available.

**Table 3 Annual Number of Days Exceeding Ambient Air Quality Standards**

Pollutant	Standard	Monitoring Station	Days Exceeding Standard				
			2003	2004	2005	2006	2007
Ozone (O <sub>3</sub> )	NAAQS 1-hr	Pittsburg	0	0	- <sup>1</sup>	- <sup>1</sup>	- <sup>1</sup>
		BAY AREA	1	0	- <sup>1</sup>	- <sup>1</sup>	- <sup>1</sup>
	NAAQS 8-hr	Pittsburg	0	0	0	1	0
		BAY AREA	7	0	1	12	1
CAAQS 1-hr	Pittsburg	0	0	0	3	1	
	BAY AREA	19	7	9	18	4	
CAAQS 8-hr	Pittsburg	- <sup>2</sup>	- <sup>2</sup>	2	10	2	
	BAY AREA	- <sup>2</sup>	- <sup>2</sup>	9	22	9	
Respirable Particulate Matter (PM <sub>10</sub> )	NAAQS 24-hr	Pittsburg	0	0	0	0	0
	BAY AREA	0	0	0	0	0	
CAAQS 24-hr	Pittsburg	1	1	1	2	4	
	BAY AREA	6	7	3	15	4	
Fine Particulate Matter (PM <sub>2.5</sub> )	NAAQS 24-hr <sup>3</sup>	Pittsburg	NA	NA	NA	NA	NA
		BAY AREA	0	1	0	10	14
All Other (CO, NO <sub>2</sub> , Lead, SO <sub>2</sub> )	All Other	Pittsburg	0	0	0	0	0
		BAY AREA	0	0	0	0	0

<sup>1</sup> Standard revoked in 2004.

<sup>2</sup> Standard not in place.

<sup>3</sup> Based on standard of 65 µg/m<sup>3</sup> that was in place until September 21, 2006, then 35 µg/m<sup>3</sup> standard in 2006.

NA = data not available.

**Attainment Status**

Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The Bay Area as a whole does not meet either CAAQS or NAAQS for ground level O<sub>3</sub>, or CAAQS for particulate matter (both PM<sub>10</sub> and PM<sub>2.5</sub>). For O<sub>3</sub>, the entire Bay Area is designated as non-attainment at both the federal and State levels.

Under the federal CAA, the EPA has designated the region as marginally non-attainment for the 8-hour O<sub>3</sub> standard. EPA recently revised the standard slightly and will be making new attainment designations for this standard in about three years. Although EPA has determined that monitoring data for the Bay Area indicate attainment of the previous, but slightly higher standard, CARB and BAAQMD have not requested a change in the designation.

The U.S EPA lowered the 24-hour PM<sub>2.5</sub> standard from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup> in 2006. The EPA issued attainment status designations for the 35 µg/m<sup>3</sup> standard on December 22, 2008. The final

EPA order formally designating the Bay Area as nonattainment with the federal PM<sub>2.5</sub> standard will be effective in April 2009. The nonattainment designation is based on violations of the standard at air monitoring stations in Vallejo and San Jose. The BAAQMD will have until April 2012 to develop a plan for meeting the standard and will have until April 2014 to achieve compliance with the standard.

The Bay Area has met the CO standards for over a decade and is classified attainment maintenance by the US EPA. The US EPA grades the region as unclassified for all other air pollutants, including PM<sub>10</sub>.

At the State level, the region is considered serious non-attainment for the 1-hour and 8-hour O<sub>3</sub> and non-attainment for PM<sub>10</sub> and PM<sub>2.5</sub> standards. The region is required to adopt plans on a triennial basis that show progress toward meeting the State O<sub>3</sub> standard. There are no formal planning requirements for meeting the State PM<sub>2.5</sub> or PM<sub>10</sub> standards. The area is considered attainment or unclassified for all other pollutants.

### **Bay Area Clean Air Plan**

BAAQMD along with the other regional agencies (i.e., ABAG and MTC) has prepared an Ozone Attainment Plan to address the 1-hour NAAQS for ozone. Although U.S. EPA revoked the 1-hour NAAQS, commitments made in that plan along with emissions budgets remain valid until the region develops an attainment demonstration/maintenance plan for the 8-hour NAAQS for ozone. To be redesignated as attainment/maintenance for the ozone NAAQS, the region will be required to submit a maintenance plan and demonstration of attainment with a request for redesignation to the EPA. A Carbon Monoxide Maintenance Plan was approved in 1998 by EPA, which demonstrated how NAAQS for carbon monoxide standard would be maintained.

The *Bay Area 1991 Clean Air Plan* (CAP) is a plan to reduce ground-level ozone in the Bay Area in response to the California Clean Air Act. This CAP included a comprehensive strategy to reduce air pollutant emissions, focusing on control measures to be implemented during the 1991 to 1994 period. The plan also included control measures to be implemented from 1995 through the year 2000 and beyond. This plan is updated about every three years. The plans are meant to demonstrate progress toward meeting the more stringent 1-hour ozone CAAQS. The latest update to this plan, which was adopted in January 2006, is called the *Bay Area 2005 Ozone Strategy*. This plan includes a comprehensive strategy to reduce emissions from stationary, area, and mobile sources. The plan objective is to indicate how the region would make progress toward attaining the stricter state air quality standards, as mandated by the California Clean Air Act. The plan is designed to achieve a region-wide reduction of ozone precursor pollutants through the expeditious implementation of all feasible measures. The plan proposes expanded implementation of transportation control measures (TCMs) and programs such as Spare the Air. Spare the Air is a public outreach program designed to educate the public about air pollution in the Bay Area and promote individual behavior changes that improve air quality. Some of these measures or programs rely on local governments for implementation (e.g., BART offers free transit rides on Spare the Air days when funding is available).

The clean air planning efforts for ozone will also reduce PM<sub>10</sub> and PM<sub>2.5</sub>, since a substantial amount of this air pollutant comes from combustion emissions such as vehicle exhaust. In addition, BAAQMD adopts and enforces rules to reduce particulate matter emissions and develops public outreach programs to educate the public to reduce PM<sub>10</sub> and PM<sub>2.5</sub> emissions (e.g., Spare the Night Program). SB 656 requires further action by CARB and air districts to reduce public exposure to PM<sub>10</sub> and PM<sub>2.5</sub>. Efforts identified by BAAQMD in response to SB656 are primarily targeting reductions in wood smoke emissions and adoption of new rules to further reduce NO<sub>x</sub> and particulate matter from internal combustion engines and reduce particulate matter from commercial charbroiling activities. BAAQMD recently adopted a rule addressing residential wood burning (Regulation 6, Rule 3). The rule restricts operation of any indoor or outdoor fireplace, fire pit, wood or pellet stove, masonry heater or fireplace insert on specific days during the winter when air quality conditions are forecasted to exceed the NAAQS for PM<sub>2.5</sub>. The rule also limits excess visible emissions from wood burning devices and requires clean burning technology for wood burning devices sold (or resold) or installed in the Bay Area. NO<sub>x</sub> emissions contribute to ammonium nitrate formation that resides in the atmosphere as particulate matter, so a reduction in NO<sub>x</sub> emissions would reduce wintertime PM<sub>2.5</sub> levels. The Bay Area experiences the highest PM<sub>10</sub> and PM<sub>2.5</sub> in winter when wood smoke and ammonium nitrate contributions to particulate matter are highest.

An update to the 1991 clean air plan (currently the *Bay Area 2005 Ozone Strategy*) is currently under development. This update is expected to be completed and adopted by the BAAQMD in late 2009. In addition to strategies to control ozone precursor emissions, the plan will likely include a multi-pollutant approach that also addresses particulate matter, and greenhouse gases.

### **Sensitive Receptors**

There are groups of people more affected by air pollution than others. CARB has identified the following groups who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks. Sensitive land uses near the project site include residential and park and recreational uses. The residential uses include the existing single-family homes north of the site and south of Lone Tree Way from the site. Park and recreational facilities in the immediate vicinity include: Knoll Park to the northwest of the site; Williamson Ranch Park on the opposite side of Lone Tree Way; and Prewitt Family Park located just west of the Williamson Ranch Plaza.

## **AIR QUALITY IMPACTS AND MITIGATIONS**

### **Thresholds of Significance**

Appendix G, of the CEQA Guidelines (Environmental Checklist) contains a list of project effects that may be considered significant. The project would result in a significant impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; and
- Create objectionable odors affecting a substantial number of people.

As provided by the State CEQA Guidelines, the CEQA Guidelines prepared by BAAQMD were applied to evaluate the significance of impacts resulting from the project. The following BAAQMD significance criteria are applied to provide greater specificity to several of the CEQA standards contained in Appendix G:

- A substantial net increase of any criteria pollutant, which is defined by BAAQMD as direct or indirect emissions of greater than 80 pounds per day for ROG, NO<sub>x</sub>, or PM<sub>10</sub>. The BAAQMD CEQA Guidelines do not include thresholds for PM<sub>2.5</sub>. The thresholds for PM<sub>10</sub> are considered to be inclusive of PM<sub>2.5</sub>, since PM<sub>10</sub> particulates include PM<sub>2.5</sub>.
- A substantial contribution to an existing or project violation of an ambient air quality standard would result if the project would cause an exceedance of the California Ambient Air Quality Standard for carbon monoxide of 9.0 parts per million over an 8-hour averaging period:
- Expose sensitive receptors or the general public to substantial pollutant concentrations. This is evaluated by assessing the health risk in terms of cancer risk or hazards posed by the placement of new sources of air pollutant emissions near existing sensitive receptors or placement of new sensitive receptors near existing sources. A significant impact would occur if the project results in probability of greater than 10 in one million that the Maximally Exposed Individual (MEI) will contract cancer.
- Create or expose a substantial number of people to objectionable odors.

The BAAQMD Guidelines recommend that cumulative impacts be evaluated based on the significance of operational air quality impacts and evaluation of the consistency of the project with the General Plan and of the General Plan with the Clean Air Plan.

**Impact 1: Result in a substantial net increase of any criteria pollutant, which is defined by BAAQMD as direct or indirect emissions of greater than 80 pounds per day for ROG, NO<sub>x</sub>, or PM<sub>10</sub>? *Less-than-significant***

The Bay Area is considered a non-attainment area for ground-level ozone under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for respirable particulates or particulate matter with a diameter of less than 10 micrometers (PM<sub>10</sub>), and particulate matter with a diameter of less than 2.5 micrometers (PM<sub>2.5</sub>) under the California Clean Air Act, but not the Federal Act. The area has attained both State and Federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM<sub>10</sub>, BAAQMD has established thresholds of significance for air pollutants. These thresholds are for ozone precursor pollutants (reactive organic gases and nitrogen oxides) and PM<sub>10</sub>. The Bay Area has attained carbon monoxide standards.

The project would add new traffic trips, which would lead to increased emissions of air pollutants. Emissions of air pollutants associated with the project were predicted using the URBEMIS2007 model (Version 9.2.4), distributed by the Rimpo Associates ([www.urbemis.com](http://www.urbemis.com)) and recommended for use by BAAQMD. This model predicts daily emissions associated with land use developments. The model combines predicted daily traffic activity, associated with the different land use types, with emission factors from the State's mobile emission factor model (i.e., EMFAC2007). Kimley-Horn and Associates provided trip generation rates in the traffic report for the project. The model also predicts area source emissions associated with the proposed project, which are minor compared to emissions associated with traffic. For air quality modeling purposes, the project was anticipated to be fully operational in 2011. Project emissions are reported in Table 4. URBEMIS2007 computer output is provided in Appendix 1.

The proposed Wal-Mart expansion will add an additional 33,575 square feet to the existing Wal-Mart store that results in an additional of 1,590 daily trips. Development of the project expansion would increase emissions of ROG, NO<sub>x</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>. As shown in Table 4, the combination of new vehicular travel and area sources predicted using the URBEMIS2007 model would not result in emissions that exceed BAAQMD significance thresholds, therefore this impact is *less-than-significant*. Note that PM<sub>2.5</sub> emissions were modeled at about 20 percent of the project PM<sub>10</sub> emissions that are well below the BAAQMD significance thresholds.

**Table 4 Daily Project Emissions for Implementation of the Wal-Mart Expansion Project in Pounds Per Day**

Scenario	Modeled Daily Emissions in Pounds Per Day (lbs/day)			
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO <sub>x</sub> )	Respirable Particulates (PM <sub>10</sub> )	Fine Particulates (PM <sub>2.5</sub> )
Net New Area Sources	<1	<1	<1	<1
Net New Mobile Sources	9	12	10	2
<b>Net New Sources - Total</b>	<b>10</b>	<b>13</b>	<b>10</b>	<b>2</b>
<i>BAAQMD Significance Thresholds</i>	<i>80</i>	<i>80</i>	<i>80</i>	<i>--<sup>1</sup></i>

<sup>1</sup> The BAAQMD does not have PM<sub>2.5</sub>-based standards.

Stationary equipment that could emit air pollution has not been identified for the proposed project. Retail projects, such as this one, do not usually include these sources. If stationary sources are included in the project at a later date, they may require permits from BAAQMD. Such sources could include combustion emissions from standby emergency generators (rated 50 horsepower or greater). These sources would normally result in minor emissions, compared to those from traffic generation reported above. Sources of air pollutant emissions complying with all applicable BAAQMD regulations generally will not be considered to have a significant air quality impact. Stationary sources that are exempt from BAAQMD permit requirements due to low emission thresholds would not be considered to have a significant air quality impact.

**Impact 2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation?** *Less than significant*

Carbon monoxide emissions from traffic generated by the project would be the greatest pollutant concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Measured carbon monoxide levels have been at healthy levels (i.e., below State and Federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. Highest measured 8-hour carbon monoxide levels over the last 3 years are 1.9 ppm in Pittsburg (well below the federal and State standard of 9.0 ppm).

The contribution of project-generated traffic to these levels was predicted following the screening guidance recommended by the BAAQMD. A review of intersection traffic volumes and level of service was conducted to identify intersections with the potential for highest carbon monoxide levels that would be affected by the project. Four intersections were considered the worst intersections (in terms of elevated carbon monoxide levels from traffic) that may be affected by project-generated traffic. Future carbon monoxide levels were predicted near these intersections for existing conditions and future conditions with the project in place using traffic projections provided by Kimley-Horn and Associates. Emission factors used were calculated using the EMFAC2007 model, developed by the California Air Resources Board, with default assumptions for Contra Costa County during the winter, including a temperature of 40 degrees F. The highest CO concentrations occur winter during cold stable conditions with light winds. Therefore, modeling was conducted for wintertime conditions. A slow speed of 5 miles per hour was used on local streets and 25 miles per hour on the Route 4-Bypass, which results in higher emission rates. The screening analysis included the number of through lanes in the intersection configuration with a receptor located at the edge of the roadway. Results of this assessment are reported in Table 5. Screening calculations are provided in Appendix 2. Refined modeling using wider roadways that account for turn lanes would result in lower concentrations due to an increase in mixing zone width.

**Table 5: Predicted Roadside 8-Hour Carbon Monoxide Concentrations**

Description	Existing (2008)	Near-Term (2010)	Near-Term + Project (2010)	Far-Term (2025)	Far-Term + Project (2025)
Intersection 6: Lone Tree Way & Mokelumne Drive	3.5	3.9	4.0	2.1	2.1
Intersection 8: Lone Tree Way & Deer Valley Road	3.7	4.5	4.6	2.7	2.7
Intersection 14: Lone Tree Way & Hillcrest Avenue	4.6	4.7	4.7	3.0	3.0
Intersection 18: Lone Tree Way & SR-4 Bypass Ramps	6.4	6.8	6.8	3.7	3.7

Note: Includes background concentration of 1.9 ppm.

The highest 8-hour concentration with the project in place (in about 2010) is predicted to be 6.8 ppm over an 8-hour averaging period. This intersection would also be affected by Route 4 Bypass traffic and the project would not have a measurable effect. This represents the roadside concentration with Near-Term plus Project PM peak hour conditions, as reported by Kimley-Horn and Associates. Lower concentrations would occur at other intersections affected by project traffic. The analysis shows that the project would result in a slight increase in carbon monoxide levels at those other intersections. The results of this screening analysis indicate that project levels would be below the California ambient air quality standard (used to judge the significance of the impact) of 9.0 ppm; therefore, the impact is considered *less-than-significant*. Had levels been above the ambient air quality standards, a more refined analysis would have been conducted using the CALINE4 dispersion model and actual lane-receiver geometry. Note that cumulative conditions have lower concentrations, while there is more traffic. This is due to a substantial decrease in carbon monoxide tailpipe emissions that are expected from the entire vehicle fleet. New cleaner emitting vehicles are replacing older vehicles that have much higher emission rates.

**Impact 4: Expose sensitive receptors to substantial pollutant concentrations (during project construction)? *Less than significant with mitigation***

Project construction would result in temporary emissions of dust and diesel exhaust. Emissions of diesel particulate matter emitted during construction are evaluated under Impact 5.

Dust would be generated during demolition, grading and construction activities. Most of the dust would result during grading activities and vehicle travel on unpaved areas. The amount of dust generated would be highly variable and is dependent on the size of the area disturbed, amount of activity, soil conditions and meteorological conditions. Most grading construction occurs during late spring through early fall when soil is dryer, which would result in the highest dust emissions. Typical winds during late spring through summer are from the west. Afternoon winds in late spring and summer can be quite gusty when soil conditions are dry. Nearby land uses include residential areas that could be adversely affected by dust generated from construction. In addition, construction dust emissions can contribute to regional PM<sub>10</sub> emissions.

Although grading and construction activities would be temporary, they would have the potential to cause both nuisance and health air quality impacts. PM<sub>10</sub> is the pollutant of greatest concern

associated with dust. The BAAQMD does not have emission-based significance thresholds that apply to temporary construction activities. Instead, the BAAQMD CEQA Guidelines recommend application of appropriate dust control measures to reduce PM<sub>10</sub> emissions from construction to avoid temporary significant impacts from construction. If uncontrolled, PM<sub>10</sub> levels downwind of actively disturbed areas could possibly exceed State standards. In addition, dust fall on adjacent properties could be a nuisance. If uncontrolled, dust generated by grading and construction activities represents a *significant* impact.

**Construction Mitigation Measure: Include BAAQMD recommended measures to control PM<sub>10</sub> emissions during construction.**

Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a *less-than-significant* level. Measures to reduce diesel particulate matter and PM<sub>2.5</sub> from construction are recommended by the report preparer to ensure that short-term health impacts to nearby sensitive receptors are avoided.

Dust (PM<sub>10</sub>) Control Measures:

1. Water all active construction areas at least twice daily and more often during windy periods. Active areas adjacent to residences should be kept damp at all times.
2. Cover all hauling trucks or maintain at least two feet of freeboard.
3. Pave, apply water at least twice daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas.
4. Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas and sweep streets daily (with water sweepers) if visible soil material is deposited onto the adjacent roads.
5. Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (i.e., previously-graded areas that are inactive for 10 days or more).
6. Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles.
7. Limit traffic speeds on any unpaved roads to 15 mph.
8. Replant vegetation in disturbed areas as quickly as possible.
9. Suspend construction activities that cause visible dust plumes to extend beyond the construction site.

Measures to reduce diesel particulate matter and PM<sub>2.5</sub> from construction

10. Diesel equipment standing idle for more than five minutes shall be turned off. This would include trucks waiting to deliver or receive soil, aggregate, or other bulk materials. Rotating drum concrete trucks could keep their engines running continuously as long as they were onsite. Signs describing idling restrictions shall be conspicuously posted at the construction site.
11. Prohibit equipment with dirty emissions. The project shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. This measure means that equipment with continuous dark emissions would be in violation of the requirement.
12. Properly tune and maintain equipment for low emissions.
13. Use electrical power, rather than diesel powered generators.

**Impact 5: Exposure of Sensitive Receptors to Toxic Air Contaminants from construction and operation of the project. *Less than significant***

Diesel particulate matter (DPM) would be emitted from diesel-fueled vehicles and equipment during construction activities and from vehicle traffic attracted by the proposed project while operational. The particulate matter component of diesel exhaust has been classified as a TAC by CARB based on its potential to cause cancer and other adverse health effects. A health risk evaluation was conducted to assess the potential health effects of the proposed project's DPM emissions on nearby sensitive receptors.

Additionally, polycyclic aromatic hydrocarbons (PAHs) would be emitted in small quantities from the one fast-food restaurant (McDonalds) at the project. PAHs are a group of over 100 chemicals and can be produced from cooking meat with charbroilers or griddles. PAHs are also classified as a TAC with the potential to cause cancer. Since the fast-food restaurant in the project involves the relocation of the existing fast-food restaurant within a remodeled portion of the existing store, it is not expected that there would be a net increase in PAH emissions associated with the project. Therefore, the health risk assessment for the project expansion did not include an assessment of PAH emissions.

The highest daily levels of DPM would be emitted during construction activities due to use of heavy-duty diesel equipment such as bulldozers, excavators, loaders, graders and diesel-fueled haul trucks. However, these emissions would be intermittent, vary throughout the project site area, and be of a relatively short duration (less than six months of heavy construction activity). In contrast, low-level DPM emissions would result from project operation but they would be constant over the lifetime of the project. Retail-related operational DPM emissions would result from large diesel-fueled trucks making merchandise and grocery deliveries to the proposed project, in addition to DPM emissions from a small fraction of customer motor vehicles that

would be diesel fueled. DPM emissions from retail operation are assumed to occur over a 70-year exposure period.

DPM emissions from construction activities were estimated using the URBEMIS2007 model, discussed previously, based on an estimated schedule for construction activities (grading and construction) and types of equipment expected to be used. Emissions from other vehicles during retail operations (e.g., customer and employee vehicles) were estimated using emission factors for diesel-fueled vehicles from the CARB's EMFAC2007 model. (Note: The DPM emission rates do not factor-in emission-reduction measures, which have been or will be implemented for construction equipment fleets.)

DPM emissions from project-related delivery trucks will occur at the project site from trucks driving within the site to make deliveries, during idling when not moving or unloading, and from operation of truck transportation refrigeration units (TRUs) on trucks carrying perishable products. There will be an average of up to about 22 delivery trucks accessing the expanded Wal-Mart on a daily basis compared to about 15 trucks per day for the existing Wal-Mart store. Of the 22 trucks anticipated, 10 will be heavy duty 4-axle trucks, with 2 of these trucks equipped with TRUs, and 12 lighter duty 2-axle trucks. The existing store has up to about 8 heavy duty 4-axle trucks and 7 light duty 2-axle trucks making deliveries each day. All of these trucks were assumed to be diesel-fueled. (Note: For purposes of this analysis, the increased truck delivery numbers above are slightly higher than those indicated by the applicant in order to present a worst-case analysis.)

Emissions of DPM from delivery trucks were estimated for both the existing store and the proposed expanded store using mobile source emission factors from the CARB EMFAC2007 emissions model. Emission factors for idling, traveling on site as slow speed (15 mph), and while traveling off site in the project vicinity on local roads at speeds of 35 mph were obtained from the model. TRU emissions were based on CARB's DPM emission standards for TRUs (title 13, CCR, section 2477) and an average TRU generator size of 34 horsepower<sup>5</sup>. Details on the DPM emission factors used and emission calculations are provided in Appendix 3. (Note: The DPM emission rates do not factor-in emission-reduction measures, which have been or may be implemented for retailer truck fleets.)

Some of the project-generated trips from customers and employees would be from diesel-powered vehicles. Like delivery trucks, these would have emissions from both on-site and travel to and from the site. DPM emissions from these vehicles were modeled on-site and while they traveled along Lone Tree Way and Hillcrest Avenue near the site. The project is predicted to generate about 8,901 daily trips, 1,606 more daily trips than are made to the existing store. Most of these trips would be light-duty automobiles or light-duty trucks and a small percentage would be considered medium-duty trucks. Large trucks used to deliver merchandise or serve the site were modeled as described above.

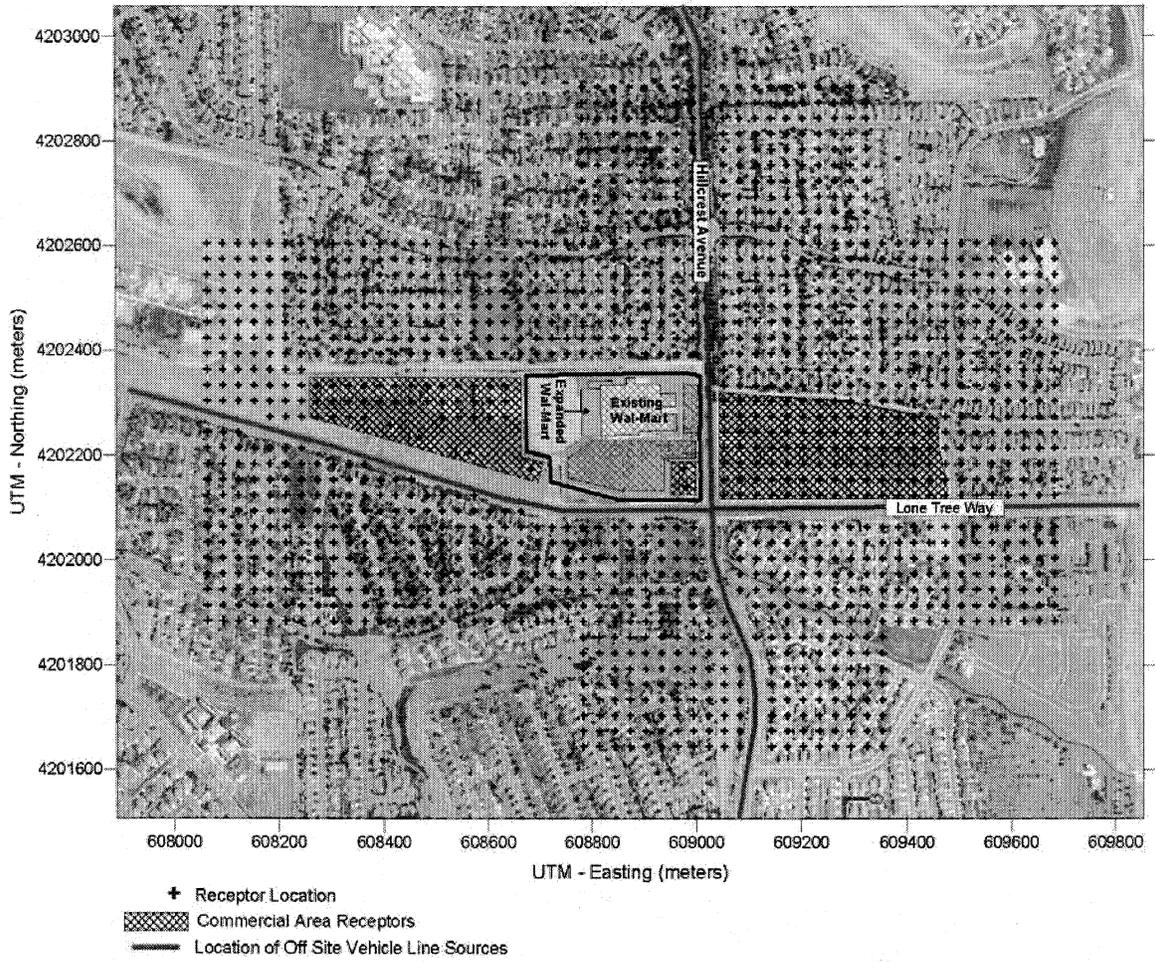
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<sup>5</sup> CARB 2003. Airborne Toxic Control Measure for In-Use Diesel-Fueled Transportation Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate. Staff Report: Initial Statement of Reasons for Proposed Rulemaking.

Potential cancer risks from on and off site project-related DPM emission sources were calculated using screening-level health risk assessment procedures. Cancer risks were calculated using health risk assessment methods recommended by the California Office of Environmental Health Hazard Assessment (OEHHA) and the BAAQMD. This involves calculation of ambient DPM concentrations at sensitive receptor locations (nearby residences) and other locations where exposure may occur (e.g., workers in nearby commercial/retail areas and in the existing Wal-Mart store) using an air quality dispersion model, then calculating cancer risks using the modeled concentrations along with appropriate DPM-specific risk factors. This method was used to assess cancer risks from all DPM emission sources (construction activities, on and off site project-generated vehicle and delivery truck travel, on site TRU operation, and from on site project-generated vehicle travel). Additional details on DPM emissions and emission sources used in the refined health risk assessment are provided in Appendix 3.

As discussed earlier, the closest residences (Parkside neighborhood) are about 120 feet from the project site on the northern side of East Antioch Creek, which is adjacent to the project site. Other nearby residences are located along Hillcrest Avenue to the northeast of the site, and along Lone Tree Way to the south of the site. A commercial area, with retail, professional offices, and restaurant uses, is directly west of the project site. Another commercial area is situated east of the project site, on the east side of Hillcrest Avenue. In modeling DPM concentrations from project emission sources, a grid of receptors, spaced every 30 meters, was used for the residential areas near the project site and along Hillcrest Avenue and Lone Tree Way in the vicinity of the project. Additional receptors, used to represent locations of potential off site worker exposure, were placed at building locations within the commercial areas adjacent to the Wal-Mart store area. Receptors within the existing Wal-Mart store spaced every 15 meters were also used to evaluate potential effects on on-site workers. Figure 1 shows the project site and its relationship to the residential and commercial area receptors where DPM concentrations were calculated and used for the health risk analysis.

**Figure 1**  
**Project Area and Modeling Receptors**



The EPA's Industrial Source Complex Short-Term (ISCST3) dispersion model was used, along with screening meteorological data from the EPA's SCREEN3 model, to calculate screening-level DPM concentrations at sensitive receptor locations in the project vicinity. The ISCST3 model calculates pollutant concentrations at receptors located in areas of flat or complex terrain from a variety of emission source types including point, area, volume and line sources. The model was run using regulatory default dispersion options and urban dispersion coefficients due to the urban nature of the project area. Since there is little variation in terrain elevation in the project vicinity the model was run in flat terrain mode.

The screening meteorological data used in the modeling are based on the meteorological conditions used with by the SCREEN3 model. These meteorological data are comprised of 54 combinations of wind speed and atmospheric stability that represent meteorological conditions that may exist over a 24-hour period (daytime and nighttime conditions). Using this meteorological data the ISCST3 model was used to compute 1-hour average concentrations at each receptor location. The 1-hour concentrations were converted to annual average concentrations, needed for evaluation of cancer risks, by applying the BAAQMD recommended conversion factor of 0.1 to the 1-hour concentrations.

The off site project-related vehicle and delivery truck DPM emissions were modeled as line sources (a series of volume sources along a path) along Lone Tree Way and Hillcrest Avenue near the project site. Emissions from delivery trucks while traveling on site were also modeled as line sources, while the truck emissions during idling and from the TRUs were modeled as point sources. For the proposed store expansion delivery trucks were assumed to use the new loading dock. Delivery trucks for the existing store were assumed to use the existing loading dock. On site project-related vehicle traffic was modeled as a series of area sources distributed throughout the project site covering the internal roads and parking areas. The locations of these emissions sources are depicted on Figure 2. DPM emissions from construction were modeled as area sources encompassing the construction area.

DPM emissions from both the existing store and for the proposed store expansion were modeled in order to identify potential changes in local DPM concentrations and associated changes to cancer risks. Potential incremental cancer risks at the residential and site worker receptor locations were calculated using standard risk assessment methodology as recommended by the BAAQMD and OEHHA. Potential non-cancer health effects due to chronic exposure to DPM were not estimated since the concentration threshold for non-cancer risks is considerably higher than concentrations that would result in significant cancer risks.

Cancer risks were evaluated following OEHHA Air Toxics Hot Spot Program Risk Assessment Guidelines (OEHHA 2003) and BAAQMD exposure parameters. Potential cancer risks from DPM emissions were calculated for both residential and non-residential (workers in the other commercial/retail facilities in the project vicinity and at the existing Wal-Mart store) exposures. Consistent with BAAQMD Guidance, residential exposures were assumed to be continuous for 24 hours per day, 350 days per year, over a period of 70 years, at a breathing rate of 302 liters per day per kilogram of body weight (L/kg-day). Workers were assumed to be exposed for 8 hours per day, 245 days per year, over a period of 40 years, at a breathing rate of 149 L/kg-day. Since DPM emissions during construction would be less than one year, the exposures were

adjusted to account for one year of exposure out of an overall 70-year exposure period. Details of the cancer risk calculations are provided in Appendix 3.

Table 6 summarizes the potential maximum increased cancer risks for residential and on- and off-site worker exposures due to DPM emissions from the project. Off-site worker and residential cancer risks are highest for receptor locations closest to the existing Wal-Mart and proposed expanded Wal-Mart, then decrease as the distance from the store increases. The maximum residential cancer risk, which is quite low, occurs at the residence closest to the existing Wal-Mart store on the west side of Hillcrest Avenue. The maximum cancer risk for an off-site worker exposure occurs east of the proposed expanded Wal-Mart, at the Orchard Supply Hardware store. These cancer risks represent the potential increase in the number of cancer cases per million persons that would result from expanding the existing Wal-Mart store. Since the projected maximum increased cancer risks associated with DPM for both residential and worker exposures are less than the BAAQMD significance threshold of 10 in a million, the impact would be considered *less than significant*.

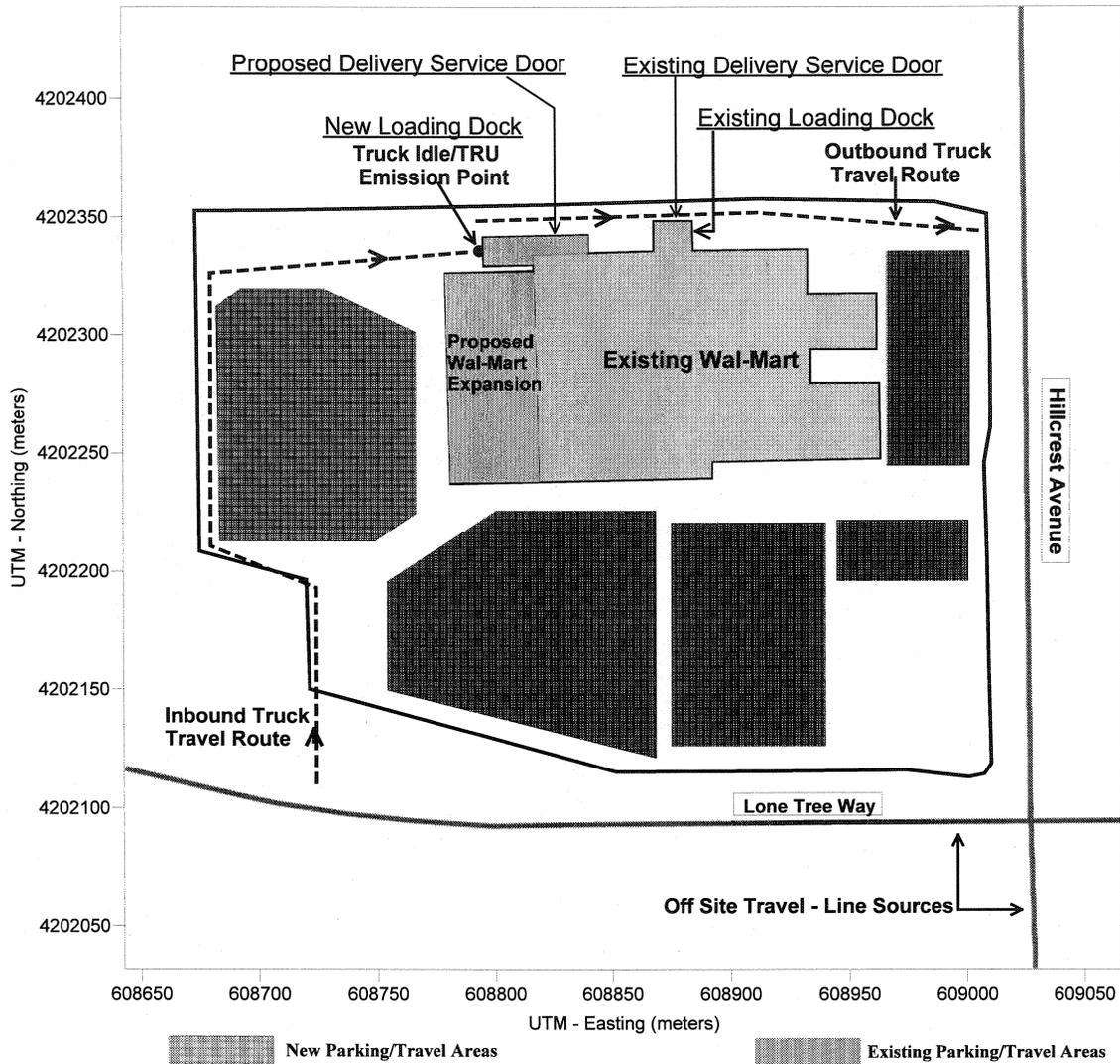
**Table 6 – Increased Cancer Risks From Proposed Wal-Mart Expansion Project**

Store Condition	Maximum Increased Cancer Risk (per million persons)		
	Off-Site Worker Exposure	Existing (Wal-Mart) Worker Exposure	Residential Exposure
Proposed Expanded Wal-Mart Store <sup>a</sup>	2.85	2.04	2.25
Existing Wal-Mart Store <sup>b</sup>	0.96	1.16	2.18
<b>Net Increased Cancer Risk</b>	<b>1.89</b>	<b>0.88</b>	<b>0.07</b>

<sup>a</sup> Includes cancer risks from construction and operation. Note: This includes the entire Wal-Mart store, as proposed to be expanded.

<sup>b</sup> Cancer risks from operation. Note: This line is subtracted from the first line to derive net change in cancer risks resulting from the store expansion.

**Figure 2  
Proposed Antioch Wal-Mart Expansion  
Emission Source Locations**



**Impact 6: Create objectionable odors affecting a substantial number of people? Significant**

During construction, the various diesel powered vehicles and equipment in use onsite would create localized odors. These odors would be temporary and not likely to be noticeable for extended periods of time much beyond the project's site boundaries. The potential for diesel odor impacts is therefore *less than significant*.

During project operations, the project could produce odors as a result of refuse storage and collection, the operation of the tire and lube facility, and from cooking exhaust at the fast-food restaurant. However, these activities all currently occur at the existing Wal-Mart store. The

refuse storage and collection area will be expanded somewhat to accommodate increased solid waste generation by the expanded store, but all collection areas and containers will be enclosed to minimize generation of odors. The tire and lube facility, which will not be altered, does not generate noticeable odors beyond the project boundaries. Therefore, the odor impacts associated with refuse store and collection, and the tire and lube facility, would be *less than significant*.

The existing fast-food restaurant inside the Wal-Mart store will be relocated within the store. This restaurant is a potential source for cooking odors. Reaction to cooking odors varies widely with individuals. Some people find them objectionable, while others find them pleasant. Restaurant cooking odors have, in some instances, been the subject of complaints, although no complaints have been received by the City of Antioch from the existing fast-food restaurant at the existing Antioch Walmart store. A potential for odor nuisance exists during light wind conditions. This is considered to be a *potentially significant impact*.

**Odor Mitigation Measure. The fast-food restaurant in the project shall install kitchen exhaust vents in accordance with accepted engineering practice, and shall install exhaust filtration systems or other accepted methods of odor reduction.**

The combination of dilution and odor removal through filtration would effectively reduce odor strength to levels that would not cause frequent complaints.

**Impact 6: Conflict with or obstruct implementation of the applicable air quality plan?** *No Impact*

Project site has been planned for commercial retail use in successive general plans and specific plans dating back to 1982. The planned retail land use for the project site would have been used in the City growth projections contained in successive air quality plans prepared by the Bay Area Air Quality Management District. Therefore, the project would not conflict with projections used to prepare the latest clean air plan (i.e., Bay Area 2005 Ozone Strategy) or obstruct its implementation. This project has no impact.

## **CUMULATIVE IMPACTS**

Cumulative air quality impacts are evaluated based on both a quantification of the project-related air quality impacts and the consistency of the proposed project and applicable General Plan with regional air quality plans. In addition, review of the project for consistency with the regional air quality plan takes into consideration the cumulative nature of the air quality plan, which is based on area-wide growth assumptions.

### **Regional Air Pollutant Emissions**

The project itself would have emissions that are below the BAAQMD CEQA Guidelines thresholds that are used to determine if a project would have a significant impact in terms of ozone and PM<sub>10</sub>. According to the BAAQMD CEQA Guidelines, when a project does not individually result in significant operational air quality impacts, the determination of a significant cumulative impact is to be based on an evaluation of the consistency of the project with the local general plan and of the general plan with the regional air quality. As described under Impact 6,

the project is consistent with the Antioch General Plan, which in turn is consistent with the regional Clean Air Plan, and therefore the project would not conflict with the regional Clean Air Plan. As a result, the project would not significantly contribute to a cumulatively significant impact to regional air quality.

### **Local Air Pollutant Emissions**

Construction period PM<sub>10</sub> emissions would be localized. With implementation of the Construction Mitigation Measure, construction period impacts would be less than significant. Additional construction at other project sites that may occur in the area simultaneously with the proposed project would be less than significant since construction impacts are localized to the immediate area surrounding the construction site and significant interaction of emissions from different sites would not be expected to occur. Therefore, cumulative construction emissions would not be significant.

The CO analysis was performed based on traffic data which incorporates the cumulative development projects in the base condition. Therefore, the results of the project-specific CO analysis, discussed under Impact 5 above, actually reflect cumulative CO levels. Since CO levels at the worst affected intersections are predicted to be well below the applicable federal and State standards, the cumulative CO emissions would be less-than-significant.

### **Cumulative Toxic Air Pollutant Impacts**

Potential cumulative toxic air pollutant impacts can result from interaction of the proposed Wal-Mart expansion project with other approved or planned projects that could have emissions of toxic air pollutants and would be operational within the timeframe of the proposed project. Two other projects, the Lone Tree Landing and Williamson Ranch Plaza projects (which both have been substantially completed but have undeveloped phases remaining), have been identified that have the potential to cumulatively interact with the proposed project. Other projects farther away were not considered since DPM emissions are highly localized and disperse quickly with distance from the source. Therefore, DPM emissions from other projects not in the immediate project vicinity would have negligible concentrations at the project site and would not combine with project emissions to result in a cumulatively significant health risk.

The Lone Tree Landing is located across Hillcrest Avenue to the east from the Wal-Mart site. The retail floor area approved for the final phase of this project is 25,000 square feet; plus there is a completed but unoccupied 8,713 square feet of retail space and 9,595 square feet of office space, for a total approved but unoccupied area of 43,308 square feet. Once this project is occupied and operational, it will generate an average of about 3 daily 2-axle diesel truck deliveries, but no 4-axle truck deliveries or trucks with TRUs. The final phase of the other project, the Williamson Ranch Plaza - Phase IV, consists of 20,030 square feet of approved office development located at the western end of the same shopping center where Wal-Mart is located. It is not expected that this development would have large diesel truck making deliveries to its occupants on a regular basis.

The primary sources of diesel particulate matter emissions from retail and commercial developments are large diesel-fueled delivery trucks and trucks with TRUs. Because of the low level of truck activity that will be associated with the final phases of the Lone Tree Landing and

the Williamson Ranch Plaza projects, these projects would not be considered to expose sensitive receptors to substantial levels of toxic air contaminants. Combined with the relatively low DPM emissions associated with the proposed project, the combined emissions from these proximate projects would also be relatively low and the health risk associated with these cumulative DPM emissions would not exceed the significance threshold of 10 increased cancer cases per 1 million population. Thus, cumulative exposure to toxic air pollutants from these nearby projects and the proposed Wal-Mart expansion project would be considered less than significant.

The project would not contribute to a local cumulative air quality impact with respect to carbon monoxide, particulate, or health risk due to TAC exposure. In addition, the project is consistent with the Antioch General Plan, which in turn is consistent with the regional Clean Air Plan, and as such the project would not conflict with the regional Clean Air Plan; therefore, the project would not have a cumulatively significant impact on regional air quality. In conclusion, the project would not have a cumulatively significant impact on air quality.

## **Appendix 1 URBEMIS2007 Output**



Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\I&R Docs\08-138 Antioch Wal-Mart Expansion\AQ\Antioch WM Expansion Urbemis.urb924

Project Name: Antioch Walmart Existing

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010 TOTALS (lbs/day unmitigated)	72.71	42.81	22.99	0.01	9.21	2.13	1.96	3.88	4,165.78

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	0.38	0.41	1.87	0.00	0.01	0.01	466.46

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	9.21	12.15	120.78	0.11	9.87	2.11	11,447.47

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	9.59	12.56	122.65	0.11	9.88	2.12	11,913.93

Construction Unmitigated Detail Report:

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## CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 6/1/2010-7/14/2010 Active Days: 32	3.04	25.05	13.62	0.00	9.20	1.25	10.46	1.92	1.15	3.07	2,349.23
Fine Grading 06/01/2010- 07/15/2010	3.04	25.05	13.62	0.00	9.20	1.25	10.46	1.92	1.15	3.07	2,349.23
Fine Grading Dust	0.00	0.00	0.00	0.00	9.20	0.00	9.20	1.92	0.00	1.92	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00	101.91
Time Slice 7/15/2010-7/15/2010 Active Days: 1	5.14	<u>42.81</u>	<u>22.99</u>	0.00	<u>9.21</u>	<u>2.13</u>	<u>11.34</u>	<u>1.92</u>	<u>1.96</u>	<u>3.88</u>	<u>4,165.78</u>
Fine Grading 06/01/2010- 07/15/2010	3.04	25.05	13.62	0.00	9.20	1.25	10.46	1.92	1.15	3.07	2,349.23
Fine Grading Dust	0.00	0.00	0.00	0.00	9.20	0.00	9.20	1.92	0.00	1.92	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00	101.91
Trenching 07/15/2010-08/01/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,816.55
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,714.64
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00	101.91
Time Slice 7/16/2010-7/30/2010 Active Days: 11	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,816.55
Trenching 07/15/2010-08/01/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,816.55
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,714.64
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00	101.91

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Time Slice 8/2/2010-8/31/2010 Active Days: 22	2.08	12.17	9.06	0.00	0.01	1.04	1.05	0.00	0.95	0.96	1,180.45
Asphalt 08/01/2010-09/01/2010 Paving Off-Gas	2.08	12.17	9.06	0.00	0.01	1.04	1.05	0.00	0.95	0.96	1,180.45
Paving Off Road Diesel	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving On Road Diesel	1.95	11.89	6.98	0.00	0.00	1.03	1.03	0.00	0.94	0.94	979.23
Paving Worker Trips	0.01	0.16	0.05	0.00	0.00	0.01	0.01	0.00	0.01	0.01	22.88
Time Slice 9/1/2010-9/1/2010 Active Days: 1	0.07	0.11	2.03	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.35
Asphalt 08/01/2010-09/01/2010 Paving Off-Gas	3.40	21.82	17.10	0.01	0.02	1.63	1.66	0.01	1.50	1.51	2,399.06
Paving Off Road Diesel	2.08	12.17	9.06	0.00	0.01	1.04	1.05	0.00	0.95	0.96	1,180.45
Paving On Road Diesel	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Worker Trips	1.95	11.89	6.98	0.00	0.00	1.03	1.03	0.00	0.94	0.94	979.23
Building 09/01/2010-10/15/2010 Building Off Road Diesel	0.01	0.16	0.05	0.00	0.00	0.01	0.01	0.00	0.01	0.01	22.88
Building Vendor Trips	0.07	0.11	2.03	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.35
Building Off Road Diesel	1.33	9.65	8.04	0.00	0.02	0.59	0.61	0.01	0.55	0.55	1,218.62
Building Vendor Trips	1.21	9.16	4.81	0.00	0.00	0.58	0.58	0.00	0.53	0.53	893.39
Time Slice 9/2/2010-10/14/2010 Active Days: 31	0.02	0.32	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	64.53
Building Off Road Diesel	0.10	0.17	2.96	0.00	0.01	0.01	0.02	0.00	0.01	0.01	260.70
Building Vendor Trips	1.33	9.65	8.04	0.00	0.02	0.59	0.61	0.01	0.55	0.55	1,218.62
Building Off Road Diesel	1.33	9.65	8.04	0.00	0.02	0.59	0.61	0.01	0.55	0.55	1,218.62
Building Vendor Trips	1.21	9.16	4.81	0.00	0.00	0.58	0.58	0.00	0.53	0.53	893.39
Building Off Road Diesel	0.02	0.32	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	64.53
Building Vendor Trips	0.10	0.17	2.96	0.00	0.01	0.01	0.02	0.00	0.01	0.01	260.70

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Time Slice 10/15/2010-10/15/2010 Active Days: 1	72.71	9.71	9.00	0.00	0.02	0.60	0.62	0.01	0.55	0.55	1,303.48
Building 09/01/2010-10/15/2010	1.33	9.65	8.04	0.00	0.02	0.59	0.61	0.01	0.55	0.55	1,218.62
Building Off Road Diesel	1.21	9.16	4.81	0.00	0.00	0.58	0.58	0.00	0.53	0.53	893.39
Building Vendor Trips	0.02	0.32	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	64.53
Building Worker Trips	0.10	0.17	2.96	0.00	0.01	0.01	0.02	0.00	0.01	0.01	260.70
Coating 10/15/2010-11/01/2010	71.38	0.05	0.96	0.00	0.00	0.00	0.01	0.00	0.00	0.00	84.86
Architectural Coating	71.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.05	0.96	0.00	0.00	0.00	0.01	0.00	0.00	0.00	84.86
Time Slice 10/18/2010-11/11/2010 Active Days: 11	71.38	0.05	0.96	0.00	0.00	0.00	0.01	0.00	0.00	0.00	84.86
Coating 10/15/2010-11/01/2010	71.38	0.05	0.96	0.00	0.00	0.00	0.01	0.00	0.00	0.00	84.86
Architectural Coating	71.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.05	0.96	0.00	0.00	0.00	0.01	0.00	0.00	0.00	84.86

Phase Assumptions

- Phase: Fine Grading 6/1/2010 - 7/15/2010 - Default Fine Site Grading Description  
 Total Acres Disturbed: 1.84  
 Maximum Daily Acreage Disturbed: 0.46  
 Fugitive Dust Level of Detail: Default  
 20 lbs per acre-day  
 On Road Truck Travel (VMT): 0  
 Off-Road Equipment:  
 1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day  
 1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day  
 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day  
 1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Phase: Trenching 7/15/2010 - 8/1/2010 - Type Your Description Here

Off-Road Equipment:

- 2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
- 1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 8/1/2010 - 9/1/2010 - Default Paving Description

Acres to be Paved: 0.46

Off-Road Equipment:

- 4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
- 1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
- 1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 9/1/2010 - 10/15/2010 - Default Building Construction Description

Off-Road Equipment:

- 1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
- 2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 10/15/2010 - 11/1/2010 - Default Architectural Coating Description

- Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
- Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
- Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
- Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.03	0.39	0.32	0.00	0.00	0.00	463.65
Hearth - No Summer Emissions	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Landscape	0.00						
Consumer Products	0.23						
Architectural Coatings	0.38	0.41	1.87	0.00	0.01	0.01	466.46
TOTALS (lbs/day, unmitigated)							

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Free-standing discount store	9.21	12.15	120.78	0.11	9.87	2.11	11,447.47
TOTALS (lbs/day, unmitigated)	9.21	12.15	120.78	0.11	9.87	2.11	11,447.47

Operational Settings:

- Does not include correction for passby trips
- Does not include double counting adjustment for internal trips
- Analysis Year: 2011 Temperature (F): 85 Season: Summer
- Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acres	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Free-standing discount store	40.18	1000 sq ft	39.97	1,605.99	11,873.12	
				1,605.99	11,873.12	

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.8	0.9	98.7	0.4
Light Truck < 3750 lbs	12.8	1.6	95.3	3.1
Light Truck 3751-5750 lbs	19.8	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	62.5	37.5	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

Residential	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
	10.8	7.3	7.5	9.5	7.4	7.4

Urban Trip Length (miles)

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)				2.0	1.0	97.0
Free-standing discount store						

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\I&R Docs\08-138 Antioch Wal-Mart Expansion\AQ\Antioch WM Expansion Urbemis.urb924

Project Name: Antioch Walmart Existing

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	0.54	0.82	0.52	0.00	0.15	0.05	0.03	0.04	0.08	83.85

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.06	0.07	0.20	0.00	0.00	0.00	84.87

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.81	2.58	22.69	0.02	1.80	0.39	1,994.69

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.87	2.65	22.89	0.02	1.80	0.39	2,079.56

Construction Unmitigated Detail Report:



Phase Assumptions

Phase: Fine Grading 6/1/2010 - 7/15/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 1.84

Maximum Daily Acreage Disturbed: 0.46

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 7/15/2010 - 8/1/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 8/1/2010 - 9/1/2010 - Default Paving Description

Acres to be Paved: 0.46

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 9/1/2010 - 10/15/2010 - Default Building Construction Description

Off-Road Equipment:

10/24/2008 1:55:45 PM

- 1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
- 2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 10/15/2010 - 11/1/2010 - Default Architectural Coating Description  
 Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.01	0.07	0.06	0.00	0.00	0.00	84.62
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.04						
TOTALS (tons/year, unmitigated)	0.06	0.07	0.20	0.00	0.00	0.00	84.87

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Total Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Free-standing discount store	1.81	2.58	22.69	0.02	1.80	0.39	1,994.69
<b>TOTALS (tons/year, unmitigated)</b>	<b>1.81</b>	<b>2.58</b>	<b>22.69</b>	<b>0.02</b>	<b>1.80</b>	<b>0.39</b>	<b>1,994.69</b>

Operational Settings:

- Does not include correction for passby trips
- Does not include double counting adjustment for internal trips

Analysis Year: 2011 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Free-standing discount store	40.18	1000 sq ft	39.97	1,605.99	11,873.12	11,873.12
				1,605.99	11,873.12	

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.8	0.9	98.7	0.4
Light Truck < 3750 lbs	12.8	1.6	95.3	3.1
Light Truck 3751-5750 lbs	19.8	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	62.5	37.5	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

Free-standing discount store

1.0

2.0

97.0

## **Appendix 2 CO Calculations**



**Antioch Walmart**  
**CARBON MONOXIDE ANALYSIS**

PM Peak Hour  
 Assumes worst case of all intersections based on total volume, LOS and project traffic contribution

CO Int

Intersection	Traffic Volume				1-Hour CO Contribution				Total 1-Hour Concentration				Total 8-Hour Concentration				
	Existing (2008)	New Trns (2015)	Comprehensive Project (2025)	Comprehensive Project (2025)	Existing (2008)	New Trns (2015)	Comprehensive Project (2025)	Comprehensive Project (2025)	Existing (2008)	New Trns (2015)	Comprehensive Project (2025)	Comprehensive Project (2025)	Existing (2008)	New Trns (2015)	Comprehensive Project (2025)	Comprehensive Project (2025)	
Link: Int 6: Lone Tree Way & Mckelume Drive Lone Tree Way (4-Lanes) Mckelume Drive (2-Lanes)	1883 556	2671 588	3050 876	3050 1080	1.8 0.2	1.4 0.1	0.4 0.1	0.2 0.1	5.3	4.8	3.8	3.6	3.3	2.9	2.3	2.1	2.1
Link: Int. 8: Lone Tree Way & Deer Valley Road Lone Tree Way (4-Lanes) Deer Valley Road (4-Lanes)	1914 1205	3171 2509	3168 2526	3302 2525	1.9 0.4	1.5 0.4	1.5 0.4	0.8 0.2	5.6	5.2	5.2	4.3	3.5	3.3	3.3	2.6	2.6
Link: Int. 14: Lone Tree Way & Hillcrest Avenue Lone Tree Way (4-Lanes) Hillcrest Avenue (4-Lanes)	2536 1044	3569 1400	3367 1480	4124 1900	3.1 0.4	2.0 0.2	2.0 0.2	1.2 0.2	6.7	5.6	5.6	4.7	4.3	3.5	3.5	2.9	2.9
Link: Int 18: Lone Tree Way & SR-4 Bypass Lone Tree Way (4-Lanes) SR-4 Bypass Ramps (4-Lanes) SR-4 Bypass (4-Lanes)	5224 787 6800	4401 1109 6800	4399 1334 6800	5684 1334 6800	3.9 0.3 4.9	2.7 0.2 2.6	2.7 0.2 2.6	1.7 0.1 1.4	12.4	8.8	8.8	6.5	8.2	5.7	5.7	4.1	4.1

Dispersion Factors		Edge
Primary	2.1x	14.0
	4.1x	11.5
	8.1x	9.2
Secondary	2.1x	3.7
	4.1x	3.3
	8.1x	2.8

Emission Factors (EMFAC2007 - 5mph)	1-Hour	8-Hour
Contia Costa County	3.008 (5 mph)	10.236 g/mi
LOS E or F (5mph)	2.024 (5 mph)	6.748 g/mi
	2.024 (5 mph)	2.856 g/mi

Background CO Levels -	1-Hour	8-Hour
Pittsburg Monitoring Station	3.3	1.9

Emission Factors (EMFAC2007 - 5mph)	1-Hour	8-Hour
Contia Costa County	3.008 (5 mph)	10.236 g/mi
Freeway	2.018 (25 mph)	3.270 g/mi
	2.023 (25 mph)	1.750 g/mi



## **Appendix 3 DPM Health Risk Assessment**



**Table A3-1**

**Proposed Antioch Wal-Mart Expansion Project - On Site Emissions & Model Parameters  
Diesel PM Emissions From Vehicles During Project Operation**

<b>Vehicle/Trip Info and DPM Emission Rates</b>			
<b>Customer Vehicles</b>			
Vehicle Type	<b>LDA &amp; LDT</b>	<b>MDT</b>	<b>Total</b>
% Trips	98%	2%	100%
No. Trips (two-way trips/day)	8,723	178	8,901
% Diesel Vehicles	0.82%	5.62%	6.44%
Project Diesel Trips (trips/day)	71.7	10.0	81.7
DPM Emis Factors (g/mi)			
at 15 mph	0.129	0.073	
at 35 mph	0.066	0.038	
<b>Truck Deliveries</b>			
Vehicle Type	<b>LHD1</b>	<b>HHD</b>	<b>Total</b>
No. Trips (one-way trips/day)	24	20	44
% Diesel Vehicles	100%	100%	100%
Project Diesel Trips (trips/day)	24	20	44
DPM Emis Factors (g/mi)			
at 15 mph	0.065	1.063	
at 35 mph	0.034	0.474	
<b>On-Site Vehicle Emissions*</b>	<b>Customer Vehicles*</b>	<b>Delivery** Trucks</b>	<b>Total</b>
Trip Length (mi)	0.25	-	
DPM Emissions (lb/day)	0.006	0.009	0.014
DPM Emissions (lb/year)	2.01	3.26	5.27
LDA = light duty auto, LDT = light duty truck, MDT = medium duty truck			
LHD1 = light heavy-duty truck, HHD = heavy heavy-duty truck			
* On-site travel speed of 15 mph			
** Delivery truck emissions from Onsite Truck Emissions spreadsheet			

**Table A3-2**

**Proposed Antioch Wal-Mart Expansion Project**

**Summary of DPM Emission Rates Used For On Site Vehicle Modeling**

Activity	Annual DPM Emissions (pounds/year)	DPM Emissions		Modeled Area Name	Area Size (m <sup>2</sup> )	Area Source Rate (g/s/m <sup>2</sup> )
		(lb/hr)	(g/s)			
<i>Construction</i>	100.0	0.011416	1.44E-03	CONSTR	17,882	8.044E-08
<i>Customer On-Site Travel*</i>	2.23E-01	4.36E-05	5.49E-06	PAREA1	3,194	1.72E-09
	9.90E-02	1.94E-05	2.44E-06	PAREA2	1,420	1.72E-09
	4.26E-01	8.34E-05	1.05E-05	PAREA3	6,112	1.72E-09
	6.70E-01	1.31E-04	1.65E-05	PAREA4	9,610	1.72E-09
	5.91E-01	1.16E-04	1.46E-05	PARKNEW	8,475	1.72E-09
Total	2.01	3.93E-04	4.95E-05	-	28,810	-

Notes: \* Hourly operation emissions assumed to occur 14 hours/day (8 am to 10 pm) for 365 days/year.

PAREA1 - PAREA4 & PARKNEW are area sources representing parking/travel areas.

**Table A3-3**

**Existing Antioch Wal-Mart Store - On Site Emissions & Model Parameters  
Diesel PM Emissions From Vehicles During Project Operation**

<b>Vehicle/Trip Info and DPM Emission Rates</b>			
<b>Customer Vehicles</b>			
Vehicle Type	<b>LDA &amp; LDT</b>	<b>MDT</b>	<b>Total</b>
% Trips	98%	2%	100%
No. Trips (two-way trips/day)	7,149	146	7,295
% Diesel Vehicles	0.82%	5.62%	6.44%
Project Diesel Trips (trips/day)	58.7	8.2	66.9
DPM Emis Factors (g/mi)			
at 15 mph	0.129	0.073	
at 35 mph	0.066	0.038	
<b>Truck Deliveries</b>			
Vehicle Type	<b>LHD1</b>	<b>HHD</b>	<b>Total</b>
No. Trips (one-way trips/day)	16	16	32
% Diesel Vehicles	100%	100%	100%
Project Diesel Trips (trips/day)	16	16	32
DPM Emis Factors (g/mi)			
at 15 mph	0.065	1.063	
at 35 mph	0.034	0.474	
<b>On-Site Vehicle Emissions*</b>	<b>Customer Vehicles*</b>	<b>Delivery** Trucks</b>	<b>Total</b>
Trip Length (mi)	0.2	-	
DPM Emissions (lb/day)	0.004	0.007	0.011
DPM Emissions (lb/year)	1.32	2.58	3.90
LDA = light duty auto, LDT = light duty truck, MDT = medium duty truck			
LHD1 = light heavy-duty truck, HHD = heavy heavy-duty truck			
* On-site travel speed of 15 mph			
** Delivery truck emissions from Onsite Truck Emissions spreadsheet			

**Table A3-4**

**Existing Antioch Wal-Mart Store**

**Summary of DPM Emission Rates Used For On Site Vehicle Modeling**

Activity	Annual DPM Emissions (pounds/year)	DPM Emissions		Modeled Area Name	Area Size (m <sup>2</sup> )	Area Source Rate (g/s/m <sup>2</sup> )
		(lb/hr)	(g/s)			
<i>Customer On-Site Travel*</i>	2.07E-01	4.05E-05	5.10E-06	PAREA1	3,194	1.60E-09
	9.20E-02	1.80E-05	2.27E-06	PAREA2	1,420	1.60E-09
	3.96E-01	7.75E-05	9.76E-06	PAREA3	6,112	1.60E-09
	6.22E-01	1.22E-04	1.53E-05	PAREA4	9,610	1.60E-09
Total	1.32	2.58E-04	3.25E-05	-	20,335	-

Notes: \* Hourly operation emissions assumed to occur 14 hours/day (8 am to 10 pm) for 365 days/year.  
PAREA1 - PAREA4 are area sources representing parking/travel areas.

**Table A3-5**

**Proposed Antioch Wal-Mart Expansion Project - On-Site Truck Emissions**

**On-Site Truck Delivery Emissions**

Segment ID	Road Length (m)	Trip Period		4-Axle Truck Trips One-Way	2-Axle Truck Trips One-Way	PM10 Exhaust Emissions				
						4-Axle Emissions (g/day)	2-Axle Emissions (g/day)	Total Daily (lb/day)	Hourly (lb/hr)	Annual (lb/year)
		Time	(hours)							
TRUCK_IN	357	7am - 10pm	15	10	12	2.36	0.17	5.58E-03	3.72E-04	2.04
TRUCKOUT	214.5	7am - 10pm	15	10	12	1.42	0.10	3.35E-03	2.24E-04	1.22
<b>Total</b>				<b>20</b>	<b>24</b>	<b>3.77</b>	<b>0.28</b>	<b>8.93E-03</b>	<b>5.96E-04</b>	<b>3.26</b>

Emission Factors (2010) at 15 mph

4-Axle HHD (g/mi) = 1.063

2-Axle LHD1 (g/mi) = 0.065

**Table A3-5  
Existing Antioch Wal-Mart Store - On-Site Truck Emissions**

**On-Site Truck Delivery Emissions**

Segment ID	Road Length (m)	Trip Period		4-Axle Truck Trips One-Way	2-Axle Truck Trips One-Way	PM10 Exhaust Emissions				
		Time	(hours)			4-Axle Emissions (g/day)	2-Axle Emissions (g/day)	Total Daily (lb/day)	Hourly (lb/hr)	Annual (lb/year)
TRKINOUT	98.7	7am - 10pm	15	16	16	1.04	0.06	2.44E-03	1.63E-04	0.89
<b>Total</b>				<b>16</b>	<b>16</b>	<b>1.04</b>	<b>0.06</b>	<b>2.44E-03</b>	<b>1.63E-04</b>	<b>0.89</b>

Emission Factors (2010) at 15 mph

4-Axle HHD (g/mi) = 1.063

2-Axle LHD1 (g/mi) = 0.065

**Table A3-6  
Proposed Antioch Wal-Mart Expansion Project  
Off Site Truck and Vehicle DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emission Factors  
Year = 2010**

Link No.	Description	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Volume Source Height (m)	Release Height (m)	Daily Total Vehicle Trips	Daily Diesel Vehicle Trips	Trip Period	Average Speed (mph)	Emission Factor (g/mi)	Link Emission Rate (g/s)
<b>Customer/Employee Vehicle Travel</b>													
1	Hillcrest Ave - North	4	965.0	68	20.7	2.0	1.0	2,314	21	8am - 10pm	35	0.0659	1.66E-05
2	Hillcrest Ave - South	4	600.6	68	20.7	2.0	1.0	445	4	8am - 10pm	35	0.0659	1.99E-06
3	Lone Tree Way - East	6	813.4	92	28.0	2.0	1.0	2,848	26	8am - 10pm	35	0.0659	1.73E-05
4	Lone Tree Way - West	5	1143.4	80	24.4	2.0	1.0	3,293	30	8am - 10pm	35	0.0659	2.81E-05
<b>Delivery Truck Travel</b>													
TLINE1	Hillcrest Ave - North	1	241.1	32	9.8	3.7	1.8	22	22	7am - 10pm	35	0.1650	1.01E-05
TLINE2	Lone Tree Way - East	6	813.4	92	28.0	3.7	1.8	44	44	7am - 10pm	35	0.1650	6.79E-05
TLINE3	Lone Tree Way - West	1	303.6	32	9.8	3.7	1.8	22	22	7am - 10pm	35	0.1650	1.27E-05

2010 DPM Emission Factors (g/mi)				
Speed (mph)	LDA & LDT	MDT	LHD1	HDT
35	0.0664	0.0380	0.0340	0.3221
55	0.0490	0.0278	0.0250	0.3118
% Diesel	0.82%	5.62%	30%	80%

Source: EMFAC2007 Model, Contra Costa Co.

Customer Vehicles 98% - 2% - -  
Delivery Trucks - - 55% 45%

**Table A3-7  
Existing Antioch Wal-Mart Store  
Off Site Truck and Vehicle DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emission Factors  
Year = 2010**

Link No.	Description	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Volume Source Height (m)	Release Height (m)	Daily Total Vehicle Trips	Daily Diesel Vehicle Trips	Trip Period	Average Speed (mph)	Emission Factor (g/mi)	Link Emission Rate (g/s)
<b>Customer/Employee Vehicle Travel</b>													
1	Hillcrest Ave - North	4	965.0	68	20.7	2.0	1.0	1,897	17	8am - 10pm	35	0.0659	1.36E-05
2	Hillcrest Ave - South	4	600.6	68	20.7	2.0	1.0	365	3	8am - 10pm	35	0.0659	1.63E-06
3	Lone Tree Way - East	6	813.4	92	28.0	2.0	1.0	2,334	21	8am - 10pm	35	0.0659	1.41E-05
4	Lone Tree Way - West	5	1143.4	80	24.4	2.0	1.0	2,699	25	8am - 10pm	35	0.0659	2.30E-05
<b>Delivery Truck Travel</b>													
TLINE1	Hillcrest Ave - North	2	241.1	44	13.4	3.7	1.8	32	32	7am - 10pm	35	0.1781	1.58E-05
TLINE2	Lone Tree Way - East	6	813.4	92	28.0	3.7	1.8	32	32	7am - 10pm	35	0.1781	5.33E-05

Speed (mph)	2010 DPM Emission Factors (g/mi)		
	LDA & LDT	MDT	HDT
35	0.0664	0.0380	0.3221
55	0.0490	0.0278	0.3118
% Diesel	0.82%	5.62%	80%

Source: EMFAC2007 Model, Contra Co.

Customer Vehicles 98% - 2% - 50% -  
Delivery Trucks - - 50% 80%

**Table A3-8  
Proposed Antioch Wal-Mart Expansion Project  
Truck Deliveries and PM10 Emissions for Truck Idling & TRUs**

Source Type	Daily Truck Deliveries				Oper. Time per Event (hour)	Daily PM10 Emissions (g/day)	Annual PM10 Emissions (lb/year)
	4+ Axle w/TRU*	2 Axle w/o TRU	Total 4-Axle	Total 2-Axle			
Truck Idle	2	8	10	12	0.083	2.332	1.88
TRU	2	-	-	-	0.5	0.360	0.29
<b>Totals</b>	<b>-</b>	<b>-</b>	<b>10</b>	<b>12</b>	<b>-</b>	<b>2.7</b>	<b>2.17</b>

\* TRU = Transport Refrigeration Unit

Operation Days = 365  
 TRU Emission Rate<sup>a</sup> (g/hr) = 0.36  
 LHD1 Truck Idle Emissions<sup>b</sup> (g/hr) = 0.777  
 HHD Truck Idle Emissions<sup>b</sup> (g/hr) = 1.866  
 TRU engine (hp) = 34  
 TRU PM emission factor (g/hp-hr) = 0.02  
 TRU engine load factor (%) = 53  
 TRU run time (min) = 30  
 Truck idle time (min) = 5

Notes:

a TRU emission factor of 0.02 g/hp-hr (TRU emission standard, title 13 CCR, section 2477) and 34 hp engine with 53% load factor  
 TRUs assumed to run 30 min per truck per day

b Idle emissions for trucks based on EMFAC 2007 for 2010 Contra Costa Co. with default vehicle mix and truck speed of 0 mph  
 4-axle trucks assumed to be heavy duty diesel (HHD) and 2-axle trucks assumed to be light heavy duty diesel (LHD1) trucks.  
 Trucks assumed to idle for a maximum of 5 min per truck per day

**Table A3-9  
Existing Antioch Wal-Mart  
Truck Deliveries and PM10 Emissions for Truck Idling & TRUs**

Source Type	Daily Truck Deliveries				Oper. Time per Event (hour)	Daily PM10 Emissions (g/day)	Annual PM10 Emissions (lb/year)
	4+ Axle w/TRU*	2 Axle	Total 4-Axle	Total 2-Axle			
Truck Idle	0	8	8	8	0.083	1.762	1.42
TRU	0	-	-	-	0.5	0.000	0.00
<b>Totals</b>	-	-	<b>8</b>	<b>8</b>	-	<b>1.8</b>	<b>1.42</b>

\* TRU = Transport Refrigeration Unit

Operation Days = 365

TRU Emission Rate<sup>a</sup> (g/hr) = 0.36

LHD1 Truck Idle Emissions<sup>b</sup> (g/hr) = 0.777

HHD Truck Idle Emissions<sup>b</sup> (g/hr) = 1.866

TRU engine (hp) = 34

TRU PM emission factor (g/hp-hr) = 0.02

TRU engine load factor (%) = 53

TRU run time (min) = 30

Truck idle time (min) = 5

Notes:

a TRU emission factor of 0.02 g/hp-hr (TRU emission standard, title 13 CCR, section 2477) and 34 hp engine with 53% load factor

TRUs assumed to run 30 min per truck per day

b Idle emissions for trucks based on EMFAC 2007 for 2010 Contra Costa Co. with default vehicle mix and truck speed of 0 mph

4-axle trucks assumed to be heavy duty diesel (HHD) and 2-axle trucks assumed to be light heavy duty diesel (LHD1) trucks.

Trucks assumed to idle for a maximum of 5 min per truck per day

**Table A3-10 Antioch Wall-Mart Expansion Project  
Increased Cancer Risks From Project-Related DPM Emissions**

**Net Increase of Cancer Risks (per million) From Proposed Wal-Mart Expansion**

Scenario	Off-Site Worker	Residential
Proposed Expansion	2.85	2.25
Existing Store	0.96	2.18
<b>Net Increased Cancer Risk</b>	<b>1.89</b>	<b>0.07</b>

**Proposed Wal-Mart Expansion - Cumulative DPM Impacts and Cancer Risks**

Project Project Activity/Emission Source	Annual DPM Emissions (pounds/yr)	Maximum DPM Concentrations and Associated Cancer Risk (per million)					
		Maximum Off-Site Worker Exposure			Maximum Residential Exposure		
		Max Concentration (ug/m <sup>3</sup> )		Cancer Risk <sup>c</sup> (per million)	Max Concentration (ug/m <sup>3</sup> )		Cancer Risk <sup>d</sup> (per million)
1-Hour	Annual Avg.	1-Hour	Annual Avg.				
<b>Construction<sup>a</sup></b>	100.0	1.0270	0.103	0.16	0.4160	0.042	0.04
<b>Operation<sup>b</sup></b>							
On-Site Delivery Trucks	3.26	0.0532	0.005	1.69	0.0376	0.004	1.20
On-Site Delivery Truck Idling & TRUs	2.17	0.0234	0.002	0.75	0.0187	0.002	0.60
Off-site Delivery Truck Travel	3.94	0.0003	0.000	0.01	0.0058	0.001	0.18
On-Site Customer Travel/Parking	2.01	0.0069	0.001	0.22	0.0067	0.001	0.21
Off-Site Customer Travel	2.59	0.0005	0.000	0.02	0.0006	0.000	0.02
Subtotal	14.0	0.0843	0.008	2.69	0.0694	0.0069	2.21
<b>Total</b>	<b>114.0</b>			<b>2.85</b>			<b>2.25</b>

a Cancer risk based on 1 year of exposure to construction emissions over a 70-year exposure period

b Cancer risk from operation activities based on 70-year exposure

c Residential DPM Unit Risk Factor (risk per million per ug/m<sup>3</sup>) = 318.5

d Off-Site Worker DPM Unit Risk Factor (risk per million per ug/m<sup>3</sup>) = 62.9

**Existing Wal-Mart Store - DPM Impacts and Cancer Risks**

Project Project Activity/Emission Source	Annual DPM Emissions (pounds/yr)	Maximum DPM Concentrations and Associated Cancer Risk (per million)					
		Maximum Off-Site Worker Exposure			Maximum Residential Exposure		
		Max Concentration (ug/m <sup>3</sup> )		Cancer Risk <sup>b</sup> (per million)	Max Concentration (ug/m <sup>3</sup> )		Cancer Risk <sup>c</sup> (per million)
1-Hour	Annual Avg.	1-Hour	Annual Avg.				
<b>Operation<sup>a</sup></b>							
On-Site Delivery Trucks	0.89	0.0000	0.000	0.00	0.0429	0.004	1.37
On-Site Delivery Truck Idling & TRUs	1.42	0.0000	0.000	0.00	0.0136	0.001	0.43
Off-site Delivery Truck Travel	3.00	0.0064	0.001	0.20	0.0084	0.001	0.27
On-Site Customer Travel/Parking	1.3	0.0215	0.002	0.68	0.0032	0.000	0.10
Off-Site Customer Travel	2.13	0.0023	0.000	0.07	0.0003	0.000	0.01
Subtotal	8.76	0.0302	0.0030	0.96	0.0684	0.0	2.18
<b>Total</b>	<b>8.8</b>			<b>0.96</b>			<b>2.18</b>

a Cancer risk from operation activities based on 70-year exposure

b Residential DPM Unit Risk Factor (risk per million per ug/m<sup>3</sup>) = 318.5

c Off-Site Worker DPM Unit Risk Factor (risk per million per ug/m<sup>3</sup>) = 62.9

**Cancer Risk Calculation Method**

$$\text{Inhalation Dose} = C_{\text{air}} \times \text{DBR} \times A \times \text{EF} \times \text{ED} \times 10^{-6} / \text{AT}$$

- Where:  $C_{\text{air}}$  = concentration in air (ug/m<sup>3</sup>)  
 DBR = daily breathing rate (L/kg body weight-day)  
 A = Inhalation absorption factor  
 EF = Exposure frequency (days/year)  
 ED = Exposure duration (years)  
 AT = Averaging time period over which exposure is averaged.  
 10<sup>-6</sup> = Conversion factor

**Inhalation Dose Factors**

Exposure Type	Value <sup>1</sup>					
	DBR (L/kg BW -day)	A (-)	Exposure (hr/day)	EF (days/yr)	ED (Years)	AT (days)
Residential (70-Yr Exposure)	302	1	24	350	70	25,550
Residential (30-Yr Exposure)	302	1	24	350	30	25,550
Off-Site Worker	149	1	8	245	40	25,550

<sup>1</sup> Default values recommended by OEHHA & Bay Area Air Quality Management District

$$\text{Cancer Risk (per million)} = \text{CPF} \times \text{Inhalation Dose} \times 1.0\text{E}6$$

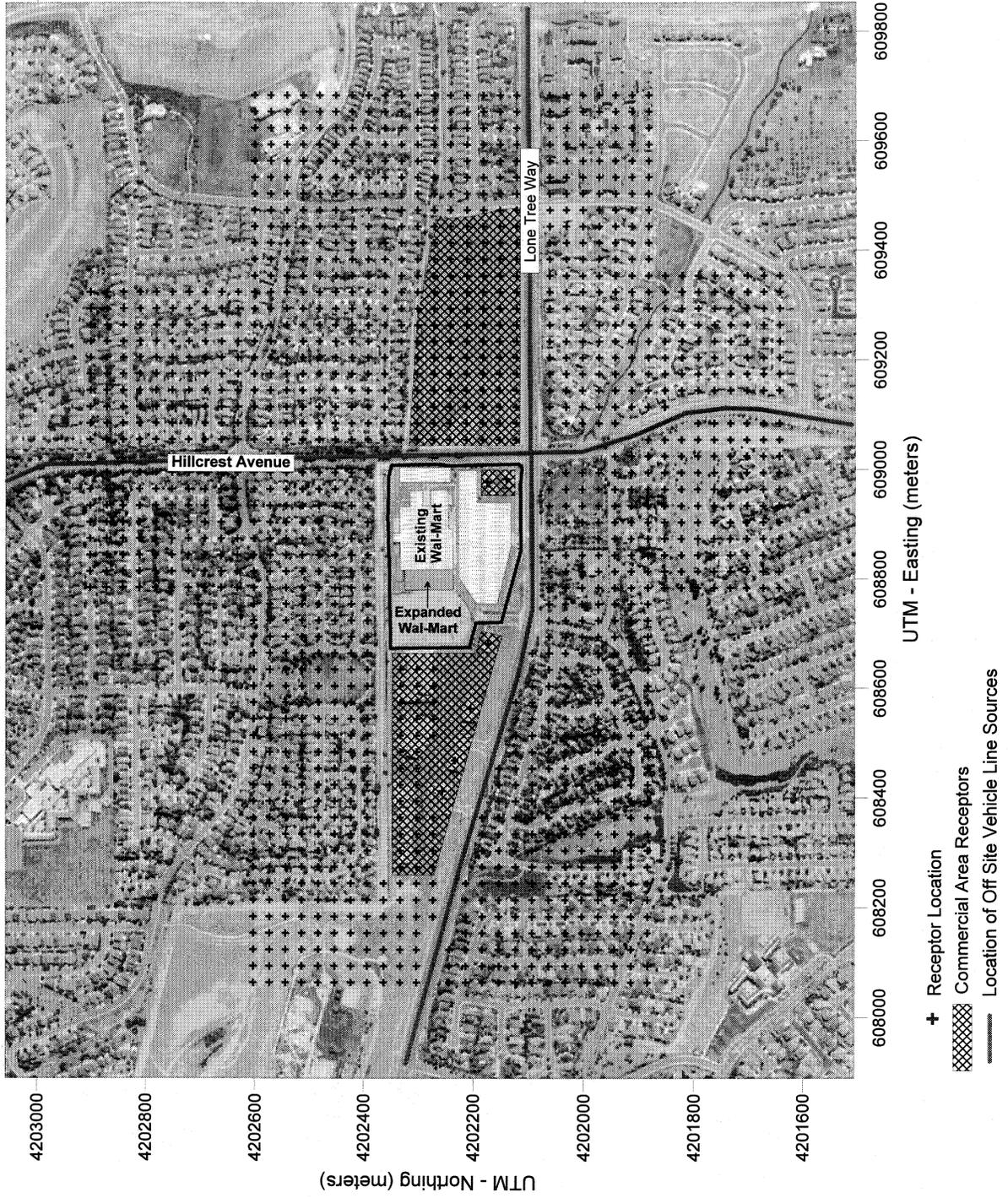
$$= \text{URF} \times C_{\text{air}}$$

- Where: CPF = Cancer potency factor (mg/kg-day)<sup>-1</sup>  
 URF = Unit risk factor (cancer risk per ug/m<sup>3</sup>)

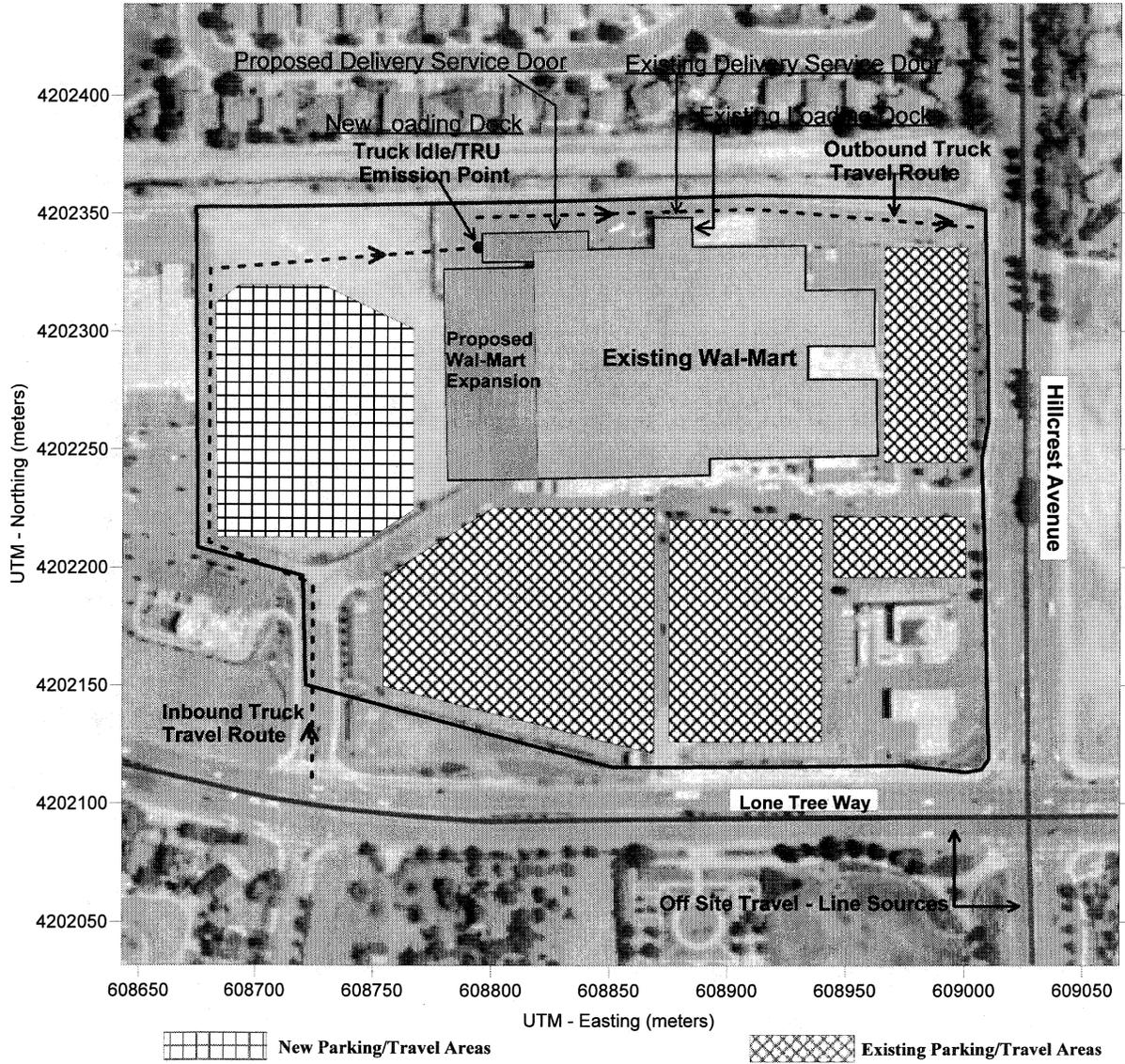
**Diesel Particulate Matter Unit Risk Factors**

Exposure Type	CPF (mg/kg-day) <sup>-1</sup>	URF (Risk/million/ug/m <sup>3</sup> )
Residential (70-Yr Exposure)	1.10E+00	318.5
Residential (30-Yr Exposure)	1.10E+00	136.5
Off-Site Worker	1.10E+00	62.9

**Figure 1**  
**Project Area and Modeling Receptors**



**Figure 2**  
**Proposed Antioch Wal-Mart Expansion**  
**Emission Source Locations**





# **APPENDIX D**

## **Biological Resources Report**

**Prepared by**

**Live Oak Associates**

**August 2009**





# **LIVE OAK ASSOCIATES, INC.**

an Ecological Consulting Firm

## **BIOTIC EVALUATION**

### **WAL-MART EXPANSION SITE ANTIOCH, CONTRA COSTA COUNTY, CALIFORNIA**

Prepared by:

**Live Oak Associates, Inc.**

Rick A. Hopkins, Ph.D., Principal, Senior Ecologist  
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August 20, 2009

Project No. 760-02



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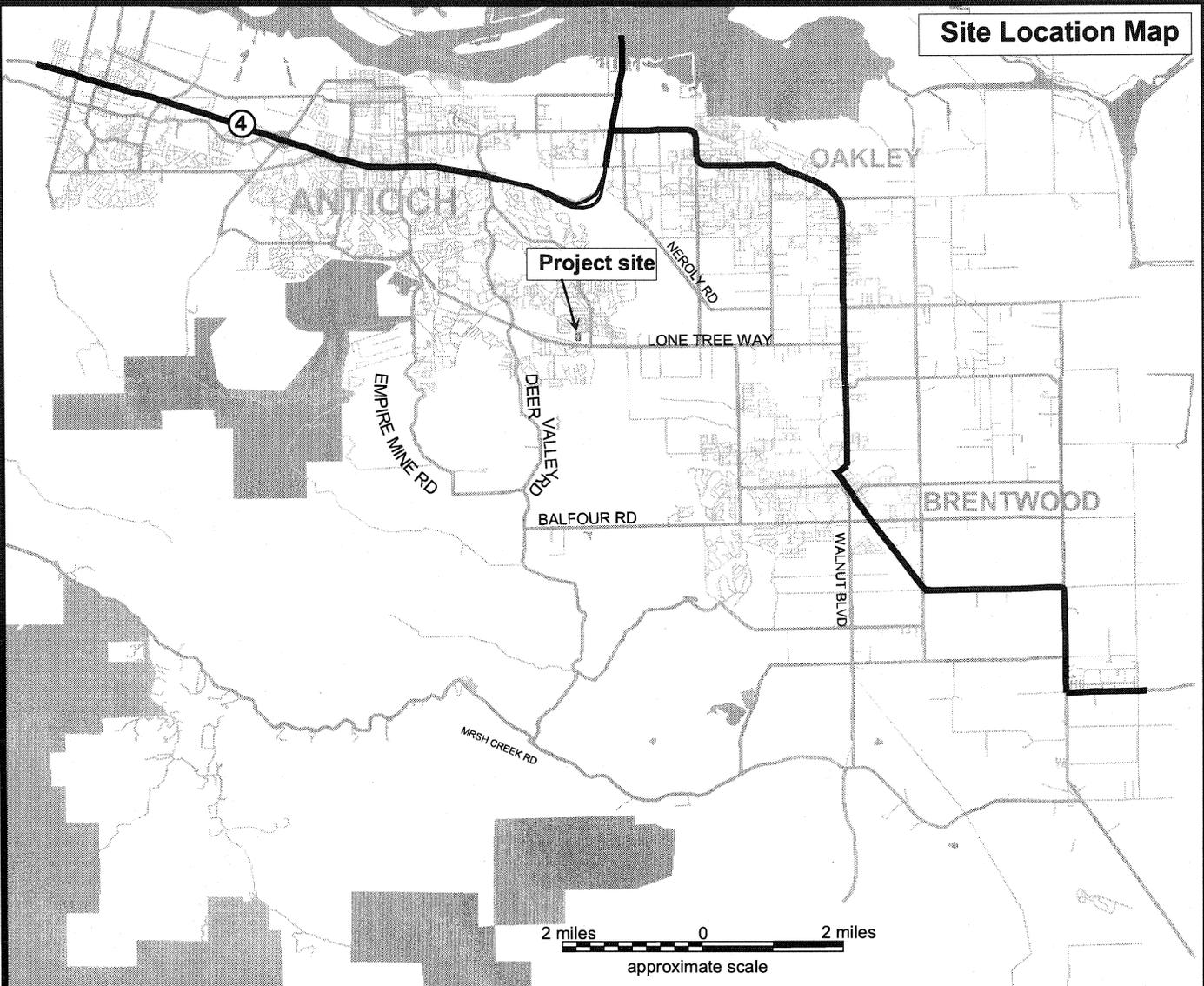
## 1.0 INTRODUCTION

Live Oak Associates, Inc. (LOA) has prepared the following report, which describes the biotic resources of an approximately 3.7-acre undeveloped portion of a Wal-Mart property located in the City of Antioch, Contra Costa County, California, and evaluates likely impacts to these resources resulting from for eventual site development associated with the expansion of an existing Wal-Mart retail store. The 3.7-acre study area is located in the northwest portion of the Wal-Mart property, which itself is located just northwest of the intersection of Lone Tree Road and Hillcrest Avenue (Figure 1). One habitat type occurs within the boundaries of the study area, and that has been identified as ruderal non-native grassland. The location of the site can be found on the Antioch South U.S.G.S. 7.5' quadrangle in Section 4, Township 1 north, Range 2 east.

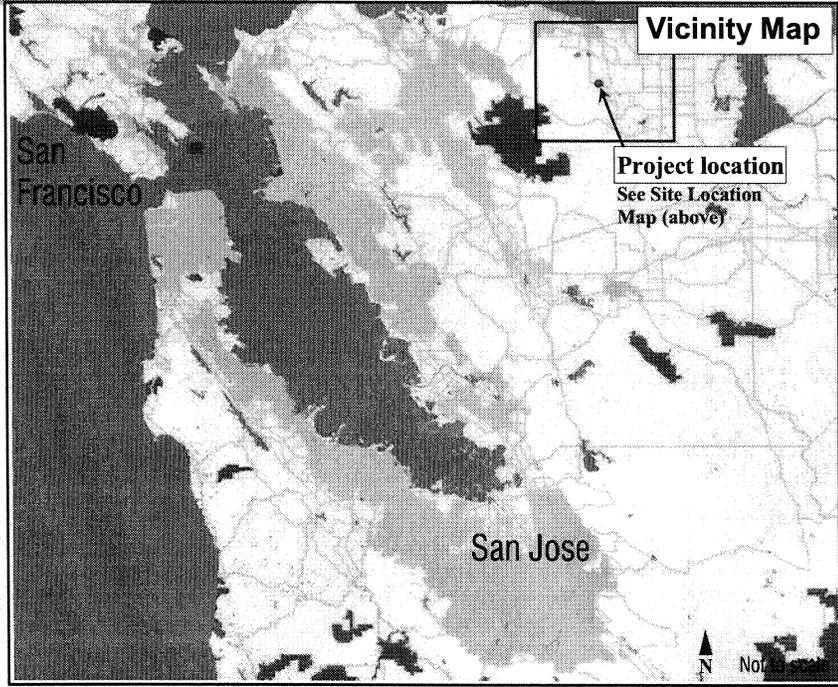
Development projects can damage or modify biotic habitats used by sensitive plant and wildlife species. In such cases, site development may be regulated by state or federal agencies, subject to provisions of the California Environmental Quality Act (CEQA), and/or covered by policies and ordinances of the City of Antioch. This report addresses issues related to: 1) sensitive biotic resources occurring on the study area; 2) the federal, state, and local laws regulating such resources, and 3) mitigation measures that may be required to reduce the magnitude of anticipated impacts. As such, the objectives of this report are to:

- Summarize all site-specific information related to existing biological resources;
- Make reasonable inferences about the biological resources that could occur onsite based on habitat suitability and the proximity of the site to a species' known range;
- Summarize all state and federal natural resource protection laws that may be relevant to possible future site development;
- Identify and discuss project impacts to biological resources likely to occur on the site within the context of CEQA or any state or federal laws; and
- Identify avoidance and mitigation measures that would reduce impacts to a less-than-significant level as identified by CEQA and that are generally consistent with recommendations of the resource agencies for affected biological resources.

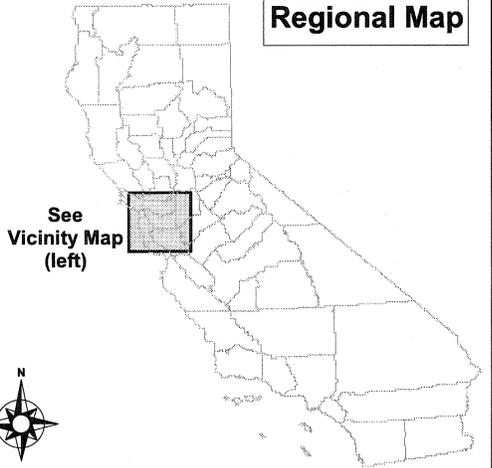
**Site Location Map**



**Vicinity Map**



**Regional Map**



 <b>Live Oak Associates, Inc.</b>		
<b>Antioch Walmart Site / Vicinity Map</b>		
Date	Project #	Figure #
6/3/08	760-02	1

The analysis of impacts, as discussed in Section 3.0 of this report, is based on the known and potential biotic resources of the site, discussed in Section 2.0. Sources of information used in the preparation of this analysis included: 1) the *California Natural Diversity Data Base* (CDFG 2008), 2) the *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2001), and 3) manuals and references related to plants and animals of the region. A reconnaissance level field survey was conducted within the study area in the morning and evening of May 26, 2008 by Live Oak Associates, Inc. (LOA) ecologist Nathan Hale, at which time the principal biotic habitats were identified and the constituent plants and animals of each were noted. Previous studies have been conducted within the study area by LOA, including a site evaluation on April 10, 2005, by LOA ecologist, Melissa Denena, and a protocol-level burrowing owl survey conducted in April 2005.

The proposed project is the expansion of the existing Wal-Mart building and parking lot into the study area (Figure 2). The current building will be enlarged onto a portion of the study area, with the remainder of the open habitat being converted into concrete-paved parking. Upon the completion of the expansion project, the entirety of the ruderal non-native grassland habitat will have been converted to developed land use.



## **2.0 EXISTING CONDITIONS**

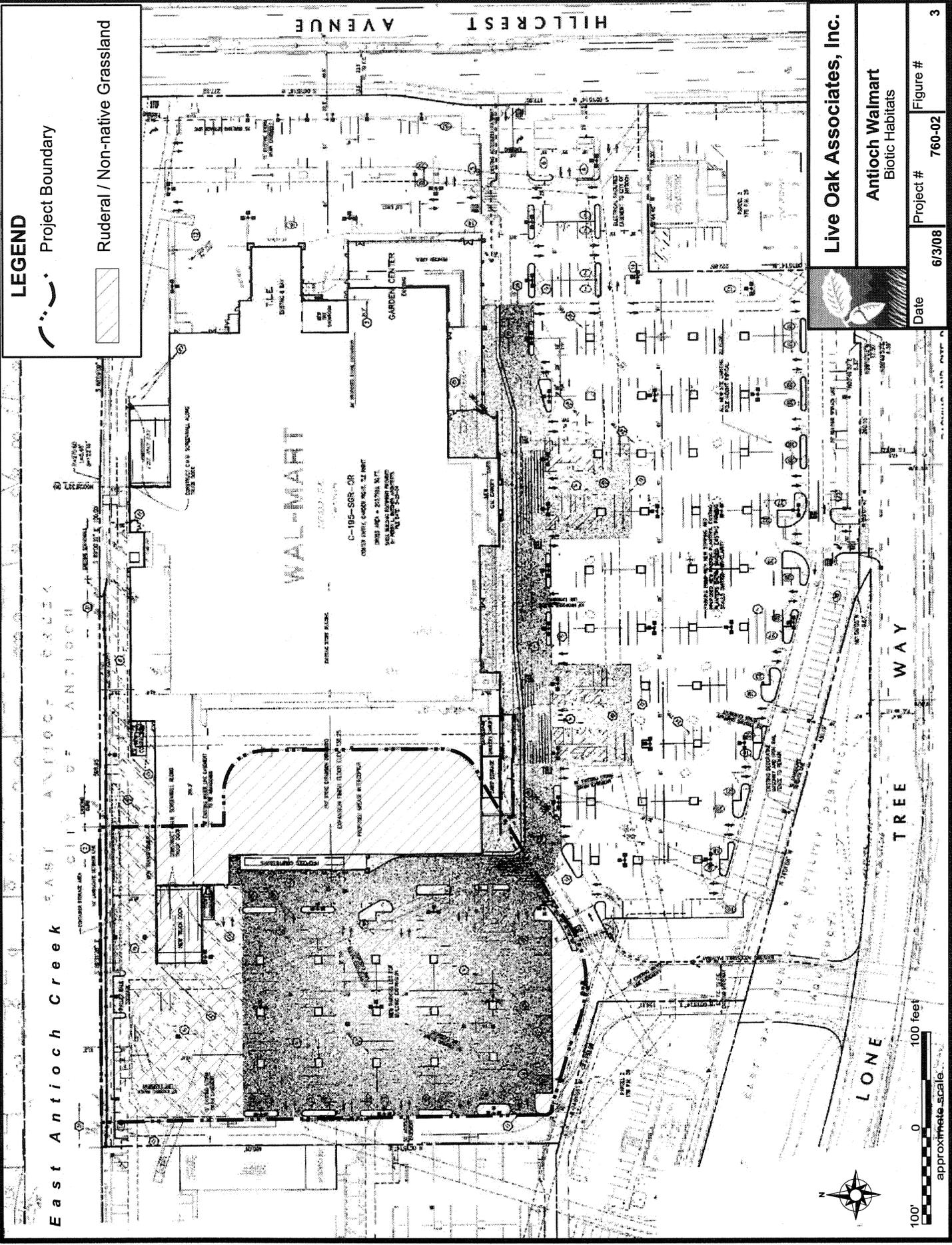
The approximately 3.7-acre study area is located in the southern portion of the City of Antioch in Contra Costa County, California. The study area is comprised of an undeveloped section of the larger property which is bounded to the south by Lone Tree Way, to the east by Hillcrest Avenue, to the north by East Antioch Creek and single-family residences, and to the west by commercial development. The study area itself is bounded by existing asphalt parking roadways to the east, south, and west and East Antioch Creek to the north. East Antioch Creek is a channelized, natural-bottom feature. During the May 2008 survey, hydrophytic vegetation and water were present within the bed of the channel, and it appears to eventually flow into the San Francisco Bay. The study area is topographically level at an elevation of approximately 135 feet (40 meters) National Geodetic Vertical Datum (NGVD). The only habitat occurring on the study area is ruderal non-native grassland.

One soil-mapping units, Pescadero clay loam, has been identified on the study area (NRCS, 1977). This alkaline soil was formed in alluvium derived from sedimentary rock and is classified as being poorly drained, with slow permeability. The Pescadero soil series is considered to be hydric with hummocky microrelief; however, drainage features have been installed onsite and the study area has been modified causing surface water that may have at one time pooled onsite to flow into the drains or sheet flow across the site into East Antioch Creek. Typical land uses within this soil are dry-farmed pastures and residential development.

Antioch has a Mediterranean climate with warm to hot dry summers and cool winters. Annual precipitation in the general vicinity of the site averages 13 inches, most of which falls between October and March. Nearly all precipitation falls in the form of rain. Stormwater runoff readily infiltrates the study area's soils; when field capacity has been reached, gravitational water flows into onsite stormwater drains or off the study area into East Antioch Creek, which eventually empties into the San Francisco Bay.

### **2.1 BIOTIC HABITATS**

The study area consists entirely of ruderal non-native grassland habitat (Figure 3). A list of the vascular plants observed within the study area during the April 2005 and May 2008 surveys has



been provided in Appendix A. A list of terrestrial vertebrates using, or potentially using, the study area has been provided in Appendix B.

As stated above, the entire study area consists of ruderal non-native grassland habitat. The term “ruderal” refers to habitats that have been heavily disturbed by human factors. Ruderal habitats are characterized by being dominated by non-native grasses and forbs of European origin and typically native vegetation is sparse to non-existent. At the time of the May 2008 survey, the study area supported extremely sparse vegetation, having apparently been disced earlier in the year. Non-native grass species observed onsite included slender wild oats (*Avena barbata*), barnyard barley (*Hordeum murinum* ssp. *leporinum*), ripgut brome (*Bromus diandrus*), and Italian wild rye (*Lolium multiflorum*); while common non-native forbs included black mustard (*Brassica nigra*), hairy vetch (*Vicia villosa*), yellow star thistle (*Centaurea solstitialis*), curly dock (*Rumex crispus*), and red-stemmed filaree (*Erodium cicutarium*). Aside from study area being dominantly barren, what little vegetation is present is mostly comprised of herbaceous species; however a few trees and shrubs were present along the margins. For instance, a single, immature willow (*Salix* sp.) was planted along the southern boundary as part of landscaping associated with the surrounding development. Landscaped trees were also scattered adjacent to the project boundary, along the bank of East Antioch Creek. Species present in this area included a Fremont’s cottonwood (*Populus fremontii*), weeping willow (*Salix babylonica*), and fruit tree (*Prunus* sp.).

Non-native grasslands can provide important habitat to many terrestrial vertebrates. As many as 25 species of reptiles and amphibians, 100 species of birds, and 50 species of mammals are known to use grassland habitats of central California (Mayer and Laudenslayer 1988). A number of these species are expected to utilize grasslands occurring on the study area throughout the year or during part of the year as breeding and foraging habitat. However, a particular habitat’s importance to the wildlife of a region can be affected by many factors including the proximity of other suitable habitat, the amount of available escape cover, the availability of water and food, as well as the amount of surrounding human disturbance. Due to the fact that the study area is located in an area of existing development and is thus considered an infill site, its value as habitat for many wildlife species occurring in the local region is greatly diminished. Nonetheless, some

wildlife species were observed onsite during the May 2008 survey, and still other species, not directly observed, would be expected to use this habitat year-round or seasonally.

The study area provides only marginal habitat for locally occurring amphibian and reptile species. It is possible that individuals occurring in the habitat of East Antioch Creek could move onto the study area from time to time. These species would include western toads (*Bufo boreas*), pacific treefrogs (*Pseudacris regilla*), western fence lizards (*Sceloporus occidentalis*), and gopher snakes (*Pituophis melanoleucus*).

Several species of resident and migratory birds that breed and forage in grassland habitats of Contra Costa County were observed within the study area. A pair of burrowing owls (*Athene cunicularia*) was observed residing in an onsite burrow during the May 2008 survey. Other birds identified as foraging within or flying over the site during this survey include a number of house finches (*Carpodacus mexicanus*), mourning doves (*Zenaida macroura*), American crows (*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), and a northern mockingbird (*Mimus polyglottos*). A number of other songbird species would be expected to forage on the site; however, aside from the burrowing owls, the occurrence of raptor species would be limited due to the lack of trees of suitable size for breeding as well as the disturbed nature of the study area and its isolation from more suitable grassland habitat.

Several species of mammals were either observed in the grassland habitat of the study area or would be expected to occur there from time to time. A fairly dense population of California ground squirrels (*Spermophilus beecheyi*) was observed onsite during the May 2008 survey. Other small mammals that are likely to occur onsite include the Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California meadow vole (*Microtus californicus*), and black-tailed jackrabbit (*Lepus californicus*). Small mammals often attract predators, including reptiles and raptors previously discussed, as well as mammalian predators. Mammalian predators that are well adapted to human disturbance such as Virginia opossum (*Didelphis virginiana*) and raccoon (*Procyon lotor*) may be attracted to the study area as a place to forage for prey. However, due to the site's urban surroundings, medium-sized predators such as the non-native red fox (*Vulpes vulpes*), coyote (*Canis latrans*), and bobcat (*Felis rufus*) would be expected to occur onsite infrequently if at all.

## 2.2 MOVEMENT CORRIDORS

Many terrestrial animals need more than one biotic habitat in order to perform all of their biological activities. With increasing encroachment of humans on wildlife habitats, it has become important to establish and maintain linkages, or movement corridors, for animals to be able to access locations containing different biotic resources that are essential to maintaining their life cycles. Terrestrial animals use ridges, canyons, riparian areas, and open spaces to travel between their required habitats.

The importance of an area as a movement corridor depends on the species in question and its consistent use patterns. Animal movements generally can be divided into three major behavioral categories:

- Movements within a home range or territory;
- Movements during migration; and
- Movements during dispersal.

While no detailed study of animal movements has been conducted for the study area, knowledge of the site, its habitats, and the ecology of the species potentially occurring onsite permits sufficient predictions about the types of movements occurring in the region and whether or not proposed development would constitute a significant impact to animal movements.

As noted in Section 2.1, the disturbed nature of the site limits the number of amphibians, reptiles, birds, and mammals that use the site. The more common species that occur have largely utilized the site as part of their home range and are known to be adapted to human-induced disturbances. These animals would move through all portions of the site, as they would also do on other disturbed habitats throughout the county. Due to the low habitat value of the project site, it is likely only used in a limited way and does not provide a regionally unique corridor of movement. Furthermore, the project site is expected to facilitate regional movements of only some wildlife species, as animals would have to travel through large areas of marginal to poor habitat (i.e., disturbed, developed, and agricultural lands) before reaching the study area.

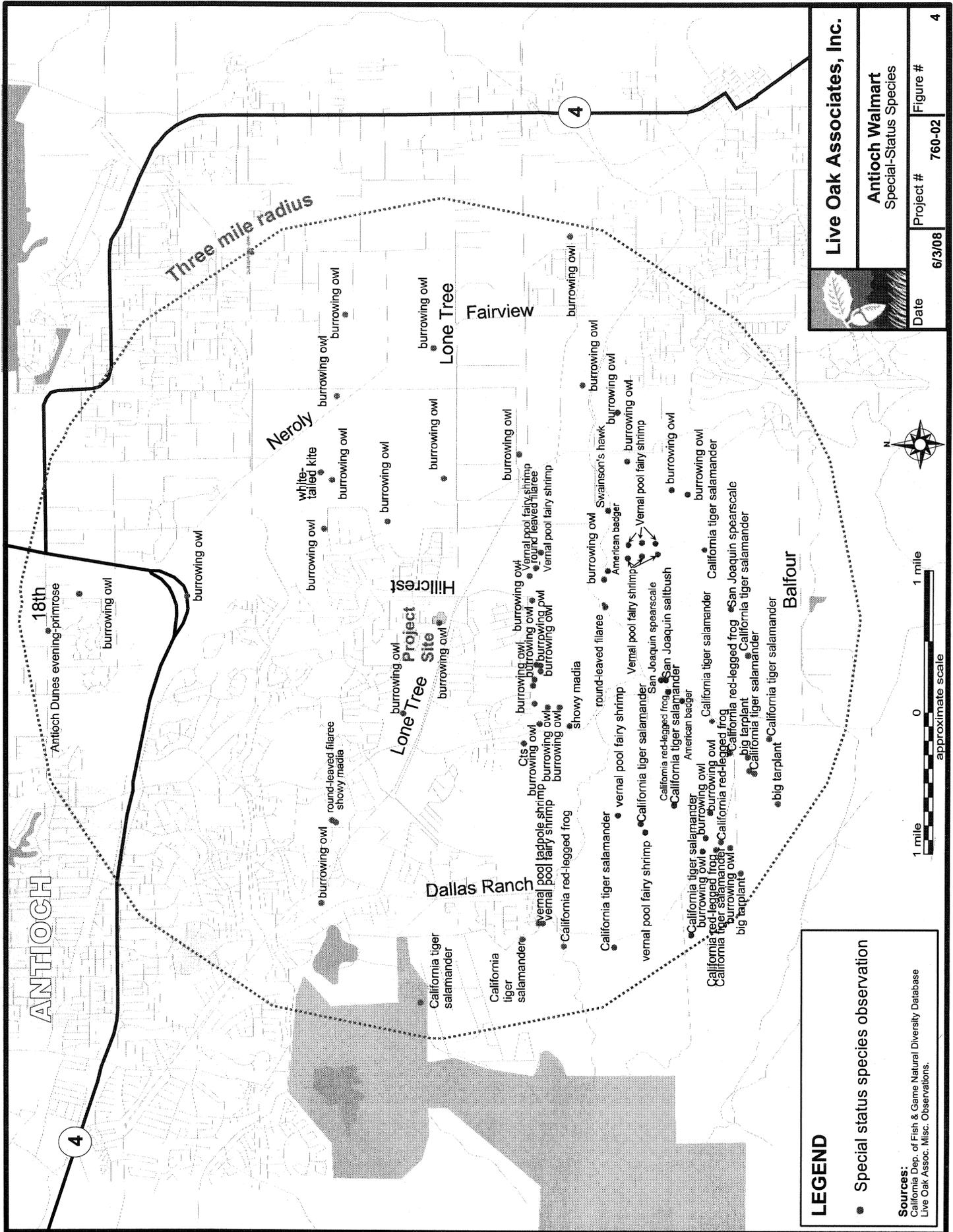
## 2.3 SPECIAL STATUS PLANTS AND ANIMALS

Several species of plants and animals within the state of California have low populations, limited distributions, or both. Such species may be considered “rare” and are vulnerable to extirpation as the state’s human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described more fully in Section 3.2, state and federal laws have provided the California Department of Fish and Game (CDFG) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as threatened or endangered under state and federal endangered species legislation. Others have been designated as “candidates” for such listing. Still others have been designated as “species of special concern” by the CDFG. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened or endangered (CNPS 2001). Collectively, these plants and animals are referred to as “special status species.”

A number of special status plants and animals occur in the vicinity of the study area. These species, and their potential to occur in the study area, are listed in Table 1 on the following pages. Sources of information for this table included *California’s Wildlife, Volumes I, II, and III* (Zeiner et. al 1988-1990), *California Natural Diversity Data Base* (CDFG 2008), *Endangered and Threatened Wildlife and Plants* (USFWS 2008), *Annual Report on the Status of California State Listed Threatened and Endangered Animals and Plants* (CDFG 2008), and *The California Native Plant Society’s Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2001). This information was used to evaluate the potential for special-status plant and animal species to occur on site. Figure 4 shows the location of special status species found by the California Natural Diversity Data Base (CNDDB) within a three-mile radius of the project site. Figure 5 shows the location of San Joaquin kit fox observed within a ten-mile radius of the project site. It is important to note that CNDDB is a volunteer database and, therefore, it may not contain all known or gray literature records of special status species occurrences.

A search of published accounts for all of the relevant special status plant and animal species was conducted for the Antioch South U.S.G.S 7.5 minute quadrangle in which the project site occurs,

as well as for the eight surrounding quadrangles (Clayton, Diablo, Tassajara, Brentwood, Byron Hot Springs, Jersey Island, Honker Bay, and Antioch North) using the California Natural Diversity Data Base Rarefind 2008. Plant species reviewed for these quadrangles included those on CNPS List 1A, 1B, 2, and 4.



		<b>Live Oak Associates, Inc.</b>	
		Project # 760-02	Figure # 4
Date 6/3/08		Antioch Walmart Special-Status Species	

**LEGEND**

- Special status species observation

**Sources:**  
 California Dep. of Fish & Game Natural Diversity Database  
 Live Oak Assoc. Misc. Observations.

1 mile 0 1 mile  
 approximate scale

N

**LEGEND**

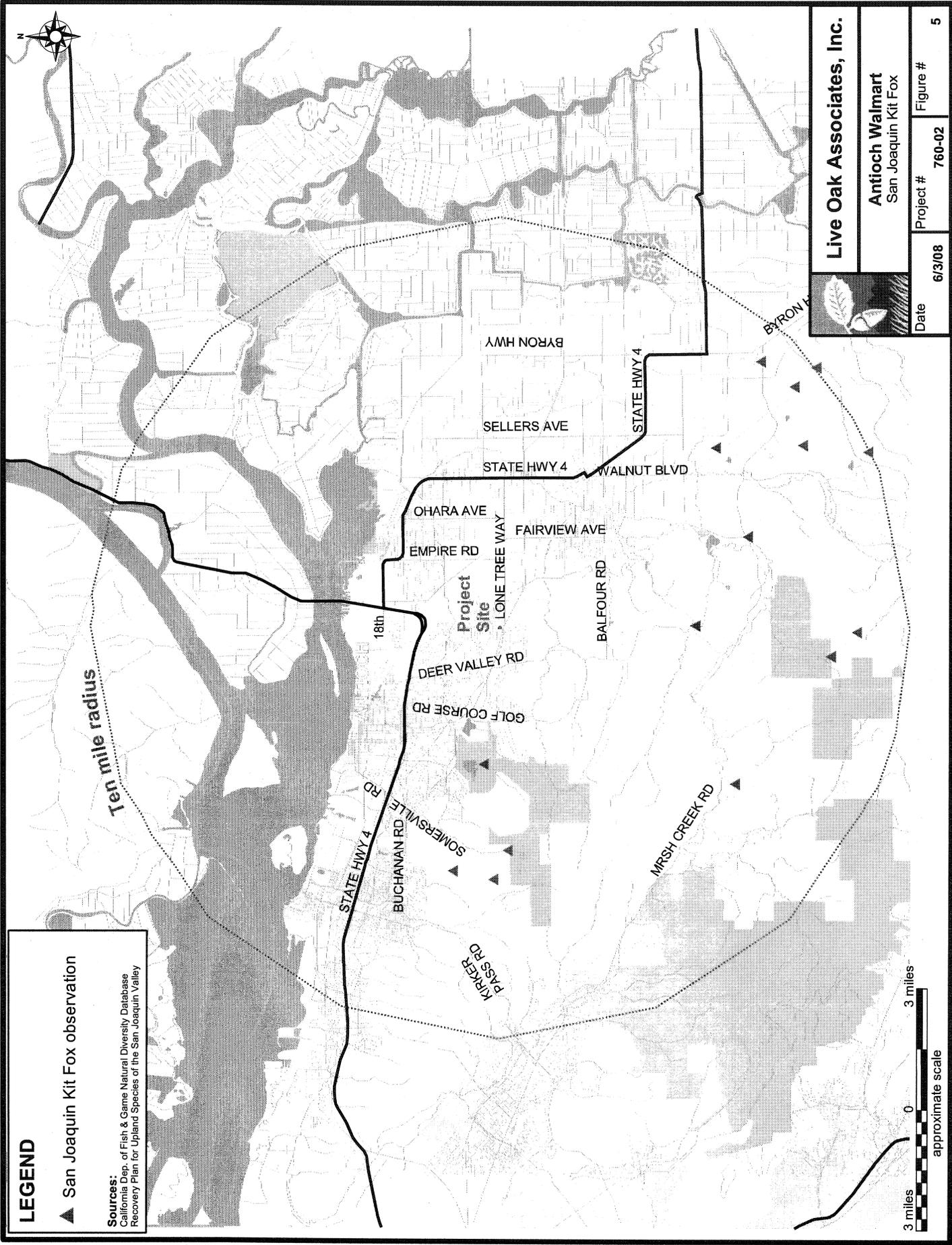
▲ San Joaquin Kit Fox observation

**Sources:**  
California Dep. of Fish & Game Natural Diversity Database  
Recovery Plan for Upland Species of the San Joaquin Valley

**Live Oak Associates, Inc.**

Antioch Walmart  
San Joaquin Kit Fox

Date 6/3/08 Project # 760-02 Figure # 5



**TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY**

PLANTS (adapted from CDFG 2008 and CNPS 2001)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Study Area
Large-flowered Fiddleneck ( <i>Amsinckia grandiflora</i> )	FE, CE, CNPS 1B	Cismontane woodland, valley and foothill grassland, at elevations between 275 and 305 meters. Blooms April-May.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated. Also, this species typically occurs at higher elevations.
Soft Bird's-beak ( <i>Cordylanthus mollis</i> ssp. <i>mollis</i> )	FE, CR, CNPS 1B	Coastal salt marshes and swamps, at elevations between 0 and 3 meters. Blooms July-November.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at lower elevations.
Contra Costa Wallflower ( <i>Erysimum capitatum</i> ssp. <i>angustatum</i> )	FE, CE, CNPS 1B	Inland dunes, at elevations between 3 and 20 meters. Blooms March-July.	<b>Absent.</b> Suitable habitat is absent from the site.
Contra Costa Goldfields ( <i>Lasthenia conjugens</i> )	FE, CNPS 1B	Vernal pools and mesic areas of valley and foothill grasslands, typically alkaline, at elevations between 0 and 470 meters. Blooms March-June.	<b>Absent.</b> Suitable habitats are absent from the site. Originally the site was characterized by hummocky terrain; however, the site has been modified in a way that precludes the establishment of wetlands.
Antioch Dunes Evening-primrose ( <i>Oenothera deltooides</i> ssp. <i>howellii</i> )	FE, CE	Inland dunes at elevations between 0 and 30 meters. Blooms March-September.	<b>Absent.</b> Suitable habitat is absent from the site.

Other special status plants listed by CNPS

Species	Status	Habitat	*Occurrence in the Study Area
Slender Silver Moss ( <i>Anomobryum julaceum</i> )	CNPS 2	A moss occurring in broadleaved upland forest and coniferous forests between 100 and 1,000 meters in elevation.	<b>Absent.</b> Suitable habitat is absent from the study area.
Mt. Diablo Manzanita ( <i>Arctostaphylos auriculata</i> )	CNPS 1B	Sandstone substrates in chaparral, at elevations between 135 and 650 meters. Blooms January-March.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Contra Costa Manzanita ( <i>Arctostaphylos manzanita</i> ssp. <i>laevigata</i> )	CNPS 1B	Occurs on rocky substrates in chaparral, at elevations between 500 and 1,100 meters. Blooms January-March.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Alkali Milk-vetch ( <i>Astragalus tener</i> var. <i>tener</i> )	CNPS 1B	Alkaline soils within playas, valley and foothill grasslands and in vernal pools, at elevations between 1 and 60 meters. Blooms March-June.	<b>Absent.</b> The site is highly disturbed and dominated by non-native, invasive plant species. Therefore, the onsite grasslands are unsuitable for this species, and any wetland habitat that may have at one time occurred onsite has been eliminated.

\* See last page of Table 1 for detailed footnote.

**TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY**

Other special status plants listed by CNPS (cont.)

Species	Status	Habitat	*Occurrence in the Study Area
Heartscale ( <i>Atriplex cordulata</i> )	CNPS 1B	Chenopod scrub, meadows and seeps, and sandy valley and foothill grasslands in alkaline soils between 1 and 375 meters. Blooms April-October.	<b>Absent.</b> The site is highly disturbed and dominated by non-native, invasive plant species. Therefore, the onsite grasslands are unsuitable for this species, and any wetland habitat that may have at one time occurred onsite has been eliminated.
Brittlescale ( <i>Atriplex depressa</i> )	CNPS 1B	Alkaline wetland soils and valley and foothill grasslands, at elevations between 1 and 320 meters. Blooms May-October.	<b>Absent.</b> The site is highly disturbed and dominated by non-native, invasive plant species. Therefore, the onsite grasslands are unsuitable for this species, and any wetland habitat that may have at one time occurred onsite has been eliminated.
San Joaquin Spearscale ( <i>Atriplex joaquiniana</i> )	CNPS 1B	Alkaline soils of chenopod scrub, mesic areas within grasslands, at elevations between 1 and 835 meters. Blooms April-October.	<b>Absent.</b> The site is highly disturbed and dominated by non-native, invasive plant species. Therefore, the onsite grasslands are unsuitable for this species, and any wetland habitat that may have at one time occurred onsite has been eliminated.
Big Tarplant ( <i>Blepharizonia plumosa</i> ssp. <i>plumosa</i> )	CNPS 1B	Valley and foothill grasslands, at elevations between 30 and 505 meters. Blooms July-October.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.
Round-leaved Filaree ( <i>California macrophylla</i> )	CNPS 1B	Cismontane woodland and clay soils of valley and foothill grassland, at elevations between 15 and 1,200 meters. Blooms March-May.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.
Mt. Diablo Fairy-lantern ( <i>Calochortus pulchellus</i> )	CNPS 1B	Chaparral, woodlands, and grasslands, at elevations between 30 and 840 meters. Blooms April-June.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.
Butte County Morning-glory ( <i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i> )	CNPS 1B	Chaparral and rocky soils of lower montane coniferous forests, occasionally along roadsides, at elevations between 600 and 1,524 meters in elevation.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Chaparral Harebell ( <i>Campanula exigua</i> )	CNPS 1B	Rocky and occasionally serpentine soils of chaparral, at elevations between 275 and 1,250 meters. Blooms May-June.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Congdon's Tarplant ( <i>Centromadia parryi</i> ssp. <i>congdonii</i> )	CNPS 1B	Valley and foothill grasslands, at elevations between 1 and 230 meters. Blooms May-November.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.

**TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY**

**Other special status plants listed by CNPS (cont.)**

Species	Status	Habitat	*Occurrence in the Study Area
Mt. Diablo Bird's-beak ( <i>Cordylanthus nidularius</i> )	CNPS 1B	Serpentine soils in chaparral, at elevations between 600 and 800 meters. Blooms July-August.	<b>Absent.</b> Suitable habitat is absent from the study area. Also, this species typically occurs at higher elevations.
Hoover's Cryptantha ( <i>Cryptantha hooveri</i> )	CNPS 1B	Sandy soils of valley and foothill grasslands and inland dunes, at elevations between 3 and 150 meters. Blooms April-May.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.
Hospital Canyon Larkspur ( <i>Delphinium californicum</i> ssp. <i>interius</i> )	CNPS 1B	Mesic areas within openings in chaparral and woodland, at elevations between 230 and 1,095 meters. Blooms April-June	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Recurved Larkspur ( <i>Delphinium recurvatum</i> )	CNPS 1B	Alkaline soils in chenopod scrub, cismontane woodlands and valley and foothill grasslands, at elevations between 3 and 750 meters. Blooms March-June.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.
Norris' Beard Moss ( <i>Didymodon norrisii</i> )	CNPS 2	Moss occurring in cismontane woodland and lower montane coniferous forest, at elevations between 600 and 1,973 meters.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Dwarf Downingia ( <i>Downingia pusilla</i> )	CNPS 2	Mesic areas within valley and foothill grassland and in vernal pools, at elevations between 1 and 445 meters. Blooms March-May.	<b>Absent.</b> The site is highly disturbed and dominated by non-native, invasive plant species. Therefore, the onsite grasslands are unsuitable for this species, and any wetland habitat that may have at one time occurred onsite has been eliminated.
Brandege's Eriastrum ( <i>Eriastrum brandegeae</i> )	CNPS 1B	Volcanic and sandy soils of chaparral and cismontane woodland, at elevations between 305 and 1,030 meters. Blooms April-August.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Mt. Diablo Buckwheat ( <i>Eriogonum truncatum</i> )	CNPS 1A	Sandy substrates in chaparral, coastal scrub and grasslands, at elevations between 105 and 600 meters. Blooms April-December.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Diamond-petaled California Poppy ( <i>Eschscholzia rhombipetala</i> )	CNPS 1B	Clay or alkaline soils in grasslands, at elevations between 0 and 975 meters. Blooms March-April.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.
Fragrant Fritillary ( <i>Fritillaria liliacea</i> )	CNPS 1B	Coastal prairie, and scrub, and valley and foothill grasslands, often on serpentine, at elevations between 3 and 410 meters. Blooms February-April.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.

**TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY**

Other special status plants listed by CNPS (cont.)

Species	Status	Habitat	*Occurrence in the Study Area
Diablo Helianthella ( <i>Helianthella castanea</i> )	CNPS 1B	Broadleaved upland forest, woodlands, chaparral, coastal scrub and grassland, at elevations between 60 and 1300 meters. Blooms March-June.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.
Brewer's Western Flax ( <i>Hesperolinon breweri</i> )	CNPS 1B	Coastal prairie, coastal scrub, and valley and foothill grasslands, often on serpentine soils, at elevations between 30 and 900 meters.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.
Wooly Rose-mallow ( <i>Hibiscus lasiocarpus</i> )	CNPS 2	Freshwater marshes and swamps, at elevations between 0 and 120 meters. Blooms June-September.	<b>Absent.</b> Suitable habitat is absent from the site.
Carquinez Goldenbush ( <i>Isocoma arguta</i> )	CNPS 1B	Alkaline soils within valley and foothill grasslands, at elevations between 1 and 20 meters. Blooms August-December.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.
Delta Tule Pea ( <i>Lathyrus jepsonii</i> var. <i>jepsonii</i> )	CNPS 1B	Marshes and swamps, at elevations between 0 and 4 meters. Blooms May-September.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at lower elevations.
Mason's Lilaepsis ( <i>Lilaepsis masonii</i> )	CNPS 1B	Marshes, swamps and riparian scrub, at elevations between 0 and 10 meters. Blooms April-November.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at lower elevations.
Delta Mudwort ( <i>Limosella subulata</i> )	CNPS 2	Marshes and swamps, at elevations between 0 and 3 meters. Blooms May-August.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at lower elevations.
Showy Madia ( <i>Madia radiata</i> )	CNPS 1B	Cismontane woodlands and in grasslands, at elevations between 25 and 900 meters. Blooms March-May.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.
Hall's Bush Mallow ( <i>Malacothamnus hallii</i> )	CNPS 1B	Chaparral and coastal scrub, at elevations between 10 and 760 meters. Blooms May-October.	<b>Absent.</b> Suitable habitat is absent from the site.
San Antonio Hills Monardella ( <i>Monardella antonina</i> ssp. <i>antonina</i> )	CNPS 3	Chaparral and cismontane woodland, at elevations between 500 and 1,000 meters. Blooms June-August.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Colusa Grass ( <i>Neostapfia colusana</i> )	CNPS 1B	Large vernal pools on adobe, at elevations between 5 and 200 meters. Blooms May-August.	<b>Absent.</b> Suitable habitat is absent from the site. Originally the site was characterized by hummocky terrain; however, the site has been modified in a way that precludes the establishment of wetlands.

**TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY**

Other special status plants listed by CNPS (cont.)

Species	Status	Habitat	*Occurrence in the Study Area
Mt. Diablo Phacelia ( <i>Phacelia phacelioides</i> )	CNPS 1B	Rocky substrates in chaparral and woodland, at elevations between 500 and 1,370 meters. Blooms April-May.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Bearded Popcorn-flower ( <i>Plagiobothrys hystriculus</i> )	CNPS 1A	Mesic areas within grasslands and in vernal pools, at elevations between 10 and 50 meters. Blooms April-May.	<b>Absent.</b> The site is highly disturbed and dominated by non-native, invasive plant species. Therefore, the onsite grasslands are unsuitable for this species, and any wetland habitat that may have at one time occurred onsite has been eliminated.
Eel-grass Pondweed ( <i>Potamogeton zosteriformis</i> )	CNPS 2	Marshes and swamps, at elevations below 1,860 meters. Blooms June-July.	<b>Absent.</b> Suitable habitat is absent from the site.
Rock Sanicle ( <i>Sanicula saxatilis</i> )	CNPS 1B, CR	Rocky substrates in broadleaved upland forest, chaparral and grassland, at elevations between 620 and 1175 meters. Blooms April-May.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Side-flowering Skullcap ( <i>Scutellaria lateriflora</i> )	CNPS 2	Mesic meadows, seeps, marshes and swamps, at elevations between 0 and 500 meters. Blooms July-September.	<b>Absent.</b> Suitable habitat is absent from the site.
Chaparral Ragwort ( <i>Senecio aphanactis</i> )	CNPS 2	Alkaline soils in chaparral, woodland and coastal scrub, at elevations between 15 and 800 meters. Blooms January-April.	<b>Absent.</b> Suitable habitat is absent from the site.
Most Beautiful Jewel-flower ( <i>Streptanthus albidus</i> ssp. <i>peremeonus</i> )	CNPS 1B	Serpentine soils in chaparral, woodland and grassland, at elevations between 120 and 1000 meters. Blooms March-October.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Mt. Diablo Jewel-flower ( <i>Streptanthus hispidus</i> )	CNPS 1B	Rocky substrates in chaparral and grassland, at elevations between 365 and 1200 meters. Blooms March-June.	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.
Coastal Triquetrella ( <i>Triquetrella californica</i> )	CNPS 1B	Moss occurring in coastal bluff scrub and coastal bluff, at elevations between 10 and 100 meters.	<b>Absent.</b> Suitable habitat is absent from the site.
Caper-fruited Tropidocarpum ( <i>Tropidocarpum capparideum</i> )	CNPS 1A	Alkaline soils in grassland, at elevations between 1 and 455 meters. Blooms March-April.	<b>Absent.</b> The grasslands of the site are highly disturbed and dominated by non-native, invasive plant species. Therefore, any suitable habitat that may have at one time occurred onsite has been eliminated.

**TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY**

**Other special status plants listed by CNPS (cont.)**

Species	Status	Habitat	*Occurrence in the Study Area
Oval-leaved Viburnum ( <i>Viburnum ellipticum</i> )	CNPS 2	Chaparral, woodland and lower montane coniferous forest, at elevations between 215 and 1,400 meters. Blooms May-June	<b>Absent.</b> Suitable habitat is absent from the site. Also, this species typically occurs at higher elevations.

**ANIMALS (adapted from CDFG 2008 and USFWS 2008)**

**Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act**

Species	Status	Habitat	*Occurrence in the Study Area
Longhorn Fairy Shrimp ( <i>Branchinecta longiantenna</i> )	FE	Vernal pools clear to turbid water in grass-bottomed pools and clear water sandstone depression pools.	<b>Absent.</b> Suitable habitat (i.e. vernal pools) is absent from the site.
Vernal Pool Fairy Shrimp ( <i>Branchinecta lynchi</i> )	FT	Vernal pools, clear to tea-colored water in grass or mud-bottomed swales, basalt depression pools, or sandstone rock outcrops.	<b>Absent.</b> Suitable habitat (i.e. vernal pools) is absent from the site.
Vernal Pool Tadpole Shrimp ( <i>Lepidurus packardii</i> )	FE	Primarily found in vernal pools, but may use other seasonal wetlands in mesic valley and foothill grasslands.	<b>Absent.</b> Suitable habitat (i.e. vernal pools) is absent from the site.
Lange's Metalmark Butterfly ( <i>Apodemia mormo langei</i> )	FE	Inhabits stabilized dunes along the banks of the San Joaquin River. Endemic to the Antioch Dunes area.	<b>Absent.</b> Suitable habitat is presently and historically absent from the site.
California Tiger Salamander ( <i>Ambystoma californiense</i> )	FT, CSC	Breeds in vernal pools and stock ponds of central California; adults aestivate in grassland habitats adjacent to the breeding sites.	<b>Absent.</b> Suitable breeding habitat for this species in the form of stagnant pools with continuous inundation for a minimum of three months is absent from the site and the immediate vicinity; thereby precluding the salamander from occurring onsite.
California Red-legged Frog ( <i>Rana aurora draytonii</i> )	FT, CSC	Rivers, creeks and stock ponds of the Sierra foothills and Bay Area, preferring pools with overhanging vegetation.	<b>Absent.</b> Suitable habitat is absent from the site and its immediate vicinity. The site itself consists entirely of upland habitat, and East Antioch Creek, located immediately north of the site, does not provide suitable habitat for this species.
Alameda Whipsnake ( <i>Masticophis lateralis euryxanthus</i> )	FT, CT	Closely associated with chaparral and rock outcrops.	<b>Absent.</b> Suitable habitat is absent from the site.
Giant Garter Snake ( <i>Thamnophis gigas</i> )	FT, CT	Prefers freshwater marsh and low gradient streams, however, species has adapted to drainage canals and irrigation ditches.	<b>Absent.</b> Suitable habitat is absent from the site and its immediate vicinity. The site itself consists entirely of upland habitat, and East Antioch Creek, located immediately north of the site, does not provide suitable habitat for this species.

**TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY**

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act (cont.)

Species	Status	Habitat	*Occurrence in the Study Area
Swainson's Hawk ( <i>Buteo swainsoni</i> )	CT	A summer migrant in grasslands and agricultural lands of California's Central Valley. Breeds in juniper-sage flats, riparian areas and in oak savannahs.	<b>Unlikely.</b> Suitable nesting habitat is absent, and the site provides only marginal foraging habitat.
Willow Flycatcher ( <i>Empidonax trailii</i> )	FE, CE (while nesting)	Breeds in the Sierra Nevada mountains and in Southern California.	<b>Absent.</b> Uncommon migrant; this species would not breed on the site, and individuals that may pass through the site are most likely not of the federally listed subspecies.
Bank Swallow ( <i>Riparia riparia</i> )	CT	Colonial nester on sandy banks near streams, rivers, lakes or coastal areas.	<b>Absent.</b> Suitable habitat is absent from the site.
San Joaquin Kit Fox ( <i>Vulpes macrotis mutica</i> )	FE, CT	Desert alkali scrub and non-native grassland, may forage in adjacent agricultural habitats.	<b>Absent.</b> While the species is known to occur in the vicinity of Antioch, the site is highly disturbed and isolated from other potential fox habitat by development.

**State Species of Special Concern and Protected Species**

Species	Status	Habitat	*Occurrence in the Study Area
Western Pond Turtle ( <i>Actinemys marmorata</i> )	CSC	Open slow-moving water of rivers and creeks of central California with rocks and logs for basking.	<b>Unlikely.</b> East Antioch Creek, located immediately north of the site, provides marginal habitat for this species. However, it is highly unlikely that an individual, if present in the creek, would climb the bank of the creek into the disturbed upland habitat of the site.
Coast Horned Lizard ( <i>Phrynosoma coronatum</i> )	CSC	Prefers open areas with sandy or loose soils for burying itself and shrubs for cover.	<b>Absent.</b> Suitable habitat (i.e. sandy soils and shrub cover) is absent from the site.
Silvery Legless Lizard ( <i>Anniella pulchra pulchra</i> )	CSC	Prefers very moist soils in sandy or loamy areas with sparse vegetation cover.	<b>Absent.</b> Suitable habitat is absent due to the highly disturbed nature of the site.
San Joaquin Whipsnake ( <i>Masticophis flagellum ruddocki</i> )	CSC	Prefers open, dry grasslands with no tree cover and animal burrows for refuge and egg-laying.	<b>Absent.</b> Suitable habitat is absent due to the highly disturbed nature of the site.
Golden Eagle ( <i>Aquila chrysaetos</i> )	CP	Typically frequents rolling foothills, mountain areas, sage-juniper flats and desert.	<b>Unlikely.</b> Suitable nesting habitat is absent, and the site provides only marginal foraging habitat.
Northern Harrier ( <i>Circus cyaneus</i> )	CSC	Frequents meadows, grasslands, open rangelands, freshwater emergent wetlands; uncommon in wooded habitats.	<b>Unlikely.</b> Suitable nesting habitat is absent, and the site provides only marginal foraging habitat.

**TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY**

**State Species of Special Concern and Protected Species (cont.)**

<b>Species</b>	<b>Status</b>	<b>Habitat</b>	<b>*Occurrence in the Study Area</b>
White-tailed Kite ( <i>Elanus leucurus</i> )	CP	Open grasslands and agricultural areas throughout central California.	<b>Possible.</b> Suitable breeding habitat is absent, but this species may occasionally forage in the onsite grasslands.
Burrowing Owl ( <i>Athene cunicularia</i> )	CSC	Found in open, dry grasslands, deserts and ruderal areas. Requires suitable burrows. This species is often associated with California ground squirrels.	<b>Present.</b> Two adult burrowing owls were observed utilizing a ground squirrel burrow during the May 2008 survey. A suitable prey base in the form of ground squirrels was also observed onsite. Therefore, suitable breeding and foraging habitat is present.
Short-eared Owl ( <i>Asio flammeus</i> )	CSC	Nests in tall grasses or in tules within swamps and irrigated agricultural fields.	<b>Unlikely.</b> Suitable nesting habitat is absent, and the site provides only marginal foraging habitat.
Vaux's Swift ( <i>Chaetura vauxi</i> )	CSC	Migrants and transients move through the foothills of the western Sierra in spring and late summer. Breeds in coniferous forests.	<b>Unlikely.</b> Suitable nesting habitat is absent, and the site provides only marginal foraging habitat.
Black Swift ( <i>Cypseloides niger</i> )	CSC	Migrants and transients found throughout many habitats of state. Breed on steep cliffs or ocean bluffs, or in cracks and crevasses of inland deep canyons.	<b>Unlikely.</b> Suitable nesting habitat is absent, and the site provides only marginal foraging habitat.
Loggerhead Shrike ( <i>Lanius ludovicianus</i> )	CSC	Nests in tall shrubs and dense trees, forages in grasslands, marshes, and ruderal habitats.	<b>Possible.</b> Suitable breeding habitat is marginal to absent, but this species may occasionally forage in the onsite grasslands.
Tricolored blackbird ( <i>Agelaius tricolor</i> )	CSC	Breeds near fresh water in dense emergent vegetation.	<b>Unlikely.</b> Suitable nesting habitat is absent, and the site provides only marginal foraging habitat.
Pallid Bat ( <i>Antrozous pallidus</i> )	CSC	Grasslands, chaparral, woodlands, and forests, most common in dry rocky open areas providing roosting opportunities.	<b>Unlikely.</b> The site provides marginal foraging habitat for this species, although roosting habitat is absent.
California Mastiff Bat ( <i>Eumops perotis californicus</i> )	CSC	Forages over many habitats, requires tall cliffs or buildings for roosting.	<b>Unlikely.</b> The site provides marginal foraging habitat for this species, although roosting habitat is absent.
Townsend's Big-eared Bat ( <i>Plecotus townsendii townsendii</i> )	CSC	Primarily a cave-dwelling bat, but may also roost in buildings. Occurs in a variety of habitats.	<b>Unlikely.</b> The site provides marginal foraging habitat for this species, although roosting habitat is absent.
Western Red Bat ( <i>Lasiurus blossevillii</i> )	CSC	Occurs in canyon habitats along streams.	<b>Unlikely.</b> The site provides marginal foraging habitat for this species, although roosting habitat is absent.
Ringtail ( <i>Bassariscus astutus</i> )	CP	Occurs in riparian and heavily wooded habitats near water.	<b>Absent.</b> Suitable habitat is absent from the site.

**TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY**

**State Species of Special Concern (cont.)**

<b>Species</b>	<b>Status</b>	<b>Habitat</b>	<b>*Occurrence in the Study Area</b>
American Badger ( <i>Taxidea taxus</i> )	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils.	<b>Absent.</b> Suitable habitat is absent from the site.

**\*Explanation of Occurrence Designations and Status Codes**

Present: Species observed on the sites at time of field surveys or during recent past.  
Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.  
Possible: Species not observed on the sites, but it could occur there from time to time.  
Unlikely: Species not observed on the sites, and would not be expected to occur there except, perhaps, as a transient.  
Absent: Species not observed on the sites, and precluded from occurring there because habitat requirements not met.

**STATUS CODES**

- |      |   |     |   |
|------|---|-----|---|
| FE   | Federally Endangered  | CE  | California Endangered                                       |
| FT   | Federally Threatened  | CT  | California Threatened                                       |
| FPE  | Federally Endangered (Proposed)   | CR  | California Rare   |
| FC   | Federal Candidate   | CP  | California Protected  |
|      |   | CSC | California Species of Special Concern                       |
| CNPS | California Native Plant Society Listing   |     |   |
| 1A   | Plants Presumed Extinct in California   | 3   | Plants about which we need more information – a review list |
| 1B   | Plants Rare, Threatened, or Endangered in California and elsewhere              | 4   | Plants of limited distribution – a watch list               |
| 2    | Plants Rare, Threatened, or Endangered in California, but more common elsewhere |     |   |

## **2.4 JURISDICTIONAL WATERS**

Jurisdictional waters include rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Jurisdictional waters also include lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Game (CDFG), and the California Regional Water Quality Control Board (RWQCB). See Section 3.2.4 of this report for additional information.

Jurisdictional waters are absent from the site itself. However, East Antioch Creek immediately north of the site may be considered a jurisdictional waterway. Therefore, if the project were to be redesigned in such a way that the Creek were to be impacted, the applicant may be required to consult with the appropriate governing agencies.

Although jurisdictional waters are presumed to be absent, the agencies are the final arbiters and could claim jurisdiction over any aquatic resources they determine as present on the site.

### 3.0 IMPACTS AND MITIGATIONS

#### 3.1 SIGNIFICANCE CRITERIA

Approval of general plans, area plans, and specific projects is subject to the provisions of the California Environmental Quality Act (CEQA). The purpose of CEQA is to assess the impacts of proposed projects on the environment before they are carried out. CEQA is concerned with the significance of a proposed project's impacts. For example, a proposed development project may require the removal of some or all of a site's existing vegetation. Animals associated with this vegetation could be destroyed or displaced. Animals adapted to humans, roads, buildings, pets, etc., may replace those species formerly occurring on the site. Plants and animals that are state and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed.

Whenever possible, public agencies are required to avoid or minimize environmental impacts by implementing practical alternatives or mitigation measures. According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest."

Specific project impacts to biological resources may be considered "significant" if they would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal

pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) states that a project may trigger the requirement to make a “mandatory findings of significance” if the project has the potential to:

“Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare or threatened species, or eliminate important examples of the major periods of California history or prehistory.”

### **3.2 RELEVANT GOALS, POLICIES, AND LAWS**

#### **3.2.1 Threatened and Endangered Species**

State and federal “endangered species” legislation has provided the California Department of Fish and Game (CDFG) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Species listed as threatened or endangered under provisions of the state and federal Endangered Species Acts, candidate species for such listing, state species of special concern, and some plants listed as endangered by the California Native Plant Society are collectively referred to as “species of special status.” Permits may be required from both the CDFG and USFWS if activities associated with a planned project will result in the take of a listed species. “Take” is defined by the state of California as “to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill” (California Fish and Game Code, Section 86). “Take” is more broadly defined by the federal Endangered Species Act to include “harm”

(16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, the CDFG and the USFWS are responding agencies under the California Environmental Quality Act (CEQA). Both agencies review CEQA documents in order to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.

### **3.2.2 Migratory Birds**

State and federal laws also protect most bird species. The Federal Migratory Bird Treaty Act (FMBTA: 16 U.S.C., sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

### **3.2.3 Birds of Prey**

Birds of prey are protected in California under provisions of the State Fish and Game Code, Section 3503.5, (1992), which states that it is “unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto”. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “taking” by the CDFG.

### **3.2.4 Wetlands and Other “Jurisdictional Waters”**

Natural drainage channels and adjacent wetlands may be considered “Waters of the United States” (hereafter referred to as “jurisdictional waters”) subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE). The extent of jurisdiction has been defined in the Code of Federal Regulations but has also been subject to interpretation of the federal courts. Jurisdictional waters generally include:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce;
- All impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified in paragraphs (a)(1)-(4) (i.e. the bulleted items above).

As recently determined by the United States Supreme Court in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (the SWANCC decision), channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds. However, the U.S Supreme Court decisions *Rapanos v. United States* and *Carabell v. U.S. Army Corps of Engineers* (referred together as the Rapanos decision) impose a "significant nexus" test for federal jurisdiction over wetlands. In June 2007, the USACE and Environmental Protection Agency (EPA) established guidelines for applying the significant nexus standard. This standard includes 1) a case-by-case analysis of the flow characteristics and functions of the tributary or wetland to determine if they significantly affect the chemical, physical, and biological integrity of downstream navigable waters and 2) consideration of hydrologic and ecologic factors (EPA and USACE 2007).

The USACE regulates the filling or grading of such waters under the authority of Section 404 of the Clean Water Act. The extent of jurisdiction within drainage channels is defined by "ordinary high water marks" on opposing channel banks. Wetlands are habitats with soils that are intermittently or permanently saturated, or inundated. The resulting anaerobic conditions select for plant species known as hydrophytes that show a high degree of fidelity to such soils. Wetlands are identified by the presence of hydrophytic vegetation, hydric soils (soils saturated intermittently or permanently saturated by water), and wetland hydrology according to methodologies outlined in the 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987).

All activities that involve the discharge of fill into jurisdictional waters are subject to the permit requirements of the USACE (Wetland Training Institute, Inc. 1991). Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the Regional Water Quality Control Board (RWQCB) issues a certification (or waiver of such certification) that the proposed activity will meet state water quality standards. The filling of isolated wetlands, over which the USACE has disclaimed jurisdiction under the SWANCC decision, is regulated by the RWQCB. It is unlawful to fill isolated wetlands without filing a Notice of Intent with the RWQCB. The RWQCB is also responsible for enforcing National Pollution Discharge Elimination System (NPDES) permits, including the General Construction Activity Storm Water Permit. All projects requiring federal money must also comply with Executive Order 11990 (Protection of Wetlands).

The California Department of Fish and Game has jurisdiction over the bed and bank of natural drainages according to provisions of Section 1601 and 1602 of the California Fish and Game Code (2003). Activities that would disturb these drainages are regulated by the CDFG via a Streambed Alteration Agreement. Such an agreement typically stipulates that certain measures will be implemented which protect the habitat values of the drainage in question.

### **3.3 CONSTRAINTS SPECIFIC TO THE PROJECT SITE**

The planned project consists of the expansion of an existing Wal-Mart site in southern Antioch. This expansion would result in the conversion of the 3.7-acre study area into development (i.e., a portion of the expanded Wal-Mart building and additional concrete-paved parking). Grading will be required to accommodate this new development and, as a result, the ruderal non-native grassland habitat occurring on the site will be disturbed or destroyed within the planned footprint of the future construction zones. Secondary impacts to areas outside of construction zones could occur as well and may include gully erosion as a result of cut-and-fill grading and the sedimentation of natural drainages. As discussed above, activities resulting in impacts to biotic resources may be regulated by local, state and federal laws. The natural resource issues specific to this project are discussed in detail below.

### **3.3.1 Loss of Habitat for Special Status Plants**

**Potential Impact.** There are 50 special status vascular plant species known to occur in the general project vicinity (Table 1). Site development would have no effect on regional populations of these species since the site provides no habitat for special status plants. Therefore, state and federal laws protecting special status plants would not be relevant to development of the site.

**Mitigation.** Mitigation measures are not warranted.

### **3.3.2 Loss of Habitat for Special Status Animals**

**Potential Impact.** Thirty-one special status animal species occur, or once occurred, regionally (Table 1). Of those, 28 would be absent or unlikely to occur on the site due to unsuitable habitat conditions. These include the state and/or federally listed longhorn fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, Lange's metalmark butterfly, California tiger salamander, California red-legged frog, Alameda whipsnake, giant garter snake, Swainson's hawk, willow flycatcher, bank swallow, and San Joaquin kit fox, as well as the western pond turtle, coast horned lizard, silvery legless lizard, San Joaquin whipsnake, golden eagle, northern harrier, short-eared owl, Vaux's swift, Black swift, tricolored blackbird, pallid bat, California mastiff bat, Townsend's big-eared bat, western red bat, ringtail, and American badger. Eventual project build-out would have no effect on these species because there is little or no likelihood that they are present.

Species that might rarely or occasionally occur in the study area as transients, occasional foragers, or winter migrants include the white-tailed kite and the loggerhead shrike. The site does not provide regionally important foraging habitat for these species. The ruderal grassland habitat of the study area is regionally abundant and will continue to be available regionally for these species following development. Migrant and transient species pass through or over many types of habitats en route to breeding or wintering habitat. Therefore, the loss of this habitat for these species would be considered less-than-significant.

The remaining special status animal species, the burrowing owl, is currently present onsite. Mitigation measures for the loss of habitat for this species are not warranted at this time due to

the fact that project proponents have preemptively purchased off-site acreage of mitigation habitat to offset this loss of habitat. This mitigation was apparently completed in 1999 in conjunction with mitigation for the Williamson Ranch Plaza following discussions with the City of Antioch and the CDFG. Potential impacts to and mitigations for those impacts to individuals of this species is dealt with specifically below (Section 3.3.3).

**Mitigation.** Mitigation measures are not warranted.

### **3.3.3 Disturbance to Active Raptor Nests from Construction Activities during Project Implementation**

**Potential Impacts.** Suitable habitat for tree nesting raptors is absent from the site at this time. There are a few immature trees along the boundaries of the site; however, these trees are too small to support raptor nests. Nonetheless, suitable habitat, in the form of ground squirrel burrows, is present onsite for the burrowing owl. While a protocol-level burrowing owl survey conducted on the study area in 2005 concluded that owls were absent from the site, they have since colonized the study area. During the May 2008 survey, a pair of burrowing owls was observed within the study area.

As discussed in Section 3.3.2, mitigation measures to offset the loss of burrowing owl habitat resulting from future site development are not warranted. However, precautionary measures would be required to ensure that individuals were not harmed, injured, or killed. Future construction activities that would adversely affect burrowing owl nesting activity or result in the mortality of individual birds constitute a violation of federal and state laws (see discussion in Section 3.2.3) and are considered significant adverse impacts. Therefore, the following mitigation would be required prior to any ground disturbance.

**Mitigation.** To avoid potential “take” of burrowing owls, the project applicant shall retain a qualified biologist to conduct protocol-level surveys within 30 days of scheduled ground disturbance in order to ensure that owls are absent from the site. Depending upon the outcome of the surveys, one of the following measures will be implemented.

- ❖ If these surveys demonstrate that owls are absent, then ground disturbance may proceed without any impediment.

- ❖ If nesting burrowing owls are detected on site prior to ground disturbance, then the applicant shall establish a 250-foot construction free buffer around the active nest, with the perimeter of the buffer zone clearly delineated by flagged survey stakes or construction fencing. No equipment or activity shall be allowed within the buffer zone until the owls have either vacated the nest (e.g., due to nest failure) or the young have fledged (usually no later than mid-September), as determined by a qualified biologist. Additionally, the applicant shall inform both the City of Antioch and the California Department of Fish and Game (CDFG) of the presence of the owl(s) and the establishment of the buffer.
  
- ❖ If non-nesting burrowing owls are detected on site prior to ground disturbance, the applicant may proceed with grading provided that the standard measures to passively relocate the owls are implemented by a qualified biologist. The applicant shall inform CDFG of their intent to passively relocate non-nesting owls and then a qualified biologist shall place one-way doors in all potential burrows on site. These doors shall remain in place for three days and be inspected daily by a qualified biologist. In the event that new burrows of suitable size for burrowing owls are created after the placement of the one-way doors, additional doors shall be installed in these newly constructed burrows and shall remain in place for a minimum of three days. Burrows may be collapsed after three days upon a determination by a qualified biologist that they are absent of owls.

Implementation of the above measures will fully mitigate impacts to burrowing owls.

#### **3.3.4 Loss of Habitat for Native Wildlife**

**Potential Impact.** The planned project will result in the loss of approximately 3.7 acres of ruderal non-native grassland habitat, which is surrounded by development and isolated from naturally occurring biotic habitats. The study area likely comprises a portion of some locally occurring wildlife species' home range or territory. As such, some species may disperse through the study area, but most wildlife presently using the study area do so as part of their normal movements for foraging, mating, and caring for young. Individuals of the various vertebrate species presently occupying the site would be displaced or lost from the development area.

While the site provides habitat for several native wildlife species, ruderal non-native grassland habitat is relatively common in the region. Therefore, aside from potential impacts already identified for burrowing owls (Sections 3.3.2 and 3.3.3), the loss of habitats for native wildlife resulting from the planned project are considered less-than-significant.

**Mitigation.** Mitigation measures are not warranted.

### **3.3.5 Interference with the Movement of Native Wildlife**

**Potential Impact.** One must differentiate between animals' consistent use patterns in order to assess the importance of an area as a "movement corridor." Wildlife movements generally can be divided into three major behavioral categories:

- Movements within a home range or territory;
- Movements during migration; and
- Movements during dispersal.

While no detailed study of animal movements has been conducted for the study area, knowledge of the site, its habitats, and the ecology of the species occurring onsite permits sufficient predictions about the types of movements occurring in the region and whether or not planned development would constitute a significant impact to animal movements.

The site planned for development consists of ruderal non-native grassland habitat, which is surrounded by development and therefore isolated from naturally occurring biotic habitats. East Antioch Creek immediately north of the site would constitute a minor movement corridor; however, this Creek would not be considered a significant movement corridor for any locally occurring wildlife. As such, the habitat of the site is not expected to function as a major movement corridor between areas of natural habitat for most native species. Certain bird species may use this habitat for foraging during fall or spring migration, but aside from this, movements of native wildlife on the site would mainly be confined to those of resident animals moving within the site itself.

**Mitigation.** Project impacts to wildlife movements would be less-than-significant, and no mitigation measures are warranted.

### **3.3.6 Disturbance to Waters of the U.S. or Riparian Habitats**

**Potential Impact.** Waters of the U.S. and riparian habitats are absent from the project site. The site itself consists completely of upland habitat. East Antioch Creek, a potentially jurisdictional water, runs adjacent to the northern boundary of the site. Protective measure will need to be taken during and after project build-out to ensure the existing quality of the Creek is not degraded (Section 3.3.7).

**Mitigation.** As long as construction occurs outside of East Antioch Creek, jurisdictional waters and/or riparian habitats will not be impacted by the project and, therefore, no mitigation is required.

### **3.3.7 Degradation of Water Quality in Seasonal Drainages, Stock Ponds and Downstream Waters**

**Potential Impact.** Eventual site development may require grading that leaves the soil of construction zones barren of vegetation and, therefore, vulnerable to sheet, rill, or gully erosion. Eroded soil is generally carried as sediment in surface runoff to be deposited in natural creek beds, canals, and adjacent wetlands. Furthermore, urban runoff is often polluted with grease, oil, pesticide and herbicide residues, heavy metals, etc. These pollutants may eventually be carried to sensitive wetland habitats used by a diversity of native wildlife species. The deposition of pollutants and sediments in sensitive wetland habitats would be considered a potentially significant adverse environmental impact.

**Mitigation.** The applicant must comply with the provisions of a City grading permit, including standard erosion control measures that employ best management practices (BMPs). Such compliance will result in no impact to water quality in seasonal creeks, reservoirs, and downstream waters from the planned project.

### **3.3.8 Local Policies or Ordinances Protecting Biological Resources**

**Impacts.** The City of Antioch has adopted a number of general plan policies related to the protection of wetland, native biotic habitats, native vegetation, and wetlands (LSA 2003;

Appendix C). Projects within the City are supposed to be in compliance with these policies, wherever possible. The City also has an established Municipal Code, including a tree preservation policy. However, it is not expected that any of the Municipal Code policies would apply to this project. Therefore, the only local policies or ordinances that would need to be implemented prior to project build-out are those from the General Plan (Appendix C).

**Mitigation.** The project will need to be in compliance with the City of Antioch's General Plan Policies for the protection of biotic resources.

### **3.3.9 Confliction with Provisions of an Adopted Conservation Plan**

**Potential Impact.** An adopted or a Draft Habitat Conservation Plan does not currently exist for the Antioch area. Therefore, this significance criterion does not apply.

**Mitigation.** Mitigation measures are not warranted at this time.

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**APPENDIX A  
VASCULAR PLANTS OF THE STUDY AREA**

The plant species listed below have been observed on the Antioch Wal-Mart study area during the surveys conducted by Live Oak Associates in April 2005 and/or May 2008. All plants have been named according to *The Jepson Manual* (Hickman 1993). The U.S. Fish and Wildlife Service indicator status of each plant has been shown following its common name.

OBL - Obligate  
 FACW - Facultative Wetland  
 FAC - Facultative  
 FACU - Facultative Upland  
 UPL - Upland  
 +/- - Higher/lower end of category  
 NR - No review  
 NA - No agreement  
 NI - No investigation

**ASTERACEAE - Sunflower Family**

<i>Carduus pycnocephalus</i>	Italian Thistle	UPL
<i>Centauria solstitialis</i>	Yellow Star Thistle	UPL
<i>Picris echioides</i>	Bristly Ox Tongue	FAC*
<i>Sonchus asper</i>	Prickly Sow Thistle	FAC-

**BRASSICACEAE – Mustard Family**

<i>Brassica nigra</i>	Black Mustard	UPL
<i>Raphanus sativus</i>	Wild Radish	UPL
<i>Sisymbrium irio</i>	London Rocket	UPL

**FABACEAE – Legume Family**

<i>Vicia sativa</i>	Spring Vetch	FACU
<i>Vicia villosa</i>	Hairy Vetch	FACU
<i>Medicago polymorpha</i>	Bur Clover	UPL
<i>Lupinus bicolor</i>	Miniature Lupine	UPL
<i>Lupinus succulentus</i>	Succulent Lupine	UPL
<i>Trifolium hirtum</i>	Rose Clover	UPL

**GERANIACEAE – Geranium Family**

<i>Erodium cicutarium</i>	Red-stemmed Filaree	UPL
<i>Geranium</i> sp.	Geranium	-

**POACEAE - Grass Family**

<i>Avena barbata</i>	Slender Wild Oats	UPL
<i>Bromus diandrus</i>	Ripgut	UPL
<i>Hordeum murinum</i> ssp. <i>leporinum</i>	Barnyard Barley	NI
<i>Lolium multiflorum</i>	Italian Ryegrass	UPL

**POLYGONACEAE - Buckwheat Family**

<i>Rumex crispus</i>	Curly Dock	FACW
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**ROSACEAE – Rose Family**

<i>Photinia glabra</i>	Red-leaf Photinia	UPL
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**SALICACEAE – Willow Family**

<i>Salix</i> sp.	Willow	-
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**SCROPHULARIACEAE – Snapdragon Family**

<i>Castilleja exserta</i>	Purple Owl's Clover	UPL
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**APPENDIX B  
TERRESTRIAL VERTEBRATES THAT POTENTIALLY OCCUR  
ON THE STUDY AREA**

Listed below are those species that may reasonably be expected to use the habitats of the project site routinely during some or all of the year. The list is not intended to include birds that are vagrants or occasional transients. Species observed during the May 2008 field survey has been noted with an asterisk.

**CLASS REPTILIA (Reptiles)**

**ORDER SQUAMATA (Lizards and Snakes)**

**SUBORDER SAURIA (Lizards)**

**FAMILY PHRYNOSOMATIDAE**

Western fence lizard *Sceloporus occidentalis*

**FAMILY ANGUIDAE (Alligator Lizards and Relatives)**

California alligator lizard *Elgaria multicarinata*

**SUBORDER SERPENTES (Snakes)**

**FAMILY COLUBRIDAE (Colubrids)**

Gopher snake *Pituophis catenifer*

Common kingsnake *Lampropeltis getula*

**CLASS AVES (Birds)**

**ORDER CICONIIFORMES (Herons, Storks, Ibises and Relatives)**

**FAMILY ARDEIDAE (Herons and Bitterns)**

Great Egret *Ardea alba*

Snowy Egret *Egretta thula*

**FAMILY CATHARTIDAE (New World Vultures)**

Turkey vulture *Cathartes aura*

**ORDER FALCONIFORMES (Vultures, Hawks and Falcons)**

**FAMILY ACCIPITRIDAE (Hawks, Old World Vultures and Harriers)**

White-tailed kite *Elanus leucurus*

Sharp-shinned hawk *Accipiter striatus*

Cooper's hawk *Accipiter cooperii*

Red-shouldered hawk *Buteo lineatus*

Red-tailed hawk *Buteo jamaicensis*

**FAMILY FALCONIDAE (Caracaras and Falcons)**

American kestrel *Falco sparverius*

Merlin *Falco columbarius*

Prairie falcon *Falco mexicanus*

**ORDER GALLIFORMES (Magapodes, Curassows, Pheasants and Relatives)**

**FAMILY PHASIANIDAE (Quails, Pheasants and Relatives)**

Ring-necked pheasant *Phasianus colchicus*

**FAMILY ODONTOPHORIDAE (New World Quail)**

California quail *Callipepla californica*

**ORDER COLUMBIFORMES (Pigeons and Doves)**

**FAMILY COLUMBIDAE (Pigeons and Doves)**

Rock dove *Columba livia*

Band-tailed pigeon *Columba fasciata*

\*Mourning dove *Zenaidura macroura*

**ORDER STRIGIFORMES (Owls)**

<b>FAMILY TYTONIDAE (Barn Owls)</b>	
Barn owl	<i>Tyto alba</i>
<b>FAMILY STRIGIDAE (Typical Owls)</b>	
Western screech owl	<i>Otus kennicottii</i>
Great horned owl	<i>Bubo virginianus</i>
*Burrowing owl	<i>Athene cunicularia</i>
<b>ORDER APODIFORMES (Swifts and Hummingbirds)</b>	
<b>FAMILY TROCHILIDAE (Hummingbirds)</b>	
Anna's hummingbird	<i>Calypte anna</i>
Allen's hummingbird	<i>Selasphorus sasin</i>
<b>ORDER PASSERIFORMES (Perching Birds)</b>	
<b>FAMILY TYRANNIDAE (Tyrant Flycatchers)</b>	
Black phoebe	<i>Sayornis nigricans</i>
Say's phoebe	<i>Sayornis saya</i>
<b>FAMILY LANIIDAE (Shrikes)</b>	
Loggerhead shrike	<i>Lanius ludovicianus</i>
<b>FAMILY CORVIDAE (Jays, Magpies and Crows)</b>	
Western scrub-jay	<i>Aphelocoma californica</i>
*American crow	<i>Corvus brachyrhynchos</i>
Common raven	<i>Corvus corax</i>
<b>FAMILY HIRUNDINIDAE (Swallows)</b>	
Tree swallow	<i>Tachycineta bicolor</i>
Violet-green swallow	<i>Tachycineta thalassina</i>
Bank swallow	<i>Riparia riparia</i>
Cliff swallow	<i>Petrochelidon pyrrhonota</i>
*Barn swallow	<i>Hirundo rustica</i>
<b>FAMILY AEGITHALIDAE (Bushtit)</b>	
Bushtit	<i>Psaltriparus minimus</i>
<b>FAMILY TROGLODYTIDAE (Wrens)</b>	
Bewick's wren	<i>Thryomanes bewickii</i>
House wren	<i>Troglodytes aedon</i>
Winter wren	<i>Troglodytes troglodytes</i>
<b>FAMILY REGULIDAE (Kinglets)</b>	
Ruby-crowned kinglet	<i>Regulus calendula</i>
<b>FAMILY TURDIDAE (Thrushes)</b>	
Western bluebird	<i>Sialia mexicana</i>
Hermit thrush	<i>Catharus guttatus</i>
American robin	<i>Turdus migratorius</i>
<b>FAMILY MIMIDAE (Mockingbirds and Thrashers)</b>	
*Northern mockingbird	<i>Mimus polyglottos</i>
California thrasher	<i>Toxostoma redivivum</i>
<b>FAMILY STURNIDAE (Starlings and Allies)</b>	
European starling	<i>Sturnus vulgaris</i>
<b>FAMILY PARULIDAE (Wood Warblers and Relatives)</b>	
Orange-crowned warbler	<i>Vermivora celata</i>
<b>FAMILY EMBERIZIDAE (Emberizines)</b>	
Spotted towhee	<i>Pipilo maculatus</i>
California towhee	<i>Pipilo crissalis</i>
Fox sparrow	<i>Passerella iliaca</i>
Song sparrow	<i>Melospiza melodia</i>
White-throated sparrow	<i>Zonotrichia albicollis</i>

White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>
Dark-eyed junco	<i>Junco hyemalis</i>
<b>FAMILY CARDINALIDAE (Cardinals, Grosbeaks and Allies)</b>	
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>
Lazuli bunting	<i>Passerina amoena</i>
<b>FAMILY ICTERIDAE (Blackbirds, Orioles and Allies)</b>	
Red-winged blackbird	<i>Gelaius phoeniceus</i>
Western meadowlark	<i>Sturnella neglecta</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
Brown-headed cowbird	<i>Molothrus ater</i>
<b>FAMILY FRINGILLIDAE (Finches)</b>	
*House finch	<i>Carpodacus mexicanus</i>
Lesser goldfinch	<i>Carduelis psaltria</i>
American goldfinch	<i>Carduelis tristis</i>
<b>FAMILY PASSERIDAE (Old World Sparrows)</b>	
House sparrow	<i>Passer domesticus</i>
<b>CLASS MAMMALIA (Mammals)</b>	
<b>ORDER DIDELPHIMORPHIA (Marsupials)</b>	
<b>FAMILY DIDELPHIDAE (Opossums)</b>	
Virginia opossum	<i>Didelphis virginiana</i>
<b>ORDER INSECTIVORA (Insectivores)</b>	
<b>FAMILY SORICIDAE (Shrews)</b>	
Ornate shrew	<i>Sorex ornatus</i>
<b>FAMILY TALPIDAE (Moles)</b>	
Broad-footed mole	<i>Scapanus latimanus</i>
<b>ORDER CHIROPTERA (Bats)</b>	
<b>FAMILY VESPERTILIONIDAE (Evening Bats)</b>	
Little brown myotis	<i>Myotis lucifugus</i>
Yuma myotis	<i>Myotis yumanensis</i>
California myotis	<i>Myotis californicus</i>
Western pipistrelle	<i>Pipistrellus hesperus</i>
Big brown bat	<i>Eptesicus fuscus</i>
Western red bat	<i>Lasiurus blossevillii</i>
Hoary bat	<i>Lasiurus cinereus</i>
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>
Pallid bat	<i>Antrozous pallidus</i>
<b>FAMILY MOLOSSIDAE (Free-tailed Bats)</b>	
Western mastiff bat	<i>Eumops perotis</i>
<b>ORDER LAGOMORPHA (Rabbits, Hares and Pika)</b>	
<b>FAMILY LEPORIDAE (Rabbits and Hares)</b>	
Brush rabbit	<i>Sylvilagus bachmani</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>
<b>ORDER RODENTIA (Rodents)</b>	
<b>FAMILY SCIURIDAE (Squirrels, Chipmunks and Marmots)</b>	
*California ground squirrel	<i>Spermophilus beecheyi</i>
Western gray squirrel	<i>Sciurus griseus</i>

<b>FAMILY GEOMYIDAE (Pocket Gophers)</b>	
Botta's pocket gopher	<i>Thomomys bottae</i>
<b>FAMILY HETEROMYIDAE (Pocket Mice and Kangaroo Rats)</b>	
California pocket mouse	<i>Chaetodipus californicus</i>
<b>FAMILY MURIDAE (Mice, Rats and Voles)</b>	
Western harvest mouse	<i>Reithrodontomys megalotis</i>
California mouse	<i>Peromyscus californicus</i>
Deer mouse	<i>Peromyscus maniculatus</i>
California vole	<i>Microtus californicus</i>
<b>ORDER CARNIVORA (Carnivores)</b>	
<b>FAMILY CANIDAE (Foxes, Wolves, and Relatives)</b>	
Coyote	<i>Canis latrans</i>
Red Fox	<i>Vulpes vulpes</i>
<b>FAMILY PROCYONIDAE (Raccoons and Relatives)</b>	
Raccoon	<i>Procyon lotor</i>
<b>FAMILY MEPHITIDAE (Skunks)</b>	
Western spotted skunk	<i>Spilogale gracilis</i>
Striped skunk	<i>Mephitis mephitis</i>
<b>FAMILY FELIDAE (Cats)</b>	
Feral cat	<i>Felis catus</i>
Bobcat	<i>Lynx rufus</i>



**APPENDIX C  
GENERAL PLAN POLICIES  
RELATED TO NATURAL RESOURCES PROTECTION  
CITY OF ANTIOCH**



- A significant ridgeline, hilltop, or exposed slope is located in the area.

The purpose of the Ordinance is to promote a more harmonious visual and functional relationship between the natural and built environments. The HPD Districts are reserved for residential uses that are clustered in a manner that will preserve significant features of hillside areas, such as drainage swales, streams, steep slopes, ridgelines, rock outcroppings, and native vegetation.

As of 1998, the City had three HPD Districts located in the south and southwest portions of the City. This land could be developed or redeveloped at any time with uses as specified in the General Plan or Zoning Ordinance. Areas designated, currently or in the future, as HPD Districts will be developed and should not be considered permanent passive open space. However, these areas will be developed in a manner which preserves valued open space characteristics.

### 10.3.1 Open Space Objective

Maintain, preserve and acquire open space and its associated natural resources by providing parks for active and passive recreation, trails, and by preserving natural, scenic, and other open space resources.

### 10.3.2 Open Space Policies

- Establish a comprehensive system of open space, facilities for organized recreation; active informal play; recreational travel along formal, natural, and riverfront trails; passive recreation; and enjoyment of the natural environment.
- Implement the design standards of the Community Image and Design Element so as to maintain views of the San Joaquin River, Mount Diablo and its foothills, and other scenic features, and protect the natural character of Antioch's hillside areas.
- Maintain the shoreline of the San Joaquin River as an integrated system of natural (wetlands) and recreational (trails and viewpoints) open space as set forth in the

Land Use Element and Public Services and Facilities Element.

- Where significant natural features are present (e.g., ridgelines, natural creeks), require new development to incorporate natural open space areas into project design. Require dedication to a public agency or dedication of a conservation easement, preparation of maintenance plans, and provision of appropriate maintenance in perpetuity of such open space areas.
- Require proposed development projects containing significant natural resources (e.g. sensitive habitats, habitat linkages, steep slopes, cultural resources, wildland fire hazards, etc.) to prepare Resource Management Plans to define appropriate responses to General Plan policies calling for their protection or preservation. Resource Management Plans shall accomplish the following.
  - Identify the significance of the resources that are found onsite and their relationship to resources in the surrounding area;
  - Define areas that are to be maintained in long-term open space, and
  - Establish mechanisms to ensure the long term protection and management of lands retained in open space.
- Encourage public access to creek corridors through the establishment of trails adjacent to riparian resources.
- Where feasible, incorporate significant existing natural features into the design of new development projects rather than removing them. Where preservation of natural features is not feasible, encourage the re-introduction of natural elements into project design.

## 10.4 BIOLOGICAL RESOURCES OBJECTIVE AND POLICIES

Although it is largely urbanized, portions of remaining undeveloped lands contain vegetation and habitat types the California Department of Fish and Game considers rare

and worthy of consideration in the California Natural Diversity Database:

- Native grasslands
- Vernal pools
- Stabilized interior dunes
- Seasonal wetlands
- Freshwater seeps
- Freshwater marshes
- Coastal brackish marshes
- Alkaline floodplains
- Alkali seeps
- Valley oak woodlands
- Riparian woodland

**Grassland.** Native grasslands have been reduced to 90 percent of their former area in California. Native grassland in the Antioch Planning Area would be dominated by purple needlegrass (*Nassella puchra*). A variety of spring wildflowers are also found in native grasslands. Because of the rarity of this once abundant vegetation type, the California Department of Fish and Game may request mitigation for projects that impact native grasslands. Additionally, special-status plants are more likely to be found in undisturbed native vegetation. Native grasslands are most likely to be found scattered in the southern part of the Antioch Planning Area.

**Vernal Pools.** Vernal pools are seasonal wetlands typically occurring in depressions in grasslands. These depressions collect water during the winter and spring rains, and dry once the rains cease. As the ponds dry in the spring, a succession of different plant species bloom around the edges of the pool. A high-quality vernal pool will display concentric rings of different colors of flowers in bloom in mid-spring. Because vernal pools tend to be isolated from each other, they may possess a unique flora that includes special-status, federally protected plants and special-status animals. Vernal pools are most likely to be found in the southern portion of the Antioch Planning Area.

**Stabilized Interior Dunes.** The Antioch Dunes along the banks of the San Joaquin River contain a unique assemblage of plant and animal species, several of which are found nowhere else in the world. Scattered grasses and forbs, some of which reach shrub size, form the ground cover. The federally endangered Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*) and Contra Costa wallflower (*Erysimum capitatum* ssp. *angustatum*) are found here amongst more common species. A number of special-status animals occur in this habitat, the most sensitive of which are the insects, including the federally endangered Lange's metalmark butterfly.

**Wetlands.** Seasonal wetlands and ponds hold water for only part of the year, and can be found in any part of the Antioch Planning Area, but are more common along the San Joaquin River and seasonal streams in the southern portion of the Planning Area. Coastal brackish marshes are wet year round and are found along the banks of the San Joaquin River. If pickleweed (*Salicornia* sp.) is present, coastal brackish marshes may contain suitable habitat for the State and Federally endangered salt marsh harvest mouse. Other listed species associated with the coastal brackish marsh in the Antioch Planning Area include California clapper rail (*Rallus longirostris obsoletus*), California black rail (*Laterallus jamaicensis coturniculus*).

Alkaline floodplains exist along the banks of the San Joaquin River. These may appear barren because of the difficulty of growing in highly alkaline, frequently disturbed soil. If unprotected, such barren lands tend to attract people seeking recreation in four-wheel drive vehicles, which reduces the vegetation ever further. Stands of pickleweed and saltgrass growing within alkaline floodplains can be habitat for the State and federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*).

**Open Water.** This category includes the San Joaquin River and permanent waterbodies, such as natural or man-made lakes, ponds, and reservoirs. Although open water does not provide habitat for many plant species, it is

important for wildlife and fish. The San Joaquin River is used as a movement corridor, foraging, and breeding habitat for a variety of native and non-native fish including steelhead (*Oncorhynchus mykiss*), Chinook salmon (*Oncorhynchus tshawytscha*), delta smelt (*Hypomesus transpacificus*), striped bass (*Morone saxatilis*), and many others. Water birds and waterfowls use the lakes and rivers for foraging and breeding and stopovers during migration.

**Oak Woodland.** Oak woodlands are important habitat for numerous common and special-status wildlife species. Blue oak woodland is found on north-facing slopes and in shady ravines in the Mt. Diablo foothills. Valley oak woodlands once dominated the edges of the Central Valley in vast park-like stands. Valley oaks are the largest and longest-lived of the California oaks. This habitat type has been much reduced by conversion of land to agriculture and because modern grazing patterns prevent the regeneration of young oaks. Valley oak stands are still found in Antioch in Contra Loma Regional Park and other southern portions of the Antioch Planning Area.

**Riparian.** Riparian vegetation refers to the native scrub or forest occurring along streams and riverbanks. In riparian areas, the roots of trees and other vegetation can easily reach the water table. Such areas are prone to frequent flooding. Riparian vegetation used to be found along most perennial and intermittent streams in the Antioch Planning Area and along the San Joaquin River. This vegetation type has become rare due to disturbance by cattle, riverfront development, and the filling or channelizing of small streams in urban areas. Riparian areas provide important breeding and foraging habitat for many species of birds, mammals, reptiles, and amphibians. The federally-listed California red-legged frog (*Rana aurora draytonii*) occurs along creeks in the Planning Area and the state-listed Swainson's hawk will nest in large trees such as cottonwoods that grow along creeks.

**Special-Status Species.** Special-status species are defined as:

- Species that are listed, or designated as candidates for listing, as threatened or endangered under the Federal Endangered Species Act;
- Species that are listed, or designated as candidates for listing as rare (plants), threatened, or endangered under the California Endangered Species Act;
- Plant species on List 1A, List 1B, List 2, and List 3 in the California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California*;
- Wildlife species listed by the California Department of Fish and Game as species of special concern or fully protected species;
- Species that meet the definition of rare or endangered under the California Environmental Quality Act (under Section 15380 of CEQA<sup>1</sup>); and
- Considered to be a taxon of special concern by local agencies.

#### 10.4.1 Biological Resources Objective

Preserve natural streams and habitats supporting rare and endangered species of plants and animals.

#### 10.4.2 Biological Resources Policies

- a. Comply with the federal policy of no net loss of wetlands through avoidance and clustered development. Where preservation in place is found not to be feasible (such as where a road crossing cannot be avoided, or where shore stabilization or creation of shoreline trails must encroach into riparian habitats), require 1) on-site replacement of wetland areas, 2) off-site replacement, or 3) restoration of degraded wetland areas at a minimum ratio of one acre of replacement/restoration for each acre of

<sup>1</sup> This Section of CEQA guidelines states that any species not included on any formal list, can nevertheless be considered rare or endangered if the species can be shown to meet the criteria for listing.

- impacted onsite habitat, such that the value of impacted habitat is replaced.
- b. Preserve in place and restore existing wetlands and riparian resources along the San Joaquin River and other natural streams in the Planning Area, except where a need for structural flood protection is unavoidable.
  - c. Require appropriate setbacks adjacent to natural streams to provide adequate buffer areas ensuring the protection of biological resources.
  - d. Through the project approval and design review processes, require new development projects to protect sensitive habitat areas, including, but not limited to, oak woodlands, vernal pools, and *native* grasslands. Ensure the preservation in place of habitat areas found to be occupied by state and federally protected species. Where preserved habitat areas occupy areas that would otherwise be graded as part of a development project, facilitate the transfer of allowable density to other, non-sensitive portions of the site.
  - e. Limit uses within preserve and wilderness areas to resource-dependent activities compatible with the protection of natural habitats.
  - f. Through the project review process, review, and where necessary, permit the removal of oak trees on a case-by-case basis.
  - g. Preserve heritage trees throughout the Planning Area.
  - h. Within areas adjacent to preserve habitats, require the incorporation of native vegetation and avoid the introduction of invasive species in the landscape plans for new development.

## 10.5 AIR QUALITY OBJECTIVE AND POLICIES

Antioch has a relatively low natural atmospheric potential for pollution given the persistent and strong winds typical of the area. These winds dilute pollutants and transport them away from the area, so that emissions

released in Antioch may influence air quality in the Sacramento and San Joaquin Valleys. Antioch lies on the south side of Carquinez Strait, which is the only sea-level gap in the central and northern California coastal mountains, resulting in relatively strong and persistent winds flowing through the gap. The large temperature difference between the greater Bay Area to the west and the Central Valley to the east also creates a strong flow of generally west-to-east winds that dilute and transport air pollutants.

Within the Bay Area, periods of high atmospheric stability, known as inversion conditions, severely limit the ability of the atmosphere to disperse pollutants vertically. In the Antioch area, inversions can be found during all seasons, but are more prevalent in the summer months when they are present about 90 percent of the time, both morning and afternoon.

Local air quality is affected by several major stationary pollutant sources that originate in Antioch and upwind in Pittsburg. Antioch's location downwind of the greater Bay Area also means that pollutants from other areas are transported to the area.

Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons. As is true throughout much of the U.S., motor vehicle use is projected to increase substantially in the region. However, due to improving emissions control technology, individual vehicles will contribute substantially fewer pollutants to regional air quality. This decrease in emissions from individual vehicles is not expected to eliminate an overall increase in regional air emissions.

The major pollutants of concern in the San Francisco Bay Area ozone, carbon monoxide, and particulate matter are monitored at a number of locations. There are no monitoring stations in the City of Antioch; the monitoring station closest to the site is in Pittsburg. The Pittsburg monitoring station measures ozone, carbon monoxide, NO<sub>2</sub>, and (beginning in

# **APPENDIX E**

## **Hydrology and Drainage Reports**

**Prepared by**

**Robert A. Karn & Associates**

**October and December 2008**



August 26, 2005  
Rev. December 2, 2008  
Job No. A03048

## **HYDROLOGY/HYDRAULICS REVIEW**

**For**

**Wal-Mart Store #2697 Expansion  
Williamson Ranch Plaza, Antioch, CA**

### **Introduction**

This review is being prepared for the proposed development of the Wal-Mart Supercenter Expansion located at the Williamson Ranch Plaza Retail Center in Antioch, CA. The purpose is to investigate the existing and proposed storm drainage conditions as well as the associated impacts of the expansion project. This report is intended as an update to the Hydrology/Hydraulics Review prepared for the Williamson Ranch Plaza in September 2005.

### **Site Location**

The proposed development is located in the southeast region of the City of Antioch, Contra Costa County, California. The project site encompasses a 3.7-acre undeveloped portion of the larger 21.6-acre Wal-Mart site, the majority of which is developed and occupied by a Wal-Mart Division 1 store. The Wal-Mart site is a portion an overall 33-acre retail development, known as Williamson Ranch Plaza Phase I, located at the northwest quadrant of the intersection of Lone Tree Way and Hillcrest Drive. The site is bounded by an existing flood control canal to the north (East Antioch Creek), the existing phase II of the Williamson Ranch Plaza to the west, Lone Tree Way to the south, and Hillcrest Avenue to the east. The general surrounding area is largely residential, with existing subdivisions to the south across Lone Tree Way and north/northeast across the flood control canal.

### **Existing Conditions**

The first phase of the Wal-Mart project developed approximately 17.9 acres of the 21.6-acre site. The on-site storm drainage system was designed to accommodate the post-development runoff from the 10-year storm event. The storm drainpipes in proximity to the undeveloped 3.7-acres were stubbed and capped for future extension. Under current conditions, the majority of the undeveloped 3.7-acre expansion area is not served by a storm drain system. Most site runoff either percolates into the soil, or temporarily ponds until it evaporates, or it flows directly to the adjacent channel of East Antioch Creek. Some of the runoff in the eastern portion of the expansion area enters two temporary field inlets, which were installed with the construction of the existing Wal-Mart store. Refer to the attached Hydrology Map for the location of the existing storm drainage system.

Under existing conditions for a 100-year storm event, the overall Wal-Mart site of 21.6 acres has a flow rate of 24.62 cfs, which accounts for the 17.9-acre developed impervious area and the 3.7-acre undeveloped Wal-Mart expansion area.

### **Proposed Conditions**

The estimated peak flow rate of the fully developed site for a 100-year storm was previously calculated to be **28.35 cfs**. This was based on the Rational Hydrology Method and  $Q=CiA$ , where  $Q$  is the flow rate in cubic feet per second,  $C$  is the runoff coefficient,  $i$  is the rainfall intensity, and  $A$  is the site area in acres. Parameters for the calculation are consistent with the City of Antioch and Contra Costa County Public Works Department for on-site private development flow rate requirements. (It should be noted that this post-development runoff figure was based on the larger 22.5-acre Wal-Mart site which existed in 1998, and that was subsequently reduced by 0.9 acres through a lot line adjustment with the adjacent parcel to the west.)

The expansion project would cover most of the 3.7-acre expansion area with impervious surfaces. This would increase the peak runoff rate by about 3.73 cfs. Development of the expansion area would increase the overall runoff rate for the 21.6-acre Wal-Mart site from 24.62 cfs to 28.35 cfs during a 100-year storm event. This runoff rate of 28.35 cfs is the same as the overall runoff rate calculated by Robert A. Karn & Associates for the entire 22.5-acre site in 1998. (Although the site plan for the expansion area has been modified, the extent of impervious surface coverage resulting from the currently planned Wal-Mart expansion would be about the same as originally planned. As noted above, the overall site area is 0.9 acres smaller than considered in the original runoff analysis.)

### **Drainage Improvements**

1. On-Site - The expansion project would include the following drainage improvements:
  - Installation of five drop inlet catch basins
  - Removal of four drop inlet catch basins
  - Conversion of one drop inlet to a junction box
  - Construction of five stormwater treatment devices
  - Installation of 6" subdrains as part of the stormwater treatment devices
  - Installation of 15" and 24" stormdrains
  - Each watershed that is part of the expansion project is graded to drain to a stormwater treatment device

Refer to the Hydrology Map for locations of the drainage improvements.

2. Off-Site - There are no off-site drainage facilities proposed for this project.

In accordance with City of Antioch and Contra Costa County Public Works standards, the on-site storm drain system for the expansion area will be designed using a 10-year storm event, with parameters in the grading design for a 100-year overland drainage release. For the purposes of this review, the 100-year storm event is used to quantify the amount of potential storm runoff,

which would enter the public system, by combining the overland release and the underground storm system network. The East Antioch Creek flood control channel was sized and designed to accommodate the post-development storm runoff and flood flows generated at the project site, including the expansion area. Therefore, the Wal-Mart expansion project will not result in drainage impacts or increased downstream flooding potential.

### **Stormwater Compliance**

As authorized by the Clean Water Act, the **National Pollutant Discharge Elimination System** (NPDES) permit program controls water pollution by regulating sources that discharge pollutants into waters of the United States. The City's discharge of Stormwater is covered under the NPDES program and requires the City to have a municipal Stormwater permit.

There are 4 creeks, which wind through the city: East Antioch Creek, Markley Creek (a tributary of West Antioch Creek), Sand Creek, and West Antioch Creek. Within the city limits are also parts of the watersheds for Marsh Creek and Kirker Creek. These creeks receive runoff from neighborhoods through a system of storm drains or through rain filtration and runoff of permeable surfaces. All water that runs down the City's streets and into the storm drains flows into the local creeks and eventually to the San Joaquin River.

The City of Antioch's NPDES program is charged with the responsibility of preventing pollution and maintaining the storm water system. They have adopted the Contra Costa Clean Water Program, which requires developments to provide for pre- and post- construction treatment of storm water run-off.

The California Regional Water Quality Control Boards for the San Francisco Bay Region and Central Valley Region (RWQCBs) have mandated that Contra Costa municipalities impose new, more stringent requirements to control runoff from development projects. The RWQCBs amended Provision C.3 of the municipalities' Stormwater NPDES permit in February 2003. The municipalities have phased in the requirements from 2004 through 2006. The RWQCBs determined that the new Provision C.3 requirements are needed to implement Federal Clean Water Act provisions governing discharges to municipal storm drains. Congress adopted amendments to the Clean Water Act in 1987, and the United States Environmental Protection Agency (USEPA) issued implementing regulations in 1990. The San Francisco Bay RWQCB began issuing Stormwater discharge permits to municipalities that same year. Since the early 1990s, Contra Costa municipalities have required contractors to implement temporary Best Management Practices (BMPs) to minimize the amount of sediment and other pollutants that enter site runoff during construction. For several years, the municipalities have also encouraged applicants to design their projects to minimize new impervious area and to incorporate into their plans permanent treatment BMPs – features and devices that detain, retain, or treat runoff for the life of the project. As before, the standard for these BMPs is “maximum extent practicable,” or MEP. However, the new permit requirements define MEP more specifically and include design criteria. The new development provisions are one part of a comprehensive Stormwater pollution prevention program implemented by each Contra Costa municipality.

Those programs also require:

1. Controls on runoff from existing commercial and industrial sites.
2. Temporary measures to control sediment and other pollutants in runoff from construction sites.
3. Changes in the way the municipalities maintain streets, parks and public infrastructure.
4. Prevention of illegal dumping in storm drains.
5. Public outreach and education.

For previously undeveloped sites, and for project applications “deemed complete” after February 15, 2005, the C.3 requirements apply if a project creates one acre or more impervious area. On August 15, 2006, this threshold was reduced to 10,000 square feet of impervious area. For sites that have been previously developed, the threshold is more complex. If the new project results in an increase of, or replacement of, 50% or more of the previously existing impervious surface, and the existing development was not subject to Stormwater treatment measures, then the entire project must be included in the treatment measure design. **If less than 50% of the previously impervious surface is to be affected, only that portion must be included in the treatment measure design.** Interior remodels, routine maintenance or repair, roof or exterior surface replacement, and repaving are not subject to C.3 requirements.

**This project is developing 18% of the previous impervious area, or 3.71 acres of the total 21.6-acre site.** Therefore, the new C3 guidelines will only apply to the 3.71 acres of proposed impervious surface.

NPDES permit Provision C.3.d includes criteria for designing treatment BMPs. These criteria target treatment of 80% of average annual runoff. Because a large portion of average annual runoff is produced by small storms that occur many times a year, treatment BMPs can be designed to bypass larger storms. The 80% criterion means that BMPs will be bypassed, on average, every 1-2 years. Because treatment BMPs are designed to treat only small storms, they can be considerably smaller than detention basins designed to protect property during flood-generating storms that may recur in 10%, 4%, or 1% of coming years. However, treatment BMPs must be designed as part of an overall drainage system that can accommodate larger storms.

### **Proposed Mitigation**

The proposed development does not have a significant impact on the existing storm drain system as designed and provided by the Contra Costa County Flood Control and Water Conservation District and City of Antioch. Stormwater run-off will be directed to treatment devices designed in accordance with the Contra Costa Clean Water Program Stormwater C.3 Guidebook – third edition October 2006 and then conveyed off-site via the proposed underground storm drainage system, which will be designed with sufficient capacity to accommodate increased flows from the project. No off-site mitigation is required as part of this project.

State, City and agency requirements, which will require proper design, construction and maintenance procedures, will be implemented as part of this development. The project sponsor and its affiliated consultants will provide the following standards and procedures as required by the City of Antioch.

1. Obtain all necessary permits for construction activities involving storm water improvements; i.e., NPDES, State and Regional Water Quality, EBMUD, CCFCWCD, City of Antioch and others as may be required as part of the review process.
2. Provide proper erosion control and silt control measures for construction activities, which will commence during October 15<sup>th</sup> to April 15<sup>th</sup> of each year.
3. Provide for treatment of on-site storm run-off through implementation of source control BMPs, stormwater treatment devices and/or other measures, as required by the City of Antioch to comply with the intent of the Contra Costa Clean Water Program Stormwater C.3 Guidebook – third edition October 2006.



## **APPENDIX A – HYDROLOGY MAP**







# **Stormwater Control Plan**

**WAL-MART  
STORE #2697 EXPANSION  
4893 Lone Tree Way  
Antioch, CA, 94509**

Prepared By:

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Revised  
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# Stormwater Control Plan – Wal-Mart, Antioch

## I. Project Setting

### A. Projection Description and Information Summary

The proposed development is located in the southeast region of the City of Antioch, Contra Costa County, California (Figure 1). The project site encompasses 6.3-acres, which is a portion an overall 33-acre retail development located at the northwest quadrant of the intersection of Lone Tree Way and Hillcrest Drive. The site is bounded by an existing flood control canal to the north (East Antioch Creek), an Orchard Supply Hardware store to the west, existing phase II of the Williamson Ranch Plaza, Lone Tree Way to the south and Hillcrest Drive to the east. The general area is largely residential in use, with existing subdivisions to the south across Lone Tree Way and north/northeast across the flood control canal.



**Figure 1. Vicinity Map**

### B. Existing Site Conditions

The first phase of the Wal-Mart project constructed was approximately 17.9 acres. The interior storm drainage system pipe sizing was designed to accommodate the post-development runoff from the 10-year storm event. Storm drainpipes were stubbed and

## Stormwater Control Plan – Wal-Mart, Antioch

capped for future extension. Under current conditions, the majority of the undeveloped 6.3-acre expansion area is not served by a storm drain system. Most site runoff either percolates into the soil, or temporarily ponds until it evaporates, or it flows directly to the adjacent channel of East Antioch Creek. Some of the runoff in the eastern portion of the expansion area enters two temporary field inlets, which were installed with the construction of the existing Wal-Mart store. The elevation of site is approximately 130 feet above mean sea level. The general topography of the area proposed for building pad was relatively level. The existing zoning for this project site is commercial.

A geotechnical exploration of the site was performed by The Twining Laboratories, Inc. The report dated January 22, 1998 (Project Number: A80920.01-01) indicates no active surface faults in the site vicinity. The soils encountered consist of near surface medium stiff lean and fat clays with interbedded stiff sandy silt layers (NRCS Hydrological Soil Group "D"). The laboratory tests indicate that the clays exhibit a low to medium expansive potential, moderate to high plasticity, moderate shear strength and moderate compressibility characteristics. This type of soil has a low infiltration rate.

Groundwater was encountered between the depths of 7 to 12.5 feet in the fifteen boring test drilled to the depth between 10 and 41.5 feet below site grade.

### C. Opportunities and Constraints for Stormwater Control

Treatment and flow control of runoff from the site are to be provided.

Planned landscaped areas include landscape setbacks along East Antioch Creek and within the parking islands.

Discharge of runoff to deep filtration is not feasible on this site due to the low permeability of the clay soils (soil group D).

Constraints include:

- A 10' wide easement for an 8" water line runs parallel to and 20 feet inside the site's northern boundary.
- A 10' wide easement for an 8" water line runs parallel to site's eastern boundary.
- A 10' wide easement for a 6" water line runs from site's eastern to southern boundary.
- A 10' wide water easement runs across from site's eastern to western boundary.
- A 15' wide easement for a 30" existing storm drain runs parallel to site's western boundary.
- A 15' wide easement for a 24" existing storm drain runs from site's eastern to southern boundary.
- A 15' wide easement for a sanitary sewer runs from site's western to southern boundary.

In addition, as part of the building expansion, the front entrance along the south side of the building will be modified to be in compliance with current ADA standards. To meet those standards, the pavement and parking islands in that location are being modified. These modifications will result in a net increase of pervious area. To address treatment to the maximum extent possible, these pervious areas will be made self-retaining. Additional efforts to treat the remaining impervious areas are impracticable.

## Stormwater Control Plan – Wal-Mart, Antioch

An inventory of the existing and proposed pervious areas that are located within the area being modified to be compliant with current ADA standards is tabulated below in Table 1. Refer to the Preliminary Stormwater Control Plan Exhibit for the location of the existing and proposed pervious areas.

**Table 1. Existing and Proposed Pervious Areas**

Existing Pervious Area		Proposed Pervious Area	
Area ID	Size (sq.ft.)	Area ID	Size (sq.ft.)
AREA 1	295	SR-17	174
AREA 2	222	SR-18	173
AREA 3	222	SR-19	130
AREA 4	222	SR-20	174
AREA 5	222	SR-21	174
AREA 6	320	SR-22	183
AREA 7	222	SR-23	429
AREA 8	222	SR-24	174
AREA 9	444	SR-25	183
		SR-26	174
		SR-27	199
		SR-28	174
		SR-29	221
		SR-30	502
		SR-31	96
		SR-32	324
Total	2,391	Total	3,484

## II. Measures to Limit Imperviousness

### A. Measures to Cluster Development and Protect Natural Resources

The following site layout characteristics are incorporated to reduce imperviousness:

- The site is developed to maximum density.
- The parking lots serving the building are to be landscaped with in-ground planter boxes or self-retaining areas.

### B. Measures to Limit Directly Connected Impervious Area

#### 1. Site Design Features

Impervious areas (roofs, pavement, etc.) are disconnected from the drainage system. To the maximum extent possible, runoff from these impervious areas is directed to treatment and flow control BMPs.

#### 2. Pervious Pavements

Conventional concrete and conventional asphalt are used throughout the site. Permeable pavements, although feasible, are somewhat impractical for this site because of heavy vehicle use and because pavements overlie nearly impermeable, expansive clay soils.

## **Stormwater Control Plan – Wal-Mart, Antioch**

### **3. Detention and Drainage Design**

The flow control requirements to manage increases in runoff peak flows and durations (hydrograph modification management) are satisfied by demonstrating compliance under option 2 from the flow control standard taken from the CCCWP Stormwater C.3 Guidebook, 3<sup>rd</sup> edition.

Stormwater runoff from the building roof and parking lot will be conveyed to treatment and flow control BMPs.

Each BMP has adequate hydraulic head to allow drainage into, through, and away from the BMP without the need of pumps.

### **C. Summary of Pervious Areas**

Pervious areas in this project are located throughout the site. All of these pervious areas are designed to be standard landscaping, self-treating, self-retaining or Integrated Management Practice BMPs.

Self-retaining areas will be graded in a concave form to ensure that the first one-inch of rainfall on the area will be retained before any runoff can occur.

Self-treating areas will be graded to drain directly off site or to a storm drain system.

Refer to Table 3 and Table 4 of the Appendix for a list and size of self-treating and self-retaining areas. The locations are shown on the Stormwater Control Plan Exhibit.

## **III. Selection and Preliminary Design of Storm Water BMPs**

Requirements to manage increases in runoff peak flows and durations (hydrograph modification management) are satisfied by compliance under option 2 from the flow control standard taken from the CCCWP Stormwater C.3 Guidebook, 3<sup>rd</sup> edition.

Impervious areas on site, including all roofs, parking areas, and driveways, have been divided into 17 drainage management areas (12 paved, 5 roof) as shown on the Stormwater Control Plan Exhibit.

Runoff from these areas is managed by routing to an in-ground planter or a bioretention area sized to treat runoff from that area.

All IMPs located on the site have suitable access for inspection and maintenance.

The Stormwater Control Plan Exhibit shows the IMPs and the corresponding roof and paved areas that drain to each IMP. The areas of each drainage management area (DMA) and corresponding IMP are listed in Table 5 thru Table 9 of the Appendix

Several impervious areas will not drain to an IMP for treatment. These areas include DMA PAVE-6, PAVE-11, and PAVE-12. PAVE-6 is located at the north side of project site along East Antioch Creek. This DMA is located between the proposed and existing pavement and cannot be drained toward planter PL-4 due to grading constraints. PAVE-11 is a small pavement section located at the southeast corner of the project site. PAVE-12 is a section of sidewalk along the southern section of the project site. The untreated stormwater from these DMA accounts for less than 1% of the total project area.

Drainage management areas ROOF-4, ROOF-5, PAVE-7, PAVE-8, PAVE-9, and PAVE-10 are also untreated. Refer to section I.C. for further explanation.

## Stormwater Control Plan – Wal-Mart, Antioch

### A. General Characteristics

#### 1. In-Ground Planters

In general, in-ground planters are configured as shown in Appendix C of the *Stormwater C.3 Guidebook, Third Edition*. All planters feature a minimum 18" depth of sandy loam (minimum infiltration rate specified to be 5" per hour.) All planters are underdrained (Soil groups C and D), and the underdrains are connected to underground storm drains that carry the treated runoff as well as any overflow off-site. All drainage into and away from the BMPs is by gravity, eliminating the need to collect and pump stormwater and avoiding the need for vaults.

The physical configuration of the planters, including inlets and outlets, varies. Details are shown in cross section on the Stormwater Control Plan Exhibit.

#### 2. Bioretention Areas

In general, bioretention areas are configured as shown in Appendix C of the *Stormwater C.3 Guidebook, Third Edition*. All bioretention area feature a minimum 18" depth of sandy loam (minimum infiltration rate specified to be 5" per hour.) All bioretention areas are underdrained (Soil groups C and D), and the underdrains are connected to underground storm drains that carry the treated runoff as well as any overflow off-site. All drainage into and away from the BMPs is by gravity, eliminating the need to collect and pump stormwater and avoiding the need for vaults. Gravel layer must be 48 inches deep. Planting must be suitable to imported sandy loam soil, the site, and location. Plantings will be selected to minimize potential future need for fertilizers or pesticides.

### B. Specific Characteristics of Each Impervious Area and IMP

Specific descriptions of each drainage management area (DMA) and IMP are located in Table 5 thru Table 9 of the Appendix.

## IV. Source Control Measures

The following activities planned for the Antioch Wal-Mart expansion have the potential to allow pollutants to enter runoff:

- Landscape maintenance.
- Food services and future retail tenants that provide food service.
- Refuse disposal.
- Loading and unloading.

To further reduce the potential for pollutants to enter runoff, permanent and operational source control BMPs will be implemented as described in Table 2.

## Stormwater Control Plan – Wal-Mart, Antioch

**Table 2. Source and Source Control BMPs**

<b>Potential Source of Runoff Pollutants</b>	<b>Permanent Source Control BMPs</b>	<b>Operational Source Control BMPs</b>
On-site storm drain inlets	Mark inlets that could be easily accessed with a “No Dumping-Drains to Creek” or similar message.	<ul style="list-style-type: none"> <li>• Maintain and periodically repaint or replace inlet markings.</li> <li>• Lessees will receive stormwater pollution prevention information to be provided by the City.</li> <li>• Tenant leases will include clause stating: “Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.”</li> </ul>
Interior floor drains and elevator shaft sump pumps	State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	<ul style="list-style-type: none"> <li>• Inspect and maintain drains to prevent blockages and overflow.</li> </ul>
Need for future indoor and structural pest control	Standard building design minimizes potential needs for future pest control.	Lessees will receive integrated pest management information to be provided by the City.

## Stormwater Control Plan – Wal-Mart, Antioch

<b>Potential Source of Runoff Pollutants</b>	<b>Permanent Source Control BMPs</b>	<b>Operational Source Control BMPs</b>
Landscape/outdoor pesticide use	<ul style="list-style-type: none"> <li>• Any native trees, shrubs, and ground cover on the site will be preserved to the maximum extent possible.</li> <li>• Landscaping will be designed to minimize required irrigation and runoff, to promote surface infiltration, and to minimize the use of fertilizers and pesticides that can contribute to storm water pollution.</li> <li>• Plantings for swales will be selected to be appropriate to anticipated soil and moisture conditions.</li> <li>• Where possible, pest resistant plants will be selected, especially for locations adjacent to hardscape.</li> <li>• Plants will be selected appropriate to site soils, slopes, climates, sun, wind rain, land use, air movement, ecological consistency, and plant interactions.</li> </ul>	<ul style="list-style-type: none"> <li>• Lessees and new site owners will receive integrated pest management information.</li> <li>• All site landscaping is to be maintained by a professional landscaping contractor. Contract to state that landscaping is to be maintained using IMP principles, with minimal or no use of pesticides.</li> </ul>
Food service	All facilities approved for food service uses will be required to have an interior mop sink suitably sized for washing any floor mats, containers, or equipment per City use permit requirements.	Provide “Water Pollution Prevention Tips to Protect Water Quality and Keep Your Food Service Facility Clean” brochure to new site owners and lessees.
Refuse areas	<ul style="list-style-type: none"> <li>• Refuse areas outside to be roofed and burbed. Any drains must connect to sanitary sewer.</li> <li>• Other refuse areas to be indoors and floors sloped to prevent drainage to exterior. Any floor drains must connect to sanitary sewer.</li> <li>• All dumpsters will be marked with a “Do Not Dump Hazardous Materials Here” or similar.</li> </ul>	<ul style="list-style-type: none"> <li>• Adequate litter receptacles will be provided throughout the commercial area.</li> <li>• Grounds keeping crew or contractor will inspect and clean up daily.</li> <li>• Spills will be cleaned up using dry methods.</li> </ul>
Loading areas	The loading/unloading area drains to a IMP or treatment device rather than directly to storm drain.	Unloading materials (except for outdoor display) will be moved indoors or under cover as quickly as practicable.

## Stormwater Control Plan – Wal-Mart, Antioch

Potential Source of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
Fire sprinkler test water	Fire sprinkler test valves will be equipped with a means to divert test water to the sanitary sewer.	
Miscellaneous drain or wash water <ul style="list-style-type: none"> <li>• Boiler drain lines</li> <li>• Condensate drain lines</li> <li>• Rooftop equipment</li> <li>• Drainage sumps</li> <li>• Roofing, gutters, and trim</li> </ul>	<ul style="list-style-type: none"> <li>• Boiler drain lines shall be directed or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.</li> <li>• Condensate drain lines will discharge to the sanitary system or to landscaped areas.</li> <li>• Rooftop mounted equipment will be roofed or covered to prevent pollutants from entering runoff.</li> <li>• Drainage sumps shall feature a sediment sump to reduce the quantity of sediment in pumped water.</li> <li>• Roofing, gutters and trim shall not be copper or other unprotected metal that could leach into runoff.</li> </ul>	
Plazas, sidewalks, and parking lots		Plaza, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Wash water containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.

### V. Permitting and Code Compliance Issues

There are no known conflicts between the proposed storm water control plan and the City of Antioch ordinances or policies. Any conflicts that are found will be resolved through the design review process or during subsequent permitting.

## **Stormwater Control Plan – Wal-Mart, Antioch**

### **VI. BMP Operations and Maintenance**

#### **A. Means to Finance and Implement BMP Maintenance**

All storm water treatment facilities in this plan will be owned and maintained in perpetuity by the private owner of the subject property. The applicant accepts responsibility for interim operation and maintenance of the facilities until such time as this responsibility is formally transferred to a subsequent owner.

If the City of Antioch should require, the applicant will execute, prior to completion of project construction, a Stormwater Facilities Operation and Management Agreement per the model proposed by the Contra Costa Clean Water Program. Such an agreement will “run with the land” and be enforceable on subsequent property owners.

The applicant will submit, with the application for building permits, a draft Stormwater Facilities Operation and Maintenance Plan including detailed maintenance requirements and a maintenance schedule.

##### **1. Commitment to Execute any Necessary Agreements**

Wal-Mart, agrees to provide any necessary easements or right of entry to Contra Costa County for access and inspection of stormwater BMPs.

##### **2. Statement of Responsibility for Operation and Maintenance of Facility**

Wal-Mart, agrees to maintain the BMPs which will be designed for this project until one of the following occurs: (1) Acceptance of maintenance responsibility by the City, including the filling of all required easements and establishment of a special district or other permanent funding mechanism or (2) Other private entity to be responsible for maintenance, execution of codes, Covenants, and Responsibilities or other agreement that run with the land and requires future owners to provide and pay for maintenance of stormwater BMPs, and execution of a stormwater management facilities Operation and Maintenance Agreement and right of Entry in the form provided by the City.

#### **B. Summary of Maintenance Requirements**

##### **1. Bioretention Areas**

These facilities remove pollutants primarily by filtering runoff slowly through an active layer of soil. Routine maintenance is needed to insure that flow is unobstructed, that erosion is prevented, and that soils are held together by plant roots and are biologically active. Typical maintenance consists of the following:

- Inspect inlets, exposure of soils, or other evidence of erosion. Clear any obstructions and remove any accumulation of sediment. Examine rock or other material used as a splash pad and replenish if necessary.
- Inspect outlets for erosion or plugging.
- Inspect side slopes for evidence of instability or erosion and correct as necessary.
- Observe soil at the bottom of the swale or bioretention area for uniform percolation throughout. If portions of the swale or bioretention area do not drain within 48 hours after the end of the storm, the soil should be tilled and replanted. Remove any debris or accumulations of sediment.
- Confirm that check dams and flow spreaders are in place and level and that channelization within the swales or filter is effectively prevented.

## Stormwater Control Plan – Wal-Mart, Antioch

- Examine the vegetation to insure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary, remove fallen leaves and debris, prune large shrubs or trees, and mow turf areas. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove invasive vegetation.
- Abate any potential vectors by filling in the ground and around swale and by insulating that there are no areas where water stands longer than 48 hours following a storm. If mosquito larvae are present and persistent, contact the County Vector Control District for information and advice. Mosquito larvicides should be applied only when absolutely necessary and then only by a licensed individual or contractor.

### 2. Infiltration Planters

Planter boxes capture runoff from downspouts or sheet flow from plazas and paved areas. The runoff briefly floods the surface of the box and then percolates through an active soil layer to drain rock below. Typical maintenance consists of the following:

- Examine downspouts from rooftops or sheet flow from paving to ensure that flow to the planter is unimpeded. Remove any debris and repair any damaged pipes. Check splash blocks or rocks and repair, replace, or replenish as necessary.
- Examine the overflow pipe to make sure that it can safely convey excess flows to a storm drain. Repair or replace any damaged or disconnected piping.
- Check the underdrain piping to make sure it is intact and unobstructed.
- Observe the structure of the box and fix any holes, cracks, rotting, or failure.
- Check that the soil is at the appropriate depth to allow a reservoir above the soil surface and is sufficient to effectively filter stormwater. Remove any accumulations of sediment, litter, and debris. Till or replace soil as necessary. Confirm that soil is not clogging and that the planter will drain within 3-4 hours after a storm event.
- Determine whether the vegetation is dense and healthy. Replace dead plants. Prune or remove any overgrown plants or shrubs that may interface with planter operation. Clean up fallen leaves or debris and replenish mulch. Remove any nuisance or invasive vegetation.

## Stormwater Control Plan – Wal-Mart, Antioch

### VII. Construction Plan C.3 Checklist

Stormwater Control Plan Reference	BMP Description	Plan Sheet Number
Table 4, Exhibit, and Section II.C	Self-retaining Areas SR-1 thru SR-16 graded to retain first inch of rainfall.	
Table 5 thru Table 9, Exhibit, and Section III.B	Planters PL1, PL-2, PL-3, PL-4 and Bioretention Area BR-1 sized as specified and designed to capture and route drainage from areas delineated on Exhibit.	
Table 2	On-site drain inlets (if any) to be marked with “no dumping” message.	
Table 2	Preserve of any native trees, shrubs, or ground cover.	
Table 2	Plant selection to minimize irrigation, minimize use of fertilizers and pesticides, and for pest assistance.	
Table 2	Any know food service facilities at time of construction required to have suitably sized interior mop sink.	
Table 2, Exhibit	Drain from trash enclosure in building to be connected to sanitary sewer via grease interceptor.	
Table 2	Trash enclosure adjacent to building to be bermed and roofed.	
Table 2	Dumpsters to be marked with “No dumping of hazardous materials or similar	
Table 2	Adequate litter receptacles throughout the commercial area.	
Table 2	Condensate drain lines discharge to landscaped areas or sanitary sewer.	
Table 2	Rooftop mounted equipment to be roofed or covered to prevent pollutants from entering runoff.	
Table 2	Drainage sumps feature sediment sump	
Table 2	Fire sprinkler test valves to be equipped to drain less water to sanitary.	
Table 2	No roofing, gutters, trim made of copper, or unprotected metals that may leach into runoff.	

### VIII. Certification

The selection, sizing, and preliminary design of treatment BMPs and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2003-0022.



**APPENDIX**



## Stormwater Control Plan – Wal-Mart, Antioch Summary Report

Project Name: Wal-Mart, Antioch  
Project Location: 4893 Lone Tree Way, Antioch, CA, 94509  
APN or Subdivision Number: 056-011-030-6  
Total Project Area (square feet): 273,732  
Mean Annual Precipitation at Project Site: 13.3 inches  
IMPs designed for: Treatment and flow control

**Table 3. Self-treating areas**

DMA Name	Area (square feet)
ST-1	943
ST-2	8,757
ST-3	778
Total	10,478

**Table 4. Self-retaining areas**

DMA Name	Area (square feet)
SR-1	833
SR-2	242
SR-3	60
SR-4	60
SR-5	60
SR-6	60
SR-7	60
SR-8	186
SR-9	250
SR-10	60
SR-11	60
SR-12	60
SR-13	60
SR-14	60
SR-15	366
SR-16	259
SR-17	174
SR-18	173
SR-19	130
SR-20	174
SR-21	174
SR-22	183
SR-23	429
SR-24	174
SR-25	183
SR-26	174
SR-27	199
SR-28	174
SR-29	221
SR-30	502
SR-31	96
SR-32	324
Total	6,220



## Stormwater Control Plan – Wal-Mart, Antioch Summary Report

**Table 9.**

DMA Name	DMA Area (sq. ft.)	Post-project surface type	Runoff Factor	(DMA area) x (runoff factor)	Soil Group	IMP Name/Type			
					D	BR-1/Bioretention Area			
					IMP sizing factor	Rainfall adjustment factor	Minimum IMP size	Proposed IMP size	Orifice Diameter
PAVE-4	22,074	Concrete/Asphalt	1.0	22,074					
ROOF-1	38,406	Roof	1.0	38,406					
				Total	0.06	1.30	4,717 sf	5,583 sf	2.53 in

**Table 10. Tabulation of Site Areas (sq. ft.)**

Total Area of Self-Treating Areas	10,478
Total Area of Self Retaining Areas	6,220
Total Area of DMA draining to Self-Retaining Areas	0
Total Area of IMPs	15,275
Total Area of DMA draining to IMPs	170,237
Total Area of untreated stormwater <sup>(1)</sup>	71,522
<b>Total Area of Site</b>	<b>273,732</b>

<sup>(1)</sup> It is impracticable to treat 68,648 square feet of the untreated stormwater. Refer to Section I.C. – Opportunities and Constraints for Stormwater Control for further explanation. The remaining 2,874 square feet of untreated impervious area comprises 1% of the total area of the site.



# **APPENDIX F**

## **Economic Impact Report**

**Prepared by**

**Bay Area Economics (BAE)**

**July 2009**





**RETAIL MARKET IMPACT ANALYSIS  
FOR  
PROPOSED WAL-MART EXPANSION  
IN ANTIOCH, CALIFORNIA**

**Prepared for:**  
City of Antioch

**Prepared by:**  
Bay Area Economics

July, 2009

**Bay Area Economics**

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## Introduction

### Background and Study Purpose

The City of Antioch has received a proposal to expand the existing 141,498 square foot Wal-Mart in the City to a 175,073 square foot store in the Supercenter format, which includes the equivalent of a full supermarket within the store along with general merchandise. As part of its evaluation of the proposed specific plan, the City of Antioch has retained Bert Verrips to complete an Environmental Impact Report (EIR). Recent California court decisions (*Bakersfield Citizens for Local Control v. City of Bakersfield*, *Panama 99 Properties LLC*, and *Castle & Cooke Commercial-CA, Inc.*, as well as *Dolan Ingram, et al. v. City of Redding and Wal-Mart, Inc, et al.*) have made clear that for large retail developments, an economic impact analysis should be undertaken to assess the possibility of “urban decay” and deterioration and indirect physical impacts on the environment. In the Bakersfield decision, the Appellate Court made clear that such an impact needed to be given “meaningful consideration.” Both cases indicate that to fully satisfy the requirements of an EIR, the analysis must start with the economic impacts, but also follow the causal chain to assess the likelihood of new retail space causing existing space to become vacant, and following that outcome, determine the potential for urban decay and physical deterioration of existing retail centers and nodes. The EIR prime consultant has retained Bay Area Economics (BAE) to undertake an economic impact analysis as part of the EIR process for this project. BAE aims to use the best available information to assess the economic impacts and then establish whether these economic impacts might result in closure of existing businesses and sustained long-term vacancy of buildings, which could lead to a negative effect on the physical environment of Antioch and the surrounding communities as manifested by urban decay and physical deterioration of existing retail centers.

### Project Description

The Wal-Mart expansion (the “Proposed Project”) consists of an expansion of the existing Wal-Mart store in Antioch at 4893 Lone Tree Way in the Williamson Ranch Plaza from 141,498 square feet total to 175,073 square feet, including the outdoor garden center. The expansion consists largely of the addition of grocery sales and support areas, effectively creating a full-service supermarket within the store. Table 1 provides a detailed breakdown of the square footage of the store following the proposed expansion. Based on the proportion of sales space devoted to groceries, 20.5 percent of the stockroom/ancillary space has been allocated to the grocery use. Combining the sales and sale support space with this allocation of stockroom/ancillary space, and rounding up to the nearest thousand, it is estimated that the Supercenter will contain 40,000 square feet of supermarket-equivalent space. This 40,000 square-foot estimate is used for the remainder of this analysis as the assumed total supermarket-equivalent space. The proportion of the proposed store devoted to general merchandise and other uses is reduced by approximately 6,400 square feet.

**Table 1: Proposed Project Development Information**

<u>Type of Space</u>	<u>Square Feet</u>
General Merchandise Sales	105,239
Grocery Sales	27,146
Grocery Sales Support	7,875
Stockroom/Receiving	16,243
Ancillary	7,142
Tire & Lube Express	5,346
Food Tenant Area	1,196
<b>Total Building Area</b>	<b>170,187</b>
Outdoor Garden Center	4,886
<b>Grand Total Area</b>	<b>175,073</b>
<b><u>Total Supermarket-Equivalent Space</u></b>	
Grocery Sales	27,146
Grocery Sales Support	7,875
Stockroom/Ancillary Allocation	4,794
Calculated Supermarket-Equivalent Area	39,815
<b>Assumed Supermarket-Equivalent Area</b>	<b>40,000</b>

Source: Perkowitz + Ruth Architects and Robert A. Karn & Associates, Inc., October, 2008.

As currently scheduled, project completion is scheduled for the latter half of 2010. For this analysis, it is assumed that the project opens at the beginning of 2010; this is a worst case scenario with respect to impacts; using a later date would allow some increase in overall trade sales potential (assuming even limited population growth) that would lessen any impacts from the proposed expansion.

### **Approach**

The purpose of this report is not to directly assess whether the retail market area can support this project, but to assess the impacts of the proposed project assuming that it is constructed as planned. The analysis assumes that this will be a fully functioning store, achieving a level of sales revenue reflective of the national averages or other appropriate benchmarks for the project. This is considered a reasonable and defensible basis upon which to evaluate the potential economic impacts of the proposed project. It should be noted that BAE's analysis for this project commenced and was initially conducted in July and August of 2008. However, because of changes in on-the-ground conditions, the City of Antioch provided an updated list of planned and proposed projects in January 2009, and BAE subsequently updated information from the other nearby cities, and undertook an additional area tour in March 2009. BAE also updated its baseline for the supermarket impact analysis to reflect store openings within the trade area into mid-March 2009. The data and analysis based on taxable retail sales data is still derived from the most recent available data as of August 2008. The population projections and demographic analysis are based

on ABAG data published in 2007, which is the most recent available data as of July 2009. BAE recognizes that over the course of the EIR process, conditions may change rapidly, especially in the current economic environment; BAE attempts to take the current economic downturn into consideration with the presentation and analysis of a “delayed growth scenario,” described subsequently, although future economic conditions may vary from those assumed in that scenario (i.e., conditions could be less severe or more severe than those reflected in the delayed growth scenario). In addition, information that has come to light in the first half of 2009, subsequent to the completion of the baseline economic analysis, such as news of store closings within the trade area, has been noted where applicable and incorporated into the analysis as appropriate. In summary, the conditions evaluated in this report reflect information that was available and conditions that prevailed as of late 2008/early 2009.

## **Population and Employment Overview**

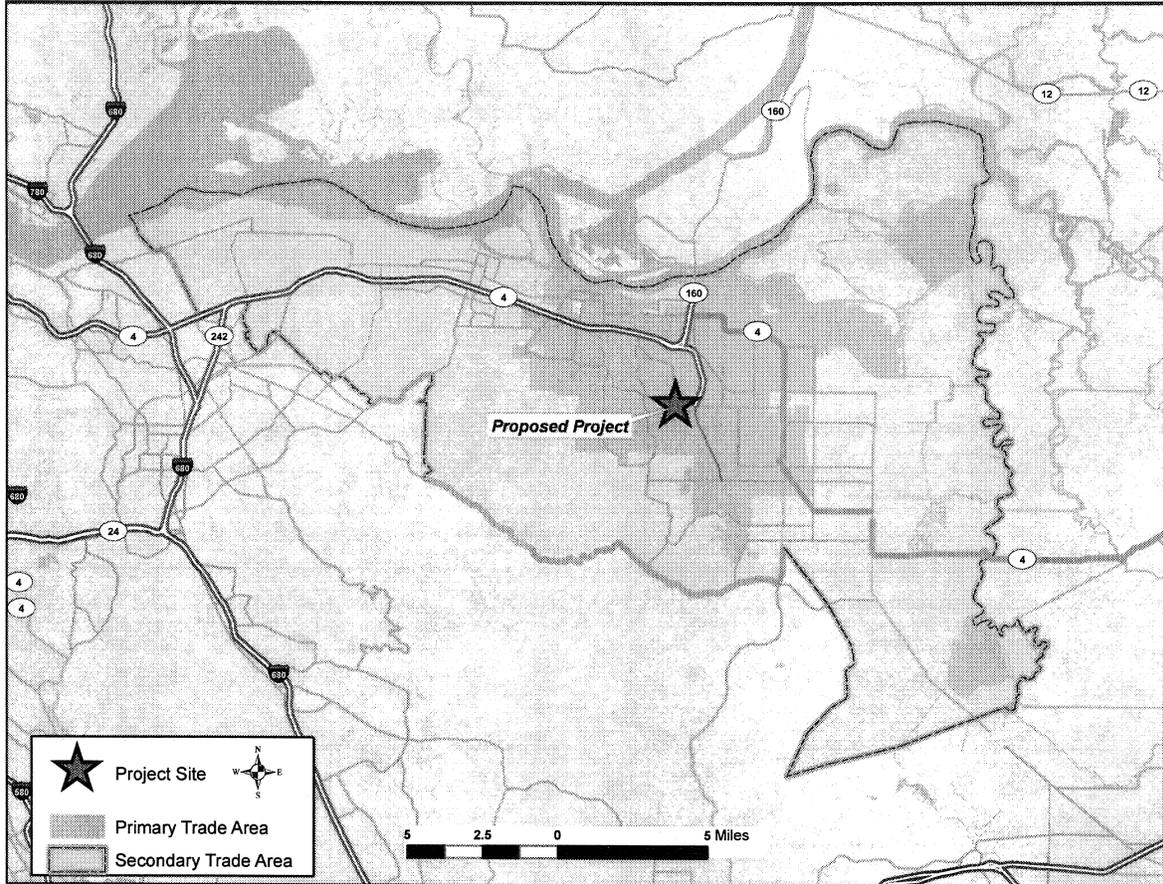
### **Introduction**

This section presents background information on historic, current, and projected demographic and economic conditions in Antioch and surrounding areas in eastern Contra Costa County. Estimates for 2010, assumed to be the first full year of operation for the expanded store, are also provided, as are estimates for 2015. Developing an economic and demographic profile of these areas will provide background information to assist in estimating future retail sales in the area and in assessing the potential impacts of the Proposed Project on other retail outlets and centers. Data sources include the U.S. Census Bureau, including the 2000 Census and the 2002 Census of Retail Trade, the California Employment Development Department (EDD), the State Department of Finance (DOF) Demographic Research Unit, and projections from the Association of Bay Area Governments (ABAG).

### **Definition of Analysis Areas**

A trade area is the geographic region that encompasses most of a retail outlet's customers. This report uses two areas of analysis: a Primary Trade Area (PTA) consisting of the Cities of Antioch, Brentwood, and Oakley, which is assumed to provide the majority of shoppers at the Proposed Project; and a Secondary Trade Area (STA) providing most of the remaining shoppers and comprising a wider swath of East Contra Costa County including Pittsburg, Bay Point, and other unincorporated areas surrounding the Primary Trade Area (see Figure 1 and Appendix A). These definitions are based on the location of other existing and major retail nodes, including the Wal-Mart in Pittsburg, the distance to other Supercenters (e.g., planned Supercenters in Tracy and Suisun City), and on the relative distance and isolation from other major urbanized areas. The Primary Trade Area includes the populated areas within approximately five miles; the Secondary Trade Area extends out approximately 10 to 15 miles and its populated areas are largely separated from other population concentrations such as Concord and Martinez. The only other Wal-Mart within the Secondary Trade Area is in Pittsburg, and this store is not currently a Supercenter or slated for conversion/expansion to that format. The primary attraction of the Proposed Project to residents in the Secondary Trade Area is not convenience through proximity, but convenience through the availability of one-stop shopping or lower prices. While at one time there was a Wal-Mart Supercenter planned for River Oaks Crossing in Oakley which would have effectively bifurcated the Primary Trade Area, that proposal has been formally withdrawn, and the approved River Oaks Crossing Specific Plan, as recently amended, includes restrictions that effectively disallow a superstore-type use (i.e., prohibits stores greater than 100,000 square feet in size with a least 10 percent of the sales area dedicated to non-taxable merchandise). The isolation of the Primary and Secondary Trade Areas from other population concentrations means that few shoppers are likely to venture to the Proposed Project from beyond those areas, effectively eliminating any potential significant impacts outside the Trade Areas.

Figure 1: Primary and Secondary Trade Areas



## Population Trends

### *Short-Term Trends*

In recent years, eastern Contra Costa County has seen rapid growth, but from 2005 onward, the rate of growth declines. Between 1990 and 2005, the PTA population nearly doubled, growing from 88,132 to 174,550 persons, growing at an annual compound rate of 4.7 percent (see Table 2). Over the same period, the STA population grew more slowly, from 81,261 to 107,309, at an annual compound rate of 1.9 percent. This is above the rate of growth for Contra Costa County as a whole which grew at an annual compound rate of 1.6 percent from 1990 to 2005. Since then growth has slowed considerably for the PTA and STA; between 2005 and 2010, growth is projected at only 1.6 per annum for the PTA and at 1.1 percent for the STA. Future growth from 2010 through 2015 is projected at a similar pace, with the PTA population reaching 204,050 and the STA population reaching 119,078 by 2015.<sup>1</sup>

<sup>1</sup> Because of the housing foreclosure crisis and general economic conditions, it is possible that these projections will not be reached. The analysis below takes into account a “delayed growth” scenario with

Currently, the Primary Trade Area Population is estimated at 189,250, and the Secondary Trade Area population is estimated at 110,868. The City of Antioch comprises 57 percent of the PTA population.

<b>Population</b>	<b>1990</b>	<b>2005</b>	<b>Average Annual Change 1990-2005</b>	<b>2008 (a)</b>	<b>2010</b>	<b>Average Annual Change 2005-2010</b>	<b>2015</b>	<b>Average Annual Change 2010-2015</b>
<b>Antioch (b)</b>	62,195	101,500	3.3%	104,177	106,000	0.9%	110,400	0.8%
<b>Primary Trade Area (b)</b>	88,132	174,550	4.7%	183,227	189,250	1.6%	204,050	1.5%
<b>Secondary Trade Area (b)(c)</b>	81,261	107,309	1.9%	110,868	113,306	1.1%	119,078	1.0%
<b>Contra Costa County (b)</b>	803,732	1,023,400	1.6%	1,046,329	1,061,900	0.7%	1,107,300	0.8%

(a) 2008 estimate for Antioch, PTA, STA, and County derived by assuming a constant rate of growth per ABAG Projections from 2005 through 2010. Estimates for Antioch, PTA, and County are within 2 percent of DOF estimates. No DOF estimate available for STA.

(b) 2005, 2010, and 2015 from ABAG. Estimates for Antioch, PTA, and County for 2005 are within two percent of DOF estimate. No DOF estimate available for STA.

(c) 1990 data for a slightly different area due to changes in Census Tract Boundaries. Areas that are different are sparsely populated, so there should be no substantial effect on the analysis from using this slightly different area.

Sources: 1990 & 2000 U.S. Census; Association of Bay Area Governments (ABAG) *Projections 2007*; State Department of Finance (DOF), 2007 & 2008; BAE, 2008.

### ***Long Term Trends***

Long term, the population of the Primary Trade Area and the Secondary Trade Area is projected to increase in the future at levels similar to but slightly below the rate estimated for 2010 through 2015 (see Table 3). By 2030, the Primary Trade Area population is projected to be slightly less than 250,000 persons; the Secondary Trade Area population is projected at approximately 143,000. This long-term growth should sustain continued growth in retail demand in eastern Contra Costa County. It should be noted that despite current economic and housing market conditions, in the long term the Bay Area expects continued employment and population growth, with a chronic shortage of housing; the short-term correction currently underway does not change this underlying imbalance between jobs and housing that continues to drive the area's housing market. The Primary Market Area represents one of the few places in the region with land available for new large-scale development.

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expected population growth between 2008 and 2010 and beyond delayed two years on the assumption that long term the economy will recover and growth will resume.

Population (a)	2010	2020	2030	Annual % Change 2010-2030
Antioch	106,000	115,000	124,000	0.8%
Primary Trade Area	189,250	218,250	246,950	1.3%
Secondary Trade Area	113,306	126,490	143,148	1.2%
Contra Costa County	1,061,900	1,157,000	1,255,300	0.8%

(a) Projections from ABAG.

Sources: Association of Bay Area Governments (ABAG) *Projections 2007*; BAE, 2008.

## Household Trends

### *Household Growth*

As shown in Table 4, the rates of household growth in the Primary Trade Area and the Secondary Trade Area mirror the respective population growth rates of the two areas. PTA households will increase from 44,667 households in 2000 to 66,520 households in 2015. STA households will increase from 33,978 to 39,096 households over the same period. As of 2008, the PTA has an estimated 58,894 households, and the STA has 35,962 estimated households.

Households (a)	2000	2005	Average Annual Change 2000-2005	2008	2010	Average Annual Change 2005-2010	2015	Average Annual Change 2005-2015
Antioch	29,338	32,760	2.2%	33,828	34,560	1.1%	36,360	1.0%
Primary Trade Area	44,667	55,760	4.5%	58,894	61,080	1.8%	66,520	1.8%
Secondary Trade Area	31,978	34,565	1.6%	35,962	36,925	1.3%	39,096	1.2%
Contra Costa County	344,129	368,310	1.4%	378,471	385,400	0.9%	405,420	1.0%

(a) Projections from ABAG. 2008 estimates derived by assuming a constant rate of growth from 2005 through 2010.

Sources: 2000 U.S. Census; Association of Bay Area Governments (ABAG) *Projections 2007*; BAE, 2008.

### *Household Income*

Household incomes and resulting consumer buying power are key factors in assessing the potential for additional retail development. Based on ABAG's *Projections 2007*, relative to Contra Costa County's 2005 mean household income of \$98,400 (all incomes in constant 2005 dollars), the Primary Trade Area had a lower mean household income of \$85,338 (see Table 5). The STA's 2005 mean income was estimated at \$77,050. All the local geographies are projected to have growth in real household income after 2005, potentially increasing the per capita spending for the areas. While the PTA and STA have lower income levels than the County or the region, they did not experience the same decline in real incomes shown for those larger geographies in the early part of this decade (likely due to the dot-com implosion). As a result, while the PTA's mean

household income was only 81 percent of the region's in 2000, in 2005 and 2010 it is estimated at 88 percent of the regional average. However, PTA incomes are above estimated statewide levels.

**Table 5: Mean Household Income**

<u>Households</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
<b>Antioch (a)</b>	\$81,700	\$83,300	\$87,400
<b>Primary Trade Area (a)</b>	\$84,018	\$85,338	\$90,099
<b>Secondary Trade Area</b>	\$76,121	\$77,050	\$78,614
<b>Contra Costa County</b>	\$100,500	\$98,400	\$103,400
<b>ABAG Region (c)</b>	\$104,000	\$97,400	\$102,100
<b>California (d)</b>	na	\$74,043	na
<b>PTA as % of Region</b>	81%	88%	88%

Notes: All incomes in constant 2005 dollars.  
 (a) Sphere of influence, which is a slightly larger area than the incorporated City.  
 (b) PTA consists of the spheres of influence for Antioch, Brentwood, and Oakley.  
 (c) Nine-county ABAG region includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties.  
 (d) Based on American Community Survey data from U.S. Census. No projection to 2010 available, and 2000 not available in 2005 dollars.

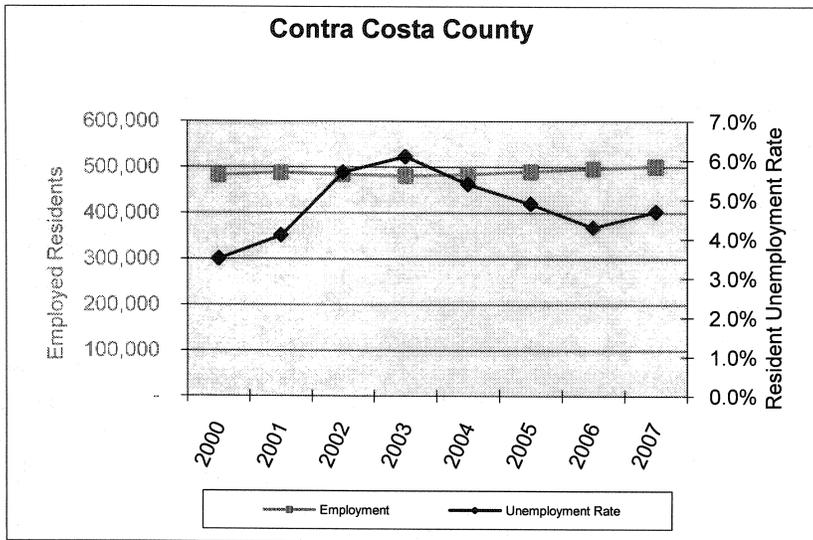
Sources: Association of Bay Area Governments (ABAG) *Projections 2007*; U.S. Census American Community Survey, 2005; BAE, 2008.

## Labor Force Trends

Employment levels are an indicator of regional buying power; unemployed workers and their households will have reduced incomes and lower expenditures. Growth in the employed labor force of an area can indicate increased buying power. As shown in Figure 2, Contra Costa County has seen a modest increase in the number of employed residents since 2000.<sup>2</sup> Unemployment declined from a peak of 6.1 percent in 2003 to 4.3 percent in 2006, but since then has edged upward to 4.7 percent on average in 2007, and reached 5.8 percent in May 2008 (most recent data available at time of analysis). These recent trends mirror problems in the national economy, and eastern Contra Costa County may be more adversely affected due to the ongoing foreclosure crisis and the decline in construction of new housing in the area.

<sup>2</sup> Because of the rapid population increase in the Primary Trade Area, the estimates of the labor force, employment, and unemployment for that area from the state Employment Development Department have been deemed unreliable. In 2000, the PTA's unemployment rate was 3.6 percent, narrowly above the 3.5 percent rate for the County at that time.

**Figure 2: Employed Residents and Unemployment Rate**



Data presented are for residents of the area by place of residence, not workers by place of work. For detailed data, see Appendix B.

Sources: California Employment Development Department; Bay Area Economics, 2008.

## Retail Sales Analysis

This section examines general retail trends in Antioch, the Primary Trade Area, and Contra Costa County. The analysis covers overall retail sales, and also food stores as a subcategory, since the expansion proposed consists largely of the equivalent of a supermarket. Ending this chapter is a leakage and supportable square footage analysis for the Primary Trade Area.

### Overall Retail Sales

As shown in Figure 3, in the early part of this decade, Antioch's total taxable retail sales<sup>3</sup> increased at a somewhat more rapid rate than population, and have continued to grow at a slower rate as the City's population has leveled off and declined slightly since 2004. Since 2000, taxable retail sales have increased every year from \$665.9 million in 2000 to \$929.4 million in the most recent four quarters for an overall increase of 40 percent, while population only increased ten percent.<sup>4</sup> The substantial increase between 2003 and 2004 likely reflects the 2003 opening of Slatten Ranch Shopping Center, a 430,000 square foot retail center anchored by Target, Barnes & Noble, Mervyns<sup>5</sup> and other big-box retailers. As the home to two Lowe's and Somersville Towne Center, the only traditional mall in the area, as well as the growing retail node at Slatten Ranch, Antioch has established itself with the most region-serving retail in eastern Contra Costa County. Antioch's sales trends suggest the market has grown quickly, but the rapid emergence of neighboring Brentwood (see below) and possibly Oakley in the future as competing retail centers will most likely challenge Antioch's future retail sales growth.

Brentwood's population has shown steady growth since 2000, and taxable retail sales have increased at an especially rapid clip over the last few years. Both the population and taxable retail sales have more than doubled, with annual sales rising from \$156.6 million in 2000 to \$373.5 million in the most recent annual period and population increasing from 23,302 to 47,224 over the same period. Two recently opened retail centers most likely account for the nearly 50 percent increase in taxable retail sales in Brentwood from 2003 to 2004; the WinCo center opened in 2003 and Lone Tree Plaza, with a Home Depot, Kohl's, Sports Authority, and other stores, opened in 2004. With the 460,000 square-foot Streets of Brentwood currently under construction and opening slated for later this year, and several other retail projects in the pipeline, Brentwood has become much more competitive in the regional retail market, challenging Antioch's dominant position.

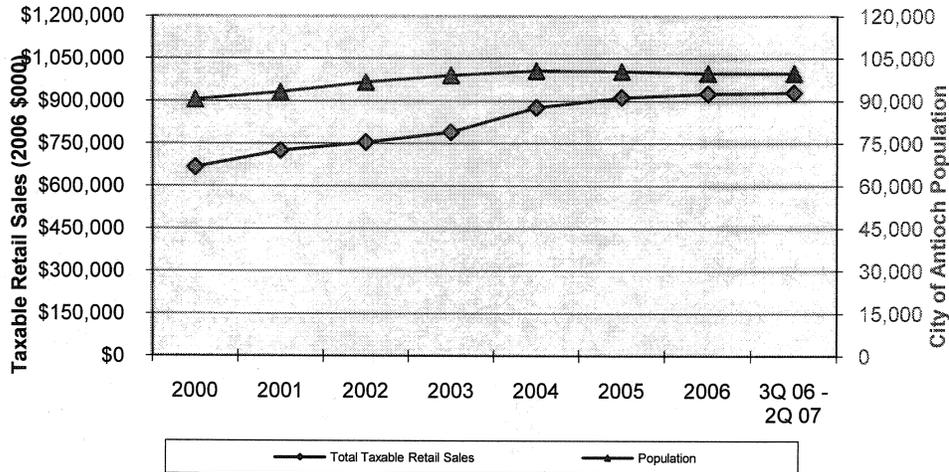
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<sup>3</sup> In California, the State Board of Equalization provides retail sales data by store type for most counties and for larger cities. This is the most up-to-date and reliable source available, but it only includes taxable sales. Most food items, prescription drugs, and certain other items are exempt from sales tax, so the reported taxable sales data excludes these non-taxable sales. Later in this section of the report, taxable sales as a proportion of total sales in supermarkets will be assessed.

<sup>4</sup> All sales in inflation-adjusted 2006 dollars unless otherwise noted.

<sup>5</sup> The Mervyns stores in Somersville Towne Center and in Slatten Ranch closed while this analysis was underway, following the liquidation of the entire Mervyns chain. These stores are currently vacant and available for lease.

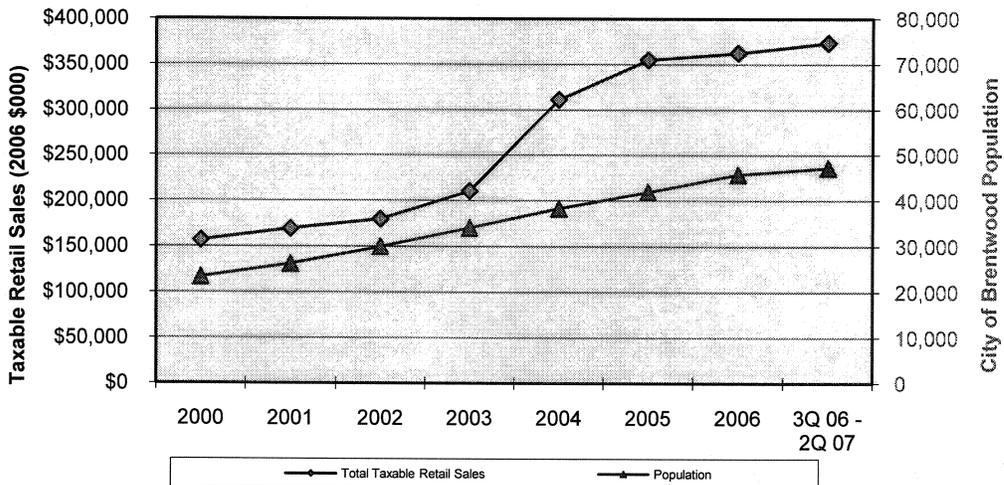
**Figure 3: Antioch Taxable Retail Sales and Population, 2000-2007**



Notes: Population data from State Department of Finance. May vary from other sources. Sales here are taxable sales only, and exclude most food sales as well as prescription drugs and certain other items. Sales are presented in 2006 dollars. For details, see Appendix C.

Sources: State Board of Equalization; 2000 U.S. Census; State Department of Finance; Bay Area Economics, 2008.

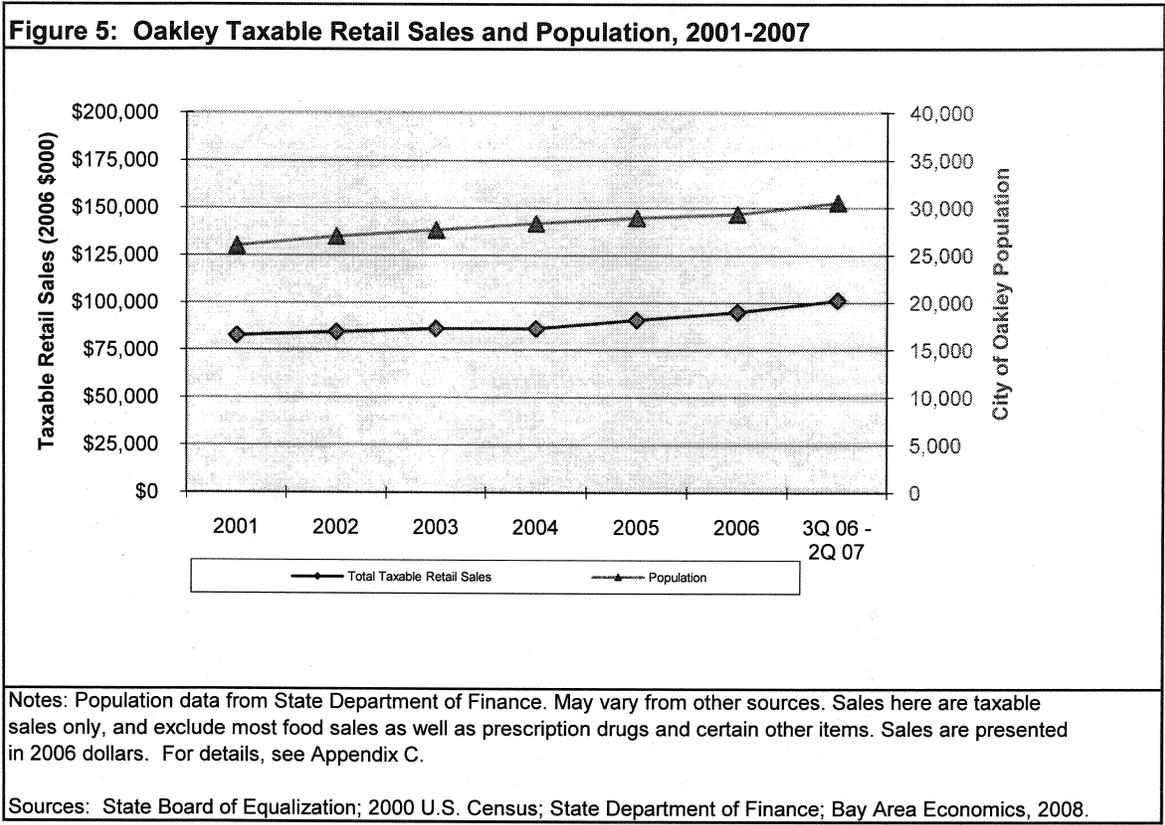
**Figure 4: Brentwood Taxable Retail Sales and Population, 2000-2007**



Notes: Population data from State Department of Finance. May vary from other sources. Sales here are taxable sales only, and exclude most food sales as well as prescription drugs and certain other items. Sales are presented in 2006 dollars. For details, see Appendix C.

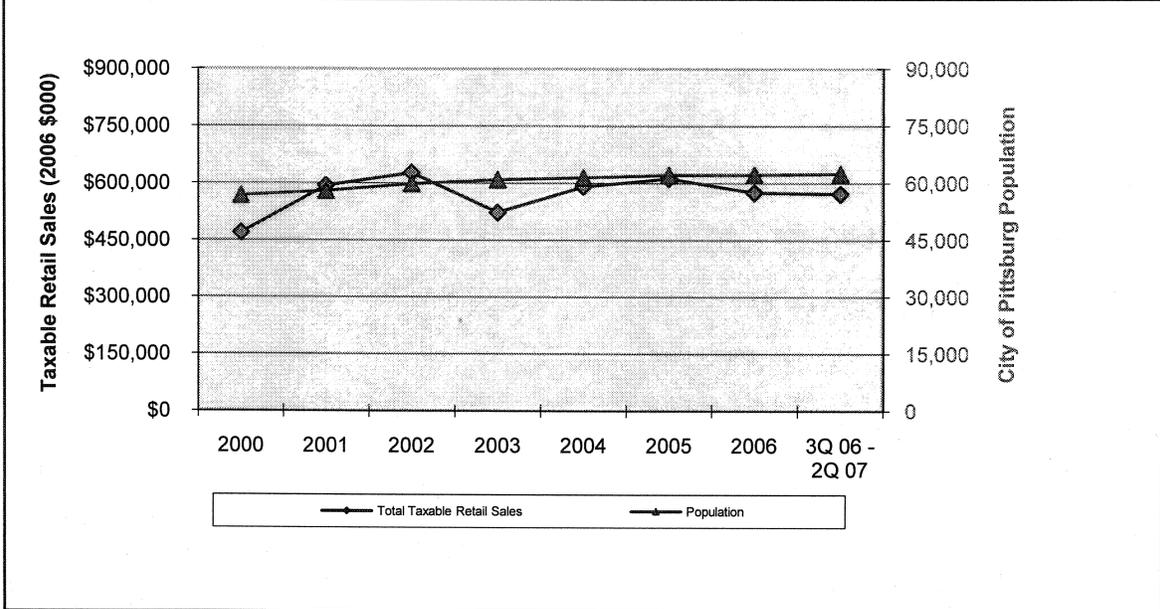
Sources: State Board of Equalization; 2000 U.S. Census; State Department of Finance; Bay Area Economics, 2008.

As the County's youngest city, Oakley incorporated in 1999; detailed taxable sales data for Oakley are unavailable for years prior to 2001. Currently, Oakley does not have any large region-serving retail centers, and its limited growth in taxable retail sales with a rising population strongly suggests that surrounding cities are capturing sales from Oakley residents. In the most recent annual period, Oakley's taxable retail sales are only 11 percent of Antioch's, and only 27 percent of Brentwood's (see Figure 5).



Pittsburg has not been designated as part of the Primary Trade Area due to its greater distance from the Proposed Project and the presence of another Wal-Mart (albeit not a Supercenter), but the city has the only major concentrations of retail in the Secondary Trade Area, which otherwise consists of unincorporated areas with limited retail offerings. Pittsburg's taxable retail sales climbed in the early part of this decade, but sales levels have remained relatively flat since that time, with the peak in retail sales reached in 2002 (see Figure 6). Inflation-adjusted sales in the most recent annual period are only 22 percent above 2000 figures, compared to a 40 percent increase in Brentwood and 38 percent in Antioch. The decline and limited recovery since 2002 may reflect the opening of new retail centers in Antioch and Brentwood, especially on Lone Tree Way in the Slatten Ranch area. Pittsburg and Antioch are both relatively built out in comparison to Brentwood and Oakley, and thus have shown slower population growth, but Antioch has seen a much more rapid rate of retail sales growth than Pittsburg despite similar rates of population increase (10 percent over the period).

**Figure 6: Pittsburg Taxable Retail Sales and Population, 2000-2007**



Notes: Population data from State Department of Finance. May vary from other sources. Sales here are taxable sales only, and exclude most food sales as well as prescription drugs and certain other items. Sales are presented in 2006 dollars. For details, see Appendix C.

Sources: State Board of Equalization; 2000 U.S. Census; State Department of Finance; Bay Area Economics, 2008.

Table 6 below summarizes estimated retail sales in the four cities, the Primary Trade Area, as well as Contra Costa County and California. This table includes adjustments to include non-taxable sales, as well as estimates for non-disclosed categories in Oakley. Antioch continues to have a greater share of sales relative to its population, with 64 percent of retail sales and only 56 percent of the PTA’s population. Brentwood’s proportion of sales is nearly the same as its population, while Oakley has only eight percent of the PTA’s sales but 17 percent of its population. The PTA has 14 percent of the County’s sales, and 17 percent of the County’s population.

**Table 6: Comparative Estimated Retail Sales, 3rd Quarter 2006 through 2nd Quarter 2007**

	Antioch	Brentwood	Oakley	Primary Trade Area	Pittsburg	Contra Costa County	California
<b>Sales in 2006 \$1,000 (a) (b) (c)</b>							
Apparel Stores	\$31,888	\$26,728	\$275	\$58,891	\$15,965	\$469,534	\$20,562,077
General Merchandise Stores	\$281,654	\$20,808	\$6,500	\$308,962	\$106,336	\$2,390,068	\$79,549,422
Food Stores	\$153,506	\$128,489	\$50,000	\$331,996	\$76,473	\$2,120,755	\$69,747,973
Eating and Drinking Places	\$93,537	\$46,325	\$14,036	\$153,898	\$59,266	\$1,116,522	\$50,622,163
Home Furnishings and Appliances	\$22,826	\$16,513	\$2,266	\$41,605	\$19,263	\$446,980	\$17,203,492
Building Materials	\$113,194	\$62,595	\$2,500	\$178,289	\$75,503	\$1,021,681	\$37,402,711
Motor Vehicles and Parts	\$181,834	\$58,441	\$14,970	\$255,245	\$166,188	\$1,870,583	\$72,358,087
Service Stations	\$95,449	\$67,540	\$38,549	\$201,538	\$47,274	\$1,270,348	\$45,052,385
Other Retail Stores	\$87,879	\$36,290	\$7,518	\$131,687	\$72,477	\$1,583,301	\$66,319,210
<b>Retail Stores Total</b>	<b>\$1,061,767</b>	<b>\$463,729</b>	<b>\$136,614</b>	<b>\$1,662,111</b>	<b>\$638,745</b>	<b>\$12,289,772</b>	<b>\$458,817,520</b>

**Retail Sales Total as % of PTA**

64% 28% 8%

	Antioch	Brentwood	Oakley	Primary Trade Area	Pittsburg	Contra Costa County	California
<b>Sales per Capita in 2006 \$ (c)</b>							
Apparel Stores	\$320	\$566	\$9	\$332	\$256	\$455	\$551
General Merchandise Stores	\$2,825	\$441	\$213	\$1,741	\$1,702	\$2,316	\$2,131
Food Stores	\$1,540	\$2,721	\$1,636	\$1,871	\$1,224	\$2,055	\$1,868
Eating and Drinking Places	\$938	\$981	\$459	\$867	\$949	\$1,082	\$1,356
Home Furnishings and Appliances	\$229	\$350	\$74	\$234	\$308	\$433	\$461
Building Materials	\$1,135	\$1,326	\$82	\$1,005	\$1,209	\$990	\$1,002
Motor Vehicles and Parts	\$1,824	\$1,238	\$490	\$1,438	\$2,660	\$1,813	\$1,938
Service Stations	\$957	\$1,430	\$1,262	\$1,136	\$757	\$1,231	\$1,207
Other Retail Stores	\$881	\$768	\$246	\$742	\$1,160	\$1,534	\$1,776
<b>Retail Stores Total (b)</b>	<b>\$10,649</b>	<b>\$9,820</b>	<b>\$4,471</b>	<b>\$9,365</b>	<b>\$10,226</b>	<b>\$11,910</b>	<b>\$12,289</b>

**Population**

99,704 47,224 30,555 177,482 62,465 1,031,907 37,337,019

**Population as % of PTA**

56% 27% 17%

**Notes:**

Third quarter 2006 through second quarter 2007 represents most recent data available.

(a) Retail sales have been adjusted to 2006 dollars based on the Taxable Sales Deflators calculated by the State Board of Equalization (BOE). 2007 deflation factor has not yet been calculated. No inflation assumed from 2006 through 2007. Given the low rate of inflation historically in this index, this is not an unreasonable assumption, and even if inflation is at a slightly higher level, it would not materially affect the analysis.

(b) Analysis excludes all non-retail outlets (business and personal services) reporting taxable sales.

(c) Sales have been adjusted to include non-taxable items, using available comparative data from the Census of Retail Trade (see Appendix D). Oakley sales for non-disclosed categories have been estimated based on a mix of sources, including quarterly data from BOE, the Census of Retail Trade, Trade Dimensions data, and data from the City of Oakley. Beginning with 2007, BOE has redefined their categories, so they are shown here. Note that since this period spans both sets of categories, some sales in some categories may be misclassified. However, these changes do not affect the general merchandise and food store categories critical to the analysis here, and any misclassification should not materially affect the analysis.

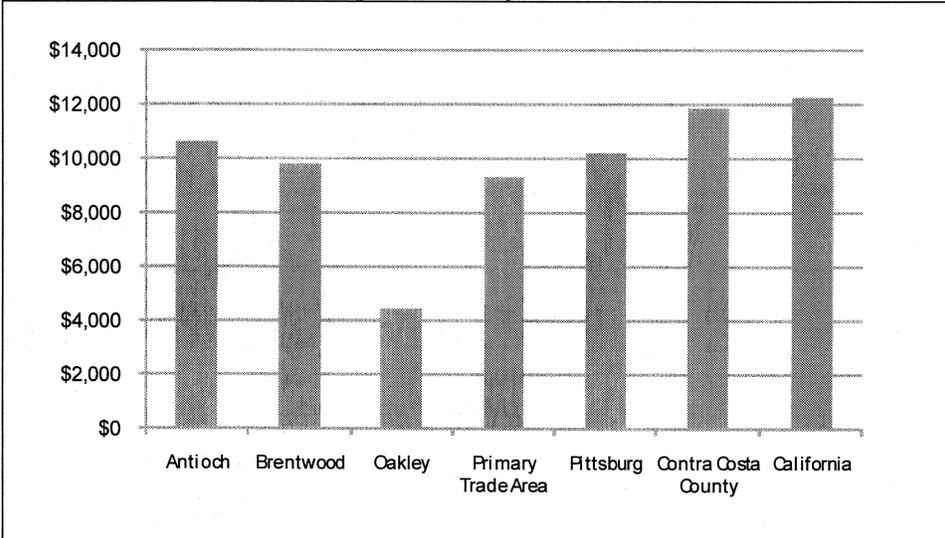
Sources: State Board of Equalization; State Department of Finance; Census of Retail Trade; Trade Dimensions; Bay Area Economics, 2008.

## Overall Per Capita Taxable Retail Sales

Per capita retail sales are a key indicator of the relative strength of a city as a retail destination; other factors being equal, higher per capita sales relative to a larger region point toward attraction of shoppers from outside the city. As shown in Figure 7 and Table 6, Antioch has the strongest per capita sales in eastern Contra Costa County, with estimated annual per capita sales of \$10,649

compared to \$9,365 for the entire PTA. Within the PTA, Brentwood also has per capita sales above the PTA as a whole with annual per capita sales estimated at \$9,820. Oakley again shows its weakness in retailing, with per capita sales estimated at only \$4,471 per annum. Overall, the PTA lags the County (\$11,910) and the State (\$12,289).

**Figure 7: Comparative Analysis, Per Capita Taxable Retail Sales**



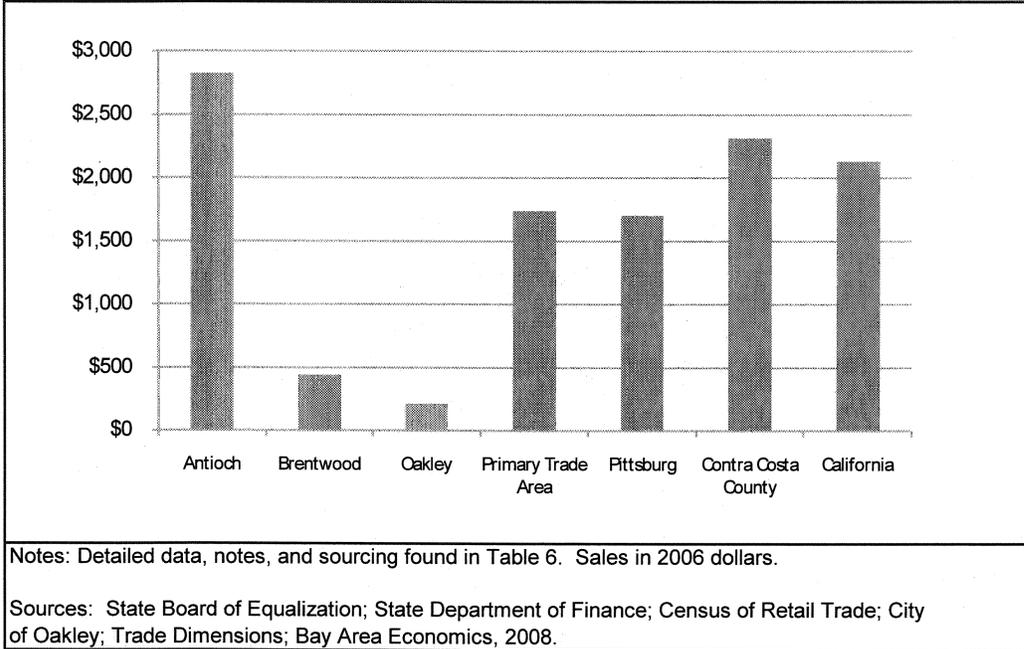
Notes: Detailed data, notes, and sourcing found in Table 6. Sales in 2006 dollars.

Sources: State Board of Equalization; State Department of Finance; Census of Retail Trade; City of Oakley; Trade Dimensions; Bay Area Economics, 2008.

### General Merchandise Store Sales

The net increase in the size of the Wal-Mart resulting from the proposed project will consist almost entirely of supermarket-equivalent space, but the remainder of the store will continue to function as a discount general merchandise store, with a broad variety of items available. For the PTA as a whole, Antioch is the dominant city for general merchandise, accounting for 94 percent of the reported taxable sales for this store category (see Table 6 above). While Brentwood has gained substantially in overall retail sales since 2000, it still does not have a major general merchandise store, and has only seen slight gains in this category. Oakley has extremely limited sales in this category, with the only major store being a Rite Aid drug store, and no larger outlets. Antioch's dominance is also reflected in estimated general merchandise store per capita total sales, where Antioch shows annual per capita taxable sales in this category of \$2,825 contrasted with only \$441 for Brentwood and \$213 for Oakley; Antioch is also well above the County at \$2,316 and the state at \$2,131 (see Figure 8). By comparison, annual per capita general merchandise sales for the PTA are estimated at \$1,741, indicating that the PTA overall might be losing sales to other locales.

**Figure 8: Comparative Analysis, Per Capita General Merchandise Store Sales**

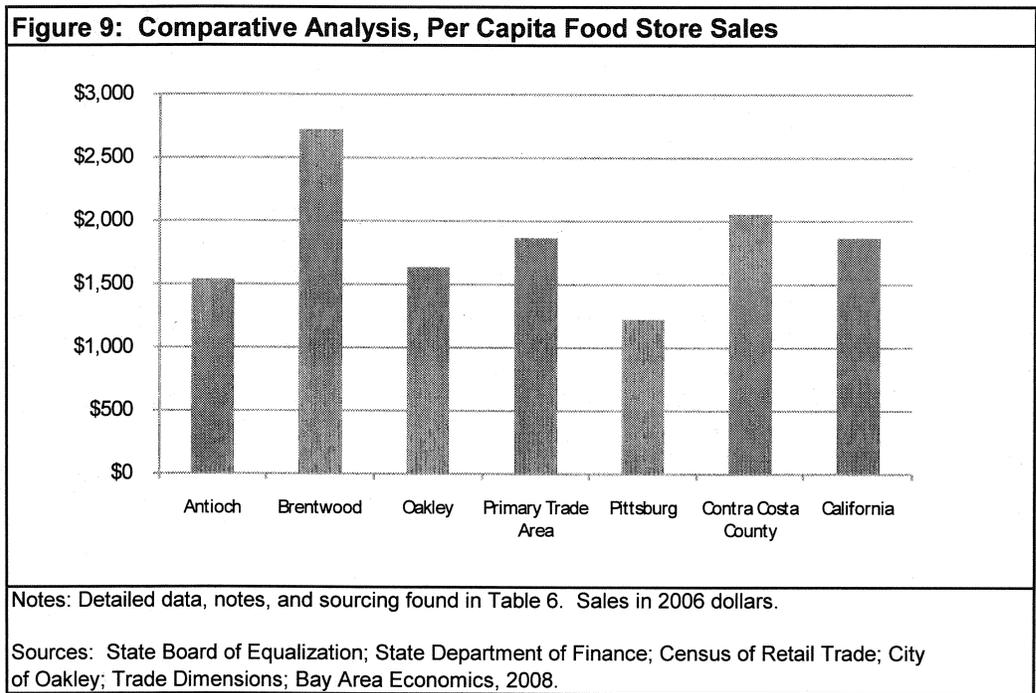


## Food Store Sales

Historically, food store sales tended to be very locally driven, with stores often located in neighborhood-serving retail centers and serving trade areas limited largely by proximity to consumers seeking everyday convenience purchases. This traditional role of food stores has changed as supermarkets have become larger, and as more specialized stores such as warehouse-format stores have developed. Stores such as Costco, Wal-Mart Supercenters, and WinCo tend to encourage more pantry-loading, with customers coming from a larger trade area. The increasing number of stores such as Costco and Wal-Mart Supercenters, where food is sold under the same roof as many other types of goods, appears to be shifting sales away from conventional food stores entirely. Specialized food stores such as Trader Joe's and Whole Foods also tend to attract shoppers from larger market areas than typical supermarkets. At the same time, however, some major chains are now opening smaller-format food stores (such as Tesco's Fresh & Easy stores, for which there are planned locations in the Primary Trade Area) intended to capture convenience-oriented shoppers who may not wish to take the time to venture to a superstore, warehouse club, or a large conventional supermarket. However, a region as large as the Primary Trade Area, or all of eastern Contra Costa County, is still likely to capture the large majority of its residents' food store purchases due in part to the need to get perishable items home in a relatively short period of time. Additionally, most food store types can be found within the area.

On a per capita basis, Brentwood has by far the strongest food store sales in the PTA, at an estimated \$2,721 per annum (see Figure 9). Antioch and Oakley have estimated annual per capita food store sales of \$1,540 and \$1,636, respectively. The likely explanation for these figures is the large WinCo store on Lone Tree Way, which is near the Antioch border and acts as a regional draw; food store sales in Antioch declined dramatically following the opening of the WinCo in

Brentwood. Additionally, Brentwood has historically had high per capita taxable food store sales; this may be due to lack of other retail types nearby, leading residents to purchase a higher proportion of non-food goods (such as small housewares and paper goods) at local supermarkets. Regionally, the PTA and California have very similar levels of annual per capita food store sales, with the PTA at \$1,871 and the State at \$1,868. Contra Costa County is slightly higher, at \$2,055. It should be noted that the sales data presented here predate the opening of the WinCo in Pittsburg. This new store, near the Antioch border, has almost certainly boosted Pittsburg's food store sales at the expense of Antioch and other nearby communities. With this store open, Antioch has a large region-serving supermarket use on both its eastern and western borders, with no equivalent directly competitive supermarket type space within the city.



### Retail Sales in Secondary Trade Area

Retail sales in the Secondary Trade Area are more difficult to estimate, since there are no published data specific to the unincorporated portion of the STA. Pittsburg has annual retail sales estimated in the baseline period at \$639 million; on a per capita basis, annual sales are \$10,226. The STA also includes retail outlets in unincorporated areas, especially in Bay Point and Discovery Bay. Bay Point has two supermarket-anchored centers and various other outlets, primarily along Willow Pass Road; Discovery Bay has a supermarket-anchored center.

Using an estimate derived from Zip Code Business Patterns, retail sales in the entire STA are estimated to be approximately \$790 million annually in 2006 (see Appendix E). Ninety percent of these sales are estimated to be in the Pittsburg/Bay Point portion of the STA; the estimates based on taxable sales data as noted above indicate these sales are largely within the City of Pittsburg,

reflecting the extremely limited retail offerings in unincorporated Bay Point. Unincorporated eastern Contra Costa County also has limited retail offerings, with total annual retail sales estimated at approximately \$72 million. On a per capita basis, the Secondary Trade Area lags the state despite the large inventory of retail outlets in Pittsburg. Annual per capita retail sales for the entire STA are estimated at \$7,256, below the statewide estimate of \$12,215. The eastern portion of the STA is particularly under-retailed, with estimated annual per capita retail sales of only \$4,616.

For the key category of general merchandise stores, the STA has per capita sales at a level less than two-thirds of the statewide figure, with virtually all of the sales in the Pittsburg/Bay Point area; food store per capita sales are at approximately 80 percent of statewide levels, indicating the more localized convenience-oriented nature of this store type. The STA shows even weaker per capita sales for the combined category of all other retail types, at only 54 percent of statewide levels.

These findings indicate that while Pittsburg holds its own as a retail destination, the overall STA has sales levels below statewide levels; many of the resident expenditures most likely occur in the retail nodes in the Primary Trade Area, due to the limited shopping options in the unincorporated portions of the STA.

BAE's survey of retail nodes in the unincorporated areas indicates that the largest and most common retail outlets are convenience-oriented, e.g. food stores and drug stores. As noted above, Bay Point has two supermarket-anchored centers (as well as numerous other smaller ethnic food stores on Willow Pass), and Discovery Bay has a center anchored by Safeway and Longs. For other types of shopping, the residents of these areas must venture to the incorporated cities. Bay Point residents are more likely to frequent Pittsburg (and perhaps Concord) while residents of unincorporated eastern Contra Costa County are more likely to shop in the Primary Trade Area cities.

## **Leakage Analysis and Demand for New Retail Space in the Primary Trade Area**

### ***Overview of Methodology***

Retail leakage analysis compares actual retail sales in an area with some benchmark that provides a measure of the potential sales generated by that area's residents. If sales levels are below the predicted level, the area may be able to support increased sales. This increase in sales could take the form of increased sales in existing outlets or in new outlets.

A lower-than-predicted sales volume implies that consumers are traveling outside the area to shop; thus, sales would be "leaking" out of the study area. Conversely, if the area shows more sales than would be expected from the area's characteristics, there would be sales "injections" into the study area. Often, an injection of sales indicates that the study area is serving as the regional shopping destination for a broader area. On the other hand, if an area shows substantial leakage, it may be due to the presence of a region-serving retail node outside the study area capturing those "leaked" sales. In such a case, the study area itself may not have sufficient population to support region-serving retail, and as a result those sales cannot expect to be captured within the study area.

There are a number of factors that can be used to predict sales levels, with the two most important factors being the number of persons in the area and the disposable income available to that population. Additional factors influencing retail spending in an area include household type, age of population, number of workers in the area (i.e., daytime population), tourism expenditures, tenure patterns (owner vs. renter), and cultural factors.

The Primary Trade Area functions largely as a relatively self-contained regional retail market, since most types of retail can be found within the PTA and the relative isolation from most other retail centers makes it likely that most residents expend most of their retail dollars within the PTA. However, per capita sales in many store categories are below those Countywide or Statewide, indicating that for some types of shopping, area residents may be venturing elsewhere. While the County, with its higher per capita sales levels, could also be considered as the benchmark, this would not take into account the lower household incomes found in the Primary Trade Area. While it would be a reasonable approach to use statewide levels as a benchmark, the State has higher per capita sales levels than the County despite the higher household incomes found in the County, indicating the County may have special characteristics in its spending patterns. BAE has chosen to use as a benchmark per capita figure either the statewide figure for a major retail store category or the Countywide figure as shown in Table 6, whichever is lower. The State actually has lower household incomes than the PTA, so in that way using statewide figures is conservative. But in cases where the County is lower, this may reflect localized spending patterns, so the lower figure is used. It should be noted that these numbers represent benchmarks, and should only be seen as general guidelines regarding expected sales rather than hard and fast rules on the exact amount of sales “leaking” out of the area or being captured by the area.

### ***Trade Area Sales Potential***

Using estimates based on the most recent published taxable sales data as a baseline and shown in Table 6 above, BAE has estimated the leakage of retail sales from the Primary Trade Area for that annual period (third quarter 2006 through second quarter 2007). This baseline year is used throughout the following analysis, except as noted; the results of this analysis are shown in Table 7. For the baseline period, the PTA shows leakage in most major categories of retail outlets, with the exceptions being food stores and building materials. Food store sales are effectively in balance for the PTA, showing only minimal estimated injections. Building materials shows modest injections. It is likely that this is due to the nature of the area, which has in recent years seen substantial new home construction relative to the County as a whole. The leakage is greatest as a proportion of sales in store types associated with comparison goods rather than everyday items. Proportionally, the greatest leakages are in apparel, home furnishings and appliances, and other retail, which includes specialty stores such as jewelry, books, and sporting goods. For these types of stores, shoppers from the PTA may be more likely to venture out of the PTA to regional shopping concentrations such as those in Concord, Walnut Creek, and even San Francisco which offer shopping choices not found in eastern Contra Costa County.

The overall net leakage of sales from the PTA is estimated at approximately \$381 million annually. The largest single category for leakage is other retail stores, with \$141 million in annual leakages, followed by general merchandise at \$69 million and motor vehicles and parts at \$66 million. While the Proposed Project is focused on competing largely with the food store category, these

estimated leakages may represent opportunities for new retail in the area in either new or vacated space.

**Table 7: Leakage Analysis for Primary Trade Area**

Store Category	Baseline Per Capita Taxable Retail Sales 2006 \$ (a)		Baseline PTA Total Retail Sales 2006 \$000 (b)		Injection/ (Leakage) (c)	
	Primary Trade Area	Benchmark	Actual	Potential	Total 2006 \$000	Per Capita 2006 \$
	Apparel Stores	\$332	\$455	\$58,891	\$80,757	(\$21,866)	($123)
General Merchandise Stores	\$1,741	\$2,131	\$308,962	\$378,138	(\$69,176)	(\$390)
Food Stores	\$1,871	\$1,868	\$331,996	\$331,547	\$449	\$3
Eating and Drinking Places	\$867	\$1,082	\$153,898	\$192,035	(\$38,137)	(\$215)
Home Furnishings and Appliances	\$234	\$433	\$41,605	\$76,878	(\$35,273)	(\$199)
Building Materials	\$1,005	\$990	\$178,289	\$175,723	\$2,566	\$14
Motor Vehicles and Parts	\$1,438	\$1,813	\$255,245	\$321,728	(\$66,483)	(\$375)
Service Stations	\$1,136	\$1,207	\$201,538	\$214,156	(\$12,618)	(\$71)
Other Retail Stores	\$742	\$1,534	\$131,687	\$272,318	(\$140,631)	(\$792)
<b>Total</b>	<b>\$9,365</b>	<b>\$11,513</b>	<b>\$1,662,111</b>	<b>\$2,043,280</b>	<b>(\$381,169)</b>	<b>(\$2,148)</b>

For notes and sources for this table, refer to Appendix F.

***Potential Capture of Leakage at Proposed Project and Elsewhere in the Primary Trade Area***

Because the Proposed Project consists largely of the equivalent of a full-service supermarket, and food store sales are in balance in the Primary Trade Area, the above analysis would indicate that there are no sales from PTA residents that can be recaptured by the project. However, the analysis above is based on data prior to the opening of the WinCo in Pittsburg, so the project could conceivably recapture some PTA sales that have been lost to that store. The project might also capture some additional general merchandise sales that are currently leaking out of the area, to the extent that “one-stop” shopping induces residents to spend money in this store rather than venturing out of the PTA. However, the PTA has the existing Wal-Mart and the Target at Slatten Ranch; the type of general merchandise retail outlets lacking in the area are generally upscale (e.g., Nordstrom’s in Walnut Creek) rather than discount stores, so the ability to recapture any resident sales might be limited to capturing any sales currently going to the Pittsburg Target (which is well-situated to capture shoppers from parts of Antioch) and Wal-Mart.

While the Proposed Project might not capture a significant amount of leakage of sales to PTA residents, other retailers could be attracted to the area with the intent of capturing some of this leakage. For instance, the under-construction Streets of Brentwood project (see discussion below) is designed as a “lifestyle” center offering upscale shopping options (e.g., REI) not currently present in the PTA. Table 8 presents an estimate of potential capture of leakage by the PTA under baseline conditions (3<sup>rd</sup> Quarter 2006 through 2<sup>nd</sup> Quarter 2007) and converts the dollar estimate to supportable square footage. Based on a capture rate of 50 percent for non-automotive retail categories, the PTA is estimated to have the potential to capture slightly over \$150 million in annual retail sales, supporting 461,000 square feet of additional retail space.

**Table 8: Supportable Space in Primary Trade Area from Leakage, Baseline Conditions**

<b>Store Category</b>	<b>Total Injection/ (Leakage) 2006 \$000</b>	<b>Capture Rate</b>	<b>Additional Sales 2006 \$000</b>	<b>Annual Sales per SF 2006 \$</b>	<b>Additional Supportable SF</b>
Apparel Stores	(\$21,866)	50%	\$10,933	\$360	30,000
General Merchandise Stores	(\$69,176)	50%	\$34,588	\$364	95,000
Food Stores	\$449			\$486	
Eating and Drinking Places	(\$38,137)	50%	\$19,068	\$528	36,000
Home Furnishings and Appliances	(\$35,273)	50%	\$17,636	\$336	52,000
Building Materials	\$2,566			\$305	
Motor Vehicles and Parts	(\$66,483)				
Service Stations	(\$12,618)				
Other Retail Stores	(\$140,631)	50%	\$70,315	\$284	248,000
<b>Total</b>	<b>(\$381,169)</b>		<b>\$152,540</b>		<b>461,000</b>

<b>Store Category</b>	<b>Per Capita Baseline 2006 \$000</b>	<b>Capture Rate</b>	<b>Additional Per Capita Sales 2006 \$000</b>	<b>Per Capita Baseline 2006 \$000</b>	<b>Capture Rate</b>	<b>Additional Captured Per Capita Sales 2006 \$000</b>	<b>Effective Per Capita Sales 2006 \$000</b>
Apparel Stores	\$332	100%	\$332	\$123	50%	\$62	\$394
General Merchandise Stores	\$1,741	100%	\$1,741	\$390	50%	\$195	\$1,936
Food Stores	\$1,871	100%	\$1,871		0%	\$0	\$1,871
Eating and Drinking Places	\$867	100%	\$867	\$215	50%	\$107	\$974
Home Furnishings and Appliances	\$234	100%	\$234	\$199	50%	\$99	\$333
Building Materials	\$1,005	100%	\$1,005		0%	\$0	\$1,005
Motor Vehicles and Parts	\$1,438		\$0		0%	\$0	\$0
Service Stations	\$1,136		\$0		0%	\$0	\$0
Other Retail Stores	\$742	100%	\$742	\$792	50%	\$396	\$1,138

For notes and sources for this table, refer to Appendix F.

Table 8 also presents adjusted potential per capita sales overall for non-automotive retail, which are used below to estimate additional total sales and supportable square footage for future population increases. The adjustments take into account baseline per capita expenditures, and assume that those will continue, and estimate 50 percent capture for the leakages will apply to the new population also. This estimate is conservative in that estimated sales will still be below benchmark levels based on state and county sales.

Table 9 provides estimates of future sales and supportable square footage for two points in time, 2010 and 2015. Between 2007 and 2010, population growth in the Primary Trade has the potential to general an additional \$79.6 million in annual non-automotive retail sales, supporting an estimated 211,000 square feet of additional retail space. Between 2010 and 2015, there is estimated potential to generate an additional \$113.2 million in retail sales supporting 302,000 square feet of retail space.

**Table 9: Additional Retail Support from Population Growth, 2007-2015**

**2007-2010**

<b>Store Category</b>	<b>Potential Per Capita Sales 2006 \$</b>	<b>Total Additional Sales 2006 \$000</b>	<b>Average Sales per Square Foot 2006 \$</b>	<b>Additional Supportable SF</b>
Apparel Stores	\$394	\$4,100	\$360	11,000
General Merchandise Stores	\$1,936	\$20,100	\$364	55,000
Food Stores	\$1,871	\$19,500	\$486	40,000
Eating and Drinking Places	\$974	\$10,100	\$528	19,000
Home Furnishings and Appliances	\$333	\$3,500	\$336	10,000
Building Materials	\$1,005	\$10,500	\$305	34,000
Motor Vehicles and Parts				
Service Stations				
Other Retail Stores	\$1,138	\$11,800	\$284	42,000
		<b>\$79,600</b>		<b>211,000</b>

**2010-2015**

<b>Store Category</b>	<b>Potential Per Capita Sales 2006 \$</b>	<b>Total Additional Sales 2006 \$000</b>	<b>Average Sales per Square Foot 2006 \$</b>	<b>Additional Supportable SF</b>
Apparel Stores	\$394	\$5,800	\$360	16,000
General Merchandise Stores	\$1,936	\$28,700	\$364	79,000
Food Stores	\$1,871	\$27,700	\$486	57,000
Eating and Drinking Places	\$974	\$14,400	\$528	27,000
Home Furnishings and Appliances	\$333	\$4,900	\$336	15,000
Building Materials	\$1,005	\$14,900	\$305	49,000
Motor Vehicles and Parts				
Service Stations				
Other Retail Stores	\$1,138	\$16,800	\$284	59,000
		<b>\$113,200</b>		<b>302,000</b>

**Notes:**

All sales in 2006 dollars. 2007 data refer to most recent period for which a full year of sales data are available, 3rd quarter 2006 through 2nd quarter 2007.

See Table 2 for population data. Population assumed to grow at same annual rate for all years from 2005 through 2010. Because the retail data spans 2006 and 2007, the population used here is midpoint between 2006 and 2007 data.

PTA population growth, 2007-2010	10,408
PTA population growth, 2010-2015	14,800

Per capita sales from Table 8.

Sources: Bay Area Economics 2008, based on information from a number of sources as shown in Appendix F.

***Capture of Additional Sales from Secondary Trade Area and Elsewhere***

The Primary Trade Area offers shopping opportunities not found in Pittsburg or the unincorporated areas of the STA, including traditional department stores at Somersville Towne Center and other specialty retail in the Slatten Ranch area. As noted above, for general discount retail such as Target

or Wal-Mart, Bay Point shoppers are likely to shop in Pittsburg due to its proximity. Residents of the STA to the east of the PTA, however, may do a larger portion of their shopping within the PTA, especially along Lone Tree Way. The expanded Wal-Mart may increase its capture, especially of sales currently going to food stores elsewhere in the PTA. This capture would be greatest from those stores closest to the Antioch Wal-Mart. As discussed previously, the impacts of the recently opened Pittsburg WinCo are not reflected in the published data. Wal-Mart should recapture some of the sales of Antioch residents lost to WinCo since its opening in late 2007; the use of per capita estimates derived from before that date effectively take into account that recapture. The Supercenter may also pull some shoppers out of other supermarkets in the STA, especially nearby Pittsburg. However, this capture will vary widely by store, and may be negligible for some stores. More specific impacts will be discussed below.

## **Impacts of Proposed Project on Existing Retail Outlets**

### **Overview**

This discussion provides estimates of the impacts on sales at existing retail outlets with the Proposed Project in place and with any additional pending projects considered. The impacts of the Proposed Project alone are considered first, followed by a discussion of cumulative impacts, which takes into consideration other under-construction and proposed retail projects in the Primary Trade Area and nearby.

The retail category where potential impacts are the primary focus of concern is food stores, because the Supercenter expansion consists of the addition of the equivalent of a supermarket to the retail inventory. The most directly competitive food stores are the other supermarkets in the area, so these stores would also be the ones likely to be most impacted by the Proposed Project. Smaller food outlets, such as convenience stores and smaller ethnic markets, are not directly competitive with supermarkets and thus would not be significantly affected by the addition of a food sales department to the Walmart store, and therefore would not be likely to close as a result of the project.

This chapter compiles an inventory of competing retail nodes and, using available information on general sales volumes by store type and the supportable square footage analysis, estimates the impacts of the Proposed Project on sales of existing retailers in Antioch and the Primary and Secondary Trade Areas.

### **Inventory of Competitive Outlets**

BAE has identified and inventoried major competitors for the Proposed Project in the supermarket and general merchandise categories. Figure 10 shows these major competing retail nodes in the Primary and Secondary Trade Areas.

### ***Methodology***

These competing outlets were located through review of previous retail analysis done in Antioch by BAE, verified and updated through field surveys of the PTA and STA as well as listings in a Trade Dimensions retail database acquired as part of this study. Square footages for the supermarkets were acquired through interviews with store managers and city planning departments, information from brokers, through data from the Contra Costa County Assessor via the County's online mapping information center, and from information acquired for previous BAE analyses. In some cases Google Earth was used to verify that the numbers were of the correct order of magnitude.



### **Major Supermarkets**

As of early 2009, Antioch has eight major supermarkets totaling approximately 340,000 square feet (see Figure 10 for a map and Appendix G for a complete listing of the PTA supermarkets). Several major chains are represented, with one company owning four of the stores; Food Maxx, Lucky, and the two Save Marts are all under the Save Mart corporate umbrella. Other stores include a Safeway, a Raley's, a Grocery Outlet, and the recently opened County Square Market. These stores represent a broad range of supermarket types, including discount warehouse, generic supermarkets more upscale markets, and an ethnic Asian market. Brentwood also has a wide range of supermarkets totaling approximately 398,000 square feet, including two Safeways, Raley's, recently opened Trader Joe's and Smart & Final Extra stores, Food Maxx, Centro Mart, and WinCo. This WinCo, near the border with Antioch, is the largest single store in the PTA, at nearly 97,000 square feet. Oakley has three major full-service supermarkets totaling just under 120,000 gross square feet: Lucky, Raley's, and Centro Mart. As part of its field work, BAE visited all of the stores to assess the quality of the store as well as the level of customer traffic in the store. In addition to the aforementioned supermarkets, there is a recently expanded Costco in Antioch providing an additional option for pantry-loading grocery shoppers. This expansion occurred in August 2008, when Costco opened a new store in Antioch, replacing their 120,068 square-foot store with one of 161,117 square feet,<sup>1</sup> for a net increase in size of approximately 41,000 square feet. Costco sells grocery items in bulk form for pantry loaders, and the expansion includes an increase in grocery selling space that would be competitive with the existing supermarkets in the region. Based on available information from Costco,<sup>2</sup> BAE estimates that the proportion of Costco sales equivalent to a supermarket at approximately 30 percent of sales volume and sales space. Using this factor, the increase in supermarket-equivalent competitive space is 12,315 square feet.

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<sup>1</sup> The existing Costco has been demolished and thus did not become part of the inventory of available retail space in the PTA.

<sup>2</sup> Costco's Annual Reports do not provide adequate information to determine precisely the amount of supermarket-equivalent sales. Based on their most recent *Annual Report* (FY 2008), food and fresh food make up 32 percent of their sales. However, this excludes "sundries" which by their accounting includes candy, snack foods, and alcoholic and non-alcoholic beverages. Sundries accounts for an additional 22 percent of sales. However, food includes "institutionally packaged foods" and sundries includes "cleaning and institutional supplies"; these subcategories include non-retail and non-food items, so the proportion attributable to retail food sales only is unknown. Another potential measure would be to use data on the proportion of sales to institutional buyers versus household buyers, but this measure is also fraught with imprecision; in fact, it is highly likely that there are members who use Costco for both household and business/institutional purchases, so even knowing the identity of the member may not allow Costco to determine the ultimate user of many items purchased within the store. In one presentation available online ("Costco Today, 2<sup>nd</sup> Quarter, FY 2009") at its website, Costco estimates that its 54.5 million cardholders include 29.7 million households. If sales are allocated just based on these numbers (not knowing the actual sales by each segment), households would account for slightly more than half of sales. Given the limitations of the publicly available data, the potential for "sundries" to be supermarket-related items or not, and for some of the food-related sales to be to entities other than households, BAE believes that a 30 percent allocation of Costco's sales to supermarket and/or food-related items is a "reasonable inference" for the purposes of its analysis. BAE also visited the Antioch Costco, and while the proportion of the store space allocated to groceries may be slightly higher than 30 percent, some of the food sales are to businesses (e.g., small merchants) making bulk purchases for resale elsewhere.

Costco also tends to have higher sales volumes than most supermarkets, so sales per square foot are assumed based on Costco corporate average sales per square foot.

Based on a variety of sources, including Trade Dimensions data from Nielsen/Claritas, taxable sales data, the Census of Retail Trade, and site visits, BAE estimates that the supermarkets in the Primary Trade Area have annual sales of approximately \$315 million (see Table 10). Based on this estimate, average annual sales per square foot are estimated at \$367. This is somewhat below the stated benchmark of \$486, but does not indicate definitively that the existing stores are struggling. Industry benchmarks are not by themselves indicators of the level of profitability of individual stores; some stores might be profitable at a lower sales level, while others may require greater market support. Retail operators have varying standards regarding satisfactory store performance and profit margins.<sup>3</sup>

Estimated Supermarket Sales (a) (b)	\$315,000,000
Existing Supermarket Square Feet	857,199
Estimated Average Annual Sales per Square Foot	\$367
ULI Median, All Supermarkets (c)	\$486
<p>(a) Based on estimates by BAE based on confidential sources, published taxable sales data, Census of Retail Trade, site visits and industry benchmarks. Adjustments have been made for the recently opened Costco and County Square Market (see Appendix J).</p> <p>(b) Sales estimates in 2006 dollars.</p> <p>(c) Urban Land Institute/International Council of Shopping Center, <i>Dollars &amp; Cents of Shopping Centers/The Score 2008</i>. Median for all supermarkets in community and supercommunity shopping centers nationwide.</p>	
<p>Source: Bay Area Economics 2008, based on information from State Board of Equalization, 2002 Census of Retail Trade, Trade Dimensions, and ULI/ICSC.</p>	

The Secondary Trade Area includes several additional supermarkets of the same chains, as well as a FoodsCo, a large new Latino-oriented market, and two independent markets. Most noteworthy is another large WinCo store in Pittsburg, which because of its location near Antioch is likely attracting shoppers from parts of Antioch; some of these shoppers may return to shopping in Antioch if the Supercenter expansion is completed. The aforementioned large Latino-oriented Mi Pueblo market opened in March 2009 in a space formerly occupied by an Albertsons/Lucky but vacant for several years. Additionally, a Save Mart in Pittsburg closed in September 2008, and the space remains vacant (as of March 2009).

### ***Major General Merchandise Outlets***

The PTA and STA have a number of major general merchandise stores. As previously indicated by the retail sales data, Antioch itself is dominant in this category, with several major stores, including the existing Wal-Mart, a Big Kmart in the northeast corner of the City, Sears, and Macy's in

<sup>3</sup> The benchmark used shows considerable variability over time, in a way not necessarily accounted for by inflation; the same ULI/ICSC benchmark from 2006, for instance, was only \$392.

Somersville Towne Center,<sup>4</sup> a Target in the Slatten Ranch Shopping Center, and a Costco. Oakley has no major region-serving general merchandise stores. Brentwood has only one major general merchandise store, Kohl's. In the Secondary Trade Area, Pittsburg is home to a Wal-Mart and a Target. There are drug stores such as Rite Aid and Walgreens scattered throughout the trade areas, but these are primarily convenience-oriented and local-serving.

### **Retail Real Estate Market Conditions in the Primary Trade Area**

A key factor in determining the ability of the market to absorb vacated space is the current state of the overall retail real estate market. In a weak market long-term vacancies are more likely. BAE has visited East Contra Costa County several times in recent years to assess retail conditions, most recently in March 2009. At the time of that tour as well as during BAE's site visit in July 2008, retail centers appeared to have more vacancies than at the time of a previous BAE tour of the area's retail nodes in 2005. Vacancies also have increased somewhat between mid-2008 and March 2009, largely due to the closure of the two Mervyns in Antioch. In the Secondary Trade Area, Pittsburg has seen the closure of Circuit City and a Save Mart (see above), but a large vacant Albertsons was recently reopened as a Latino-oriented supermarket (also discussed above).

The vacant spaces seen in 2008 and 2009 were generally smaller storefronts rather than the anchor spaces of centers; many of the vacancies had been occupied by service businesses related to residential real estate, including mortgage offices and real estate brokers, i.e., those businesses most directly affected by the foreclosure crisis. The Sand Creek Center with Raley's in Brentwood has some vacant midsize spaces, and this center appeared to have the highest vacancy rate for mid-size or larger centers in the PTA; Brentwood also had newer small retail centers with high vacancies likely resulting from slow initial lease-up under current market conditions. More recently, the Mervyns stores in Somersville Towne Center and Slatten Ranch were closed, making them the two largest vacant retail spaces in the PTA. As of the end of 2008, Terranomics reported retail vacancy rates in Antioch, Brentwood, and Oakley of 3.4 percent, 14.1 percent, and 1.7 percent, respectively, for an overall weighted vacancy rate of 7.9 percent, or 310,884 square feet out of total inventory of 3,934,920 square feet.<sup>5</sup> Based on BAE's fieldwork the higher vacancy rate in Brentwood is due in large part to the recently built inventory which is still undergoing initial absorption, rather than vacancies due to store closures. The current economic climate has led to an extremely slow absorption of this space; BAE's field work in July 2008 and March 2009 saw little absorption of new space, with the exception of the Streets of Brentwood, which did add a substantial amount of new occupied retail space to the Primary Trade Area.

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<sup>4</sup> The Mervyns stores in Somersville Towne Center and in Slatten Ranch closed while this analysis was underway, following the liquidation of the entire Mervyns chain. These stores are currently vacant and available for lease. Gottschalks filed for bankruptcy in January 2009; and in April 2009, subsequent to the research for this study, the firm was sold to liquidators, with all stores closed in the summer of 2009, including the store in Somersville Towne Center.

<sup>5</sup> "Contra Costs County Retail Report, Year End 2008," Terranomics (Oakland and Walnut Creek Offices). Terranomics' stated inventory excludes centers of less than 50,000 square as well as space in traditional malls. This inventory excluded the vacancy of Mervyns at Slatten Ranch, as well as other changes in the market since the end of 2008, but based on BAE's own field work is reasonably representative of current market conditions in the Primary Trade Area.

Interviews with retail brokers representing centers in the region indicated a poor retail real estate market overall, with rent reductions and increases in vacancies over the last year (see Appendix H for a list of brokers interviewed). Some brokers reported that re-tenanting a larger anchor space would be difficult in the current economic climate, and that keeping anchor tenants such as grocery stores is crucial to maintaining foot traffic in a center. Interestingly, the broker representing the Sand Creek Center in Brentwood, which as noted above has a relatively high vacancy rate, stated that the opening of Streets of Brentwood across from that center would likely increase traffic in that area and eventually lead to decreased vacancies in the Sand Creek Center.

Overall, the picture painted was of a market showing substantial challenges related to the distressed economic climate. Although there has been a rise in scattered retail vacancies, none of the retail centers within the Primary Trade Area exhibited signs of physical deterioration or urban decay. Apart from the two vacant Mervyn's stores and the vacant Gottschalks store, most of the remaining vacancies are smaller spaces in projects scattered throughout the Primary Trade Area. With the exception of downtown Antioch, which consists largely of small storefronts, most of these small-store vacancies are actually in the newest centers in the area, some of which include plans for additional future development not yet underway. In other words, rather than being concentrated in older centers, the vacancies tend to be in the newest spaces, representing centers that are still undergoing initial absorption that has been slowed by the current recession. BAE's tour of these centers and observation of these vacant storefronts found that these centers were all still well-maintained, and even where construction had been halted mid-project, there were no signs of physical deterioration (e.g., broken windows, graffiti, or other markers for urban decay). Even vacant spaces in downtown Antioch are generally well-maintained.

### **Impacts of Proposed Project on Existing Retail Nodes and Outlets**

This section assesses the impacts of the Proposed Project on sales at existing retail outlets in the Primary and Secondary Trade Area. Because of the relative isolation of these areas from other population concentration and retail outlets, any impacts outside the PTA or STA are likely to be insignificant. Few additional shoppers from beyond the STA would venture to Antioch just to shop at the expanded Supercenter.

The analysis focuses on supermarkets, since the expansion consists entirely of adding the equivalent of a full supermarket to the existing Wal-Mart. Supermarkets also often anchor shopping centers and districts. Smaller food outlets, such as convenience stores and smaller ethnic markets, are not directly competitive with supermarkets and thus would not be significantly affected by the addition of a food sales department to the Walmart store, and therefore would not be likely to close as a result of the project. To the extent that some of Wal-Mart's expected additional food sales might be captured from outlets other than major supermarkets, this would ameliorate the impacts on the large supermarkets that are the focus of the analysis here.

After assessing the potential impacts of the project on a stand-alone basis the analysis considers cumulative impacts relating to other under construction and proposed retail development in the PTA and STA. This analysis takes into account reasonably foreseeable projects as reported to BAE at the time of its research (initially in summer 2008 and updated to mid-first quarter 2009).

Generally, a project is considered reasonably foreseeable if an application has been made to a government body by a developer, or if that project is under construction, or if it is in the approvals process or already approved but not yet underway. Projects which are not considered reasonably foreseeable include: projects that have been formally denied by the public agency and for which no new application has been received; projects that have been formally withdrawn from the approval process by the applicant; and projects for which the approvals have expired. In one instance (River Oaks Crossings in Oakley), a Specific Plan has been approved but there is no current application in process for development of that site; therefore, the development of that Specific Plan area is not considered a probable future project for the near-term.

## Primary Trade Area (PTA)

The analysis that follows begins by assuming that this will be a fully functioning center upon opening, with the Supercenter performing at stabilized sales immediately. To the extent that this overestimates initial sales, it is conservative in considering the potential for greater resulting impacts. This estimate of sales is presented in Table 11. Annual sales at the Supercenter are estimated at \$87.5 million, of which \$20.0 million is from the supermarket-equivalent space.

<b>Store Component</b>	<b>Square Feet (a)</b>	<b>Sales per SF (b)</b>	<b>Estimated Sales in Proposed Project (c)</b>
General Merchandise & Other	135,073	\$500	\$67,500,000
Supermarket Equivalent	40,000	\$500	\$20,000,000
<b>Total</b>	<b>175,073</b>	<b>\$500</b>	<b>\$87,500,000</b>

All sales estimates in 2006 dollars.  
 (a) Derived from Table 1 per latest site plan available.  
 (b) Wal Mart nationally has sales of approximately 423 per square foot. Trade Dimensions data and BAE site visits indicate that this store is performing at higher levels. For this analysis, sales of \$500 per square foot are assumed. This also provides a level of sales for the supermarket equivalent that is above the ULI benchmark.  
 (c) Rounded to the nearest hundred thousand.

Source: Bay Area Economics, 2009, based on information from Wal-Mart.

The general merchandise and other component of the store is actually 6,425 square feet smaller than the existing store. In fact, one possible outcome of the reduced square footage could be a decline in Wal-Mart's market share for non-food merchandise if this portion of the store were considered in isolation. However, this effect could be counterbalanced by the synergies of one-stop shopping at the Supercenter. Additionally, some of the space in the existing store is already dedicated to food items, so the floor area devoted to general merchandise in the existing store may be smaller. Overall, however, any difference in general merchandise sales, whether higher or lower than existing levels, would probably be minor. Since no significant changes in sales levels are anticipated in the non-grocery retail categories, it is reasonable to assume that there will be no substantial net impact on trade area general merchandise stores due to this project and thus no additional analysis of project impacts upon general merchandise retailers is necessary.

Table 12 shows the impacts of the Supercenter on existing supermarkets in the Primary Trade Area based on the estimated annual sales as shown in Table 11. In the assumed year of completion, given population growth as projected by ABAG, it is estimated that the overall loss of sales at existing supermarkets in the PTA would be approximately three percent in 2010 (assuming that is the first full year of project operation). By 2015, given the existing inventory of supermarkets plus

the Supercenter, sales overall should recover to levels above today's sales for the existing supermarkets.<sup>6</sup>

<b>Table 12: Potential Impact on Existing Primary Trade Area Supermarkets</b>			
<b>ABAG Projected Growth</b>			
	<b>2008</b>	<b>2010</b>	<b>2015</b>
Primary Trade Area Population (a)	183,227	189,250	204,050
Current Supermarket Sales (b) (c)	\$315,000,000		
Capture from Leakage (d)	\$0	\$0	\$0
Potential Sales per Capita	\$1,719	\$1,719	\$1,719
Supermarket Sales Potential (c)	\$315,000,000	\$325,350,000	\$350,800,000
Existing Supermarket Square Feet (e)	857,199	857,199	857,199
Additional Grocery Store in Project (f)		40,000	40,000
Estimated Supermarket Sales in Supercenter (c) (g)		\$20,000,000	\$20,000,000
Sales in Existing Outlets (c)	\$315,000,000	\$305,350,000	\$330,800,000
<b>Average Annual Sales per Square Foot at Existing Stores</b>	<b>\$367</b>	<b>\$356</b>	<b>\$386</b>
<b>Percent Change from 2008</b>		<b>-3%</b>	<b>5%</b>
<b>Delayed Growth Scenario</b>			
	<b>2008</b>	<b>2010</b>	<b>2015</b>
Primary Trade Area Population (h)	183,227	183,227	197,996
Current Supermarket Sales (b) (c)	\$315,000,000		
Capture from Leakage (d)	\$0	\$0	\$0
Potential Sales per Capita	\$1,719	\$1,719	\$1,719
Supermarket Sales Potential (c)	\$315,000,000	\$315,000,000	\$340,390,000
Existing Supermarket Square Feet (e)	857,199	857,199	857,199
Additional Grocery Store in Project (f)		40,000	40,000
Estimated Supermarket Sales in Supercenter (c) (g)		\$20,000,000	\$20,000,000
Sales in Existing Outlets (c)	\$315,000,000	\$295,000,000	\$320,390,000
<b>Average Annual Sales per Square Foot at Existing Stores</b>	<b>\$367</b>	<b>\$344</b>	<b>\$374</b>
<b>Percent Change from 2008</b>		<b>-6%</b>	<b>2%</b>
(a) From Table 2.			
(b) From Table 10.			
(c) All estimates throughout table in 2006 dollars. All total sales estimates rounded to nearest ten thousand.			
(d) From Table 8.			
(e) From Appendix F.			
(f) From Table 1.			
(g) From Table 11.			
(h) Assumes that because of current economic conditions, there will be no growth between 2008 and 2015; 2015 is equivalent to ABAG 2013 levels assuming constant annual compound growth rate between 2010 and 2015.			
Source: Bay Area Economics 2008, based on information from State Board of Equalization, 2002 Census of Retail Trade, Trade Dimensions, and as cited in supporting tables.			

<sup>6</sup> It should be noted that this analysis assumes that Wal-Mart achieves these sales levels based entirely on capture from the Primary Trade Area stores. This may overstate the impacts on the PTA. Potential impacts in the STA are discussed separately below.

Table 12 also provides a “delayed growth” scenario, assuming that based on the current economic climate that there will be no population growth between 2008 and 2010, at which point more normal economic conditions will return and growth will resume, shifted two years into the future. Under this scenario, sales levels in 2010 for existing supermarkets would decline by six percent, on average, recovering to show a gain of two percent in 2015.

On average, these levels of sales losses would not necessarily put the existing stores at risk of closure. Sales revenues and “break-even” sales levels for supermarkets can vary and are highly dependent on conditions at each store; however, the specific revenue figures and break-even sales levels for competing supermarkets in the trade area are not known. This information is not publicly available at the specific store level, and while BAE attempted to obtain this data from individual stores in the trade area, no sales or break-even information was provided by any of the stores contacted.

Individual outlets can adjust to lost sales to some extent by changes in offerings or pricing, reducing staff levels, or through other strategies short of closure. Furthermore, long-term growth in the area would indicate that sales levels could recover within several years, even assuming a delayed growth scenario.

While Wal-Mart may draw from a larger area than a typical community-serving market, thus spreading its impacts throughout its market area, it is still possible that the impacts would be greatest at those stores closest to the Proposed Project. The two closest stores, Trader Joe’s and the recently opened Smart & Final Extra store, occupy more specialized niches in the market unlike Wal-Mart’s more generic supermarket-equivalent format, and like Wal-Mart draw from a larger area than a typical community-serving supermarket and as a result are unlikely to face closure resulting from their proximity to Wal-Mart. The Lucky supermarket recently was re-branded from Albertsons following the purchase of many of Albertsons’ northern California stores by Save Mart (although it was originally a Lucky, it had been part of the Albertsons chain for several years after their acquisition of Lucky). BAE has visited this store several times over the years as part of other studies, and the most recent site visits indicated more customer traffic at the store, an impression confirmed by changes in Trade Dimensions sales estimates and BAE interviews with store management. While store management projected a substantial loss of sales from the Supercenter, they did not indicate that the store was likely to close as a result. While close to the Supercenter, it is not at the same traffic node, but is over one mile away. This store also has the advantage of being in a newer center than some of the other stores in Antioch and the Primary Trade Area, with better access to future growth areas to the east via Lone Tree Way and to the south via Deer Valley Road. Thus even if the current operator vacated the space, another supermarket might be supportable at this location in the near future. The other stores in the Primary Trade Area are distant enough that impacts would be spread among the outlets such that the no impacts greater than average could be assumed based on proximity alone.

Based on market niche, the most similar competitors are supermarkets focused on low prices, such as WinCo and the two Food Maxx stores. The WinCo in Brentwood is also relatively close, within two miles of the Antioch Wal-Mart. Based on site visits, this store appears to have strong sales, and WinCo has been aggressive and successful in entering many of the same markets in northern California as Wal-Mart Supercenters. Interviews with store management indicated that they did

not see a risk of closure resulting from the opening of a Supercenter nearby. Furthermore, as an extremely large-format supermarket with low prices and a wide range of goods, the management reported attracting customers from well beyond the Primary Trade Area. Based on the available information, it is not likely that the opening of the Supercenter will lead to the closure of the WinCo in Brentwood. The two Food Maxx stores are the most distant PTA stores from the proposed Supercenter, with each slightly less than six miles from Wal-Mart. Interviews with store management for the Antioch store indicated that while they expected substantial impacts, store management did not predict store closure. The distance of these stores from Wal-Mart makes it less likely that the impacts would be large enough to force closure of these stores.

In the unlikely event that an existing supermarket were to close as the result of proposed Wal-Mart Expansion, it would not necessarily have to be re-tenanted as a supermarket. Vacated supermarkets are commonly leased to other types of users, such as dollar stores or fitness clubs; for example, even in the current economy, dollar stores, which provide bargain shopping, show continued success and growth.<sup>7</sup> These second-tier uses keep the property leased and help prevent a decline into urban decay and physical deterioration. As noted above in Table 8, based on the baseline data gathered in mid-2008, the Primary Trade Area, through capture of some leakage, could support approximately 460,000 square feet of additional retail space. Adding in the sales potential from population growth per ABAG projections (as shown in Table 9), the total potential demand for new retail space in the Primary Trade Area is estimated at 672,000 square feet in 2010 and 974,000 square feet in 2015. However, this analysis was undertaken in summer 2008, prior to the opening of Streets of Brentwood, which is currently approximately two-thirds built out to its total square footage of 460,000 square feet. This project, with its specialized “lifestyle center” retail focus unlike other retail centers in eastern Contra Costa County, likely has captured much of the estimated leakage under the considered baseline conditions. Nevertheless, continued growth in the area will generate demand for additional retail space above and beyond that found in the Streets of Brentwood.<sup>8</sup> With slower or delayed growth due to economic conditions, the timing to reach these numbers would be pushed out a couple of years. In any case, the Primary Trade Area shows ample growth and retail demand to re-absorb a vacant supermarket when considering the Proposed Project on its own.

### **Secondary Trade Area (STA)**

While the above analysis conservatively assumes that all of the sales redirection to the Supercenter will come from the Primary Trade Area, this may somewhat overstate the impacts on PTA stores as a group, since it is likely that the Supercenter will reach stabilized sales levels by attracting shoppers from beyond the PTA, particularly from the STA. Additional consideration should be

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<sup>7</sup> For instance, see “Family Dollar Stores Q3 Comps Up 6.2%,” RTT News, June 4, 2009, <http://www.rttnews.com/ArticleView.aspx?Id=970067&SMap=1>, accessed June 10, 2009, or “Dollar General profit zooms as shoppers seek value,” Reuters, June 2, 2009, <http://www.reuters.com/article/bondsNews/idUSN0250344420090602>, accessed June 10, 2009.

In the current economy, some of these second-tier uses, which represent bargain shopping, show continued success and growth.

<sup>8</sup> It is also important to note that the largest single tenant at Streets of Brentwood is a 14-screen theater complex, which is not space that is filling retail demand as defined here.

given to the STA, in part because some of the stores in the STA may be attracting shoppers from within the PTA who would patronize the Supercenter instead. The store most likely to be affected would be the recently opened WinCo in Pittsburg. This store, with its large format and broad range of items, low prices, and location near the border with Antioch, functions as more of a regional draw than a typical supermarket, and may be pulling shoppers out of the western portions of the Primary Trade Area. Interviews with WinCo management in 2008 indicated that this store was underperforming expectations; BAE's site visit in mid-2008 also indicated less customer traffic than seen at other WinCos visited by BAE, including the Brentwood store. In March 2009, this store appeared somewhat busier, indicating increased market acceptance and the probable capture of some sales previously directed to the Save Mart in Pittsburg.

In fact, since summer 2008, conditions in Pittsburg have changed substantially with respect to the supermarket inventory. First, an existing 50,200 square-foot Save Mart in Pittsburg closed in September 2008, likely due in part to the increased competition from WinCo.<sup>9</sup> This space is currently vacant and for lease. However, while this space has gone vacant, in March 2009, the former Pittsburg Albertsons/Lucky space of 50,173 square feet, which had been unoccupied for several years, reopened as a Mi Pueblo Food Center, part of a growing Latino-oriented supermarket chain based in San Jose.<sup>10</sup> Effectively, while undergoing one closure and one reopening, Pittsburg has seen almost no net change in the amount of major supermarket space; the marketplace is still in flux, but new operators other than Wal-Mart appear willing to enter the area even under current market conditions.

With respect to WinCo, the company has competed aggressively with Wal-Mart for grocery business in many markets in California and has yet to close a store as a result. In some markets they have either expanded or opened new stores as Wal-Mart opened or planned Supercenters in the same market (e.g., Stockton, Tracy, and Redding). Given the fact that this store is much farther (at seven miles) from the Supercenter than the Brentwood WinCo (at two miles) and also given the successful track record of WinCo's competition with Supercenters to date, BAE deems it unlikely that the impacts will be so great as to lead to closure of the Pittsburg WinCo. The Raley's and FoodsCo in Pittsburg are more local-serving and distant enough from the Antioch Wal-Mart that they should not be at risk of closure, and the new Mi Pueblo is in a specialized niche that may attract shoppers from a broader region even beyond the STA, given the lack of similar large Latino markets in Contra Costa County. The presence of a regular Wal-Mart in Pittsburg also should limit the degree to which the Antioch store, even when expanded, will attract shoppers from Pittsburg and Bay Point. Therefore, it is unlikely that any existing supermarkets in the STA would be at risk of closure due to the Wal-Mart expansion.

The number of shoppers coming from beyond the STA should be minimal due to the presence of other closer Supercenters to the north (approved stores in Fairfield and Suisun City) and east (existing and planned stores in Stockton, planned expansion to Supercenter in Tracy), or just the relative geographic isolation of the combined PTA and STA. Because the number of shoppers

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<sup>9</sup> "Save Mart to close in Pittsburg," Paul Bugarino, *Oakland Tribune*, August 15, 2008, [http://findarticles.com/p/articles/mi\\_qn4176/is\\_20080815/ai\\_n28058484](http://findarticles.com/p/articles/mi_qn4176/is_20080815/ai_n28058484), accessed March 15, 2009.

<sup>10</sup> Mi Pueblo grocery ready to make Pittsburg debut, Paul Bugarino, *Contra Costa Times*, March 13, 2009, [http://www.contracostatimes.com/ci\\_11909030?source=most\\_emailed](http://www.contracostatimes.com/ci_11909030?source=most_emailed), accessed March 15, 2009.

attracted from beyond the STA would be very limited, any resulting loss in sales among competitive supermarkets beyond the STA would be negligible; therefore, it is highly unlikely that the project would result in store closures outside the Trade Areas.

## **Cumulative Impacts**

Per CEQA requirements, the impacts of the Proposed Project must also be assessed in the context of other likely retail developments in the market area or affecting the market area. The discussion below is limited to those reasonably foreseeable projects that are deemed competitive with the Proposed Project and thus capable of contributing to any cumulative impacts. The most important projects would be those that include outlets directly competitive with the proposed expansion (i.e., supermarkets) that could, in tandem with the proposed project, potentially result in the closure of one or more existing supermarkets. Other retail projects could then result in significant impacts if, in combination with the proposed project and other proposed supermarkets, they led to an oversupply of retail space that could result in long-term vacancies, particularly in the Primary Trade Area. It should be noted again that the Proposed Project consists almost entirely of the addition of a supermarket-equivalent space, with no increase in general merchandise space. As such, the impacts of the project as indicated above are tied to the grocery sales sector, and the project would not contribute substantially to potential impacts on other retail sectors due to other planned and proposed projects that are not food stores.

Following is a discussion of projects that are currently under construction or proposed in the Primary Trade Area, with some additional discussion of Pittsburg. Outside Pittsburg, BAE did not locate any additional planned retail projects in the Secondary Trade Area.

### ***Additional Competitive Supermarkets***

Overall, among projects that are verified as active by the local planning departments, there are a total of approximately 41,000 square feet of additional supermarket space in the Primary Trade Area, all of it in the three Fresh & Easy projects. In Antioch, there are two Fresh & Easy Neighborhood Markets planned, one for the recently approved Buchanan Crossing shopping center on the northwest corner of Buchanan and Somersville Roads, and the other for the Lakeview Center project which is currently in the process of completing its application to the City. The estimated size of these stores is 13,000 to 14,000 square feet. Outside of Antioch, BAE found an additional Fresh & Easy store planned for Oakley in the Laurel Plaza shopping center. These stores are part of a major rollout of stores in California, Arizona, and Nevada by Tesco, a major British retailer, as it tries to establish a beachhead in the American grocery retail market. These additional new markets are of a new prototype for the area, smaller and more convenience-oriented than traditional modern supermarkets, with a focus on house brands and prepared meals. To date there are limited indicators as to Fresh & Easy's success elsewhere; while these local stores are still moving forward, it has been reported that Tesco's entry into the U.S. has not been as successful initially as planned, and the pace of store openings in northern California (none of which are open yet) has been slowed.<sup>11</sup>

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<sup>11</sup> For some discussion of the problems encountered by Tesco in its rollout of Fresh & Easy Markets, see <http://articles.latimes.com/2008/apr/01/business/fi-fresh1>, or more recently,

There are currently no other reasonably foreseeable supermarket projects in the Primary Trade Area. Safeway had approvals for a store anchoring a center in Oakley, but the entitlements for this project have since expired, so it is no longer an active project. Also, although Wal-Mart had proposed to build a new Supercenter at the River Oaks Crossing Project in Oakley, they withdrew from this project, and even though the overall River Oaks Crossing project was approved, any superstore-type use would require additional approvals to become part of the project, and no such re-application has been submitted or is foreseen.

While Brentwood has substantial additional retail space coming into the market, and has a number of recently built centers that are leasing up slowly, none of the space is known to be slated for supermarket use, and much of it is in smaller centers in spaces not suitable for supermarket tenancy. In the Secondary Trade Area, the remodeling of the Atlantic Plaza center in Pittsburg includes a small 1,300 square-foot expansion for the existing FoodsCo store, in addition to the recently opened Mi Pueblo and the closed Save Mart in Pittsburg, as discussed and accounted for under the discussion of existing conditions above.

#### ***Additional Under-Construction and Planned Retail Outlets***

In addition to the under construction and planned supermarkets, there are additional retail projects in the pipeline in the Primary Trade Area (see Appendix I). These additional projects are relevant here because the retail space they would create would compete with any vacated supermarket space for retail tenants. The largest of the under construction and planned projects is the remaining space planned and under construction at the Streets of Brentwood, totaling approximately 150,000 square feet as of mid-March 2009. As noted above, this is a “lifestyle” center focused on upscale retailers, and may capture substantial leakages from the Primary and Secondary Trade Areas for shoppers who are currently venturing to Concord, Walnut Creek, and other retail destinations. Other large projects include a proposed Target in Antioch on Lone Tree Way (which is not proposed as a SuperTarget with a full line of groceries), the remaining buildout of Lone Tree Crossing in Brentwood adjacent to the WinCo center, and the Neroly Commercial Center in Oakley. There are a number of smaller centers, especially in Brentwood, including some that are partially built. The total additional unbuilt retail space in the pipeline and seen as reasonably foreseeable in the Primary Trade Area is estimated at approximately 940,000 square feet.<sup>12</sup>

The current economic climate and other factors have apparently delayed several projects. The Oakley City Council recently approved a Specific Plan and EIR for River Oaks Crossing, a potentially major region-serving retail project. The center was originally conceived to include up to 690,000 square feet of retail space with a Wal-Mart Supercenter as an anchor, but Wal-Mart withdrew from the project. No applications for development under the Specific Plan have been

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<http://www.sacbee.com/business/story/1720647.html> or

<http://www.azcentral.com/community/chandler/articles/2009/03/19/20090319biz-tesco0319.html>.

<sup>12</sup> In some cases in the Primary Trade Area, there are projects in the early stages of approval or development where the building footprint (or even the mix of retail and other uses) has not yet been determined. These sites have not been included in the square footage calculations since any estimate of timing and/or building size would be speculative. Also excluded are some projects which are entitled for retail development but where there are no current plans for retail development (e.g., Roddy Ranch).

submitted, and there are no known prospective developers or tenants. In addition, the River Oaks Crossing Specific Plan has been amended to include restrictions that effectively disallow a superstore-type use (i.e., prohibits stores greater than 100,000 square feet in size with a least 10 percent of the sales area dedicated to non-taxable merchandise). In the absence of a formal development application, and without indications that such an application may be forthcoming, the development of the River Oaks Specific Plan Area is not considered to be a probable future project in the near-term. It is therefore not included in the total inventory below of retail space considered to be reasonably foreseeable within the time frame of this analysis. Two other major projects have been withdrawn or had applications expire in Oakley: a center anchored by a Safeway, and another center which included a Home Depot. Various other projects shown in the list are on hold, and in the current market are likely to be delayed. On its recent area tour, BAE noted several projects where building shells had been erected or with vacant pads with no sign of current construction activity. In Lone Tree Crossing, only one space is built and occupied, and while at least one other building is underway, others appear partially built but fenced off with no construction underway. In the Shops at Fairview, Longs and several other tenants are open, but some pads remain unbuilt, again with no signs of construction activity. The number of projects cancelled or delayed is indicative of the market responding to changed conditions, correcting for a potential oversupply of retail space by slowing the pace of development.

#### ***Impacts on Existing Supermarkets***

Table 13 shows an estimate of the cumulative impacts of these stores in combination with the expanded Wal-Mart. Based on the growth as projected by ABAG, the net decrease in sales for existing supermarkets with these additional stores in place would be seven percent in 2010, and by 2015 sales would recover to slightly above current estimated levels. Under the Delayed Growth Scenario, the net sales decline in 2010 would be 11 percent from baseline levels, decreasing to a decline of only three percent in 2015. These sales declines are limited enough and short-term enough that it is unlikely that they could put a supermarket in the PTA at risk of closure, especially for the long term. Even if one supermarket were to close, its sales would then be redistributed among the remaining existing supermarkets, making additional closures unlikely.

With respect to individual store impacts, the addition of the limited square footage of the three Fresh & Easy outlets would not substantially change the potential impacts from those that do not consider cumulative impacts. The three new stores are small, and being scattered throughout the area they should not substantially add to the potential proximity effects on stores near the Wal-Mart (e.g., the Lucky), and are not specialized in the same market niche as existing supermarkets, so they should not impact stores in any particular market niche such that the additional cumulative impacts would be likely to result in the closure of any existing supermarket outlets.

Because of their small size and locations, the additional supermarkets are not projected to capture a substantial proportion of sales from the Secondary Trade Area or beyond. The additional supermarket square footage in the Secondary Trade Area is negligible, a 1,300 square foot expansion to an existing store (see discussion above). The Save Mart in Pittsburg that is closed, did so due to pre-existing conditions (e.g., competition from the Pittsburg WinCo) rather than the Proposed Project's future impacts, and the presence of a Supercenter more than nine miles distant should have a negligible impact on efforts to re-tenant that space as either a supermarket or in some other local-serving use for which it is deemed suitable.

**Table 13: Cumulative Impacts on Primary Trade Area Supermarkets**

<b>ABAG Projected Growth</b>	<b>2008</b>	<b>2010</b>	<b>2015</b>
Supermarket Sales Potential (a)	\$315,000,000	\$325,350,000	\$350,800,000
Existing Supermarket Square Feet (b)	857,199	857,199	857,199
Additional Grocery Store Equivalent in Project (c)		40,000	40,000
Estimated Supermarket Sales in Supercenter (d) (e)		\$20,000,000	\$20,000,000
Other Proposed Supermarkets (f)			
<i>Fresh &amp; Easy Market (Antioch, Buchanan Crossing)</i>		14,000	14,000
<i>Fresh &amp; Easy Market (Antioch, Lakeview Center)</i>		14,000	14,000
<i>Fresh &amp; Easy Market (Oakley)</i>		13,000	13,000
Total Additional Square Feet		41,000	41,000
Average Sales per Square Foot in Other Proposed Stores (g)		\$340	\$368
Estimated Total Sales in Other New Supermarkets		\$13,940,000	\$15,100,000
Estimated Supermarket Sales in All New Stores		\$33,940,000	\$35,100,000
Sales in Existing Outlets (h)	\$315,000,000	\$291,410,000	\$315,700,000
<b>Average Annual Sales per Square Foot at Existing Stores</b>	<b>\$367</b>	<b>\$340</b>	<b>\$368</b>
<b>Percent Change from 2008</b>		<b>-7%</b>	<b>0%</b>
<b>Delayed Growth Scenario</b>	<b>2008</b>	<b>2010</b>	<b>2015</b>
Supermarket Sales Potential (a)	\$315,000,000	\$315,000,000	\$340,390,000
Existing Supermarket Square Feet (b)	857,199	857,199	857,199
Additional Grocery Store Equivalent in Project (c)		40,000	40,000
Estimated Supermarket Sales in Supercenter (d) (e)		\$20,000,000	\$20,000,000
Other Proposed Supermarkets (f)			
<i>Fresh &amp; Easy Market (Antioch, Buchanan Crossing)</i>		14,000	14,000
<i>Fresh &amp; Easy Market (Antioch, Lakeview Center)</i>		14,000	14,000
<i>Fresh &amp; Easy Market (Oakley)</i>		13,000	13,000
Total Additional Square Feet		41,000	41,000
Average Sales per Square Foot in Other Proposed Stores (g)		\$328	\$357
Estimated Sales in Other New Supermarkets		\$13,470,000	\$14,620,000
Estimated Supermarket Sales in All New Stores		\$33,470,000	\$34,620,000
Sales in Existing Outlets (h)	\$315,000,000	\$281,530,000	\$305,770,000
<b>Average Annual Sales per Square Foot at Existing Stores</b>	<b>\$367</b>	<b>\$328</b>	<b>\$357</b>
<b>Percent Change from 2008</b>		<b>-11%</b>	<b>-3%</b>

(a) From Table 12.

(b) From Appendix F.

(c) From Table 1.

(d) From Table 11.

(e) All estimates throughout table in 2006 dollars. All total sales estimates rounded to nearest ten thousand.

(f) From Appendix G.

(g) Assumes average sales at other new outlets will be at same level as existing outlets.

(h) Supermarket sales potential less sales in new stores.

Source: Bay Area Economics 2008, based on information from State Board of Equalization, 2002 Census of Retail Trade, Trade Dimensions, Costco, and as cited in supporting tables.

## Potential for Urban Decay

The causal chain leading to urban decay is dependent on long-term vacancies resulting from store closures due to the entry of a new competitor into the market. Since the analysis above does not point to likely store closure, long-term vacancies and thus urban decay are also not likely to result from the Proposed Project, either alone or cumulatively with other reasonably foreseeable projects. However, in the unlikely event that an existing supermarket was to close, it is likely that any such space would be readily retented. This is primarily due to the fact that supermarket spaces are not only reusable by other grocers, they are also quite suitable and desirable for other retail users such as dollar stores or non-retail users such as fitness centers. Since there is very little or no vacant supermarket-equivalent space in the trade area, there would be no competition from such space which might delay retenting of a closed supermarket space. Additionally, in areas such as the Primary Trade Area where historic growth has been strong and where future growth potential is expected to remain strong once the economy recovers, there is a general expectation that higher-than-desirable vacancy rates will be temporary. Consequently, property owners are more likely to perceive the prospect of properties ultimately being leased at favorable rents, and thus are more likely to maintain their properties in a condition suitable for leasing or releasing. Therefore, the two major factors which can ultimately result in urban decay – prolonged vacancy and lack of property maintenance – cannot be concluded to be present or anticipated. As such, urban decay is not a reasonably foreseeable outcome even in the unlikely event of the closure of a supermarket.

There is also the related question of whether the project could exacerbate conditions for existing vacant spaces and thus contribute to factors which could result in urban decay related to such spaces. Certain non-grocery segments of the market show high vacancy and if all proposed and reasonably foreseeable retail projects were built, this might exacerbate the situation in the short term. However, as mentioned above, the vacancies in the Primary Trade Area are not in spaces suitable for a major competitive supermarket, and are thus not directly competitive with the supermarket retail sector in terms of building occupancy. In other words, the introduction of new supermarket space by Wal-Mart would not delay or inhibit the tenanting or retenting of existing non-supermarket size vacant space in the trade area because none of these spaces are suitable for another supermarket (which might theoretically be seeking to meet unmet grocery demand in the trade area). For example, the three largest vacancies, the two vacated Mervyns stores and the vacant Gottschalks, are too large for a supermarket, and are in centers or retail nodes where such a use would be atypical (e.g., one of the vacated Mervyns stores and the vacated Gottschalks are in the Somersville Towne Center, a mostly-enclosed shopping mall; supermarkets are rarely found in such retail centers).<sup>13</sup> (In the Secondary Trade Area, there is the vacant Save Mart in Pittsburg, but it is located over eight miles from the project site and its potential for retenting would be minimally affected by the Walmart expansion.) Most of the remaining vacancies are smaller spaces in projects scattered throughout the Primary Trade Area. With the exception of downtown Antioch, which consists largely of small storefronts, most of these small-store vacancies are actually in the newest centers in the area, some of which include plans for additional future development not yet underway. In other words, rather than being concentrated in older centers, the vacancies tend to be in the newest spaces, representing centers that are still undergoing initial absorption that has been slowed by the current recession. BAE's tour of these centers and

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<sup>13</sup> As noted above, the Gottschalks also closed in the summer of 2009.

observation of these vacant storefronts found that these centers were all still well-maintained, and even where construction had been halted mid-project, there were no signs of physical deterioration (e.g., broken windows, graffiti, or other markers for urban decay). Even vacant spaces in downtown Antioch are generally well-maintained. As mentioned above, in areas such as the Primary Trade Area where historic growth has been strong and where future growth potential is expected to remain strong once the economy recovers, there is a general expectation that higher-than-desirable vacancy rates will be temporary. Consequently, property owners are more likely to perceive the prospect of properties ultimately being leased at favorable rents, and thus are more likely to maintain their properties such that urban decay is avoided. This is not to say that the retail climate in the area is not currently challenging, only that this project will not be a causal factor for urban decay, for the reasons discussed above.

In summary, it is BAE's conclusion that urban decay is not a likely result of the proposed project, neither under project-specific conditions nor under cumulative conditions. The analysis shows that it is unlikely that the project would result in closures of competitive businesses resulting in building vacancies. In the unlikely event that such a vacancy was to occur, none of the other conditions which could ultimately lead to urban decay - prolonged vacancy and lack of property maintenance - are anticipated to occur. Additionally, it is unlikely that the project would contribute to the development of urban decay conditions at currently vacant properties. Given the lack of existing vacancies that would be suitable for a competing supermarket tenant, the introduction of the project to the trade area would not delay or inhibit the retenanting of larger or smaller existing vacant spaces that do exist. Despite the current unfavorable retail climate, the projected long term growth potential in the trade area is strong, and owners of vacant spaces (many of which are newly constructed) are maintaining their properties in a condition suitable for leasing with no sign of neglect or deferred maintenance. Therefore, there is no evidence to indicate that the project would result in conditions ultimately leading to urban decay, or that it would exacerbate existing conditions that might lead to urban decay. As such, the project's impacts in terms of urban decay are less than significant, at both the project-specific and cumulative levels of analysis.



## Appendices



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**Appendix A: Trade Area Census Tracts**

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<u>County</u>	<u>Tract</u>
Contra Costa	3010
Contra Costa	3020.02
Contra Costa	3020.03
Contra Costa	3020.04
Contra Costa	3031
Contra Costa	3032
Contra Costa	3040
Contra Costa	3050
Contra Costa	3060.01
Contra Costa	3060.02
Contra Costa	3071.01
Contra Costa	3071.02
Contra Costa	3072.01
Contra Costa	3072.02
Contra Costa	3072.04
Contra Costa	3072.05
Contra Costa	3080.01
Contra Costa	3080.02
Contra Costa	3090
Contra Costa	3100
Contra Costa	3110
Contra Costa	3120
Contra Costa	3131.01
Contra Costa	3131.02
Contra Costa	3131.03
Contra Costa	3132.01
Contra Costa	3132.02
Contra Costa	3141.02
Contra Costa	3141.03
Contra Costa	3141.04
Contra Costa	3142
Contra Costa	3150
Contra Costa	3551.01
Contra Costa	3551.06
Contra Costa	3552

<u>STA Zip Codes</u>	<u>Zip Code</u>
Bethel Island	94511
Byron/Discovery Bay	94514
Knightsen	94548
Pittsburg/Bay Point	94565

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Note: Primary Trade Area is the Cities of Antioch, Brentwood, and Oakley. The Secondary Trade Area is this list of tracts less the three cities.

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**Appendix B: Unemployment and Labor Force Trends in Civilian Labor Force**


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	Primary Trade Area				Contra Costa County			
	Labor Force (a)	Employment	Unemployment	Unemployment Rate	Labor Force (a)	Employment	Unemployment	Unemployment Rate
<b>2000</b>	70,200	67,700	2,500	3.6%	500,700	483,000	17,700	3.5%
<b>2001</b>					508,700	488,100	20,600	4.1%
<b>2002</b>					513,700	484,300	29,400	5.7%
<b>2003</b>					512,200	480,900	31,300	6.1%
<b>2004</b>					512,000	484,100	27,900	5.4%
<b>2005</b>					515,400	490,200	25,200	4.9%
<b>2006</b>					519,000	496,700	22,300	4.3%
<b>2007</b>					526,100	501,200	24,900	4.7%
<b>May 2008</b>					529,700	499,200	30,500	5.8%

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(a) Civilian Labor Force refers to workers by place of residence. Sum may not equal parts due to independent rounding. Data represent annual averages of monthly employment data. While data are published for the PTA for years after 2000, these data have been deemed unreliable since they do not take into account the rapid household growth in the area relative to the County as a whole.

Sources: California Employment Development Department; Bay Area Economics, 2008.

**Appendix C-1: Antioch Taxable Retail Sales Trends, 2000 to 2007 (Adjusted for Inflation)**

	2000	2001	2002	2003	2004	2005	2006	3Q 06 - 2Q 07
<b>City of Antioch Sales in 2006 \$000 (a) (b) (c)</b>								
Apparel Stores	\$18,706	\$19,697	\$20,594	\$22,208	\$25,690	\$33,221	\$32,104	\$31,888
General Merchandise Stores	\$194,407	\$210,413	\$213,606	\$226,153	\$253,518	\$259,318	\$258,433	\$255,649
Food Stores	\$55,409	\$58,174	\$58,517	\$56,208	\$51,745	\$50,771	\$47,610	\$47,143
Eating and Drinking Places	\$64,738	\$70,451	\$74,403	\$78,414	\$93,772	\$93,675	\$95,249	\$93,537
Home Furnishings and Appliances	\$13,500	\$12,175	\$16,478	\$18,645	\$25,272	\$26,934	\$24,915	\$22,826
Building Materials and Farm Implements (d)	\$54,337	\$61,821	\$85,327	\$99,717	\$109,472	\$135,119	\$123,619	\$113,194
Auto Dealers and Auto Supplies	\$146,996	\$163,944	\$161,205	\$149,300	\$149,365	\$142,367	\$163,306	\$181,834
Service Stations	\$62,285	\$70,201	\$65,031	\$71,513	\$78,665	\$79,911	\$89,366	\$95,449
Other Retail Stores	\$55,528	\$58,014	\$58,722	\$67,501	\$89,010	\$90,888	\$90,721	\$87,879
<b>Retail Stores Total</b>	<b>\$665,905</b>	<b>\$724,889</b>	<b>\$753,884</b>	<b>\$789,659</b>	<b>\$876,509</b>	<b>\$912,204</b>	<b>\$925,323</b>	<b>\$929,399</b>

	2000	2001	2002	2003	2004	2005	2006	3Q 06 - 2Q 07
<b>Antioch Sales per Capita in 2006 \$ (c) (e)</b>								
Apparel Stores	\$207	\$211	\$213	\$224	\$255	\$331	\$322	\$320
General Merchandise Stores	\$2,147	\$2,259	\$2,211	\$2,284	\$2,521	\$2,585	\$2,592	\$2,564
Food Stores	\$612	\$625	\$606	\$568	\$515	\$506	\$477	\$473
Eating and Drinking Places	\$715	\$756	\$770	\$792	\$933	\$934	\$955	\$938
Home Furnishings and Appliances	\$149	\$131	\$171	\$188	\$251	\$269	\$250	\$229
Building Materials and Farm Implements (d)	\$600	\$664	\$883	\$1,007	\$1,089	\$1,347	\$1,240	\$1,135
Auto Dealers and Auto Supplies	\$1,624	\$1,760	\$1,669	\$1,508	\$1,485	\$1,419	\$1,638	\$1,824
Service Stations	\$688	\$754	\$673	\$722	\$782	\$797	\$896	\$957
Other Retail Stores	\$613	\$623	\$608	\$682	\$885	\$906	\$910	\$881
<b>Retail Stores Total</b>	<b>\$7,355</b>	<b>\$7,783</b>	<b>\$7,805</b>	<b>\$7,976</b>	<b>\$8,717</b>	<b>\$9,094</b>	<b>\$9,279</b>	<b>\$9,322</b>

<b>Population</b>	<b>90,532</b>	<b>93,141</b>	<b>96,589</b>	<b>99,001</b>	<b>100,549</b>	<b>100,308</b>	<b>99,723</b>	<b>99,704</b>
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**Notes:**

Third quarter 2006 through second quarter 2007 represents most recent data available.

(a) Retail sales have been adjusted to 2006 dollars based on the Taxable Sales Deflators calculated by the State Board of Equalization (BOE). 2007 deflation factor has not yet been calculated. No inflation assumed from 2006 through 2007. Given the low rate of inflation historically in this index, this is not an unreasonable assumption, and even if inflation is at a slightly higher level, it would not materially affect the analysis.

(b) Analysis excludes all non-retail outlets (business and personal services) reporting taxable sales.

(c) A '#' sign indicates data suppressed to preserve confidentiality due to four or fewer outlets or sales of more than 80% of the category in one store. Suppressed sales have been combined with Other Retail Stores.

(d) Starting in 2007, BOE has reclassified some outlet types, and farm implements are no longer combined with building materials, but are included in the other retail stores category.

(e) Per capita sales calculated based on State Board of Equalization reported sales and most recent Department of Finance annual population estimates benchmarked to the decennial Census. Since sales data for the last period spans the two years, the population figure used is the midpoint between the 2006 and 2007 DOF estimates.

Sources: State Board of Equalization; 2000 U.S. Census; State Department of Finance; Bay Area Economics, 2008.

**Appendix C-2: Brentwood Taxable Retail Sales Trends, 2000 to 2007 (Adjusted for Inflation)**

	2000	2001	2002	2003	2004	2005	2006	3Q 06 - 2Q 07
<b>City of Brentwood Sales in 2006 \$000 (a) (b) (c)</b>								
Apparel Stores	\$1,055	\$961	\$4,477	\$7,422	#	\$24,551	\$25,923	\$26,728
General Merchandise Stores	\$6,896	\$8,275	\$9,359	\$14,804	\$14,322	\$14,720	\$15,321	\$16,507
Food Stores	\$23,297	\$26,425	\$27,488	\$31,931	\$38,028	\$40,154	\$41,422	\$42,603
Eating and Drinking Places	\$20,545	\$23,408	\$25,840	\$28,929	\$31,949	\$40,321	\$43,368	\$46,325
Home Furnishings and Appliances	\$3,030	\$3,279	\$5,585	\$13,270	\$15,551	\$18,982	\$16,874	\$16,513
Building Materials and Farm Implements (d)	\$18,192	\$21,022	\$18,618	\$19,107	\$71,334	\$71,825	\$63,634	\$62,595
Auto Dealers and Auto Supplies	\$54,935	\$52,805	\$47,976	\$45,987	\$47,882	\$55,726	\$59,000	\$58,441
Service Stations	\$18,704	\$21,419	\$26,425	\$33,931	\$42,132	\$50,623	\$62,556	\$67,540
Other Retail Stores	\$10,006	\$11,726	\$13,913	\$15,076	\$50,092	\$38,153	\$34,546	\$36,290
<b>Retail Stores Total</b>	<b>\$156,660</b>	<b>\$169,320</b>	<b>\$179,679</b>	<b>\$210,457</b>	<b>\$311,290</b>	<b>\$355,056</b>	<b>\$362,644</b>	<b>\$373,542</b>

	2000	2001	2002	2003	2004	2005	2006	3Q 06 - 2Q 07
<b>Brentwood Sales per Capita in 2006 \$ (c) (e)</b>								
Apparel Stores	\$45	\$37	\$149	\$218	#	\$585	\$566	\$566
General Merchandise Stores	\$296	\$316	\$312	\$435	\$374	\$351	\$335	\$350
Food Stores	\$1,000	\$1,009	\$918	\$938	\$993	\$958	\$905	\$902
Eating and Drinking Places	\$882	\$894	\$863	\$850	\$834	\$961	\$948	\$981
Home Furnishings and Appliances	\$130	\$125	\$186	\$390	\$406	\$453	\$369	\$350
Building Materials and Farm Implements (d)	\$781	\$803	\$622	\$561	\$1,862	\$1,713	\$1,390	\$1,326
Auto Dealers and Auto Supplies	\$2,358	\$2,017	\$1,602	\$1,351	\$1,250	\$1,329	\$1,289	\$1,238
Service Stations	\$803	\$818	\$882	\$997	\$1,100	\$1,207	\$1,367	\$1,430
Other Retail Stores	\$429	\$448	\$464	\$443	\$1,308	\$910	\$755	\$768
<b>Retail Stores Total</b>	<b>\$6,723</b>	<b>\$6,468</b>	<b>\$5,999</b>	<b>\$6,183</b>	<b>\$8,126</b>	<b>\$8,467</b>	<b>\$7,923</b>	<b>\$7,910</b>
<b>Population</b>	<b>23,302</b>	<b>26,179</b>	<b>29,953</b>	<b>34,040</b>	<b>38,309</b>	<b>41,936</b>	<b>45,770</b>	<b>47,224</b>

**Notes:**

Third quarter 2006 through second quarter 2007 represents most recent data available.

(a) Retail sales have been adjusted to 2006 dollars based on the Taxable Sales Deflators calculated by the State Board of Equalization (BOE). 2007 deflation factor has not yet been calculated. No inflation assumed from 2006 through 2007. Given the low rate of inflation historically in this index, this is not an unreasonable assumption, and even if inflation is at a slightly higher level, it would not materially affect the analysis.

(b) Analysis excludes all non-retail outlets (business and personal services) reporting taxable sales.

(c) A "#" sign indicates data suppressed to preserve confidentiality due to four or fewer outlets or sales of more than 80% of the category in one store. Suppressed sales have been combined with Other Retail Stores.

(d) Starting in 2007, BOE has reclassified some outlet types, and farm implements are no longer combined with building materials, but are included in the other retail stores category.

(e) Per capita sales calculated based on State Board of Equalization reported sales and most recent Department of Finance annual population estimates benchmarked to the decennial Census. Since sales data for the last period spans the two years, the population figure used is the midpoint between the 2006 and 2007 DOF estimates.

Sources: State Board of Equalization; 2000 U.S. Census; State Department of Finance; Bay Area Economics, 2008.



**Appendix C-4: Pittsburgh Taxable Retail Sales Trends, 2000 to 2007 (Adjusted for Inflation)**

	2000	2001	2002	2003	2004	2005	2006	3Q 06 - 2Q 07
<b>City of Pittsburgh Sales in 2006 \$000 (a) (b) (c)</b>								
Apparel Stores	\$22,357	\$22,809	\$22,429	\$22,255	\$21,804	\$18,011	\$16,597	\$15,965
General Merchandise Stores	\$89,241	\$97,778	\$94,926	\$88,777	\$83,018	\$85,007	\$84,021	\$84,356
Food Stores	\$30,960	\$36,185	\$35,063	\$32,306	\$33,219	\$33,111	\$31,941	\$31,321
Eating and Drinking Places	\$39,628	\$43,762	\$47,677	\$51,914	\$51,546	\$52,602	\$55,718	\$59,266
Home Furnishings and Appliances	\$7,229	\$10,580	\$19,542	\$30,362	\$25,218	\$24,463	\$22,828	\$19,263
Building Materials and Farm Implements (d)	\$4,876	\$82,164	\$94,959	\$94,595	\$95,729	\$90,570	\$74,232	\$75,503
Auto Dealers and Auto Supplies	\$141,784	\$212,892	\$193,108	\$104,968	\$173,369	\$195,285	\$172,198	\$166,188
Service Stations	\$14,259	\$13,394	\$11,527	\$23,960	\$31,351	\$35,345	\$40,853	\$47,274
Other Retail Stores	\$49,414	\$73,743	\$107,785	\$73,761	\$75,756	\$77,871	\$76,520	\$72,477
<b>Retail Stores Total</b>	<b>\$469,749</b>	<b>\$593,308</b>	<b>\$627,016</b>	<b>\$522,898</b>	<b>\$591,011</b>	<b>\$612,266</b>	<b>\$574,908</b>	<b>\$571,613</b>

(a) Retail sales have been adjusted to 2006 dollars based on the Taxable Sales Defators calculated by the State Board of Equalization (BOE). 2007 deflation factor has not yet been calculated. No inflation assumed from 2006 through 2007. Given the low rate of inflation historically in this index, this is not an unreasonable assumption, and even if inflation is at a slightly higher level, it would not materially affect the analysis.  
 (b) Analysis excludes all non-retail outlets (business and personal services) reporting taxable sales.  
 (c) A '#' sign indicates data suppressed to preserve confidentiality due to four or fewer outlets or sales of more than 80% of the category in one store. Suppressed sales have been combined with Other Retail Stores.  
 (d) Starting in 2007, BOE has reclassified some outlet types, and farm implements are no longer combined with building materials, but are included in the other retail stores category.  
 (e) Per capita sales calculated based on State Board of Equalization reported sales and most recent Department of Finance annual population estimates benchmarked to the decennial Census. Since sales data for the last period spans the two years, the population figure used is the midpoint between the 2006 and 2007 DOF estimates.

	2000	2001	2002	2003	2004	2005	2006	3Q 06 - 2Q 07
<b>Pittsburgh Sales per Capita in 2006 \$ (c) (e)</b>								
Apparel Stores	\$394	\$393	\$375	\$366	#	\$230	\$267	\$256
General Merchandise Stores	\$1,572	\$1,687	\$1,587	\$1,458	\$1,351	\$1,368	\$1,350	\$1,350
Food Stores	\$545	\$624	\$586	\$531	\$541	\$533	\$513	\$501
Eating and Drinking Places	\$698	\$755	\$797	\$853	\$839	\$846	\$896	\$949
Home Furnishings and Appliances	\$127	\$183	\$327	\$499	\$410	\$394	\$367	\$308
Building Materials and Farm Implements (d)	\$1,319	\$1,417	\$1,587	\$1,554	\$1,558	\$1,457	\$1,193	\$1,209
Auto Dealers and Auto Supplies	\$2,498	\$3,673	\$3,228	\$1,724	\$2,821	\$3,142	\$2,768	\$2,660
Service Stations	\$251	\$231	\$193	\$394	\$510	\$569	\$657	\$757
Other Retail Stores	\$870	\$1,272	\$1,802	\$1,211	\$1,233	\$1,253	\$1,230	\$1,160
<b>Retail Stores Total</b>	<b>\$8,275</b>	<b>\$10,236</b>	<b>\$10,482</b>	<b>\$8,588</b>	<b>\$9,262</b>	<b>\$9,852</b>	<b>\$9,240</b>	<b>\$9,151</b>

Population 56,769 57,964 59,821 60,888 61,456 62,147 62,218 62,465

**Notes:**

Third quarter 2006 through second quarter 2007 represents most recent data available.  
 (a) Retail sales have been adjusted to 2006 dollars based on the Taxable Sales Defators calculated by the State Board of Equalization (BOE). 2007 deflation factor has not yet been calculated. No inflation assumed from 2006 through 2007. Given the low rate of inflation historically in this index, this is not an unreasonable assumption, and even if inflation is at a slightly higher level, it would not materially affect the analysis.  
 (b) Analysis excludes all non-retail outlets (business and personal services) reporting taxable sales.  
 (c) A '#' sign indicates data suppressed to preserve confidentiality due to four or fewer outlets or sales of more than 80% of the category in one store. Suppressed sales have been combined with Other Retail Stores.  
 (d) Starting in 2007, BOE has reclassified some outlet types, and farm implements are no longer combined with building materials, but are included in the other retail stores category.  
 (e) Per capita sales calculated based on State Board of Equalization reported sales and most recent Department of Finance annual population estimates benchmarked to the decennial Census. Since sales data for the last period spans the two years, the population figure used is the midpoint between the 2006 and 2007 DOF estimates.

Sources: State Board of Equalization; 2000 U.S. Census; State Department of Finance; Bay Area Economics, 2008.

**Appendix C-5: Contra Costa County Taxable Retail Sales Trends, 2000 to 2007 (Adjusted for Inflation)**

Contra Costa Sales in 2006 \$000 (a) (b) (c)

	2000	2001	2002	2003	2004	2005	2006	3Q 06 - 2Q 07
Apparel Stores	\$354,449	\$363,259	\$378,332	\$399,466	\$428,276	\$459,636	\$462,451	\$469,534
General Merchandise Stores	\$1,703,505	\$1,766,824	\$1,781,536	\$1,820,769	\$1,869,563	\$1,874,337	\$1,882,310	\$1,896,036
Food Stores	\$570,624	\$612,739	\$618,704	\$624,029	\$621,830	\$618,245	\$607,062	\$611,077
Eating and Drinking Places	\$872,944	\$922,292	\$955,682	\$982,738	\$1,036,240	\$1,068,264	\$1,098,793	\$1,116,522
Home Furnishings and Appliances	\$482,207	\$478,634	\$489,617	\$504,994	\$513,244	\$492,807	\$468,008	\$446,980
Building Materials and Farm Implements (d)	\$810,262	\$902,457	\$934,366	\$986,960	\$1,125,912	\$1,112,402	\$1,027,731	\$1,021,681
Auto Dealers and Auto Supplies	\$1,847,318	\$1,974,389	\$1,978,701	\$1,852,829	\$1,884,146	\$1,991,814	\$1,871,103	\$1,870,583
Service Stations	\$660,095	\$831,407	\$790,416	\$808,165	\$960,192	\$1,062,892	\$1,190,703	\$1,270,348
Other Retail Stores	\$1,563,186	\$1,531,751	\$1,638,925	\$1,568,514	\$1,662,602	\$1,675,442	\$1,667,746	\$1,583,301
<b>Retail Stores Total</b>	<b>\$9,064,591</b>	<b>\$9,383,753</b>	<b>\$9,566,278</b>	<b>\$9,548,463</b>	<b>\$10,102,004</b>	<b>\$10,255,840</b>	<b>\$10,275,907</b>	<b>\$10,286,062</b>

Contra Costa Sales per Capita in 2006 \$ (c) (e)

	2000	2001	2002	2003	2004	2005	2006	3Q 06 - 2Q 07
Apparel Stores	\$374	\$376	\$385	\$402	\$426	\$452	\$451	\$455
General Merchandise Stores	\$1,795	\$1,829	\$1,815	\$1,832	\$1,859	\$1,844	\$1,834	\$1,837
Food Stores	\$601	\$634	\$630	\$628	\$618	\$608	\$592	\$592
Eating and Drinking Places	\$920	\$955	\$974	\$989	\$1,030	\$1,051	\$1,071	\$1,082
Home Furnishings and Appliances	\$508	\$495	\$499	\$508	\$510	\$485	\$456	\$433
Building Materials and Farm Implements (d)	\$854	\$934	\$952	\$993	\$1,120	\$1,095	\$1,001	\$990
Auto Dealers and Auto Supplies	\$1,947	\$2,044	\$2,016	\$1,865	\$1,874	\$1,861	\$1,823	\$1,813
Service Stations	\$906	\$861	\$805	\$813	\$955	\$1,046	\$1,160	\$1,231
Other Retail Stores	\$1,648	\$1,586	\$1,670	\$1,579	\$1,653	\$1,649	\$1,625	\$1,534
<b>Retail Stores Total</b>	<b>\$9,554</b>	<b>\$9,714</b>	<b>\$9,746</b>	<b>\$9,609</b>	<b>\$10,046</b>	<b>\$10,091</b>	<b>\$10,013</b>	<b>\$9,968</b>

Population

	948,816	966,012	981,536	993,668	1,005,590	1,016,304	1,026,234	1,031,907
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Notes:

Third quarter 2006 through second quarter 2007 represents most recent data available.

(a) Retail sales have been adjusted to 2006 dollars based on the Taxable Sales Deflators calculated by the State Board of Equalization (BOE). 2007 deflation factor has not yet been calculated. No inflation assumed from 2006 through 2007. Given the low rate of inflation historically in this index, this is not an unreasonable assumption, and even if inflation is at a slightly higher level, it would not materially affect the analysis.

(b) Analysis excludes all non-retail outlets (business and personal services) reporting taxable sales.

(c) A "\*" sign indicates data suppressed to preserve confidentiality due to four or fewer outlets or sales of more than 80% of the category in one store. Suppressed sales have been combined with Other Retail Stores.

(d) Starting in 2007, BOE has reclassified some outlet types, and farm implements are no longer combined with building materials, but are included in the other retail stores category.

(e) Per capita sales calculated based on State Board of Equalization reported sales and most recent Department of Finance annual population estimates benchmarked to the decennial Census. Since sales data for the last period spans the two years, the population figure used is the midpoint between the 2006 and 2007 DOF estimates.

Sources: State Board of Equalization; 2000 U.S. Census; State Department of Finance; Bay Area Economics, 2008.

**Appendix C-6: California Taxable Retail Sales Trends, 2000 to 2007 (Adjusted for Inflation)**

	2000	2001	2002	2003	2004	2005	2006	3Q 06 - 2Q 07
<b>California Sales in 2006 \$000 (a) (b) (c)</b>								
Apparel Stores	\$13,464,045	\$14,048,569	\$14,838,799	\$16,059,952	\$17,664,703	\$19,053,511	\$19,829,416	\$20,562,077
General Merchandise Stores	\$48,029,172	\$49,517,797	\$51,284,978	\$53,482,162	\$56,190,251	\$57,823,183	\$59,264,894	\$59,956,208
Food Stores	\$19,256,369	\$19,751,695	\$20,045,062	\$20,533,245	\$20,653,035	\$21,513,939	\$21,864,179	\$21,941,421
Eating and Drinking Places	\$37,163,893	\$38,666,065	\$40,277,345	\$42,372,104	\$45,080,763	\$47,259,607	\$49,229,418	\$50,622,163
Home Furnishings and Appliances	\$14,245,363	\$13,989,526	\$14,790,236	\$15,980,081	\$17,089,888	\$17,705,945	\$17,383,449	\$17,203,492
Building Materials and Farm Implements (d)	\$25,995,967	\$27,765,935	\$29,694,364	\$32,473,626	\$38,679,558	\$40,381,051	\$39,811,541	\$37,402,711
Auto Dealers and Auto Supplies	\$59,450,958	\$63,772,435	\$67,504,144	\$70,940,365	\$73,722,194	\$74,944,164	\$71,574,816	\$72,358,087
Service Stations	\$26,419,271	\$25,839,191	\$25,309,211	\$29,321,753	\$34,126,581	\$39,270,159	\$43,579,719	\$45,052,385
Other Retail Stores	\$56,821,899	\$55,099,011	\$55,273,644	\$57,622,533	\$61,577,270	\$64,712,843	\$66,529,140	\$66,319,210
<b>Retail Stores Total</b>	<b>\$300,846,938</b>	<b>\$308,450,224</b>	<b>\$319,017,785</b>	<b>\$338,785,822</b>	<b>\$364,784,243</b>	<b>\$382,664,401</b>	<b>\$389,066,572</b>	<b>\$391,417,754</b>

	2000	2001	2002	2003	2004	2005	2006	3Q 06 - 2Q 07
<b>California Sales per Capita in 2006 \$ (c) (e)</b>								
Apparel Stores	\$397	\$408	\$423	\$450	\$488	\$520	\$534	\$551
General Merchandise Stores	\$1,418	\$1,438	\$1,463	\$1,500	\$1,552	\$1,577	\$1,597	\$1,606
Food Stores	\$568	\$574	\$572	\$576	\$571	\$587	\$589	\$588
Eating and Drinking Places	\$1,097	\$1,123	\$1,149	\$1,188	\$1,245	\$1,289	\$1,326	\$1,356
Home Furnishings and Appliances	\$421	\$406	\$422	\$448	\$472	\$483	\$468	\$461
Building Materials and Farm Implements (d)	\$767	\$806	\$847	\$911	\$1,069	\$1,101	\$1,073	\$1,002
Auto Dealers and Auto Supplies	\$1,755	\$1,852	\$1,925	\$1,990	\$2,037	\$2,043	\$1,928	\$1,938
Service Stations	\$780	\$750	\$722	\$822	\$943	\$1,071	\$1,174	\$1,207
Other Retail Stores	\$1,677	\$1,600	\$1,576	\$1,616	\$1,701	\$1,764	\$1,793	\$1,776
<b>Retail Stores Total</b>	<b>\$8,882</b>	<b>\$8,959</b>	<b>\$9,098</b>	<b>\$9,502</b>	<b>\$10,077</b>	<b>\$10,434</b>	<b>\$10,483</b>	<b>\$10,483</b>

<b>Population</b>	<b>33,873,086</b>	<b>34,430,970</b>	<b>35,063,959</b>	<b>35,652,700</b>	<b>36,199,342</b>	<b>36,675,346</b>	<b>37,114,598</b>	<b>37,337,019</b>
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**Notes:**

Third quarter 2006 through second quarter 2007 represents most recent data available.

(a) Retail sales have been adjusted to 2006 dollars based on the Taxable Sales Deflators calculated by the State Board of Equalization (BOE). 2007 deflation factor has not yet been calculated. No inflation assumed from 2006 through 2007. Given the low rate of inflation historically in this index, this is not an unreasonable assumption, and even if inflation is at a slightly higher level, it would not materially affect the analysis.

(b) Analysis excludes all non-retail outlets (business and personal services) reporting taxable sales.

(c) A "#" sign indicates data suppressed to preserve confidentiality due to four or fewer outlets or sales of more than 80% of the category in one store. Suppressed sales have been combined with Other Retail Stores.

(d) Starting in 2007, BOE has reclassified some outlet types, and farm implements are no longer combined with building materials, but are included in the other retail stores category.

(e) Per capita sales calculated based on State Board of Equalization reported sales and most recent Department of Finance annual population estimates benchmarked to the decennial Census. Since sales data for the last period spans the two years, the population figure used is the midpoint between the 2006 and 2007 DOF estimates.

Sources: State Board of Equalization; 2000 U.S. Census; State Department of Finance; Bay Area Economics, 2008.

**Appendix D: Comparison of Total and Taxable Sales**

	<u>Oakley</u>	<u>Antioch</u>	<u>Brentwood</u>	<u>PTA</u>	<u>Pittsburg</u>	<u>Contra Costa County</u>	<u>State</u>
<b>Total Sales, from 2002 Economic Census (a) (b):</b>							
NAICS Code	445	445	44511 (d)		445	445	445
Food and beverage stores	\$50,828	\$180,145	\$78,379	\$309,352	\$85,610	\$2,030,074	\$60,243,253
<b>Taxable Sales, from State Board of Equalization (a) (c):</b>							
Food Store Taxable Sales	\$19,434	\$55,324	\$25,988	\$100,746	\$35,063	\$584,948	\$18,951,412
<b>Percent Taxable Sales:</b>	<b>38%</b>	<b>31%</b>	<b>33%</b>	<b>33%</b>	<b>41%</b>	<b>29%</b>	<b>31%</b>
General Merchandise							
<b>Total Sales, from Economic Census (a) (b):</b>							
General Merchandise Stores (NAICS 452)	D	\$191,207	D		D	1,628,813	\$46,696,215
Drug and Proprietary Stores (NAICS 44611)	D	\$31,288	D		\$15,191	\$494,394	\$17,635,808
Total General Merchandise Store Group	D	\$222,495	D		D	\$2,123,207	\$64,332,023
<b>Taxable Sales, from State Board of Equalization (a) (c):</b>							
General Merchandise Stores							
Drug Stores							
Total General Merchandise Store Group		201,952				\$1,476,093	\$42,741,257
<b>Percent Taxable Sales:</b>							
General Merchandise Stores						\$208,243	\$5,745,634
Drug Stores						\$1,684,336	\$48,486,891
Total General Merchandise Store Group		<b>91%</b>				<b>91%</b>	<b>92%</b>
						<b>42%</b>	<b>33%</b>
						<b>79%</b>	<b>75%</b>

**Notes:**

- (a) Sales in \$1,000s.
- (b) Sales expressed in uninflated dollars.
- (c) These are the best matches available for type of store. Because they are not necessarily exact matches, and because the Economic Census and the State Board of Equalization rely on different data gathering methodologies, the percentages calculated here should be seen as general guides rather than hard and fast rules for food stores. Individual stores may vary widely due to product mix and other factors.
- (d) Data for larger 445 group is suppressed according to confidentiality rules; however, these stores likely represent most of sales in the category.

Sources: 2002 Economic Census; California State Board of Equalization; Bay Area Economics, 2008.

**Appendix E: Estimated Retail Sales for Secondary Trade Area, 2006**

	<b>Pittsburg/Bay Point</b>	<b>East County Unincorporated</b>	<b>Secondary Trade Area</b>	<b>California</b>
<b>Sales in 2006 \$000 (a)</b>				
General Merchandise Stores	\$132,881	\$6,678	\$139,558	\$78,632,192
Food Stores	\$132,929	\$35,262	\$168,191	\$69,502,434
All Other Retail	\$449,420	\$30,025	\$479,445	\$307,937,499
<b>Retail Stores Total</b>	<b>\$715,230</b>	<b>\$71,964</b>	<b>\$787,194</b>	<b>\$456,072,125</b>

	<b>Pittsburg/Bay Point</b>	<b>East County Unincorporated</b>	<b>Secondary Trade Area</b>	<b>California</b>
<b>Sales per Capita in 2006 \$</b>				
General Merchandise Stores	\$1,508	\$428	\$1,286	\$2,106
Food Stores	\$1,509	\$2,262	\$1,550	\$1,861
All Other Retail	\$5,101	\$1,926	\$4,420	\$8,248
<b>Retail Stores Total (b)</b>	<b>\$8,118</b>	<b>\$4,616</b>	<b>\$7,256</b>	<b>\$12,215</b>

<b>Population (b)</b>	<b>88,104</b>	<b>15,590</b>	<b>108,482</b>	<b>37,337,019</b>
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**Notes:**

2006 represents most recent Zip Code data available at time of analysis.

For this table, Secondary Trade Area locales have been defined by Zip Code for sales due to data availability. See Appendix A for a list of Zip Codes by locale. These Zip Codes represent the best fit to the STA, but boundaries may vary. Except for California, which is derived from BOE data as shown in Appendix C, sales have been estimated using Zip Code Business Patterns employment data and per-employee sales data by detailed NAICS code from the 2002 Economic Census. These estimates may vary from other sources, and should be considered to have some margin of error. Because of these limitations, data by category is only presented for the key categories of general merchandise and food stores.

(a) Retail sales have been adjusted to 2006 dollars based on the Taxable Sales Deflators calculated by the State Board of Equalization (BOE).

(b) Population estimate derived based on ABAG 20005 and 2010 estimates, assuming a constant rate of growth over the period to obtain the 2006 estimate. State estimate from DOF. Tracts used for subareas of STA represent a best fit with the portion of the secondary area under consideration, but in some cases tract boundaries do not follow city boundaries, and portions of the PTA may be in these tracts. Consider this as an "order of magnitude" estimate as a result.

Sources: State Board of Equalization; ABAG; 2000 U.S. Census; State Department of Finance; U.S. Census of Retail Trade, 2002; Zip Code and County Business Patterns 2006; Bay Area Economics, 2008.

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**Appendix F: Notes and Sources for Tables 7, 8, and 9**

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**Table 7**

- (a) Per Capita sales from Table 6. Sales have been benchmarked to Contra Costa County or California statewide, using whichever per capita number was smaller. The PTA had income levels and demographics more similar to statewide, but in order to be more conservative, if the County level was lower it was used.
- (b) 2007 per capita taxable sales times 2007 population. 2007 population data from Table 6.
- (c) Injection/Leakage = PTA Actual Sales less Potential Sales.

**Table 8**

Assumptions have been made regarding possible capture by the proposed project of leakage in each category; for instance, the Trade Area is unlikely to achieve 100 percent capture of "leaking" general merchandise sales, because some general merchandise shopping is mall-based, and shoppers seeking mall stores are likely to go elsewhere. The project is assumed not to capture any sales in service stations and automotive retail. New sales based on current per capita levels, so it is assumed that the area can continue to capture 100% of that level. Total capture from future sales equals current per capita levels adjusted to include capture of additional sales as shown in top half of table.

Sales per square foot in relevant categories has been derived as follows:

Apparel Stores	Based on mix of HdL highs and lows for a mix of store types in this category.
General Merchandise Stores	Average of average sales per square foot for Wal-Mart and Target, from most recent Annual Reports or 10-Ks available at the time of BAE's analysis.
Food Stores	Based on ULI's/ICSC's <i>Dollars &amp; Cents of Shopping Centers/The SCORE: 2008</i> . Median for all supermarkets in super community/community shopping centers
Eating and Drinking Places	Based on mix of HdL highs and lows for a mix of store types in this category.
Home Furnishings and Appliances	Based on mix of HdL highs and lows and ULI data for a mix of store types in this category.
Building Materials	Average of Lowe's and Home Depot averages from 2006 Annual Reports.
Motor Vehicles and Parts	n/a
Service Stations	n/a
Other Retail Stores	ULI national median sales per square foot for all types of retail in supercommunity/community shopping centers, from <i>Dollars &amp; Cents of Shopping Centers/The SCORE, 2008</i> .

Additional supportable square footage rounded to nearest thousand.

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Sources: Bay Area Economics 2008, based on information from the CA State Board of Equalization, 2002 Census of Retail Trade, Association of Bay Area Governments, CA State Department of Finance, Urban Land Institute/International Council of Shopping Centers, Wal-Mart, Home Depot, Lowe's, and Hinderliter de Lamas (HdL).

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**Appendix G: Competitive Supermarkets in Antioch and the Primary Trade Area**


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<u>Store/Location</u>	<u>Square Feet</u>	<u>Distance to Project (miles)</u>
<b><u>ANTIOCH</u></b>		
Food Maxx 2950 Delta Fair Blvd	49,950	5.8
Save Mart 3190 Contra Loma Blvd	50,355	4.9
Raley's 3632 Lone Tree Way	50,000	3.4
Grocery Outlet 1818 A St	21,162	4.5
Save Mart 111 E 18th St	32,462	4.8
Safeway 3365 Deer Valley Rd	52,866	2.7
Lucky 4500 Lone Tree Way	65,741	1.4
County Square Market 2711 Hillcrest Ave	17,043	3.4
<b>Total Grocery Store SF Antioch</b>	<b>339,579</b>	
<b><u>BRENTWOOD</u></b>		
Centro Mart 7820 Brentwood Blvd	15,000	5.1
Safeway 1125 2nd St	45,886	5.6
Raley's 2400 Sand Creek Rd	71,680	2.6
Trader Joe's 5451 Lone Tree Way	12,060	1.0
Safeway 3110 Balfour Rd	65,589	4.3
WinCo 6700 Lone Tree Way	96,956	1.8
Food Maxx 4461 Balfour Rd	62,441	5.8
Smart & Final Extra 5491 Lone Tree Way	28,288	1.0
<b>Total Grocery Store SF Brentwood</b>	<b>397,900</b>	
<b><u>OAKLEY</u></b>		
Raley's 2077 Main St	60,750	4.7
Lucky 2545 Main St	43,970	4.4
Centro Mart 3110 Main St	15,000	5.1
<b>Total Grocery Store SF Oakley</b>	<b>119,720</b>	
<b>Total Supermarket SF in PTA</b>	<b>857,199</b>	

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Sources: Contra Costa County Assessor's Office; Supervalu; Trade Dimensions; Cities of Antioch, Brentwood, and Oakley; Mapquest and Google Maps; Bay Area Economics, 2008.

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**Appendix H: Brokers Interviewed**

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Robert (Bob) Ashin  
916-485-8900  
Catlin Properties

John Sechser  
925-279-5588  
Colliers International

Brian Mirkovich  
925-279-4626  
Colliers International

Stephen Rusher  
925-974-0115  
Cornish & Carey

Stephen Coates  
408-371-8770  
Coates and Sowards Inc.

Michael Mundelius  
925-279-5585  
Colliers International

Tina Moucka  
310-277-6318  
Cal-American Corp.

Deborah Perry  
925-279-5561  
Colliers International

Jeff Zeigler  
614-883-1206  
(Streets of Brentwood)

**Appendix I: Planned and Proposed Retail Development**

Project Name/Site <i>City of Antioch</i>	Total Retail Square Feet	General Retail Square Feet	Reasonably Foreseeable	Food Store Square Feet	Status or Anticipated Opening Date	Comments
Bases Loaded Corner of 4th & G Sts.	4,700	4,700	4,700		Under construction	Restaurant/sports bar, under construction
Buchanan Crossing NWC of Buchanan and Somersville Roads	99,139	85,139	85,139	14,000	mid-2010	Approved fall 2008, includes a Fresh & Easy and Longs, slated for completion mid-2010
Contra Loma Plaza 3182 Contra Loma Blvd	4,000	4,000	4,000		Unknown	approved, is just a pad site in existing center no tenants located, appears to be stalled
Hillicrest Summit Hillicrest Ave and East Tregallas Rd	15,000	15,000	15,000		Unknown	No identified tenants; part of project with approximately 35,000 square feet of office space
Juliet Plaza 2100 L Street at Sycamore Drive	7,400	7,400	7,400		Unknown	Application incomplete
The Orchard at Slatten Ranch 4951 Slatten Ranch Rd	24,000	24,000	24,000		Unknown	Consists of three pad buildings; 104,325 sf JC Penney open, no pad tenants identified; accepted but on hold per applicant's request
Lone Tree Landing Lone Tree Way and Hillcrest Ave	25,000	25,000	25,000		Unknown for this portion	Total center size upon completion will be 80,875 square feet, for built portion 9,595 sq ft vacant office, 8,713 square feet vacant retail. Consists largely of local restaurants and salons, bank, services. Number represents unbuilt portion, 55,875 square feet built.
Produce Market 914 A St	3,200		0	3,200	Unknown	Approved in 2006, but on hold, building vacant remodel of vacant space
Antioch Armory 625 W 3rd St.	6,474	6,474	6,474		January 2009	Remodel of existing building for sporting goods store; occupied but not finished by building dept as of 1/09
Fowler Property 1700 4th St.	5,000	5,000	5,000		Unknown	235,456 square foot building; 5,000 square feet for retail showroom, remainder as warehouse.
Fitzuren Commercial Building 909 Fitzuren Rd.	na	na	na		Unknown	2 yr old incomplete application; will likely not be built
Rivertown Business Center I St. & 1st St.	29,301	29,301	29,301		Unknown	Approved, not built. Plans include a mix of retail and restaurants; project also includes a small amount of non-retail
Starbucks/Commercial/Retail 3300 Hillcrest at Wildflower	29,140	29,140	29,140		Unknown	1,804 sf Starbucks, 11,000 sf retail, also 4,450 sf bank. Project approved, no permits submitted as of 12/9/08
Antioch Town Center 4065 Lone Tree Way	138,557	138,557	138,557		Unknown	60,000 sf fitness center (not in retail total) already built and occupied. None of remainder of center underway as of 12/4/08. Use permit will need to be modified to accommodate Target.
Lakeview Center NW Corner Lone Tree and Golf Course	50,000	36,000	36,000	14,000	Unknown	Part of larger commercial/office project. 1st phase consists of approximately 40,000 sf including 15,000 sf drugstore, 14,000 sf Fresh & Easy, and 9,000 sf retail/office. Application currently incomplete

**Appendix I: Planned and Proposed Retail Development**

<b>Project Name/Site</b>	<b>Total Retail Square Feet</b>	<b>General Retail Square Feet</b>	<b>Reasonably Foreseeable</b>	<b>Food Store Square Feet</b>	<b>Status or Anticipated Opening Date</b>	<b>Comments</b>
<b>Brentwood</b>						
<b>The Shops at Fairview</b> 3101 Balfour Rd	44,060	44,060	44,060	0	Half-Built.	90,520 s.f. total center; Longs anchor space open. Some others space built, and partially occupied. Two buildings waiting to be built.
<b>Lone Tree Crossings</b> NWC Lone Tree Way & Fairview Drive	109,226	109,226	109,226	0	Half-Built	Firestone Tires is only building built out. One building actively under construction, others incomplete but no activity currently. Some smaller surrounding pads, to be built as suites, are not completed.
<b>Streets of Brentwood</b> State Highway 4 and Sand Creek Rd.	153,000	153,000	153,000	0	2/3 Completed.	Red Robin (under construction), REI, Ulta, Wine Loft, and Salad Makers all scheduled for Spring and Summer 2009 store openings. Jeff Zilm (City Planner) thought the Streets were doing well, and there was no reason these new store openings would be postponed. Square footage here is an estimate of unopened space.
<b>The Plaza at Balfour</b> Balfour and Highway 4	33,200	33,200	33,200	0	On Hold	This project has not moved forward; no tenants identified.
<b>Balfour Griffith Plaza</b> Griffith Lane and Balfour Road,	49,364	49,364	0	0	Built-Out	Very small L-Shaped building is built out. Largest tenant is children's day care center. Two planned front buildings will probably be eliminated from original plans. Some vacancies in built portion.
<b>Rodda Electric</b> 2155 Elkins Way	5,274	5,274	5,274	0	Waiting for Construction Permits	Plus approx. 3,000 sf office, 9,000 sf industrial.
<b>Kendall Plaza</b> 2010 Elkins Way	4,400	4,400	4,400	0	Under Construction.	Plus approx. 7,000 sf office and 17,000 sf industrial. Retail will be an auto store.
<b>Oakley</b>						
<b>Safeway Center</b> NE Corner Laurel/O'Hara	85,000	30,000	55,000	0	Expired	Entitlements expired.
<b>Emerson Commercial Center</b> NWC of Sellers & Cypress	NA	10.5 acres	0	0	EIR In Progress	Currently EIR underway - early stages of project, 10.5 acre property not yet entitled. Substantial Comments. No date set.
<b>River Oaks Crossing</b> Main Street and Bridgehead Rd	770,000	770,000	0	0	EIR Approved No project application	EIR approved Spring 2008, property entitled, but no plans or applications. No potential tenants at this time.
<b>Oakley Station Shopping Center</b> SE corner Main and Live Oak	102,513	102,513	0	0	App. Withdrawn	Home Depot application withdrawn.
<b>Popeye's Restaurant and Retail Center</b> 900 to 912 Main Street	6,000	6,000	0	0	App Withdrawn	Application withdrawn.
<b>Neroly Commercial Center</b> (Phase II of Spare Time) SE Corner of Neroly & Empire	116,899	116,899	116,899	0	Approved	Approved; no plans submitted. No potential tenants. Three stand-alone pads (possible restaurants with drive-thrus), along with office space
<b>Laurel Plaza: Rite-Aid</b> NWC of Laurel & O'Hara	56,528	43,528	43,528	13,000	Rite Aid Approved	Rite Aid approved. Fresh & Easy rumored to be applying for building permit (none submitted, Jan 2009). Bank-tenant and one more quick-serve (drive-through) pad available.
<b>Downtown Commercial Center</b> Main Street between 2nd and 5th Streets	20,000	20,000	20,000	0	Early Planning Stages	Mixed-Use retail and office. (20,000 of each use)
<b>General Plan Amendment</b> SE Corner of Empire and Laurel Rd.	NA	NA	NA	NA	NA	Preliminary plan for Amendment for Pentel property. 3 acre site. Want to zone to commercial. Working on site's grading and right-of-way.

**Appendix I: Planned and Proposed Retail Development**

<b>Project Name/Site</b>	<b>Total Retail Square Feet</b>	<b>General Retail Square Feet</b>	<b>Reasonably Foreseeable</b>	<b>Food Store Square Feet</b>	<b>Status or Anticipated Opening Date</b>	<b>Comments</b>
<b>La Aurora</b> 290 W 10th St.	6,250	0		6,250	Plan approved; No Permits issued.	Existing supermarket moving across the street, from 290 West 10th Street to 308 West 10th Street. Intending to develop new mixed-use building on new site, including two office spaces, and two 1-BR units.
<b>Marina Commercial Center</b> Northeast side of Marina Blvd.	na	na		0	Approved. Construction Spring 2009.	Downtown building scheduled to break ground Feb. 2009. Originally-proposed project scaled back to 2, rather than 3, stories. Second floor tenants will include harbor master, and other smaller office. First floor will be very small retail space, perhaps a small bookstore or coffee shop. No tenants located.
<b>Vidrio Project</b> Black Diamond St. and 7th St.	37,855	37,855	37,855	0	Partially-Built. On Hold.	3 separate buildings planned, with one building partially-completed. This project is currently on hold, looking to be sold to another developer; original developer bankrupt, stopped work.
<b>El Matador Restaurant</b> 95 Bliss Ave.	6,687	6,687	6,687	0	Under Construction	Restaurant
<b>KFC/Long John Silvers</b> 2155 Railroad Ave.	3,052	3,052	3,052	0	Under Construction	Restaurant

To the extent possible, space listed here excludes completed space; some of these centers are already partially built and occupied

Sources: Antioch Planning Department, 2009; Brentwood Planning Department, 2009; Oakley Planning Department, 2009; Pittsburg Planning Department, 2009; BAE, 2009.

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## Appendix J: Adjustment to Estimated PTA Supermarket Sales due to Recent Openings

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<b>Estimated Supermarket Sales prior to Recent Openings</b>	<b>\$319,000,000</b>
<u>Estimated Net Change in Costco Grocery Square Footage (a)</u>	12,315
Costco Sales per Square Foot (b)	\$973
Estimated Net Change in Costco Grocery Sales	\$11,980,000
Capture from PTA vs. STA (c)	63%
Estimated Costco Sales Capture Allocated to PTA	(\$7,550,000)
<u>Country Square Market (square footage)</u>	17,043
Estimated Sales per SF (using ULI Median)	\$486
Estimated Sales at County Square Market	\$8,282,898
Capture from PTA vs. STA (c)	63%
Estimated County Square Market Sales Capture Allocated to STA	\$3,060,000
Net Adjustment to Existing Store Sales	(\$4,490,000)
<b>Adjusted Sales (rounded to nearest million)</b>	<b>\$315,000,000</b>

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**Notes:**

It is assumed that Costco will capture some sales from existing supermarkets in the PTA. On the other hand, County Square Market will capture new sales from outside the PTA. This capture will represent new sales to the PTA, offsetting sales lost to Costco to some degree. There is no adjustment made for the new Smart & Final Extra, it is assumed that it will capture all its sales from existing supermarkets in the PTA.

(a) Costco square footage assumes approximately 30 percent of the store space is devoted to retail food offerings. See text for discussion.

	<u>Square Footage</u>		
		<u>Retail</u>	
	<u>Total</u>	<u>Food</u>	<u>Other</u>
Costco after expansion	161,117	48,335	112,782
Costco before expansion	120,068	36,020	84,048
<i>Net change in square footage</i>	<i>41,049</i>	<i>12,315</i>	<i>28,734</i>

(b) Based on data on sales companywide from Costco 2007 Annual Report.

(c) Costco trade area assumed to comprise PTA and STA of Supercenter; capture allocated based on percent of combined PTA and STA population in PTA.

Source: Bay Area Economics 2008, based on information from State Board of Equalization, 2002 Census of Retail Trade, Trade Dimensions, Costco Annual Report; and as cited in other tables.



# **APPENDIX G**

## **Noise Assessment**

**Prepared by**

**Illingworth & Rodkin**

**October 2009**



***WAL-MART EXPANSION, WILLIAMSON RANCH PLAZA  
ANTIOCH, CALIFORNIA  
ENVIRONMENTAL NOISE ASSESSMENT***

**October 6, 2009**



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**JOB No.: 08-138**



## INTRODUCTION

This report presents the results of the environmental noise assessment conducted for the Wal-Mart expansion at Williamson Ranch Plaza in Antioch, California. This assessment presents background information on noise, the applicable regulatory criteria used in the assessment, and the results of a noise monitoring survey conducted at the project site. Noise impacts are assessed against the applicable State and City guidelines, policies and regulations. Recommendations are presented to reduce applicable noise impacts to a less-than-significant level.

## BACKGROUND INFORMATION ON NOISE

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable effects of noise can be attributed to either pitch or loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

There are several noise metrics, or scales that are used to describe noise. *A decibel (dB)* is a unit of measurement that indicates the relative amplitude of sound pressure. Zero on the decibel scale is based on the lowest sound level that a healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while an increase of 20 decibels results from 100 times the energy, and a 30 decibel increase results from an energy increase of 1,000 times. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called  $L_{eq}$ . The most common averaging period is hourly, but  $L_{eq}$  can describe any series of noise events for a specified duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

**Table 1: Definitions of Acoustical Terms Used in this Report**

Term	Definitions
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, $L_{eq}$	The average A-weighted noise level during the measurement period.
$L_{max}$ , $L_{min}$	The maximum and minimum A-weighted noise level during the measurement period.
$L_{01}$ , $L_{10}$ , $L_{50}$ , $L_{90}$	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, $L_{dn}$	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

**Table 2: Typical Noise Levels in the Environment**

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	120 dBA	
Jet fly-over at 300 meters		Rock concert
	110 dBA	
Pile driver at 20 meters	100 dBA	
		Night club with live music
	90 dBA	
Large truck pass by at 15 meters		
	80 dBA	Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters	70 dBA	Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 90 meters	60 dBA	
Suburban daytime		Active office environment
	50 dBA	
Urban area nighttime		Quiet office environment
	40 dBA	
Suburban nighttime		
Quiet rural areas	30 dBA	Library
		Quiet bedroom at night
Wilderness area	20 dBA	
	10 dBA	
	0 dBA	Threshold of human hearing

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level, CNEL*, is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level, L<sub>dn</sub>*, is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

## **REGULATORY CRITERIA**

The State of California and the City of Antioch have each established regulations, plans, and policies designed to limit noise exposure at noise sensitive land uses. These include; (1) the California Environmental Quality Act (CEQA) Guidelines, Appendix G, (2) the Noise Element of the City of Antioch General Plan, and (3) the City of Antioch Zoning Ordinance.

### **State CEQA Guidelines**

There are no state laws directly applicable in the assessment of noise associated with new projects. CEQA includes qualitative guidelines for determining significance of adverse environmental noise impacts. A project will typically have a significant impact if it would:

- a. Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies. (For specific standards refer to General Plan Noise Objective 11.6.1 below.)
- b. Expose people to or generate excessive groundborne vibration or groundborne noise levels.
- c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- e. For projects within an area covered by an airport land use plan or within two miles of a public airport or public use airport when such an airport land use plan has not been adopted, or within the vicinity of a private airstrip, expose people residing or working in the project area to excessive aircraft noise levels.
- f. For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

[As noted below, the City of Antioch General Plan (Policy 11.6.2(e)) specifies that noise mitigation is to be provided "when the proposed project will cause new exceedences of General Plan noise objectives, or an audible (3.0 dBA) increase in noise in areas where General Plan

noise objectives are already exceeded as the result of existing development.” For purposes of this analysis, these standards are applied as significance criteria.]

Checklist items (a), (c), and (d) are relevant to the planned project. Pile driving, the most common source of construction causing elevated vibration levels is not proposed with the project. The East Antioch Creek Channel would buffer the any vibrations resulting from proposed construction activities. Low speed trucks circulating on the site would cause very low levels of localized ground vibration on project driveways. There are no operational sources of groundborne vibration that would be perceptible beyond the project’s boundaries. Groundborne noise, typically the result of rail transit systems, would not occur during construction or operation of the project. The project is not located in the vicinity of a public or private airstrip; therefore, checklist items (b), (e), and (f) are not carried forward for further analysis.

### **City of Antioch General Plan**

The Noise Section of the Environmental Hazards Element of the City of Antioch General Plan contains the following noise objective and policies which are relevant to the project:

#### **11.6.1 Noise Objective**

Achieve and maintain exterior noise levels appropriate to planned land uses throughout Antioch, as described below:

- Residential

- Single Family: 60 dBA CNEL within rear yards  
Multi-Family: 60 dBA CNEL within exterior open space

- Commercial/Industrial: 70 dBA CNEL at the front setback

#### **11.6.2 Noise Policies**

##### *Noise Compatible Land Use and Circulation Patterns*

- b. Maintain a pattern of land uses that separates noise-sensitive land uses from major noise sources to the extent possible, and guide noise-tolerant land uses into noisier portions of the Planning Area.

##### *Noise Analysis and Mitigation*

- e. When new development incorporating a potentially significant noise generator is proposed, require noise analyses to be prepared by a qualified acoustical engineer. Require the implementation of appropriate noise mitigation when the proposed project will cause new exceedences of General Plan noise objectives, or an audible (3.0 dBA) increase in noise in areas where General Plan noise objectives are already exceeded as the result of existing development.

- f. In reviewing noise impacts, utilize site design and architectural design features to the extent feasible to mitigate impacts on residential neighborhoods and other land uses that are sensitive to noise.
- g. Where feasible, require the use of noise barriers to reduce significant impacts.
  - The barrier must have sufficient mass to reduce noise transmission and high enough to shield the receptor from the noise source.
  - To be effective, the barrier needs to be constructed without cracks or openings.
  - The barrier must interrupt the line-of-sight between the noise source and the receptor.
  - The effects of noise “flanking” the noise barrier should be minimized by bending the end of the barrier back from the noise source.

#### *Temporary Construction*

- i. Ensure that construction activities are regulated as to hours of operation in order to avoid or mitigate noise impacts on adjacent noise-sensitive land uses.
- j. Require proposed development adjacent to occupied noise sensitive land uses to implement a construction-related noise mitigation plan. This plan would depict the location of construction equipment storage and maintenance areas, and document methods to be employed to minimize noise impacts on adjacent noise sensitive land uses.
- k. Require that all construction equipment utilize noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.
- m. Prior to the issuance of any grading plans, the City shall condition approval of subdivisions and non-residential development adjacent to any developed/occupied noise-sensitive land uses by requiring applicants to submit a construction-related noise mitigation plan for City review and approval. The plan should depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as:
  - The construction contractor shall use temporary noise-attenuation fences, where feasible to reduce construction noise impacts on adjacent noise sensitive land uses.
  - During all project site excavation and grading on-site, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers’ standards. The construction contractor shall place all stationary construction equipment so that the emitted noise is directed away from sensitive receptors nearest the project site.
  - The construction contractor shall locate construction staging areas that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.

- n. The construction related noise mitigation plan required shall also specify that haul truck deliveries be subject to the same hours specified for construction equipment. Additionally, the plan shall denote any construction traffic haul routes where heavy trucks would exceed 100 daily trips (counting both to and from the construction site). To the extent feasible, the plan shall denote haul routes that do not pass sensitive land uses or residential dwellings. Lastly, the noise mitigation plan shall incorporate any other restrictions imposed by the City.

### **City of Antioch Zoning Ordinance**

Section 9-5.1901 of the Antioch Zoning Ordinance sets forth noise attenuation requirements for stationary and mobile noise sources. The provisions applicable to the project include the following:

(A) *Stationary noise sources.* Uses adjacent to outdoor living areas (e.g., backyards for single-family homes and patios for multi-family units) and parks shall not cause an increase in background ambient noise which will exceed 60 CNEL.

(B) *Mobile Noise Sources.*

(1) Arterial and street traffic shall not cause an increase in background ambient noise which will exceed 60 CNEL.

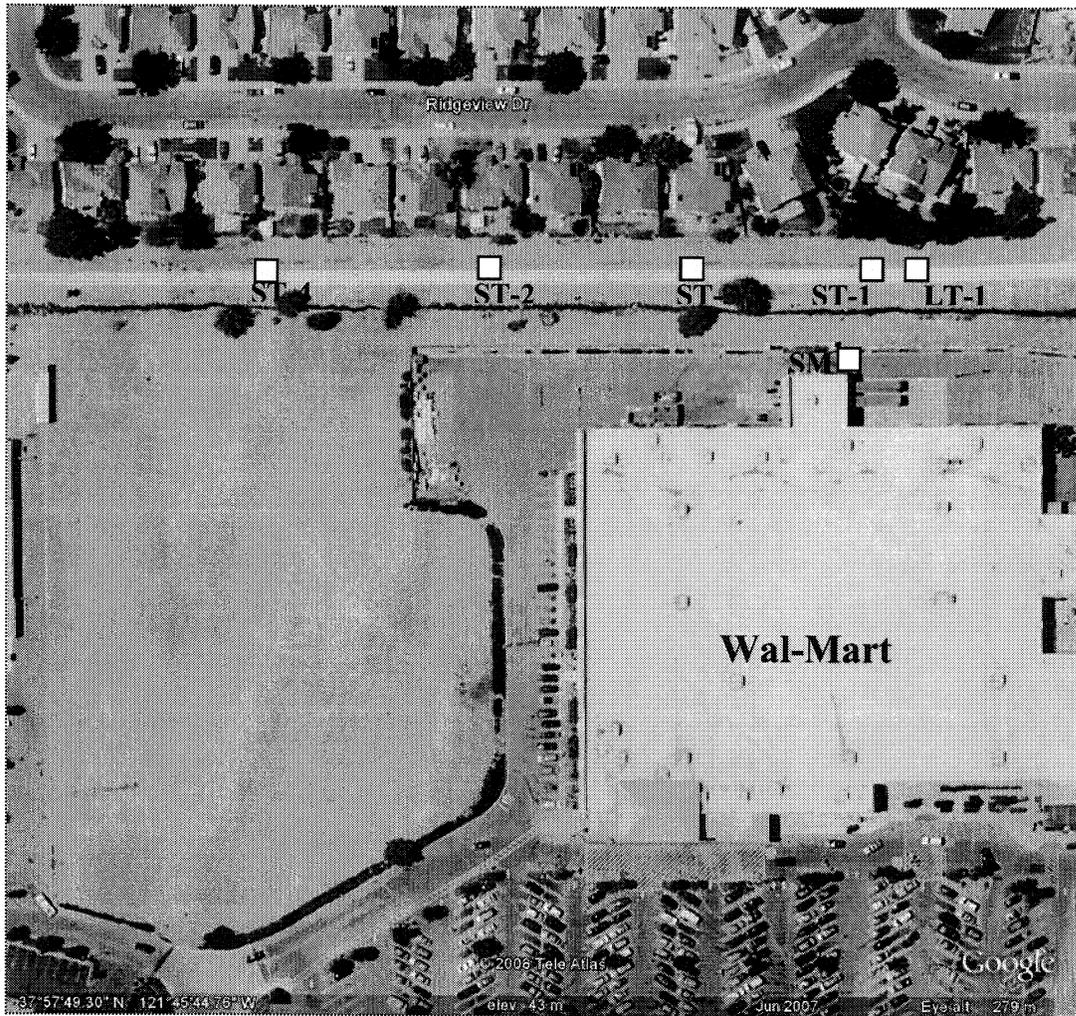
(D) *Noise Attenuation.* The City may require noise attenuation measures be incorporated into a project to obtain compliance with this section. Measures outlined in the noise policies of the General Plan should be utilized to mitigate noise to the maximum feasible extent.

### **EXISTING NOISE ENVIRONMENT**

The Wal-Mart at Williamson Ranch is located at the corner of Lone Tree Way and Hillcrest Avenue in Antioch, California. The project consists of the expansion of the existing store to accommodate additional services including general merchandising sales and grocery sales. Single family residences are located about 100 feet north of the Wal-Mart property line and are shielded from Wal-Mart generated noise by two sound walls; one alternating 6 and 8 foot wall along the Wal-Mart northern property line and another 6 foot wall along the residential property line. The East Antioch Creek runs through an undeveloped area separating the two land uses. The primary noise source at the residential property line is traffic noise generated along Hillcrest Avenue. In addition, occasional noise associated with aircraft overflights and Wal-Mart activities are audible at the residential property line. The existing Wal-Mart loading dock area faces the residences and occasional loading dock activities are currently the primary Wal-Mart generated noise source affecting the nearby residences.

A noise monitoring survey was conducted on October 15 to 20, 2008 to quantify the existing ambient noise environment. Noise levels, including  $L_1$ ,  $L_{10}$ ,  $L_{50}$ ,  $L_{90}$ ,  $L_{max}$ , and  $L_{eq}$ , were measured at 5 locations in the creek channel area between Wal-Mart and the residences. Locations were selected to represent the worst-case exposure at residences to noise generated by Wal-Mart activities. One long-term measurement (LT-1) and 4 attended short-term

measurements (ST 1-4) were made to complete the noise monitoring survey. Previously, an attended source measurement (SM) was made June 29, 2005 to quantify the noise levels generated by existing Wal-Mart loading dock activities. (This previous noise measurement was updated by the 2008 noise measurements mentioned at the beginning of this paragraph.) Noise measurement locations are shown on Figure 1.



**Figure 1: Noise Measurement Locations**

Long-term noise measurement LT-1 was located south of the residential property line sound wall, approximately 80 feet from the Wal-Mart property sound wall and 400 feet from the centerline of Hillcrest Avenue. The measurement was shielded from Wal-Mart activity noise by the Wal-Mart property line sound wall. Hourly average daytime noise levels typically ranged from 48 to 51 dBA  $L_{eq}$  with occasional noisy activities increasing the hourly noise levels to 53 to 56 dBA  $L_{eq}$ . Hourly noise levels ranged from 40 to 48 dBA  $L_{eq}$  between nighttime hours of 10:00 pm

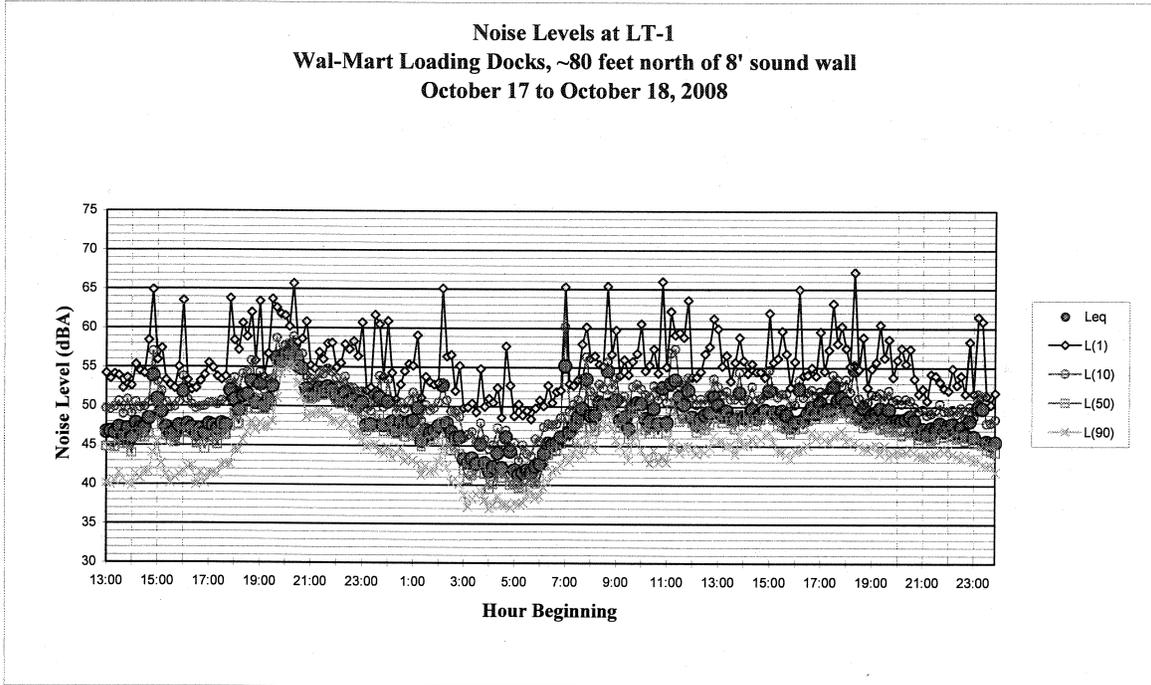
and 5:00 am and then increased to daytime levels during the 5:00 am hour. LT-1 collected both weekday and weekend data. The weekday day-night average noise level was calculated to be 54 dBA CNEL. The weekend day-night average noise level was calculated to be 53 dBA CNEL. The daily trend in noise levels at LT-1 is shown in Figures 2a and 2b.

During the four attended short-term noise measurements, typical noise levels were observed from 1:00 PM to 4:00 PM on October 15, 2008. Traffic from Hillcrest Avenue was most prominent at ST-1 noise measurement location, due to proximity, and achieved instantaneous noise levels of 48-52 dBA. Additional contributors to the noise environment included: a propeller airplane flying overhead producing instantaneous noise levels from 52 to 58 dBA, and elements such as birds chirping and dogs barking raised noise levels approximately 10 dB above the ambient noise environment of 39 to 42 dBA. Noise sources attributable to Wal-Mart activity included a skid steer forklift, a leaf blower, and traffic from one Semi-truck, which produced 56-62 dBA during the attended noise measurements. Noise level descriptors taken from the attended short-term measurements are shown in Table 3. The Wal-Mart stores use a Public Address (PA) system to inform patrons of recovered personal items. Background music is sometimes played. The PA systems are inaudible outside the store except in the outdoor garden area. A small speaker in the garden area plays these PA announcements at conversational levels that are not audible beyond the garden area or nearby on-site parking and circulation areas. Staff uses radios to communicate. The PA system does not contribute to community noise.

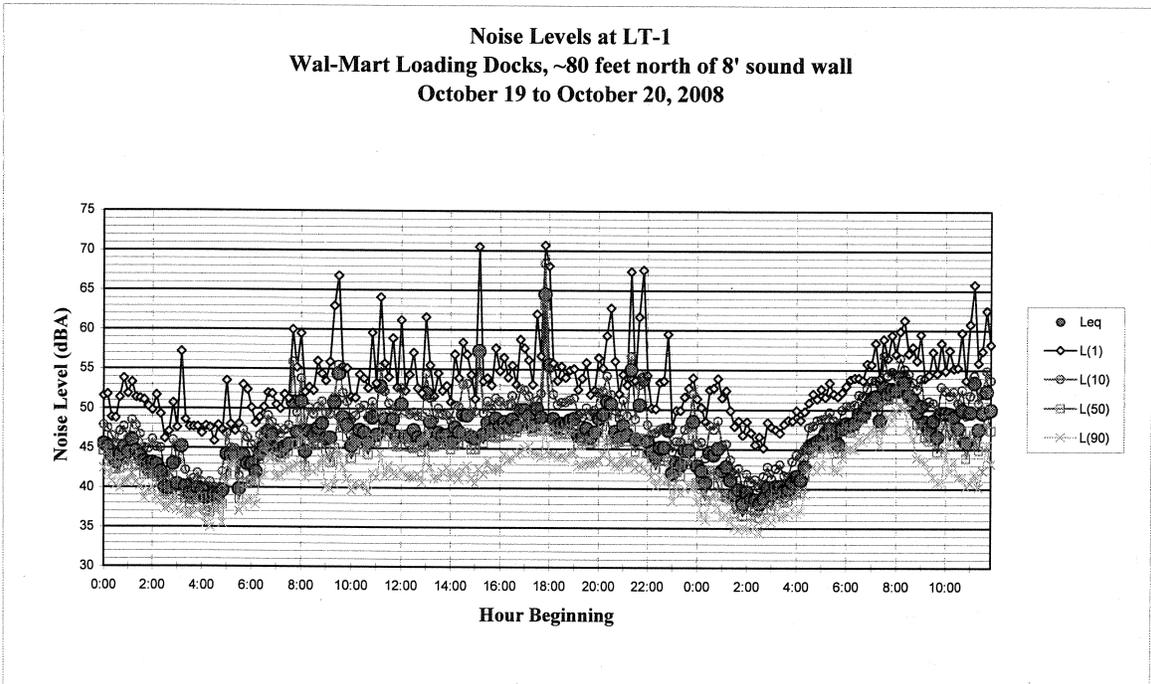
Noise levels were measured on June 29, 2005 above the Wal-Mart sound wall adjacent to the loading docks, with full line-of-sight to dock activities. Figure 3 shows the noise levels at three noise measurement locations during the attended measurement period. Maximum noise levels generated by Wal-Mart heavy truck deliveries generated typical maximum noise levels of 70 to 75 dBA  $L_{max}$  and medium delivery trucks generated typical noise levels of 60 to 65 dBA  $L_{max}$ . Aircraft typically generated maximum noise levels of 55 to 60 dBA  $L_{max}$ .

Traffic noise generated along Hillcrest Avenue was the primary noise source at all measurement locations. Aircraft, local residential activities (i.e., yard work, birds), and Wal-Mart loading activities occasionally generated noise levels that exceeded the ambient background noise. These occasional activities typically drop off at a rate of about 6 dB per doubling of distance. Based on the attended measurements, the combination of the Wal-Mart sound wall and the distance from the noise-generating activity to the measurement locations in the creek channel is calculated to provide approximately 8 dBA of noise reduction from most Wal-Mart activities. The Wal-Mart sound wall would provide slightly less attenuation for heavy truck movements, which may not be entirely shielded due to the increased noise source height. The residential sound wall provides additional attenuation to residences.

**Figure 2a: Daily Trend in Noise Levels at LT-1 for October 17-18, 2008**



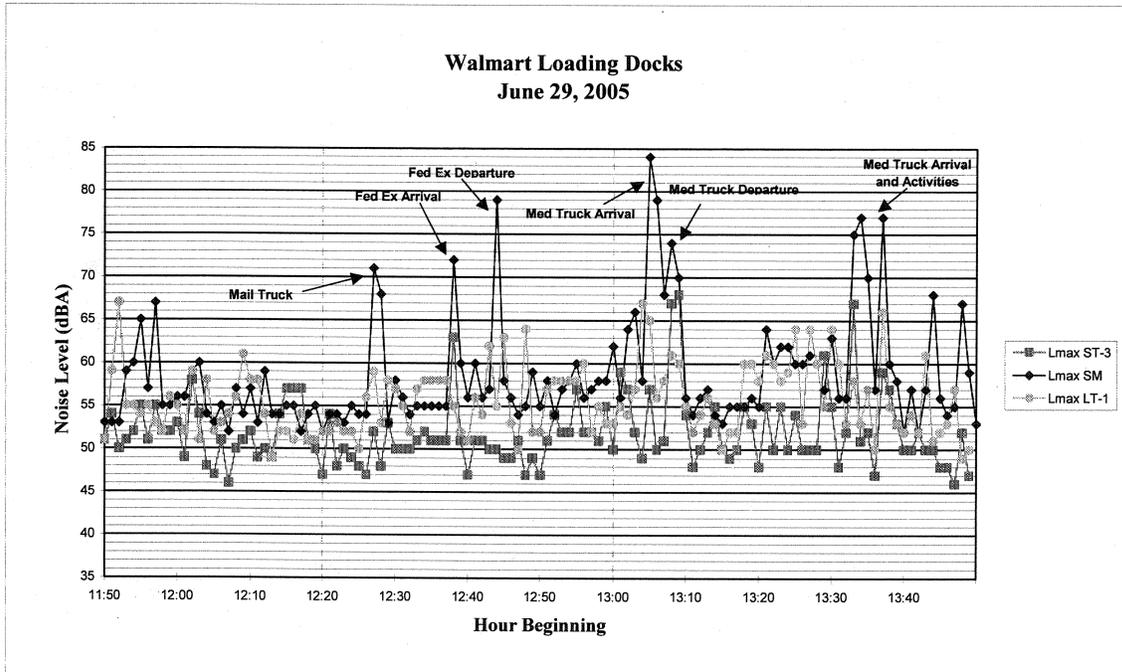
**Figure 2b: Daily Trend in Noise Levels at LT-1 for October 19-20, 2008**



**Table 3: Attended Short-Term Noise Measurements—October 15, 2008**

Noise Measurement Location	Time	L <sub>max</sub>	L <sub>(1)</sub>	L <sub>(10)</sub>	L <sub>(50)</sub>	L <sub>(90)</sub>	L <sub>eq</sub>
ST-1: ~ 405 feet from the center of Hillcrest Ave., 5 feet from residential sound wall.	13:10 to 16:00	73	57	51	46	41	48
ST-2: ~ 740 feet from the center of Hillcrest Ave., 5 feet from residential sound wall.	13:30 to 16:00	68	63	53	44	41	48
ST-3: ~ 570 feet from the center of Hillcrest Ave., 5 feet from residential sound wall.	14:00 to 15:10	68	61	51	45	41	50
ST-4: ~ 930 feet from the center of Hillcrest Ave., 5 feet from residential sound wall.	15:20 to 15:30	52	47	44	42	40	44

**Figure 3: Attended Noise Levels at LT-1, SM, and ST-3**



## IMPACTS AND MITIGATIONS

**Impact 1: The planned expansion is compatible with the onsite noise environment. This is a *less-than-significant* impact.**

The noise environment at the site results primarily from traffic along both Hillcrest Avenue and Lone Tree Way. Based on the noise monitoring survey conducted for this report, and traffic volume counts for Hillcrest Avenue and Lone Tree Way, the site would be exposed to noise levels of up to 74 dBA CNEL under the worst-case (Cumulative plus Project) traffic scenario in areas adjacent to the roadways. Areas adjacent to the roadways would continue to be used for parking activities and would not be considered noise sensitive. At the setback of the building expansion, noise levels would be less than 70 dBA CNEL and would meet the City's threshold for commercial uses. This is a *less-than-significant* impact.

**Mitigation 1: None Recommended.**

**Impact 2: Project activities would increase noise levels at nearby noise sensitive receivers. However, with the application of measures included in the project design, or as required under the original project approval or under subsequent City requirements, noise levels would not increase substantially above existing noise levels. This is a *less-than-significant* impact.**

The existing noise levels at the nearest residences are primarily due to traffic along Hillcrest Avenue and local residential noise sources. Ambient noise levels at residences across the creek channel from the project are 55 dBA CNEL or less with shielding provided by residential structures and the existing sound walls. Noise levels at residences along Hillcrest Ave would be higher due to the proximity to the roadway. Hourly noise levels on the south side of the sound wall along the residential property line along the north bank of East Antioch Creek, opposite the existing Wal-Mart loading dock, were measured to typically range from 48 to 51 dBA  $L_{eq}$  during daytime activities with occasional noisy activities increasing the hourly noise levels to 53 to 56 dBA  $L_{eq}$ . Hourly noise levels ranged from 40 to 48 dBA  $L_{eq}$  between nighttime hours of 10:00 pm and 5:00 am, and then increased to daytime levels during the 5:00 am hour likely due to morning traffic along Hillcrest Avenue. Heavy truck deliveries, the primary noise source generated by Wal-Mart activities at the residences, generate maximum noise levels of 70 to 75 dBA  $L_{max}$ . Smaller delivery trucks typically generate maximum noise levels of 60 to 65 dBA  $L_{max}$ . Ambient noise levels at adjacent residences decrease with the distance of the residence from Hillcrest Avenue and from the existing loading dock area. Noise levels are slightly lower in backyard areas, due to the shielding provided by the 6-foot sound wall, located along the residential property lines along the north bank of East Antioch Creek.

The project would expand the existing Wal-Mart store by 33,575 square feet, increasing the total floor area to 175,073 square feet. In addition, the parking lot would be expanded to the west and two compressor units would be added within a decorative concrete block enclosure, one trash compactor would be added, one delivery service door for smaller vendor trucks would be added, and a new loading dock would be added. The hours of operation would not change. A new electrical transformer and new storage areas for pallets and additional bales would be located on the north side of the store, and the trash compactor would be relocated adjacent to the expansion area. Predominate noise sources associated with the expansion would include increased traffic on the surrounding streets, additional parking lot activity, increased truck deliveries made at the rear of the store, additional compressor and trash compactor units, and additional loading dock activities. In addition, the new truck dock would move loading activities closer to some residences.

The existing 8-foot high textured block wall will be extended westward for a distance of about 600 feet above the northern edge of the expansion area to the Wal-Mart western property boundary. Also, new 10-foot high masonry screen walls will be constructed along the north edge of the existing recessed loading dock near the northeast corner of the building, and on the north edge of the new grocery loading dock at the northwest corner of the expanded building, as well as along the north edge of the relocated trash compactor. The pallet and bale storage areas planned to be located along the northern site boundary would be enclosed by 10-foot high masonry wall enclosures on the west, north, and east sides. In addition, the previous noise mitigations identified in the IS/MND, which became conditions of approval for the original Use Permit, will be applicable to the expansion. These include a prohibition on nighttime loading and other activities along the north side of the center, as well as restricted hours for leaf blowing in the north portion of the project. Additionally, the further noise reduction measures that were subsequently required by the City of Antioch will apply to the expansion project, including the use of truck gates to enforce the prohibition on nighttime loading, and the prohibition of temporary on-site storage of large metal containers. All of the applicable operational noise reduction measures are set forth under Mitigation Measure 2 below.

#### *Traffic Increases*

Traffic data for area roadways, provided by Kimley-Horn and Associates, Inc., were reviewed to calculate the relative noise level changes expected under various traffic conditions. Existing traffic noise levels along nearby segments of Lone Tree Way and Hillcrest Avenue are 71 dBA CNEL and 68 dBA CNEL, respectively, at 50 feet from the centers of the nearest travel lanes. These noise levels are currently in excess of the City's noise level objectives of 60 dBA CNEL for outdoor use area of residential land uses and 70 dBA CNEL at the front setback lines of commercial uses. Based on the data in the traffic study, project traffic would result in noise level increases of approximately 0.1 dBA CNEL along the nearby segment of Hillcrest Avenue and 0.2 dBA CNEL along the nearby segment of Lone Tree Way. According to City General Plan Policy 11.6.2.(e), a noise impact will occur when the proposed project will cause new exceedences of General Plan noise objectives, or an audible (3.0 dBA) increase in noise in areas where General Plan noise objectives are already exceeded as the result of existing development. In this case, where the General Plan noise objectives are exceeded under existing conditions, the

noise level increase would be 0.1 to 0.2 dBA CNEL, which is far below the 3.0 dBA increase which would constitute an impact under the General Plan. This is a *less-than-significant* impact.

#### *Delivery Truck Movements*

As observed during the noise measurement survey of existing activities, the highest noise levels generated by Wal-Mart activities at the adjacent residential uses typically result from trucks circulating along the northern side of the retail center and the docking area. The existing Wal-Mart store receives deliveries from about 8 heavy duty 4-axle trucks and 8 light duty 2-axle trucks daily. The expansion would increase the totals to up to 10 semi-trailer deliveries and approximately up to 12 vendor deliveries per day. (Note: These increased truck delivery numbers are slightly higher than those indicated by the applicant in order to present a worst-case analysis.) As required under current City requirements for the existing Wal-Mart store, the delivery times would continue to be limited to the hours of 7:00 am to 10:00 pm. Truck gates along the north side of the building will be closed between 10:00 pm and 7:00 am to prevent vehicular access to the loading areas. For semi-trailer deliveries, all trailers are currently dropped at the truck docks for unloading, with empty trailers hauled away from the site. This will continue to be the practice after completion of the planned expansion, and no trailers or metal shipping containers will be used as storage containers and kept on the site. However, truck trailers which have been backed up to the gasket seals at the loading docks will be permitted to be unloaded 24 hours per day. In addition, the new loading dock planned along the western side of the planned expansion would move activities closer to some residences. Although there would be a small increase in the number of deliveries, noise levels generated during individual deliveries would be similar to existing delivery noise. Maximum instantaneous noise levels (designated  $L_{max}$ ) generated by heavy trucks pulling into and out of the existing loading docks are typically 70 to 75 dBA  $L_{max}$  at the nearest residences and behind the Wal-Mart sound wall. Low speed truck noise results from a combination of engine, exhaust, and tire noise and is not tonal in nature.

Most deliveries by vendor trucks would not occur at the recessed loading bays but rather at the delivery service doors located on the north wall between the two main loading docks. These service doors are located 155 feet from the nearest rear residential property lines to the north, and 175 feet from the nearest dwellings on those properties. The maximum noise level generated by vendor trucks would range from 55 to 60 dBA  $L_{max}$  at the nearest residential property line.

In accordance with City requirements, delivery and loading dock activity will continue to be prohibited from 10:00 pm to 7:00 am, and the westerly access gate will be relocated to accommodate the expanded building and new truck dock and to ensure compliance with the nighttime activities limits. The wall located along the northern property line of the site would be extended to the western property line. Although maximum noise levels generated during individual truck movements temporarily increases the ambient noise levels, these additional intermittent noise events would be similar to existing deliveries and would not typically cause speech interference during daytime hours or cause a substantial increase in the overall noise levels. The implementation of planned sound reduction measures, as mentioned above and summarized in detail under 'Mitigation Measure 2', would reduce this potential effect to a *less-than-significant* level.

### *Loading Dock Activities*

Noise levels generated at the new truck dock during loading activities would be similar to existing levels generated during activities at the existing dock. The retail center is designed to allow heavy-duty trucks to back up to loading bays, with all loading and unloading taking place within the building. The existing truck docks are recessed into the ground about four feet and are equipped with rubber gasket seals to reduce noise generated during loading activities. The use of rubberized gasket type seals at the loading bay doors allows little loading noise to escape into the community and reduces noise generated during loading activities at the existing loading dock. The new loading dock will also be recessed into the ground, and will include rubber gasket seals to contain loading noise. Based on field observations by Illingworth & Rodkin at similar facilities, it was noted that typical loading noise from trailers backed up to rubber gasket seals is inaudible at a distance of 100 feet. Occasionally, banging within the truck would be audible outside the truck and would occasionally exceed the existing ambient noise levels, but would not substantially add to the existing noise environment given the sound attenuating effects of the masonry walls planned alongside the loading docks, the existing and planned sound walls along the north site boundary, and the existing sound wall along the south residential property lines across East Antioch Creek from the project.

The pallet storage areas would be relocated eastward from the current location in the northwest corner of the site. At the current location the pallet storage area is partially shielded by the existing masonry wall directly to the north, but is not shielded by a masonry wall to the west. At the proposed locations the storage areas would be enclosed on the west, north and east sides by 10-foot high masonry walls, and would also be behind the existing 8-foot high sound wall. Noises from operations of the forklift and pallet stacking would reach 55-61 dBA without screen walls at the residential property line, and this noise level would be reduced by 5-10 dBA because operations would occur behind the enclosure walls and sound wall. All such activities are prohibited between 10:00 pm and 7:00 am in accordance with the conditions of the original project approval for Wal-Mart. Therefore, the maximum noise levels with screening would be 56 dBA, and average noise levels would be lower. These noise levels would not violate the City's noise ordinance, and would be well below the General Plan significance threshold of 60 dBA CNEL at the rear yards of the nearest single-family residences. Therefore, the noise levels associated with the pallet and bale storage areas would represent a less than significant impact.

The new loading dock at the northwest corner of the expanded Wal-Mart would primarily receive deliveries for the new grocery department to be added to the store. Thus, some deliveries would be by trucks with refrigeration units which would remain in operation while at the loading docks. Noise levels from diesel and electric powered refrigeration trucks were measured by I&R for previous environmental noise studies. During the measurements of diesel-powered refrigeration trucks, it was observed that the units typically cycled between the high and low settings, which would account for about a 4 to 5 dBA variation in the noise (i.e., under the low power setting, the unit would generate a noise level of about 5 dBA below the high setting). If the units were provided electricity as opposed to running on their diesel-powered engines, noise levels would be about 12 dBA lower. Under worst-case assumptions, i.e., the trucks would be diesel powered; the units would operate only under the high power setting; the refrigeration unit on the truck would emit noise from the top of the unit (about 9 to 10 feet high); and the truck

would be located along the northern property line of the site (eliminating the benefit of noise shielding from the wall along Wal-Mart's north property line), the noise level would be 64 dBA at 125 feet. While unloading, the refrigeration trucks would actually be located in the new grocery loading docks, which are set back from the northern property line by about 50 feet, recessed about 4.5 feet into the ground (at the loading door), and behind the 10-foot high loading dock walls (which would be equivalent to a 14.5-foot high wall at the lowest location at the receiving end of the loading ramp). Since the truck would be parked on an incline while at the loading dock, the front end of the trailer where the refrigeration unit is mounted would be about 3 feet below grade. Thus, the top of the refrigeration unit would be up to 7 feet above grade, about three feet below the height of the 10-foot high loading dock wall. Since the line-of-sight between the refrigeration unit and the nearest residences to the north would thus be broken, the noise shielding provided by the loading dock wall is calculated to provide a noise reduction of 7 dBA. Also, the additional 50 feet separating the loading dock from the nearest residences would provide an additional 3 dBA of noise reduction. Thus, the total noise reduction would be 10 dBA, with a resulting noise level of 54 dBA at the nearest residences. It is likely that Wal-Mart delivery trucks would be equipped with automatic ignition shut-off controls that would turn off the truck engine after three minutes of idling. This feature would further reduce noise during unloading of delivery trucks. It is estimated that an average of two deliveries from refrigeration trucks would occur per day, that the trucks would each be unloading over a period of about one hour, and that the refrigeration cycle would turn on for 5 to 10 minutes approximately two times during each one-hour unloading period, totaling 20 to 40 cumulative minutes of noise per day, on average. These noise levels, which would occur during daytime hours only, would be within the State of California's Model Community Noise Ordinance (60 dBA for 15 to 30 minutes of noise during any daytime hour) and the City of Antioch's General Plan and Zoning Ordinances. This is a *less-than-significant* impact.

#### *Parking Lot Expansion and Modifications*

Construction of an additional parking area to the west of the building expansion would add an additional 176 parking spaces to the site, for a total of 918 spaces. Noise associated with the use of the parking lot would include vehicular circulation, louder engines, car alarms, squealing tires, door slams, and human voices. The maximum sound ( $L_{max}$ ) of a passing car at 15 mph typically ranges from 40 dBA to 50 dBA at 200 feet. The noise generated during an engine start is similar. Door slams create lower noise levels. The hourly average noise level resulting from all of these noise-generating activities in a busy parking lot, without taking into account the shielding effect of sound walls and intervening building masses, could range from 35 dBA to 40 dBA  $L_{eq}$  at a distance of 200 feet from the parking area.

The nearest residences north of the project site are located approximately 170 feet from the main portion of the new parking lot (with six of the planned new parking stalls located between 120 and 170 feet away). In addition to this distance separation, the nearest residences would also be shielded from parking lot noise by the planned 8-foot high sound barrier along the northern property line of the site, and the existing sound wall along the southern residential property lines across East Antioch Creek from the project site. Existing parking lot noise is typically inaudible at the nearby residences, although occasional loud events such as car alarms can be heard. Noise levels in the new parking lot would be similar to existing on-site parking lot noise. Existing

parking areas at the northwest corner of the Wal-Mart site are located 190 feet from the nearest residences, and existing parking areas along the rear of the adjacent OSH site to the west are 110 feet from the nearest residences across East Antioch Creek from the OSH store. Maximum instantaneous noise levels from vehicles in the nearest parking stalls would range from 45 to 55 dBA L<sub>max</sub> at the nearest residential property line. Although the new Wal-Mart parking area would locate parking stalls closer to some residences than the existing Walmart parking stalls, parking lot noise would continue to typically fall below intermittent ambient noise levels that currently range from 55 to 65 dBA, and would not contribute to a substantial increase in background noise levels, given the extension of the planned sound wall westward along the northern Wal-Mart property line. This is a *less-than-significant* impact.

The parking area surface at Walmart shopping centers is periodically cleaned using small mechanical parking lot sweepers. The noise from this type of equipment was measured by Bollard Acoustical Consultants in 2007. It was determined that at a distance of 50 feet, the noise of the mechanical parking lot sweeper was 75 dBA L<sub>max</sub>. Such equipment could be operated throughout the primary parking areas south of the Walmart without resulting in noise impacts because of the distance separating these activities from residential receivers and the shielding provided by the Walmart building itself. However, in the expanded parking area to the west of the Walmart building, sweepers could operate as close as 100 feet from the nearest residences to the north. The operation of a sweeper truck at this distance would generate maximum noise levels up to 63 dBA L<sub>max</sub> assuming the shielding provided by the noise barrier proposed along the north property line of the Walmart site. This activity would be of short duration (lasting less than a few minutes) and average daily noise levels due to sweeping activities would not exceed the City of Antioch's 60 dBA CNEL threshold. The maximum noise levels generated by sweeping trucks would be below ambient maximum noise levels experienced at the nearest residential receivers and therefore would not be expected to result in a significant noise impact.

#### *Rooftop Mechanical Equipment*

Rooftop mounted mechanical equipment would include heating, ventilating, and air conditioning equipment. Noise generated by such equipment varies significantly depending on the equipment type and size. Noise impacts would depend on system design level specifications including the equipment location, type, size, capacity, and enclosure design. These details are typically not available until later phases of the project design and development review process.

Noise levels generated by existing Wal-Mart rooftop equipment were not measured during the noise monitoring survey because levels were indistinguishable from traffic noise at the northern property line of the site. Project rooftop equipment would likely be similar to existing equipment. Based on measurements of rooftop equipment at similar commercial centers and large supermarkets in the region, noise levels of 60 to 70 dBA at a distance of 15 feet could be expected. Due to the shielding from the roof and the increase in distance, noise levels at the property line of the nearest residences would be expected to be less than 45 dBA. As observed for the existing equipment, noise levels generated by project equipment would be expected to be indistinguishable above the ambient noise environment. Given that existing project mitigation measures will require acoustical analysis of planned mechanical equipment (see Mitigation Measure 2 below), with the requirement that noise from mechanical equipment shall not exceed

45 dBA  $L_{eq}$  in the nearest residential backyards, the noise levels generated from this source will result in a *less-than-significant* impact.

#### *Refrigeration Condenser Units*

The project would construct two compressor units along the western façade of the expanded building. Based on manufacturer specifications for typical Wal-Mart equipment, these units would be approximately 16 feet long by 8 to 9 feet tall by 8 feet wide, and each individual compressor unit would generate noise levels ranging from 64 to 73 dBA at a distance of 50 feet from the unit, depending on the receiver location relative to the orientation of the unit. With both compressors running simultaneously, unmitigated noise levels would range from 67 to 76 dBA at a distance of 50 feet from the units.

The units are proposed to be enclosed by metal screening and would be located about 230 feet from the nearest residences. The nearest residences would be shielded from condenser noise by the two sound walls (Wal-Mart's and the existing residential sound wall along the north bank of the creek). Not taking this shielding into account, the compressors would generate noise levels of about 54 to 63 dBA at the location of the nearest residence. It is calculated that the acoustical shielding provided by the two intervening concrete noise barriers would provide about 5 dBA of noise reduction within the residential rear yards. The resulting noise levels would be about 49 to 58 dBA at the rear yards of the nearest residences. Assuming the condensing units run continuously for an hour, noise levels are calculated to exceed existing measured levels by up to 18 dBA  $L_{eq}$  during the nighttime and 10 dBA  $L_{eq}$  during the daytime in the nearest residential rear yards. The amount of time the units would operate over a 24-hour period is not known. If the units operated for 8 hours during the daytime and 4 hours during the nighttime, the CNEL in the nearest residential rear yards is calculated to be 61 dBA. If continuous 24-hour operation is assumed, the CNEL is calculated to be 64 dBA. Noise levels would substantially exceed the existing ambient levels during the daytime and the nighttime, and the CNEL could exceed 60 dBA and increase by more than 3 dBA. Noise levels would exceed the thresholds established in General Plan Policy 11.6.2(e) and Zoning Ordinance section 9-5.1901. This is a *significant* impact.

#### *Trash Compactors and PA System*

The project also proposes two trash compactors to be located along the north façade (the existing compactor near the northwest corner of the building would be relocated to the east, and a new compactor would be installed on the north side of the new loading dock). Trash compactors typically generate maximum noise levels of 40 to 50 dBA at 150 feet, depending on the power rating and enclosure characteristics. Primarily due to shielding provided by the 8-foot high screen walls planned along the north sides of the trash compactors, and to a lesser degree the two existing sound walls, it is calculated that the maximum noise levels generated at the adjacent residences by the new trash compactors would be 45 dBA or less and would generally be below ambient daytime noise levels at the nearest residences. As indicated in the list of noise reduction measures to be implemented for the project expansion, as summarized in detail under 'Mitigation Measure 2' below, trash compactor operations would be prohibited between the hours of 10:00 pm and 7:00 am and thus would not generate noise during nighttime hours. The PA system was

discussed in the Existing Noise Environment section. The PA system is inaudible outside the site. This is a *less-than-significant* impact.

### **Mitigation 2:**

The following is a comprehensive list of measures required to reduce project-generated noise to less-than-significant levels. These measures are either: 1) design measures included in the planned project expansion; 2) conditions of approval from the original project approval which are applicable to the planned expansion; 3) City of Antioch requirements established subsequent to the original project approval; or 4) measures newly identified in this report. The origin of each noise reduction measure is noted parenthetically at the end of each measure. Some of the listed measures have been modified slightly from their original form to provide greater specificity or clarity, but without changing the meaning or intent of the measure. Since almost all of the listed measures are planned to be incorporated into the project as planned design measures or as previously required mitigations, they are listed below mainly for information and reference purposes.

- All outdoor operational activities shall be prohibited on the north and west sides of the center including but not limited to loading and unloading, delivery truck engine idling or starts, operation of refrigeration/condenser equipment, operation of trash compactors, pallet moving, and any other staff activity, between the hours of 10:00 pm and 7:00 am. (However, with the installation of rubber gasket seals on the loading doors, as specified below, trailers which have been properly backed up against the loading door gaskets may be unloaded at any time of the day or night since any interior loading noise would be effectively attenuated by the rubber gaskets.) Trucks arriving on-site during these 'quiet hours' shall park in front of the building and not on the side or behind the store. Signs shall be posted at the rear of the property identifying the quiet hours and prohibition of activities during this time. (Condition of original project approval.)
- Rubber gasket seals shall be installed at the new truck dock to reduce noise generated during loading activities. (Condition of original project approval.)
- The truck gates along the north side of the Wal-Mart building shall be closed between the hours of 10:00 pm and 7:00 am to prohibit vehicular access to the rear of the building during these hours. The existing westerly truck fence and gate shall be relocated further to the west in conjunction with the building expansion. (City requirement established subsequent to original project approval; design measure included in the planned project expansion.)
- The planned trash compactor on the west side of the building expansion shall be enclosed with fencing and a locked gate to prevent access by store employees or garbage trucks between the hours of 10:00 pm and 7:00 am. In addition, signage shall be prominently posted near the trash compactor areas providing notice that no garbage pickup is to occur during these designated nighttime hours. (Newly identified in this report.)

- All delivery trucks, garbage trucks, and other service vehicles of any kind shall be prohibited from parking near the rear or sides of the Wal-Mart store between the hours of 10:00 pm and 7:00 am. Signs shall be prominently posted which provide notice to all truck drivers arriving on the site during these nighttime hours to park at the front of the store. In addition, the Wal-Mart store management shall make every effort to directly notify all truck drivers of this requirement. (Newly identified in this report.)
- All areas on the site which are designated for storage of cargo pallets or cardboard bales shall be individually fenced and gated to prevent access between the hours of 10:00 pm and 7:00 am. Pallets and cardboard bales shall be stacked no higher than 8 feet, except that stacks shall be no higher than six feet where they are located adjacent to sections of existing sound wall that are six feet high. (Newly identified in this report.)
- The existing 8-foot high sound wall, which runs along the northern property line of the site, shall be extended westward to the west site boundary. (Design measure included in the planned project expansion.)
- A 10-foot high sound wall shall be constructed along the north side of the existing loading dock and along the north side of the planned new loading dock at the northwest corner of the expanded building. (Design measure included in the planned project expansion.)
- Metal storage containers shall not be kept on-site. All truck trailers brought to the site shall be dropped at the loading docks and empty trailers shall be removed from the loading docks and the site after unloading. (City requirement established subsequent to original project approval.)
- Leaf blowers and store cleaning operations shall be prohibited north of the retail building within the project boundary between the hours of 8:00 pm and 7:00 am. (Condition of original project approval.)
- Prior to the issuance of building permits, the applicant shall submit engineering and acoustical specifications for project mechanical equipment demonstrating that the equipment design (types, location, enclosure specifications) will control noise from the equipment such that noise levels shall not exceed 45 dBA  $L_{eq}$  at the nearest residential backyards. (Condition of original project approval.)
- Refrigeration/condenser units shall be enclosed on the north and west sides by a solid concrete block structure with a wall height exceeding the final height of the equipment by three feet or more. A minimum of 50 percent of the inner sides of the enclosure walls shall be covered with acoustically absorptive material. Openings to the enclosure structure shall be configured to face away from the nearest residences. The selected refrigeration/condenser units shall have a maximum noise level rating of 65 dBA at a distance of 50 feet. (Newly identified in this report.)

- Wal-Mart shall designate a “noise disturbance coordinator” who will be responsible for responding to any local complaints about on-site operational noise. The disturbance coordinator would determine the cause of the noise complaint and institute reasonable measures as warranted to correct the problem. A telephone number for the disturbance coordinator shall be conspicuously posted in the bulletin board area at the store entrance. (Newly identified in this report.)

**Impact 3: Noise-generating activities associated with the construction of the expansion project would temporarily elevate noise levels at nearby noise sensitive receptors. However, construction activities are not anticipated to extend past one construction season and would not typically be located adjacent to a particular receptor during the entire construction period. Given also that standard noise control measures would be implemented, as required per conditions of the original project approval and by General Plan policy, the noise generated by the construction activity would not result in significant adverse impacts. The impact would be considered *less-than-significant*.**

Construction activities are anticipated to take place over a period of 9 months including one month for demolition and grading, two weeks for paving, 6 weeks for installation of underground utilities, 7 months for building construction, and one month for exterior improvements. Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise generating activities, and the distance between construction noise sources and noise sensitive areas. Noise levels from construction equipment are shown in Table 4. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction lasts over extended periods of time.

Noise generated by construction would be the greatest during site grading activities and excavation for underground utilities. Site preparation and grading is anticipated to occur over approximately 1 month and underground utility construction is anticipated to take approximately 6 weeks. Pile driving will not be employed as a construction method. Typical maximum noise levels from demolition, excavation, and grading activities range from 70 to 90 dBA at a distance of 50 feet from the source. The typical range of noise levels at 50 feet during active construction of commercial buildings would be about 65 to 85 dBA.

The nearest noise sensitive receivers are located 100 feet or further from the expansion area and would be shielded by an existing six-foot high sound wall along the south boundary of the nearest residential properties. Most construction activities would occur at distances of several hundred feet or further from these nearby residences as most construction activity would not occur in the northern portion of the site. During the site grading and excavation construction phases, the noise generated by construction activity would be the greatest to the nearest noise-sensitive land uses. During construction of the building expansion, noise would be noticeable but would not be significant. Typical maximum noise levels experienced at the nearest residences from construction activities would range from 60 to 80 dBA when construction

**TABLE 4**  
**Construction Equipment 50-Foot Noise Emission Levels**

Equipment Category	$L_{max}$ Level (dBA) <sup>1,2</sup>	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor <sup>3</sup>	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

Notes:

- <sup>1</sup> Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) time constant.
- <sup>2</sup> Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.
- <sup>3</sup> Portable Air Compressor rated at 75 cfm or greater and that operates at greater than 50 psi.

activities take place in the northern portion of the site, with the highest noise levels taking place over the first three months of construction. Noise levels would decrease with distance away from residences. Construction activities are not anticipated to extend past one construction season and would not be located in proximity to a particular receptor during the entire construction period.

In conclusion, noise generated by construction would create a temporary noise impact on adjacent noise sensitive receptors, but this would be considered a less-than-significant impact given that standard construction noise control measures, as listed in Mitigation Measure 3 below, would be implemented:

### **Mitigation Measure 3:**

The following is the list of measures required to reduce project construction noise to less-than-significant levels. These measures are divided into two categories, as follows: 1) Measures required as conditions of the original project approval; 2) Measures newly identified in this report, based on policies contained in the City of Antioch's 2003 General Plan.

#### *Mitigations Required with Original Project Approval*

(Note: In some instances the language of the original measure has been modified slightly for greater specificity or clarity, without changing the intent or meaning of the original measure.)

- Noise-generating construction activities, including truck traffic coming to and from the site for any purpose, shall be limited to weekdays between 8:00 am to 5:00 pm, or as approved by the City Engineer.
- All equipment driven by internal combustion engines shall be equipped with mufflers which are in good condition and appropriate for the equipment.
- The construction contractor shall utilize "quiet" models of air compressors and other stationary noise sources where technology exists.
- At all times during project grading and construction, stationary noise-generating equipment shall be located as far as practicable from sensitive receptors.
- Unnecessary idling of internal combustion engines shall be prohibited.
- Owners and occupants of residential and non-residential properties located within 300 feet of the construction site shall be notified of the construction schedule in writing.
- The construction contractor shall designate a "noise disturbance coordinator" who will be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and institute reasonable measures as warranted to correct the

problem. A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.

*Mitigations Newly Identified in this Report*

(Note: The following mitigation measures are based on the noise policies of the City of Antioch General Plan. The applicable General Plan policy number is indicated following each mitigation measure.)

- Prior to the issuance of any grading permits, the applicant shall submit a construction-related noise mitigation plan for City review and approval. The plan shall depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as:
  - The use of temporary noise-attenuation fences, where feasible to reduce construction noise impacts on adjacent noise sensitive land uses;
  - Placement of all stationary construction equipment so that the emitted noise is directed away from sensitive receptors nearest the project site;
  - Establishment of construction staging areas at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction. (GP Noise Policy 11.6.2m.)
- The required construction-related noise mitigation plan shall also specify that haul truck deliveries be subject to the same hours specified for construction equipment. (GP Noise Policy 11.6.2n.)

Construction activities are not anticipated to extend past one construction season and would not typically be located adjacent to a particular receptor continuously during the entire construction period. Given also that standard noise control measures would be implemented, as required per conditions of the original project approval and by General Plan policy, the noise generated by the construction activity would not result in significant adverse impacts. The impact would be considered *less-than-significant*.

# **APPENDIX H**

## **Traffic Study**

**Prepared by**

**Kimley-Horn and Associates**

**November 2009**



*Traffic Impact Study – Final Report*

# **WALMART\* EXPANSION ANTIOCH, CA**

24 November 2009

**Prepared for:**  
Environmental Consulting Services  
and City of Antioch, CA

**Prepared by:**  
Kimley-Horn and Associates, Inc.

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## INTRODUCTION

Kimley-Horn and Associates, Inc. was retained by Environmental Consulting Services to prepare a traffic study for the Walmart Discount Store expansion in Antioch, CA. Results of the traffic study will be used in the preparation of an Environmental Impact Report to assess the impacts of the proposed expansion.

The existing Walmart store is located northwest of the intersection of Lone Tree Way and Hillcrest Avenue in the Williamson Ranch Plaza. **Figure 1** illustrates the location of the project site in relation to the City of Antioch.

This traffic study was prepared based on discussions with, and criteria set forth by, the City of Antioch and Contra Costa Transportation Authority (CCTA). This study addresses the traffic and transportation effects of the proposed development in order to assist the project sponsor and the city in project planning and determining conditions of approval for the project.

## Study Methodology

### Development Conditions

The Walmart expansion traffic study was based on the following development conditions:

- Existing conditions – Based on current traffic counts and existing roadway geometry and traffic control.
- Near-term traffic conditions – Based on traffic volumes and traffic added by pending and approved (but not yet completed) developments anticipated to occur at the time the project is constructed. Also includes programmed roadway projects which are scheduled to be in place at the same time the project is anticipated to be completed in late 2010.
- Near-term plus project total traffic conditions – Based on existing traffic volumes, traffic added by approved and pending (but not yet completed developments), and traffic generated by the Walmart expansion project, as well as programmed roadway projects anticipated to be in place at the same time the project is to be completed.
- Long-Term conditions without the project – Based on future year traffic forecasts from the City's General Plan model. Future year will correspond with approximate buildout of City's General Plan.
- Long-Term conditions plus project – Based on the City model traffic forecasts and traffic generated by the project.

### **Operating Conditions and Criteria**

Measure C established a sales tax to be used to fund transportation improvements in Contra Costa County. The passage of Contra Costa County Measure J in 2004 extended the previous Measure C program to 2034. The measure includes a growth management program and requires Contra Costa Transportation Authority (CCTA) to develop a comprehensive transportation plan and update it every other year. To receive a share of the sales tax generated by Measure J, local jurisdictions must adhere to the level of service (LOS) standards that Measure J applies to routes of regional significance. Each jurisdiction must take appropriate action to ensure that the LOS standards are met, including routes of regional significance. Designated regional routes include all the freeways and state highways, and the most significant arterials in Contra Costa County.

Contra Costa Transportation Authority (CCTA) classifies several streets in the project study area including Lone Tree Way, Deer Valley Road, and Hillcrest Avenue (north of Lone Tree Way) as routes of regional significance. As such, intersections along the routes require analysis utilizing Growth Management Program procedures outlined in CCTA Technical Procedures, July 19, 2006. The CCTA Technical Procedures require the use of CCTALOS software to determine intersection operation levels based on the Intersection Capacity Utilization (ICU) methodology. The methodology describes the operation of an intersection in terms of Level of Service (LOS) based on corresponding volume to capacity v/c ratio. The CCTA standards apply only to designated routes of regional significance.

Levels of service are represented by a letter scale from LOS A to LOS F, with LOS A representing the best performance and LOS F representing the poorest performance under significantly congested conditions. CCTA set maximum levels of congestion for routes of regional significance such as intersections along Lone Tree Way, Hillcrest Avenue, and Deer Valley Road. According to the CCTA requirements, LOS D (i.e. v/c up to 0.85) is an acceptable level of traffic operation at intersections on the routes of regional significance in the study area regardless of how the intersections are currently operating. Furthermore, intersections to be evaluated under CCTA requirements include signalized intersections that are expected to be affected by 50 or more project trips in a peak period.

In addition, the Contra Costa Transportation Authority (CCTA) and its subsequent Regional Transportation Planning Committees have also set various standards in order to measure effectiveness on specific roadways, called Traffic Service Objectives (TSOs). In the study area, the delay index on routes of regional significance should be less than 2.0. That is to say the ratio of congested travel time vs. uncongested travel time along the corridor should be less than 2.0 during the AM peak as well as during the PM peak period.

For streets not designated as regionally significant, local standards apply. The Antioch General Plan adopted November 2003 states that where feasible, signalized intersections along design arterial roadways will strive to maintain a “High D” level of service ( $v/c = 0.85-0.89$ ) within regional commercial areas and at intersections within 1,000 feet of a freeway interchange regardless of how the intersections are currently operating. (For clarification, it should be noted that the level of service definitions shown in Table 1 are used by both the City of Antioch and CCTA. However, the City of Antioch Level of Service standard for intersections is “High D” (maximum  $v/c$  0.89) while the CCTA Level of Service standard is LOS “D” (maximum  $v/c$  0.85) which is applied to routes of regional significance.)

Unsignalized intersections are not specifically covered in the CCTA or General Plan requirements; however, in harmony with the intent of the General Plan, this report considered a “High D” level of service (LOS) to be an acceptable level of operation at unsignalized intersections. Unsignalized intersections were evaluated using *Highway Capacity Manual* methodology which bases LOS on average delay per vehicle.

Based on Antioch and CCTA requirements, traffic analysis to determine level of service was completed using the CCTALOS module at signalized intersections and the Highway Capacity Manual Operations module at unsignalized intersections within the Traffix software. Traffic service objectives and vehicle queuing at signalized intersections was determined using Synchro software. Traffix and Synchro software platforms are based on the methodology of the *Highway Capacity Manual*. CCTALOS software is based on the Intersection Capacity Utilization (ICU) methodology.

A significant impact would occur if levels of service at the study intersections drop below the established thresholds or if an intersection operating below the acceptable thresholds experiences an increase in  $v/c$  or a worse level of service, regardless of how small the increase seconds delay or change in  $v/c$ . Mitigation may be required when traffic from the project causes the intersection to operate below acceptable levels of traffic operation.

The effects of vehicle queuing were analyzed and a significant impact was assumed to occur if the queue increases by one or more vehicles (a vehicle being 25 feet long) and the vehicle queue exceeds the turn pocket length.

**Table 1** relates the operational characteristics associated with each level of service category for both signalized and unsignalized intersections.

**Table 1 – CCTA & City of Antioch Intersection Level of Service Definitions**

Level of Service	Description	Signalized (Intersection volume to capacity ratio v/c)	Unsignalized (Avg. control delay per vehicle sec/veh.)
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream	≤ 0.6	≤ 10
B	Stable traffic. Traffic flows smoothly with few delays.	0.61 – 0.70	> 10 – 15
C	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	0.71 – 0.80	> 15 – 25
D	Approaching unstable flow. Operation of individual users becomes significantly affected by other vehicles. Delays may be more than one cycle during peak hours.	0.81 – 0.90	> 25 – 35
E	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	0.91 – 1.00	> 35 – 50
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	> 1.00	> 50

Sources: Contra Costa Transportation Authority Technical Procedures 2006 and Transportation Research Board, *Highway Capacity Manual 2000*, National Research Council, 2000.

## Study Intersections Included in Analysis

The proposed project will generate new vehicular trips that will increase traffic volumes on the nearby street network. To assess changes in traffic conditions associated with the project, the following intersections, illustrated in **Figure 1**, were selected by the City of Antioch for evaluation in this traffic study:

1. Country Hills Drive/Deer Valley Road
2. Laurel Road/Hillcrest Avenue
3. Country Hills Drive/Hillcrest Avenue
4. Northeast Walmart Driveway/Hillcrest Avenue
5. Southeast Walmart Driveway/Hillcrest Avenue
6. Lone Tree Way/Country Hills Drive
7. Lone Tree Way/Deer Valley Plaza
8. Lone Tree Way/Deer Valley Road
9. Lone Tree Way/Prewett Park
10. Lone Tree Way/Sagebrush Drive
11. Lone Tree Way/Williamson Ranch Plaza
12. Lone Tree Way/Indian Hill Drive

13. Lone Tree Way/Walmart Driveway
14. Lone Tree Way/Hillcrest Avenue
15. Lone Tree Way/Vista Grande Drive
16. Lone Tree Way/Heidorn Ranch Road
17. Lone Tree Way/Canada Valley Road
18. Lone Tree Way/SR-4 Bypass SB Ramps
19. Lone Tree Way/Jeffrey Way
20. Marita Drive/Deer Valley Road
21. Prewett Ranch Drive/Hillcrest Avenue

Intersections were selected per CCTA traffic impact study guidelines which provide that analysis “should include any signalized intersection to which at least 50 project trips would be added” during the analysis periods (i.e., peak hours). To be conservative, some intersections that have much lower traffic levels were also included in the traffic study.

## **EXISTING CONDITIONS**

### **Existing Site Uses**

The existing Walmart is located in the Williamson Ranch Plaza near the intersection of Lone Tree Way and Hillcrest Avenue. The discount store is currently 141,498 square feet and offers services including sales of general merchandise, an 11,285 square foot garden center, pharmacy, photo center, portrait studio, and tire and lubrication services.

### **Existing Uses in Vicinity of Site**

Williamson Ranch Plaza is a shopping center that includes the Walmart as well as other uses including Orchard Supply Hardware, Staples, Big 5 sporting goods, and various retail, restaurant, and office uses.

Immediately east of the site, across Hillcrest Avenue, is the Lone Tree Landing development and Venture Commerce Center which include retail, office, restaurant and commercial uses.

Land uses north of the Walmart site are primarily residential and directly south of the site is the Williamson Ranch Park which is surrounded by residential uses.

### **Existing Roadway Network**

Below is a description of the principal roadways included in this study.

### **Canada Valley Road**

Canada Valley Road is a two-lane roadway with turn lanes serving residential areas north of Lone Tree Way. The speed limit is 40 mph. South of Lone Tree Way the street changes names and serves the Arcadia development which includes the Home Depot store.

### **Country Hills Drive**

Country Hills Drive is a two-lane roadway with turn lanes at major intersections. East of Hillcrest Avenue the street has a landscaped median. The speed limit on Country Hills Drive is 25 mph. South of Lone Tree Way the street changes name to Mokelumne Drive.

### **Deer Valley Plaza**

Deer Valley Plaza is the access to Deer Valley Plaza.

### **Deer Valley Road**

Deer Valley Road is a four-lane divided roadway with a landscaped median, left turn bays, wide shoulders, and restricted parking. Shoulders are designated as Class II bike lanes. The speed limit on Deer Valley Road is posted at 45 mph in the study area. Deer Valley Road is designated as a Route of Regional Significance.

### **Heidorn Ranch Road**

Heidorn Ranch Road is currently a four-lane divided roadway with a landscaped median, left turn lanes, and restricted parking from Lone Tree Way to the EBMUD aqueduct. North of Lone Tree Way Heidorn Ranch Road is currently a two-lane roadway. The speed limit on Heidorn Ranch Road is 25 mph north of Lone Tree Way and 45 mph south of Lone Tree Way.

### **Hillcrest Avenue**

Hillcrest Avenue is a four-lane divided roadway with a landscaped median, left turn bays, wide shoulders, and restricted parking. Shoulders are designated as Class II bike lanes. The speed limit on Hillcrest Avenue is posted at 45 mph in the study area. Hillcrest Avenue is designated as a Route of Regional Significance north of Lone Tree Way.

### **Indian Hill Drive**

Indian Hill Drive is a two-lane residential street with turn lanes at major intersections. The speed limit on Indian Hill Drive is 25 mph. An access to the Williamson Ranch Plaza is opposite Indian Hill Drive where it intersects Lone Tree Way.

### **Jeffery Way**

Jeffery Way is a two-lane street with a speed limit of 35 mph. Jeffrey Way is connected to the northbound ramps for the SR-4 Bypass.

### **Laurel Road**

Laurel Road is a four-lane divided roadway with a landscaped median and turn lanes at major intersections. Shoulders are designated as Class II bike lanes. The speed limit on Laurel Road is 45 mph in the study area. In the future, Laurel Road will be extended to the east to connect with the completed interchange at Laurel Road and the SR-4 Bypass which provides a connection to Laurel Road in Oakley. On the west side of Hillcrest Avenue the street changes name to Sterling Hill Drive.

### **Lone Tree Way**

Lone Tree Way is an arterial roadway that joins Antioch with the City of Brentwood. Through the project study area, Lone Tree Way is a four- to six-lane divided roadway with a landscaped median, left turn bays, and restricted parking. The speed limit on Lone Tree Way is posted at 45 mph in the study area. Lone Tree Way is designated as a Route of Regional Significance.

### **Marita Drive**

Marita Drive is a two-lane street with turn lanes at major intersections and Class II bike facilities. The speed limit on Marita Drive is 25 mph.

### **Prewett Park**

Prewett Park is the access for Prewett Family Park. Opposite the park entrance is the primary access for the Deer Valley High School.

### **Sagebrush Drive**

Sagebrush Drive is a two-lane street with turn lanes at major intersections. The speed limit on Sagebrush Drive is 25 mph.

### **State Route 4 (SR-4) Bypass**

State Route 4 (SR-4) Bypass is a new roadway between Vasco Road in Brentwood and the existing SR-4 in Antioch. The Bypass is a two-lane expressway between Balfour Road and Lone Tree Way and a four or six-lane freeway between Lone Tree Way and SR-4 to the north. The segment from Lone Tree Way to SR-4 was opened in 2007.

### **Vista Grande Drive**

Vista Grande Drive is a two-lane street with turn lanes at major intersections. The speed limit on Vista Grande is 25 mph.

### **Williamson Ranch Plaza**

Williamson Ranch Plaza has multiple access points into the shopping center and to the existing Walmart.

## Existing Site Access

Access to the site is primarily from the Lone Tree Way/Indian Hill Drive on the south side of Williamson Ranch Plaza and three right in/out driveways as shown in **Figure 2**. There is another access to the western portion of the shopping center at the intersection of Lone Tree Way/Williamson Ranch Plaza west of Indian Hill Drive which is expected to be used by few if any Walmart shoppers.

All site driveways provide single lane ingress and egress, with the exception of the exit at Lone Tree Way/Indian Hill Drive which has a single inbound lane and double left turns and a shared through/right lane in the outbound direction.

Existing throat depths at the site driveways are as follows:

- Lone Tree Way/Indian Hill Drive – 220 feet
- Lone Tree Way/Walmart Driveway – 30 feet
- Northeast Walmart Driveway/Hillcrest Avenue – 30 feet
- Southeast Walmart Driveway/Hillcrest Avenue – 80 feet

## Existing Lane Configurations and Traffic Control

Existing intersection lane configurations and traffic controls are illustrated in **Figure 3**. Traffic signals in the study area are located at all study intersections with the exception of three right in/out driveways serving Williamson Ranch Plaza. These study locations function as stop-controlled intersections for the Walmart project driveway approaches. In addition, the Prewett Ranch Drive/Hillcrest Avenue intersection has a traffic signal but it is currently set to operate on flash mode until future traffic volumes warrant putting it into full operation such as when Hillcrest Avenue is extended further to the south.

## Existing Peak Hour Turning Movement Volumes

Weekday intersection turning movement volumes were collected at project study area intersections in May 2008. Volumes are shown in **Figure 4**. Volumes were collected during the AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak periods of the weekday when local schools were in session and outside of holiday periods. Traffic volume data sheets for new counts are available in the **Appendix**. City practice regarding preparation of traffic impact studies is to limit analysis to weekdays. For this reason, and because no long term weekend traffic forecast data is available, no weekend traffic analysis was prepared.

## Existing Transit Facilities

Tri-Delta Transit provides bus service in Antioch. Routes 380, 383, 385 and 392 pass directly adjacent to the project site, connect to the Hillcrest park-and-ride and the Bay Point BART station in Pittsburg, and provide convenient connections to many locations in the city and connections to other local and regional transit routes. There are transit stops at the following locations adjacent to the project site:

- On eastbound Lone Tree Way, 200 feet west of Indian Hill Drive. Amenities include with a bus turnout and a bench.
- On eastbound Lone Tree Way, 200 feet east of Hillcrest Avenue. Amenities include a bus turnout and a bench.
- On westbound direction Lone Tree Way, 300 feet west of Hillcrest Avenue. Amenities include a bus turnout and a shelter.
- On northbound Hillcrest Avenue, 200 feet north of Lone Tree Way. Other than a bus stop sign, no amenities are provided at this location.

Transit serving the site operates on a frequency of 30 to 60 minutes during the weekday and 60 minutes on the weekend.

## Existing Bicycle and Pedestrian Facilities

Sidewalks are present on Lone Tree Way and Hillcrest Avenue adjacent and near the project site. Sidewalks provide walking facilities between the Walmart, nearby transit stops, and the adjacent residential neighborhoods. From the store there are existing paved walkways to both Hillcrest Avenue and Lone Tree Way where the transit stops are located. The walkways permit pedestrians to reach the bus stops without having to walk in the parking lot or drive aisles of the site.

A Class I paved bike trail is present along Lone Tree Way from Hillcrest Avenue west across the site frontage of the Walmart and Williamson Ranch Plaza. Class II bike lanes are present on Hillcrest Avenue adjacent and near the project site on both sides of the street. There is one bicycle rack that will hold up to 25 bicycles at the existing Walmart that is not fastened to the ground. Class II facilities are in place on other study area roadways including Laurel Road, Country Hills Drive, Deer Valley Road, Heidorn Ranch Road, Canada Valley Road, Mokelumne Drive, and Marita Drive. The wide shoulders on Lone Tree Way are currently being used as bicycle facilities. However, when the third traffic lane is striped on Lone Tree Way, there will be no bicycle lanes on the roadway. Bicycle traffic has been planned to use the Class I bike path along the EBMUD Aqueduct, as described above.

## Existing Levels of Service at Study Intersections

Traffic operations were evaluated at signalized and unsignalized intersections under existing traffic conditions.

As noted previously, intersections on Lone Tree Way, Deer Valley Road, and Hillcrest Avenue (north of Lone Tree Way) are to operate at a minimum level of service D and v/c up to 0.85. One study intersection is not on a route of regional significance and may operate at LOS D and v/c up to 0.89. This intersection is Prewett Ranch Drive/Hillcrest Avenue.

Results of the analysis are presented in **Table 2**, along with the minimum jurisdictional standard for acceptable levels of service (as previously described in Operating Conditions and Criteria). Additional detail of the analysis is provided in the **Appendix**.

According to CCTALOS software results, all intersections currently satisfy operational standards.

**Table 2 – Existing Levels of Service Summary**

Int. #	Intersection	Criteria	Existing			
			AM		PM	
			LOS	V/C or Delay	LOS	V/C or Delay
<b>Signalized Intersections</b>						
1	Country Hills Drive/Deer Valley Road	0.85	A	0.44	A	0.38
2	Laurel Road/Hillcrest Avenue	0.85	A	0.31	A	0.22
3	Country Hills Drive/Hillcrest Avenue	0.85	A	0.35	A	0.27
6	Lone Tree Way/Country Hills Drive	0.85	B	0.63	A	0.50
7	Lone Tree Way/Deer Valley Plaza	0.85	A	0.35	A	0.40
8	Lone Tree Way/Deer Valley Road	0.85	B	0.63	A	0.59
9	Lone Tree Way/Prewett Park	0.85	A	0.47	A	0.37
10	Lone Tree Way/Sagebrush Drive	0.85	A	0.37	A	0.38
11	Lone Tree Way/Williamson Ranch Plaza	0.85	A	0.34	A	0.34
12	Lone Tree Way/Indian Hill Drive	0.85	A	0.42	A	0.39
14	Lone Tree Way/Hillcrest Avenue	0.85	A	0.40	A	0.48
15	Lone Tree Way/Vista Grande Drive	0.85	A	0.39	A	0.54
16	Lone Tree Way/Heidorn Ranch Road	0.85	A	0.22	A	0.33
17	Lone Tree Way/Canada Valley Road	0.85	A	0.34	A	0.52
18	Lone Tree Way/SR-4 Bypass	0.85	A	0.42	A	0.58
19	Lone Tree Way/Jeffrey Way	0.85	A	0.27	A	0.44
20	Marita Drive/Deer Valley Road	0.85	A	0.29	A	0.26
21	Prewett Ranch Drive/Hillcrest Avenue	0.89	-	-	-	-
<b>Unsignalized Intersections</b>						
4	Northeast Wal-Mart Driveway/Hillcrest Avenue					
	EB Approach	D	B	13.0	B	11.5
5	Southeast Wal-Mart Driveway/Hillcrest Avenue					
	EB Approach	D	B	10.1	B	10.2
	WB Approach	D	A	9.5	A	9.6
13	Lone Tree Way/Wal-Mart Driveway					
	SB Approach	D	B	10.8	A	9.9
21	Prewett Ranch Drive/Hillcrest Avenue	D	A	8.3	A	8.5

## NEARBY ROADWAY AND DEVELOPMENT PROJECTS

### Planned Roadway Projects in Vicinity of Site

Several transportation improvements are programmed for the study area intersections and are scheduled for completion prior to or at approximately the same time as the completion of the Walmart expansion (e.g., late 2010). Improvements are planned in Brentwood and Oakley as well, but they are too far away to have an influence on traffic operations within the study area. According to the City of Antioch, these include the following roadway or intersection improvements:

- Intersection #8 – Lone Tree Way/Deer Valley Road – Lengthen the westbound Lone Tree Way left-turn lane to southbound Deer Valley Road to 500', lengthen the westbound Lone Tree Way right-turn lane to northbound Deer Valley Road to 400', lengthen the southbound Deer Valley Road left-turn lane to eastbound Lone Tree Way to 190', construct a second southbound Deer Valley Road left-turn lane to eastbound Lone Tree Way for 800', and lengthen the eastbound Lone Tree Way right-turn lane to southbound Deer Valley Road to 400'. This is part of the Lone Tree Way Corridor project (AD27/31R) and will be completed by 2010.
- Intersection #9 – Lone Tree Way/Prewett Park – Restripe westbound Lone Tree Way through-shared-right to a through and a right-turn lane to northbound Prewett Park. This is part of the Prewett Park project and will be completed by 2010.
- Intersection #10 – Lone Tree Way/Sagebrush Drive – Lengthen the westbound Lone Tree Way left-turn lane to southbound Sagebrush Drive to 600'. This is part of the Lone Tree Way Corridor project (AD27/31R) and will be completed by 2010.
- Intersection #14 – Lone Tree Way/Hillcrest Avenue – Lengthen the eastbound Lone Tree Way left-turn lane to northbound Hillcrest Avenue to 620', restripe Lone Tree Way to three lanes in the eastbound and westbound directions, construct a second southbound Hillcrest Avenue left-turn lane to eastbound Lone Tree Way for 600' as well as change the southbound Hillcrest Avenue left-shared-through lane to a through lane, and modify traffic signal phasing to become eight phases (change northbound and southbound from split phasing to have protected left-turn phasing). This is part of the Lone Tree Way Corridor project (AD27/31R) and will be completed by 2010.
- Intersection #21 – Hillcrest Avenue/Prewett Ranch Drive – Take signal out of flash mode and complete the south leg of the intersection extending Hillcrest Avenue to the south. This is funded by the Aviano Adult Community project and will be completed by 2010.

The above roadway improvements are either programmed City capital improvement projects, or are required as mitigation for other approved projects in the vicinity.

In addition, intersections on Lone Tree Way are currently being retimed and placed under coordinated operation.

## Near-Term Lane Configurations and Traffic Control

**Figure 5** illustrates the roadway geometry and traffic control planned by the city regardless of the proposed Walmart expansion. The improvements are anticipated to be in place before or at approximately the same time as the proposed opening of the Walmart expansion in late 2010.

## Approved/Pending Development Projects in Vicinity of Site

Several development projects in the broad vicinity of the Walmart site are in various stages of planning, approval, or development. These include projects that are reasonably foreseeable in the future and will ultimately be developed roughly the same time or following the Walmart store expansion. Kimley-Horn assessed the approved and pending project trips from Antioch, Brentwood, and Oakley. Therefore, information on nearby approved and pending projects was provided by the Cities of Antioch, Brentwood, and Oakley which is included in the **Appendix**.

The projects are pending for approval or are approved for construction but are not completed or fully occupied. Projects considered for this traffic study were identified by the cities of Antioch, Brentwood, and Oakley as having been approved (but not yet completed or fully occupied), or having a development application submitted, or being otherwise reasonably foreseeable at the time the Notice of Preparation (NOP) of the Walmart Expansion EIR was issued on August 13, 2008. The initial list of projects included all known projects in Antioch, Brentwood, and Oakley. Kimley-Horn and Associates considered each initially listed project in terms of its potential to generate traffic which would affect any of the study intersections. Projects which were determined to contribute no traffic or a negligible volume of traffic to study intersections were not included in the traffic analysis.

Approved and pending projects included in this study are listed in **Table 3**.

**Table 3 – Approved and Pending Developments**

#	Project Name	Location <sup>1</sup>	Size <sup>2</sup>	Status
1	Renaissance at Bluerock	Lone Tree & Golf Course Rd (A)	71 DU	Under construction
2	Bluerock Business Center	Bluerock Dr at Lone Tree Wy (A)	48.724 KSF Office	Under construction
3	Lakeview Center	Northwest Corner of Lone Tree Wy and Golf Course Rd (A)	15 KSF Drugstore 14 KSF Grocery 9 KSF Retail/Office	In process
4	Park Ridge	Canada Valley Rd (A)	562 DU	In process
5	Deer Valley Business Park	Deer Valley Rd & Country Hills (A)	84.45 KSF Office	Under construction
6	Hidden Glen	Off Hillcrest, N of Lone Tree Wy (A)	371 DU	Under construction
7	Meadow Creek Village	Off Lone Tree Wy on Vista Grande (A)	97 DU	Under construction
8	Monterra (Nelson Ranch)	Wild Horse Rd off of Hillcrest (A)	360 DU	Under construction
9	Sand Creek Ranch (Rivergate)	Off Canada Valley Rd & Lone Tree Wy (A)	239 DU	Under construction
10	Williamson Ranch Plaza	NS of Lone Tree, W of Indian Hill (A)	39.682 KSF Office	In process
11	Antioch Town Center	E of Lone Tree, W of Golf Course Rd (A)	138.557 KSF Retail	Withdrawn <sup>3</sup>
12	Lone Tree Landing	Lone Tree Wy at Hillcrest (A)	33.713 KSF Retail 9.595 KSF Office	In process (Partially Completed - 2009)
13	Venture Commerce Center	Lone Tree Wy & Vista Grande (A)	46.1 KSF Retail	Completed (50% Occupied)
14	Antioch Surgical Center	Hillcrest Ave, S of Deer Valley (A)	5.5 KSF Outpatient Surgery Center	Approved
15	Zeka Ranch Estates	Empire Mine Rd - Northwest corner of FUA-1 (A)	314 DU	Pre-Application
16	Deer Valley Estates	E of Deer Valley Rd, N of Kaiser Hospital (A)	136 DU	Approved
17	Aviano Adult Community	N of Sand Creek Rd, W of Hillcrest Avenue (A)	535 DU	Approved
18	Magnet School	Sand Creek Rd, W of Aviano Development (A)	200 Students	Completed/Occupied (Not occupied in May 2008)
19	Sand Creek Estates	W of Deer Valley Rd, Southern Boundary of the City (A)	190 DU	On hold
20	Roddy Ranch	W of Deer Valley Rd and S of Empire Mine Rd(A)	574 DU 126 Apartments 250 Room Hotel	In process
21	Seventh Day Adventist Church	2200 Country Hills Dr (A)	8-Plex Housing 39.0 KSF Church	Housing approved/ Church under construction
22	Bank of Agriculture	Lone Tree Wy at Country Hills (A)	5.1 KSF Car Wash 3.5 KSF Bank	Approved
23	Smith Parcel	Southeast Antioch off Deer Valley Rd and Balfour (A)	50 DU 111 KSF Retail	In process

<sup>1</sup> (A) = Antioch; (B) = Brentwood; (O) = Oakley.

<sup>2</sup> DU = dwelling units, KSF = thousand square feet.

<sup>3</sup> This project consisted of a proposed Target store until November 2009 when the application was withdrawn. However, for purposes of presenting a worst-case analysis of cumulative conditions, this project is retained as a pending project in this report.

#	Project Name	Location <sup>1</sup>	Size <sup>2</sup>	Status
24	Tierra Villas	5020 Heidorn Ranch Rd (A)	122 DU	In process
25	Kaiser Medical Center	6200 Deer Valley Rd (A)	159.6 KSF Hospital 108.45 KSF Medical Office	Completed
26	The Orchard at Slatten Ranch Pad Buildings	Empire Avenue at Wicklow (A)	24 KSF Retail	Approved (JC Penney Built and occupied)
27	Starbucks Commercial Center	3300 Hillcrest Avenue & Wildflower Dr (A)	1.84 KSF Starbucks 4.45 KSF Bank 11 KSF Retail	Approved
28	Hillcrest Village	Hillcrest Ave & Wildflower Dr (A)	96 KSF Office/Retail	On hold
29	Amber Park	S of Lone Tree Wy, E of Empire Ave (B)	99 DU	Under construction
30	Brentwood Station	S of Lone Tree Wy, E of Jeffery Wy (B)	11.2 Restaurant	Completed (Restaurant vacant)
31	Brighton Station	N of Grant St, E of Jeffery Wy (B)	38 DU	Under construction
32	Streets of Brentwood	E of SR-4, S of San Creek (B)	446.1 KSF Retail	Under construction (Partially Completed 2009)
33	Empire Crossings	S of Lone Tree, W of Empire (B)	11.8 KSF Retail	Completed (50% Occupied)
34	Alexandra Homes - Parkside Villas	N side of Sand Creek, W of Fairview (B)	37 DU	Under construction
35	Carmel Estates	E of Minnesota, N of Randy Wy (B)	106 DU	Approved
36	Terreno Homes	N of Sand Creek, E of Railroad Tracks (B)	134 DU	Under construction
37	Bridle Gate	W of SR-4, S of Sand Creek (B)	166 DU	Approved
38	Blackhawk-Nunn-Cox Property	W of SR-4, N of Balfour (B)	58 DU	Under construction
39	Vic Stewarts	S of Balfour, E of John Muir Pkw (B)	10.7 Restaurant 16.1 KSF Retail	Under construction (Completed 2009)
40	Senior Apts - Cox Property	W of SR-4, N of Balfour (B)	120 DU	Under construction
41	Palmilla	W of SR-4, N of Central Blvd (B)	460 DU 108 Apartments 11 Townhomes	Under construction
42	Passport Homes	S of Lone Tree Wy, E of Railroad Tracks (B)	59 DU	Approved
43	Prewett Ranch (Suncrest Homes)	S of Lone Tree Wy, E of O'Hara Ave (B)	240 DU	Approved
44	Casa Bella Apartments	NE Corner of Jeffrey Ln and Amber Ln (B)	120 Apartments	In process
45	Steeplechase	N of Lone Tree Wy, W of O'Hara Ave (B)	116 DU 16 Townhomes	Approved
46	Lone Tree Crossings	N side of Lone Tree Wy and W of the Railroad tracks (B)	117.37 KSF Retail	Under construction
47	Tingdahl	W/O Empire Ave, S/O Lone Tree Way (B)	2 DU	Approved
48	Cornerstone Church	E/O Empire Ave, S/O Lone Tree Way (B)	65.451 KSF Church	Approved
49	The Rock Church	S of Lone Tree Wy, E of O'Hara Ave (B)	21.435 KSF Church	Approved
50	Red Robin	E of SR-4, S of Sand Creek (B)	5.8 KSF Restaurant	Approved (Completed 2009)

<sup>1</sup> (A) = Antioch; (B) = Brentwood; (O) = Oakley.

<sup>2</sup> DU = dwelling units, KSF = thousand square feet.

#	Project Name	Location <sup>1</sup>	Size <sup>2</sup>	Status
51	Capital & Counties - LT	N of Wicklow Wy between Slaten Ranch Rd and Empire Avenue (A)	319.8 KSF Retail	In process (Long Term)
52	Office - LT	On Slaten Ranch Rd, S of Laurel Rd (A)	1429 KSF Office	In process (Long Term)
53	eBART - LT	Neroly Rd (A&O)	1000 Parking Spaces	In process (Long Term)
54	7662 Stonewood	Rose Lane (O)	215 DU	Under construction
55	8541 Ryder, Cortina, Sagewood & Tangelwood	Main Street (O)	495 DU	Under construction
56	8731 Magnolia Park	W of Freedom HS (O)	202 DU	Under construction
57	8736 Pleasant Meadows	1860 O'Hara (O)	44 DU	Approved
58	8787 Rosewood Estates	Laurel Rd (O)	60 DU	In process
59	8803 Brownstone 10	Brownstone Rd (O)	50 DU	Approved
60	8807 Villa Grove	2080 O'Hara (O)	50 DU	Approved
61	8975 Shiloh	Main St. & Simoni Ranch Rd. (O)	75 DU	Approved
62	8980 Brownstone Estates	301 Brownstone (O)	96 DU	In process
63	9027 Duarte Ranch	Southest Corner Laurel & Rose (O)	116 DU	Approved
64	9088 Cedarwood Estates	End of Knox Lane (O)	34 DU	In process
65	7426/7590/7655/7760 Amberwood	4400 Live Oak Ave (O)	87 DU	Approved
66	Spare Time Sports Club	Neroly Rd & Empire (O)	58.3 KSF Fitness Club	Approved (Completed Nov 2008)
67	Rite Aid	NW Corner of Laurel & O'Hara (O)	17.34 KSF Pharmacy	In process
68	Laurel Plaza	NW Corner of Laurel & O'Hara (O)	56.8 KSF Retail	In process
69	Empire Station Mixed Use Project (3 Office Bldgs)	Empire Ave & Neroly Road (O)	9.0 KSF Office	In process
70	Neroly Commercial Center (Phase II of Spare Time)	SE Corner Neroly & Empire (O)	116.9 KSF Retail	In process

<sup>1</sup> (A) = Antioch; (B) = Brentwood; (O) = Oakley.

<sup>2</sup> DU = dwelling units, KSF = thousand square feet.

## Approved/Pending Development Turning Movement Volumes

An estimate of trips generated by approved and pending projects was obtained from information provided by the Cities of Antioch, Brentwood and Oakley. Where available; traffic volumes for these projects were obtained directly from published traffic reports. For development projects that were partially completed and occupied at the time the May 2008 counts were completed for this study, Kimley-Horn staff visited each site to determine the percent occupancy and prorated the estimated number of project generated trips.

Traffic volumes from approved/pending projects, when combined with the Walmart project, represent the cumulative with project analysis condition per requirements of the California Environmental Quality Act.

**Figure 6** illustrates the location of the approved projects and **Figure 7** summarizes the vehicle trips associated with the approved and pending development projects.

## WALMART EXPANSION

### Proposed Site Uses

As noted previously, the existing Walmart discount store is currently 141,498 square feet and offers services including sales of general merchandise, pharmacy, photo center, portrait studio, and tire and lubrication services as well as an 11,285 square foot garden center. It is proposed that the store be expanded to add 39,974 square feet to include a full service grocery area, additional general retail and other ancillary store functions, and 6,339 square feet of the garden center will be removed for an overall net increase of 33,635 square feet. When expanded, the store will become a Walmart Supercenter.

### Project Trip Generation

Trip generation for development projects is typically calculated based on rates contained in the Institute of Transportation Engineer's publication, *Trip Generation 8th Edition*. *Trip Generation* is a standard reference used by jurisdictions throughout the country for the estimation of trip generation potential of proposed developments.

A trip is defined in *Trip Generation* as a single or one-directional vehicle movement with either the origin or destination at the project site. In other words, a trip can be either "to" or "from" the site. In addition, a single customer visit to a site is counted as two trips (i.e., one to and one from the site).

For purposes of determining the worst-case impacts of traffic on the surrounding street network, the trips generated by a proposed development are typically estimated between the hours of 7:00-9:00 AM and 4:00-6:00 PM. Recent 24-hour volume counts conducted near the existing Walmart were referenced to determine the AM and PM peak hours. While the project itself may generate more traffic during some other time of the day such as around noon, the peak of "adjacent street traffic" represents the time period when the uses generally contribute to the greatest amount of congestion, with the PM peak commonly being the greatest congestion period. At other times of the day retail land uses rarely cause impacts. For this reason, this evaluation focused on the

weekday AM and PM peaks. This methodology is in harmony with the city's standard for the preparation of traffic impact studies.

The existing Walmart store is most appropriately classified as Free-Standing Discount Store (Land Use 815). This use is characterized by ITE as being a free-standing store that offers "a variety of customer services, centralized cashiering, and a wide range of products. They typically maintain long store hours 7 days a week."

The Walmart when it is expanded, is most appropriately classified as Free-Standing Discount Superstore (ITE Land Use 813). This use is defined by ITE as being "...similar to the free-standing discount stores described in Land Use 815, with the exception that they also contain a full service grocery department under the same roof that shares entrances and exits with the discount store area." The major difference between Land Use 813 and Land Use 815 is that Free-Standing Discount Stores do not have a full service grocery department.

According to ITE, superstores have a higher average trip rate than discount stores in the AM peak, and discount stores have a higher average rate than superstores in the PM peak. The recently released *Trip Generation, 8<sup>th</sup> Edition* contains data from a combination of 92 additional AM and PM trip generation studies of Free-Standing Discount Superstores as compared to the 7<sup>th</sup> Edition. This substantial increase in data further validates the accuracy of the trip rates for the Free-Standing Discount Superstore (Land Use 813), which in the previous edition was a newly regarded land use type at the time of its publication.

It is proposed that the store be expanded to add 39,974 square feet inside the building, and 6,339 square feet of the garden center will be removed for an overall net increase of 33,635 square feet. To accurately portray the change in trips once the existing Walmart becomes a Walmart Superstore, the existing discount store trips were estimated (based on 130,213 square feet) and subtracted from the street network and the proposed Superstore trips were estimated (based on 170,187 square feet) and added onto the network.

Trip generation calculations prepared per ITE methodology are based on gross floor area of the building. Gross floor area includes the sum of the floor area in square feet "including cellars, basements, mezzanines, penthouses, corridors, lobbies, stores and offices that are within the principal outside faces of exterior walls." ITE specifies that "unroofed areas and unenclosed roofed-over spaces, except those contained within the principal outside faces of exterior walls, should be excluded from the area calculations." Outdoor or fenced in-areas such as outdoor garden centers are specifically not included in the definition of gross floor area and are excluded.

Excluding the areas outside the principal walls does not suggest that they do not generate trips to or from the project site; rather it is a statement that the ITE methodology already incorporates these trips in the trip generation rates reported by

ITE for the areas within the "principal outside faces of exterior walls." Therefore, consistent with ITE methodology as specifically noted in the 8<sup>th</sup> Edition, the square footage associated with outdoor and seasonal garden sales areas and other incidental outside areas (i.e., net area of 4,886 square feet for this project) are generally not included in the floor area calculation for this study.

Trip generation was calculated based on the previous discussions and is reported in **Table 5**. Additional trip generation calculations are contained in the **Appendix**.

**Table 4 – Walmart Expansion Trip Generation**

TIME PERIOD	LAND USE	Trip Rate			Trips		
		In	Out	Total	In	Out	Total
AM Peak	Free Standing Discount Store (130.213 KSF)	0.72	0.34	1.06	(94)	(44)	(138)
	<i>Discount Store Pass-by</i>				0	0	0
	Free Standing Discount Superstore (170.187 KSF)	0.94	0.73	1.67	159	125	284
	<i>Discount Superstore Pass-by</i>				0	0	0
	<b>Net New Vehicle Trips</b>				<b>65</b>	<b>81</b>	<b>146</b>
PM Peak	Free Standing Discount Store (130.213 KSF)	2.50	2.50	5.00	(326)	(325)	(651)
	<i>Discount Store Pass-by (17%)</i>				56	55	111
	Free Standing Discount Superstore (170.187 KSF)	2.26	2.35	4.61	385	400	785
	<i>Discount Superstore Pass-by (28%)</i>				(108)	(112)	(220)
	<b>Net New Vehicle Trips</b>				<b>7</b>	<b>18</b>	<b>25</b>

As noted in **Table 5**, the project will generate approximately 146 new peak AM trips and approximately 25 new peak PM trips. This is a result of the differences in shopping characteristics associated with the existing and the proposed store formats (i.e. discount store vs. superstore).

## Project Trip Pass-By

The Walmart expansion will create a specific number of vehicle trips; nevertheless, many of the trips will already be on the road and will likely stop as they pass by the site. Some vehicles are likely to stop as they pass by the Walmart as a matter of convenience on their path to another destination. These are not new vehicle trips but are considered to be pass-by trips. Pass-by trips were calculated based on data published in ITE's *Trip Generation Handbook, 2nd Edition* which includes weekday PM information. To be consistent with the trip generation assumptions noted earlier,

weekday PM pass-by reductions were based on Free-Standing Discount Superstore (Land Use 813) for the proposed Superstore and on Free-Standing Discount Store (Land Use 815) for the existing store. No AM pass-by was assumed because no data was available. The following pass-by rates were used in the analysis:

- AM Pass-by Rate – None
- PM Pass-by Rate – 17% (existing Discount Store)  
28% (proposed Discount Superstore)

## Project Trip Distribution and Assignment

Because of the nature of the development, most customers to the Walmart are expected to travel from nearby locations in Antioch and Brentwood, with few trips originating in Pittsburg and Oakley.

A project distribution was developed based on distributions prepared in previous traffic reports, existing traffic count information, and the general orientation of population sources to the site. **Figure 9** shows the traffic distribution assumed in this traffic report.

Based on the assumed trip distribution, new vehicle trips generated by the Walmart expansion were assigned to the street network as shown in **Figure 10**. **Figure 11** shows the pass-by trips expected at the project driveways and **Figure 12** shows the total project vehicle trips.

## NEAR-TERM LOS TRAFFIC CONDITIONS

Traffic operations were evaluated under the following development conditions:

- Near-Term Traffic Conditions
- Near-Term Plus Walmart Expansion Traffic Conditions

Results of the analysis are presented in **Table 6**. Additional detail is provided in the **Appendix**.

**Table 5 – Near-Term Level of Service Summary**

Int. #	Intersection	Criteria	Existing				Near Term				Near Term+Project			
			AM		PM		AM		PM		AM		PM	
			LOS	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay
<b>Signalized Intersections</b>														
1	Country Hills Drive/Deer Valley Road	0.85	A	0.44	A	0.38	A	0.47	A	0.47	A	0.47	A	0.47
2	Laurel Road/Hillcrest Avenue	0.85	A	0.31	A	0.22	A	0.33	A	0.27	A	0.34	A	0.27
3	Country Hills Drive/Hillcrest Avenue	0.85	A	0.35	A	0.27	A	0.39	A	0.31	A	0.39	A	0.30
6	Lone Tree Way/Country Hills Drive	0.85	B	0.63	A	0.50	C	0.71	A	0.58	C	0.72	A	0.58
7	Lone Tree Way/Deer Valley Plaza	0.85	A	0.35	A	0.40	A	0.45	A	0.50	A	0.45	A	0.50
8	Lone Tree Way/Deer Valley Road	0.85	B	0.63	A	0.59	C	0.72	D	0.81	C	0.73	D	0.81
9	Lone Tree Way/Prewett Park	0.85	A	0.47	A	0.37	A	0.55	A	0.49	A	0.56	A	0.49
10	Lone Tree Way/Sagebrush Drive	0.85	A	0.37	A	0.38	A	0.46	A	0.51	A	0.47	A	0.51
11	Lone Tree Way/Williamson Ranch Plaza	0.85	A	0.34	A	0.34	A	0.48	A	0.50	A	0.49	A	0.51
12	Lone Tree Way/Indian Hill Drive	0.85	A	0.42	A	0.39	A	0.54	A	0.53	A	0.57	A	0.53
14	Lone Tree Way/Hillcrest Avenue	0.85	A	0.40	A	0.48	A	0.50	A	0.54	A	0.52	A	0.54
15	Lone Tree Way/Vista Grande Drive	0.85	A	0.39	A	0.54	A	0.39	A	0.55	A	0.39	A	0.56
16	Lone Tree Way/Heidorn Ranch Road	0.85	A	0.22	A	0.33	A	0.30	A	0.45	A	0.30	A	0.46
17	Lone Tree Way/Canada Valley Road	0.85	A	0.34	A	0.52	A	0.52	B	0.69	A	0.53	B	0.69
18	Lone Tree Way/SR-4 Bypass	0.85	A	0.42	A	0.58	A	0.53	D	0.84	A	0.53	D	0.84
19	Lone Tree Way/Jeffrey Way	0.85	A	0.27	A	0.44	A	0.36	A	0.57	A	0.36	A	0.57
20	Marita Drive/Deer Valley Road	0.85	A	0.29	A	0.26	A	0.39	A	0.39	A	0.39	A	0.39
21	Prewett Ranch Drive/Hillcrest Avenue	0.89	-	-	-	-	A	0.16	A	0.17	A	0.17	A	0.17
<b>Unsignalized Intersections</b>														
4	Northeast Wal-Mart Driveway/Hillcrest Avenue													
	EB Approach	D	B	13.0	B	11.5	B	14.0	B	12.4	C	15.7	B	12.9
5	Southeast Wal-Mart Driveway/Hillcrest Avenue													
	EB Approach	D	B	10.1	B	10.2	B	10.3	B	10.5	B	10.4	B	10.7
	WB Approach	D	A	9.5	A	9.6	A	9.8	B	10.2	A	9.9	B	10.2
13	Lone Tree Way/Wal-Mart Driveway													
	SB Approach	D	B	10.8	A	9.9	B	12.1	B	11.0	B	12.1	B	11.1
21	Prewett Ranch Drive/Hillcrest Avenue	D	A	8.3	A	8.5	-	-	-	-	-	-	-	-

## Near-Term Level of Service Traffic Conditions

Existing traffic volumes, combined with vehicle trips expected to be generated by the approved and pending development projects, were evaluated at the study intersections and can be seen in **Figure 8**. As shown in **Table 6**, all study intersections function within acceptable standards.

## Near-Term + Project Level of Service Traffic Conditions

Near-Term + Project traffic conditions were evaluated at the study intersections and are shown in **Figure 13**. As shown in **Table 6**, there are no intersections that do not function within acceptable standards due to the Walmart expansion project.

## LONG-TERM YEAR 2025 TRAFFIC

### Long-Term Lane Configurations and Traffic Control

Several transportation improvements are anticipated by City staff for the study area intersections for the year 2025. According to the City of Antioch, the following roadway or intersection improvements are planned.

- Intersection #2 – Laurel Road/Hillcrest Avenue – Lengthen the southbound Hillcrest Avenue left-turn lane to eastbound Laurel Road to 600'. This is part of the Lone Tree Way Corridor project (AD27/31R) and will be funded by the City and as mitigation for Davidon's Park Ridge project and will be completed by 2013.
- Intersection #7 – Lone Tree Way/Deer Valley Plaza – the north leg of the intersection will be constructed with a planned shopping center with the following improvements:
  - The southbound Deer Valley Plaza approach will be a left, through, and right turn lanes
  - A westbound Lone Tree Way right-turn lane will be added for 100'
  - The northbound Deer Valley Plaza right-turn lane will be restriped to a through-shared-right
  - An eastbound Lone Tree Way left-turn lane will be added for 100'
- Intersection #19 – Lone Tree Way/Jeffrey Way – A second westbound Lone Tree Way left-turn lane to southbound Jeffrey Way is currently constructed for 60' but blocked off. The lane will be blocked until southbound Jeffrey Way is widened by a developer.

All of these improvements reflect the ultimate lane configurations contained in the Circulation Element of the City of Antioch 1993 General Plan.

**Figure 14** illustrates the intersection geometry and traffic control assumed in the long-term analysis.

### Year 2025 Forecast

Kimley-Horn obtained the City of Antioch's General Plan Buildout Model travel forecast information which includes anticipated development in the adjacent cities of Brentwood and Oakley. The model was used to plot bi-directional AM and PM traffic volumes on each segment of the roadways in the study area. Model output was used to compare year 2000 with year 2025 model forecasts to determine the incremental difference in traffic volumes at study intersections.

Year 2025 turning movement volumes were calculated by adding the incremental difference in bi-directional roadway segment (i.e., link) volumes to the existing 2008 link volumes, and then performing a Furness adjustment to generate future year turning movement volumes.

The following planned developments were not included in the City's General Plan Buildout forecast model and were therefore manually added to reflect the planned condition in 2025 and listed in **Table 3 - Approved and Pending Developments**:

- Retail between Slaten Ranch Road and Empire Avenue north of Wicklow Way
- Office north of Capital & Counties property
- eBART with parking lots on the east and west sides of Neroly Road in Antioch and Oakley

## **LONG-TERM LOS TRAFFIC CONDITIONS**

Traffic operations were evaluated under the following long-term development conditions:

- Long-Term (2025) Without Project Traffic Conditions
- Long-Term (2025) With Project Traffic Conditions

Results of the analysis are presented in **Table 7**. Additional detail is provided in the **Appendix**.

**Table 6 – Long-Term Level of Service Summary**

Int. #	Intersection	Criteria	Near Term				Near Term + Project				Long-Term				Long-Term + Project			
			AM		PM		AM		PM		AM		PM		AM		PM	
			LOS	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay
<b>Signalized Intersections</b>																		
1	Country Hills Drive/Deer Valley Road	0.85	A	0.47	A	0.47	A	0.47	A	0.47	A	0.57	A	0.52	A	0.57	A	0.52
2	Laurel Road/Hillcrest Avenue	0.85	A	0.33	A	0.27	A	0.34	A	0.27	B	0.65	B	0.63	B	0.65	B	0.63
3	Country Hills Drive/Hillcrest Avenue	0.85	A	0.39	A	0.31	A	0.39	A	0.30	A	0.48	A	0.47	A	0.48	A	0.47
6	Lone Tree Way/Country Hills Drive	0.85	C	0.71	A	0.58	C	0.72	A	0.58	E	0.96	D	0.88	E	0.97	D	0.88
7	Lone Tree Way/Deer Valley Plaza	0.85	A	0.45	A	0.50	A	0.45	A	0.50	A	0.55	B	0.61	A	0.56	B	0.61
8	Lone Tree Way/Deer Valley Road	0.85	C	0.72	D	0.81	C	0.73	D	0.81	D	0.83	D	0.89	D	0.84	D	0.89
9	Lone Tree Way/Prewett Park	0.85	A	0.55	A	0.49	A	0.56	A	0.49	B	0.63	A	0.57	B	0.63	A	0.57
10	Lone Tree Way/Sagebrush Drive	0.85	A	0.46	A	0.51	A	0.47	A	0.51	A	0.60	A	0.57	B	0.60	A	0.57
11	Lone Tree Way/Williamson Ranch Plaza	0.85	A	0.48	A	0.50	A	0.49	A	0.51	A	0.54	A	0.58	A	0.55	A	0.58
12	Lone Tree Way/Indian Hill Drive	0.85	A	0.54	A	0.53	A	0.57	A	0.53	A	0.58	B	0.63	B	0.61	B	0.63
14	Lone Tree Way/Hillcrest Avenue	0.85	A	0.50	A	0.54	A	0.52	A	0.54	B	0.71	E	0.91	C	0.73	E	0.91
15	Lone Tree Way/Vista Grande Drive	0.85	A	0.39	A	0.55	A	0.39	A	0.56	A	0.46	B	0.64	A	0.46	B	0.64
16	Lone Tree Way/Heidorn Ranch Road	0.85	A	0.30	A	0.45	A	0.30	A	0.46	A	0.57	C	0.74	A	0.57	C	0.74
17	Lone Tree Way/Canada Valley Road	0.85	A	0.52	B	0.69	A	0.53	B	0.69	B	0.67	D	0.84	B	0.68	D	0.84
18	Lone Tree Way/SR-4 Bypass	0.85	A	0.53	D	0.84	A	0.53	D	0.84	C	0.71	E	0.98	C	0.72	E	0.98
19	Lone Tree Way/Jeffrey Way	0.85	A	0.36	A	0.57	A	0.36	A	0.57	B	0.70	C	0.75	C	0.70	C	0.75
20	Marita Drive/Deer Valley Road	0.85	A	0.39	A	0.39	A	0.39	A	0.39	A	0.45	A	0.42	A	0.45	A	0.42
21	Prewett Ranch Drive/Hillcrest Avenue	0.89	A	0.16	A	0.17	A	0.17	A	0.17	A	0.43	A	0.58	A	0.43	A	0.58
<b>Unsignalized Intersections</b>																		
4	Northeast Wal-Mart Driveway/Hillcrest Avenue																	
	EB Approach	D	B	14.0	B	12.4	C	15.7	B	12.9	C	16.9	C	19.2	C	17.2	C	19.2
5	Southeast Wal-Mart Driveway/Hillcrest Avenue																	
	EB Approach	D	B	10.3	B	10.5	B	10.4	B	10.7	B	11.1	B	12.2	B	11.2	B	12.6
	WB Approach	D	A	9.8	B	10.2	A	9.9	B	10.2	B	10.9	B	11.5	B	11.0	B	11.0
13	Lone Tree Way/Wal-Mart Driveway																	
	SB Approach	D	B	12.1	B	11.0	B	12.1	B	11.1	B	12.8	C	15.6	B	12.8	C	12.2

## Long-Term Without Project Level of Service Traffic Conditions

Long-term traffic conditions (based on the City's model traffic forecasts) were evaluated at the study intersections and can be seen in Figure 15. As shown in Table 7, the following four intersections do not function within acceptable standards in the long-term condition:

- Lone Tree Way/Country Hills Drive
- Lone Tree Way/Deer Valley Road
- Lone Tree Way/Hillcrest Avenue
- Lone Tree Way/SB SR-4 Bypass

Intersections operating below acceptable thresholds under the long-term condition will occur regardless of the proposed Walmart expansion project.

## Long-Term With Project Level of Service Traffic Conditions

Long-term traffic conditions (based on the City's traffic forecasts) plus the Walmart expansion project were evaluated at the study intersections and are shown in Figure 16. As shown in Table 7, there were no additional intersections that do not function within acceptable standards due to the project traffic from the long-term conditions. In addition, the traffic added by the project does not increase the v/c ratios at three of the



four intersections which would be operating with less than acceptable levels of service. The addition of the project only increases the v/c ratio at the intersection of Lone Tree Way/Country Hills Drive during the AM peak hour, therefore, creating a significant impact at this intersection only.

## Delay Index

The delay index (DI) is defined as the ratio between the peak congested travel time and the uncongested travel time along a roadway segment of a designated route of regional significance. Kimley-Horn used the Synchro model developed for this traffic study to determine the DI during all scenarios evaluated. Travel times were determined under peak congestion and also under uncongested conditions. Based on CCTA established criteria, the delay index on Lone Tree Way and segments of Hillcrest Avenue and Deer Valley Road designated as routes of regional significance (in the study area) are to have a DI of less than 2.0.

Based on the analysis, all regionally significant routes in the study area currently operate at a DI of less than 2.0. Under long-term conditions, Lone Tree Way in the eastbound and westbound directions is expected to have a DI greater than 2.0 during the PM peak, with or without the project. With the addition of project traffic, the unacceptable DI on Lone Tree Way will worsen slightly in both directions during the AM peak hour. Therefore, the project would result in a significant impact in terms of added delay along this roadway. **Table 8** summarizes the DI results.

**Table 7 – Delay Index Summary**

Scenario	Time Period	Lone Tree Way		Hillcrest Avenue		Deer Valley Road		
		EB	WB	NB	SB	NB	SB	
Uncongested Travel Time (sec)	AM Peak	346.9	309.2	83.7	127.7	112.3	109.5	
	PM Peak	309.5	343.9	88.4	134.7	138.2	122.3	
Existing	AM Peak	CTT (sec)	398.9	371.8	98.2	139.1	137.6	113.0
		DI	1.1	1.2	1.2	1.1	1.2	1.0
	PM Peak	CTT (sec)	360.5	390.2	97.5	141.6	152.8	117.8
		DI	1.2	1.1	1.1	1.1	1.1	1.0
Near-Term	AM Peak	CTT (sec)	479.6	442.7	102.2	125.9	138.1	114.9
		DI	1.4	1.4	1.2	1.0	1.2	1.0
	PM Peak	CTT (sec)	432.5	444.9	102.6	128.6	191.3	117.9
		DI	1.4	1.3	1.2	1.0	1.4	1.0
Near-Term + Project	AM Peak	CTT (sec)	489.2	472.7	102.7	126.3	138.1	114.3
		DI	1.4	1.5	1.2	1.0	1.2	1.0
	PM Peak	CTT (sec)	434.0	445.5	102.7	128.6	191.3	117.9
		DI	1.4	1.3	1.2	1.0	1.4	1.0
Long-Term	AM Peak	CTT (sec)	739.8	650.3	117.0	140.2	164.1	126.1
		DI	2.1	2.1	1.4	1.1	1.5	1.2
	PM Peak	CTT (sec)	810.0	562.7	117.0	140.2	164.1	126.1
		DI	2.6	1.6	1.3	1.0	1.2	1.0
Long-Term + Project	AM Peak	CTT (sec)	758.6	703.8	121.9	125.8	147.0	115.2
		DI	2.2	2.3	1.5	1.0	1.3	1.1
	PM Peak	CTT (sec)	813.8	566.5	124.2	143.1	164.1	126.0
		DI	2.6	1.6	1.4	1.1	1.2	1.0

CTT = Congested Travel Time

## Vehicle Queuing For All Scenarios

As congestion increases it is common for traffic at signals and stop signs to form lines of stopped (or queued) vehicles. Queue lengths were determined for each lane and measure the distance that vehicles will backup in each direction approaching an intersection. The 95th percentile queue is calculated by using 95th percentile traffic to account for fluctuations in traffic and represents a condition where 95 percent of the time during the peak period, traffic volumes and related queuing will be at, or less, than determined by the analysis and is used as the benchmark for impacts as a standard transportation engineering practice. Average queuing is generally less. Ninety-fifth percentile queuing was estimated under the various development conditions and in consideration of the planned intersection and signal timing improvements. A typical vehicle length of 25 feet is used in the queuing analysis. As stated in the Operating Conditions and Criteria, a significant impact was assumed to occur if the queue increases by one or more vehicles and the vehicle queue exceeds the turn pocket length. A summary of the queuing results is included in the **Appendix**. The results indicated instances where queuing in the dedicated turn lanes may exceed the storage limits of the turn pockets.

The analysis showed that the capacities of several turn bays are exceeded under near-term and long-term conditions with the project. In most cases the inadequate queue lengths are not associated with the Walmart expansion but are a result of pre-existing deficiencies. At locations that are at or near capacity and affected by Walmart traffic,

the increase in vehicle queuing resulting from Walmart expansion traffic is less than one vehicle (which is considered less than significant)...

## Potential Effects on Transit, Bicycle, and Pedestrian Mobility

The project was evaluated to determine if it would likely conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks) or generate pedestrian, bicycle, or transit travel demand that would not be accommodated by transit, bicycle, or pedestrian facilities and plans.

Patrons to Walmart have the option of driving, taking transit, walking or bicycling. For those taking transit they can reach the site via Routes 380 and 392 of the Tri-Delta Transit system.

According to the 2000 U.S. Census, 4.3% of Antioch residents use transit to travel to work. This typically represents the highest level of transit ridership during the day, with other periods being lower such as when shoppers commonly travel to the store. If it is conservatively assumed that 4.3% of the additional customers associated with the Walmart expansion will use transit during the peak hours of the day, it represents approximately 6 passengers in the weekday AM and none in the weekday PM peak periods.

Data was not readily available for peak hour ridership levels on the Tri-Delta Transit system but during the weekday periods, the routes operate every 30 to 60 minutes and observations indicate the sufficient capacity exists on the buses to accommodate the potential additional transit demand. Furthermore, dispersion of the project-generated riders to the bus routes would result in a minimal effect on transit capacity. Thus the project impact on transit service is determined to be less than significant.

Although most pedestrians and cyclists will originate their trips from the neighborhoods in close proximity to the store, 2000 Census data suggests that even fewer customers or workers are anticipated to walk or bicycle to the Walmart than will ride transit.

There are adequate pedestrian walkways from the project site to the existing sidewalks on Lone Tree Way and Hillcrest Avenue. Furthermore, pedestrians will be able to use the continuous sidewalk facilities within the neighborhoods and on streets adjacent to the Walmart site. This will allow Walmart patrons and employees to conveniently walk from nearby destinations or access transit services. Pedestrian crosswalks are present on approaches at signalized intersections near the project site.

Cyclists will be able to use the Class I paved bike trail along Lone Tree Way from Hillcrest Avenue west across the frontage of the Williamson Ranch Plaza. Class II bicycle facilities (i.e., striped bike lanes) are also available on Hillcrest Avenue as well

as several other streets farther from the site. The bicycle rack at the existing Walmart should be fastened to the ground to help prevent theft of bicycles and to make it more secure. With the expansion of the Walmart, an additional bike rack will be installed and fastened so there will be parking for a minimum of 37 bicycles to comply within the city Municipal Code of one bicycle parking space per 25 vehicle parking spaces for a commercial development. Therefore, no capacity deficiencies are anticipated for pedestrian or bicycle facilities.

There are adequate transit facilities adjacent to the project site with continuous sidewalks and ramps to the transit stop locations.

In addition, the project will construct necessary on-site sidewalks, walkways, bicycle parking, and other amenities in compliance with adopted policies, plans and programs; thus, the Walmart expansion's impact on transit, pedestrian or bicycle facilities is determined to be less than significant.

## Site Access and Circulation

On site circulation was evaluated at the project's four driveways and within the project site.

As noted previously, all site driveways provide single lane ingress and egress, with the exception of the exit at Lone Tree Way/Indian Hill Drive which has double left turns and a shared through/right lane.

Throat depths at the site driveways are as follows:

- Lone Tree Way/Indian Hill Drive – 220 feet
- Lone Tree Way/Walmart Driveway – 30 feet
- Northeast Walmart Driveway/Hillcrest Avenue – 30 feet
- Southeast Walmart Driveway/Hillcrest Avenue – 80 feet

Blocked parking aisles can generate on-site congestion and inhibit efficient parking lot circulation. However, an analysis of on-site queuing with the store expansion indicates that vehicles are not expected to queue up beyond the depth of the driveway throats and thus would not block parking aisles.

Expansion of the Walmart store will include a new parking field and circulatory drive aisles west of the store. New pedestrian walkways are planned from the store front out into the parking lot.

Heavy vehicles serving the Walmart will continue to use the Indian Hill Drive access from Lone Tree Way. Large semi-trucks entering the site typically must encroach into the exiting traffic lane to avoid having the rear wheels of the trailer off-track into the adjacent landscaping. Once on site, trucks will travel along the west property line to a

new truck dock on the west side of the store expansion or to the existing truck dock on the north side of the building. The parking and circulation layout provides convenient access to the loading docks and adequate truck turnaround area.

Sight distances, emergency access truck access, and on-site circulation planned for the project appear to be generally adequate, and would be subject to refinements as part of the design review process.

## **SUMMARY OF IMPACTS AND RECOMMENDED MITIGATION**

Based on the results of the traffic analysis and evaluation of the proposed site plan the following impacts are noted. Impacts are identified as being significant unless mitigated.

### **Significant Unless Mitigated**

#### **Impact #1 – Long-Term**

The Lone Tree Way/Country Hills Drive intersection will operate at LOS E during the AM peak hour and LOS D (greater than 0.85 V/C) during the PM peak hour under the long-term traffic condition and will experience a slight increase in V/C during the AM peak hour due to the Walmart expansion. However, this impact was mitigated in April 2009 by a City-initiated signal optimization project for the Lone Tree Way corridor. The signal operation at this intersection was re-configured from allowing both through and left-turn movements in a given direction to occur simultaneously while traffic in other directions was stopped, to adding protected left-turn phases, allowing the opposing left-turn movements to occur simultaneously while the opposing through movements are stopped. This modification provides for more efficient traffic flow through the intersection and results in substantial reduction of congestion. Kimley-Horn and Associates has determined that the recently completed signal modification will mitigate the increased congestion resulting from the project in the Long-Term because the modifications will result in the Lone Tree Way/Country Hills Drive intersection operating at acceptable LOS D in the AM peak hour in the Long-Term, and decreasing the v/c to 0.83, which is a substantial improvement over pre-project conditions. Therefore, the potentially significant impact to long-term intersection level of service identified in the project traffic analysis no longer exists because of the recent improvements to the signal phasing at this intersection.

#### **Mitigation #1**

No mitigation is required. See discussion under Impact #1 – Long-Term above.

**Impact #2 – Long-Term**

The delay index on Lone Tree Way is greater than 2.0 during the AM and PM peak hours under the long-term traffic condition and will experience a slight increase in V/C during the AM peak hour due to the Walmart expansion.

**Mitigation #2**

To mitigate the project impacts expected to occur in the long-term in addition to Mitigation #1, the timing of the signal phasing shall be optimized at the intersection of Lone Tree Way/Deer Valley Road, in the Long-Term. Prior to the issuance of occupancy permits for the project, the applicant shall contribute \$11,000 to the City of Antioch Traffic Signal Maintenance Fund to cover the cost of the signal optimization. After mitigation, the Delay Index and volume to capacity ratio (v/c) will be improved to better than pre-project levels in the Long-Term.

**Discussion**

Since the efficiencies gained by timing optimization are typically minor, signal retiming projects are usually performed in response to traffic congestion that is already occurring. The City of Antioch performs signal retiming at signalized intersections on an as-needed basis; that is, when traffic congestion warrants retiming of signals to optimize traffic flow. This work is funded by the Traffic Signal Maintenance Fund. Therefore, the project contribution to the Traffic Signal Maintenance Fund would ensure that retiming of the Lone Tree Way/Deer Valley Road intersection would take place in the Long-Term when project impact in terms of added congestion at the intersection occurs. If the signal retiming is performed in the Long-Term, as prescribed, Kimley-Horn and Associates expects that the Delay Index and volume to capacity ratio (v/c) will be improved to better than pre-project levels in the Long-Term.

Currently, the cost of signal retiming in Antioch ranges from about \$4,000 to \$7,000, with the cost in any given instance depending on the complexity of the case. To be conservative, the estimated cost for retiming the Lone Tree Way/Deer Valley Road signal was based on the higher \$7,000 figure, which was then increased at a 3 percent annual rate (average annual inflation over the past 20 years was 2.8 percent) to arrive at an estimated cost of \$11,000 to perform the signal timing in the Long Term (assumed for calculation purposes to occur in 2025, the projected year of General Plan buildout)

## APPENDIX



## **APPENDIX**

### FIGURES

#### TURNING MOVEMENT VOLUMES

#### EXISTING CONDITIONS

#### TRIP GENERATION

#### APPROVED & PENDING DEVELOPMENT INFORMATION

#### EXISTING + APPROVED TRAFFIC CONDITIONS

#### EXISTING + APPROVED + PROJECT TRAFFIC CONDITIONS

#### LONG-TERM TRAFFIC CONDITIONS

#### LONG-TERM + PROJECT TRAFFIC CONDITIONS

#### SIGNAL WARRANT ANALYSIS

#### QUEUING SUMMARY





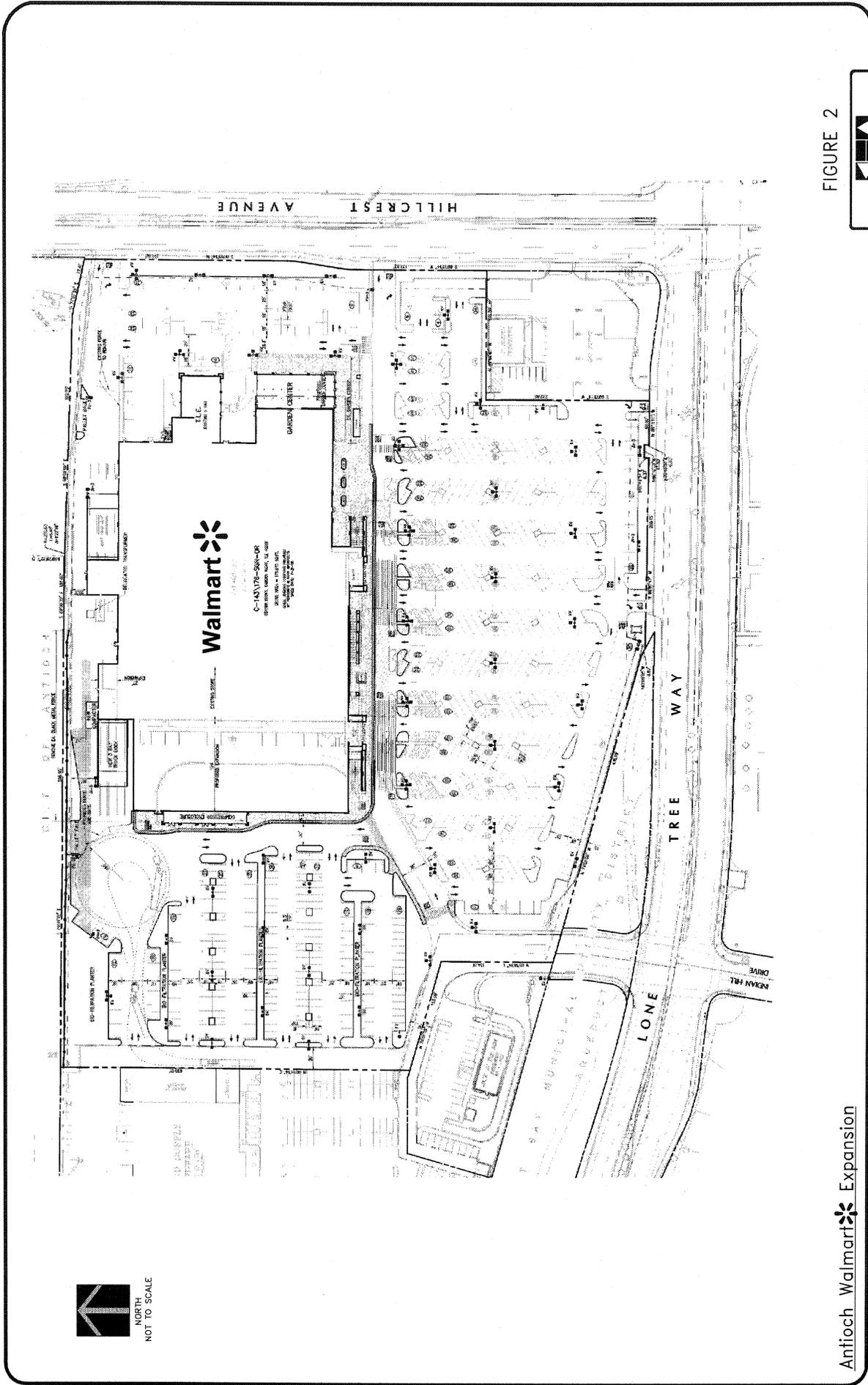
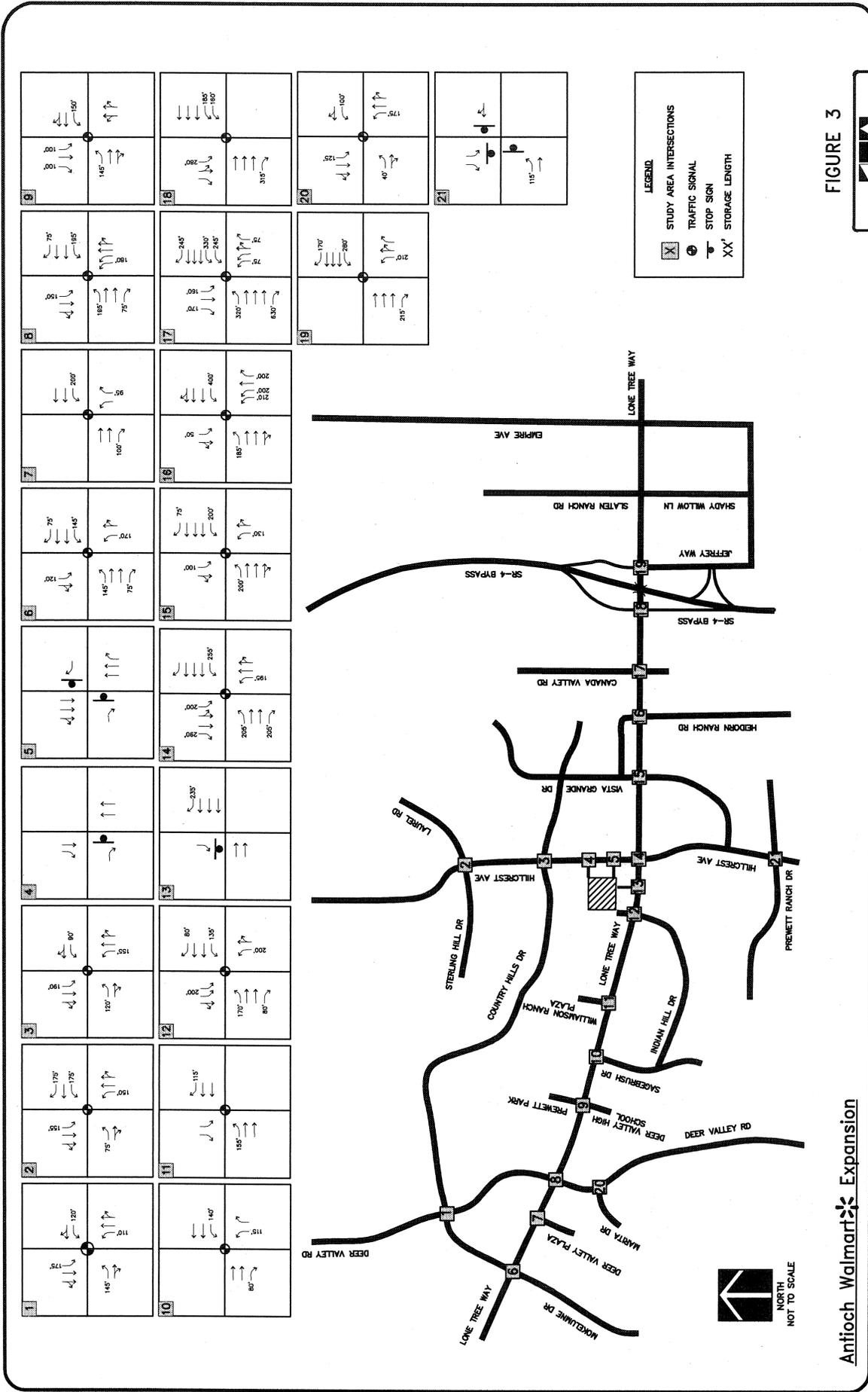


FIGURE 2

Antioch Walmart Expansion

SITE PLAN





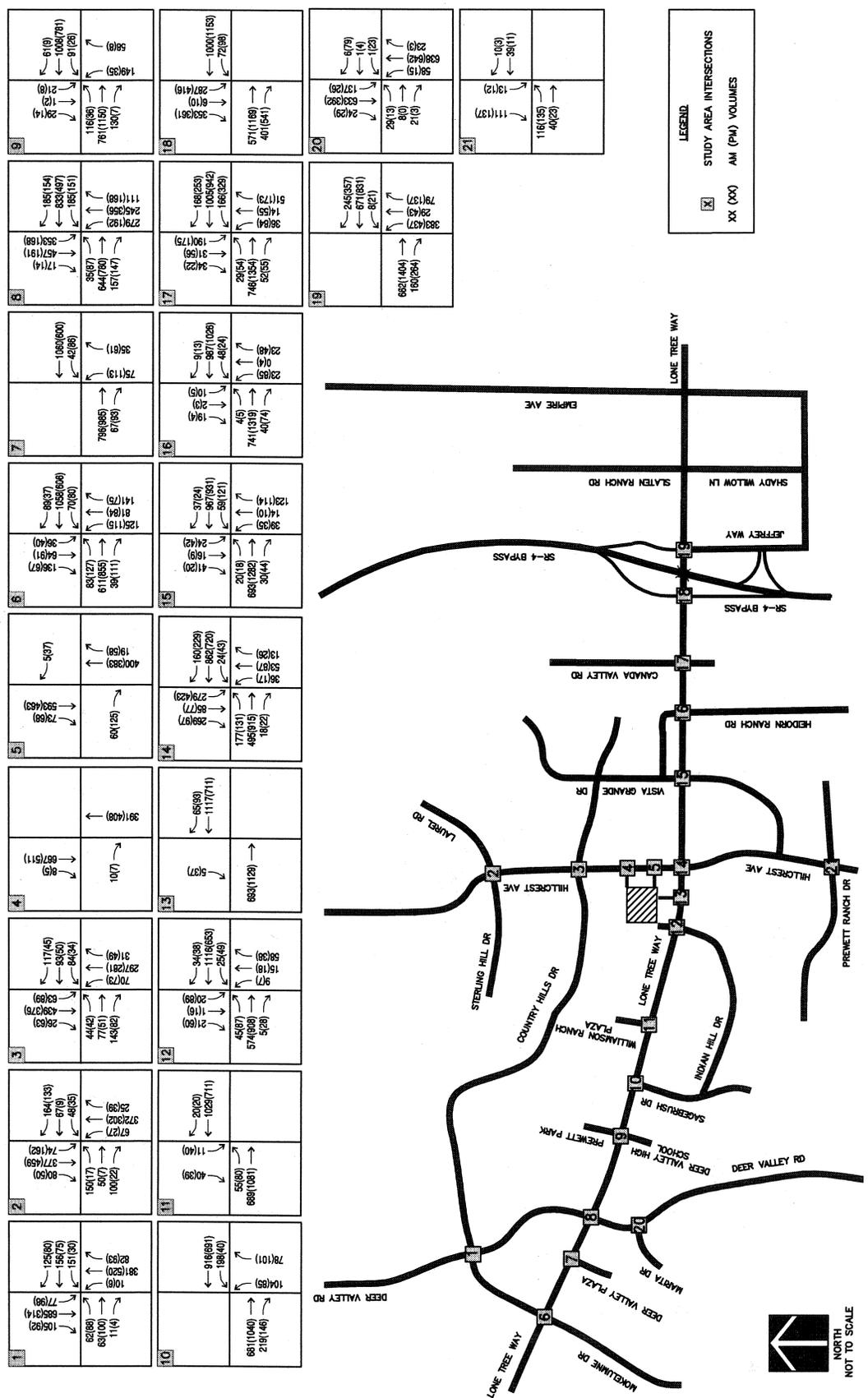


FIGURE 4

Antioch Walmart Expansion

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES





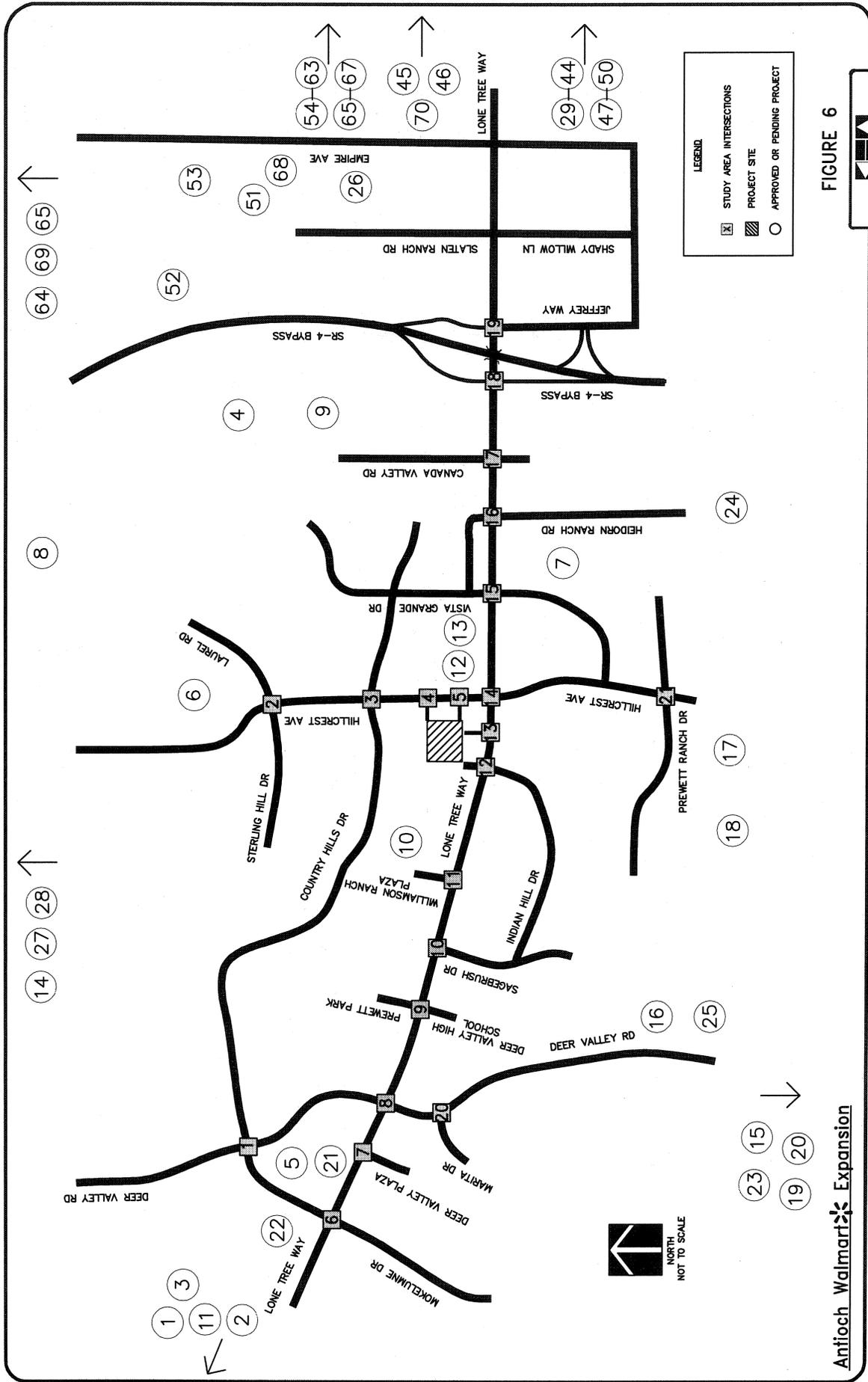


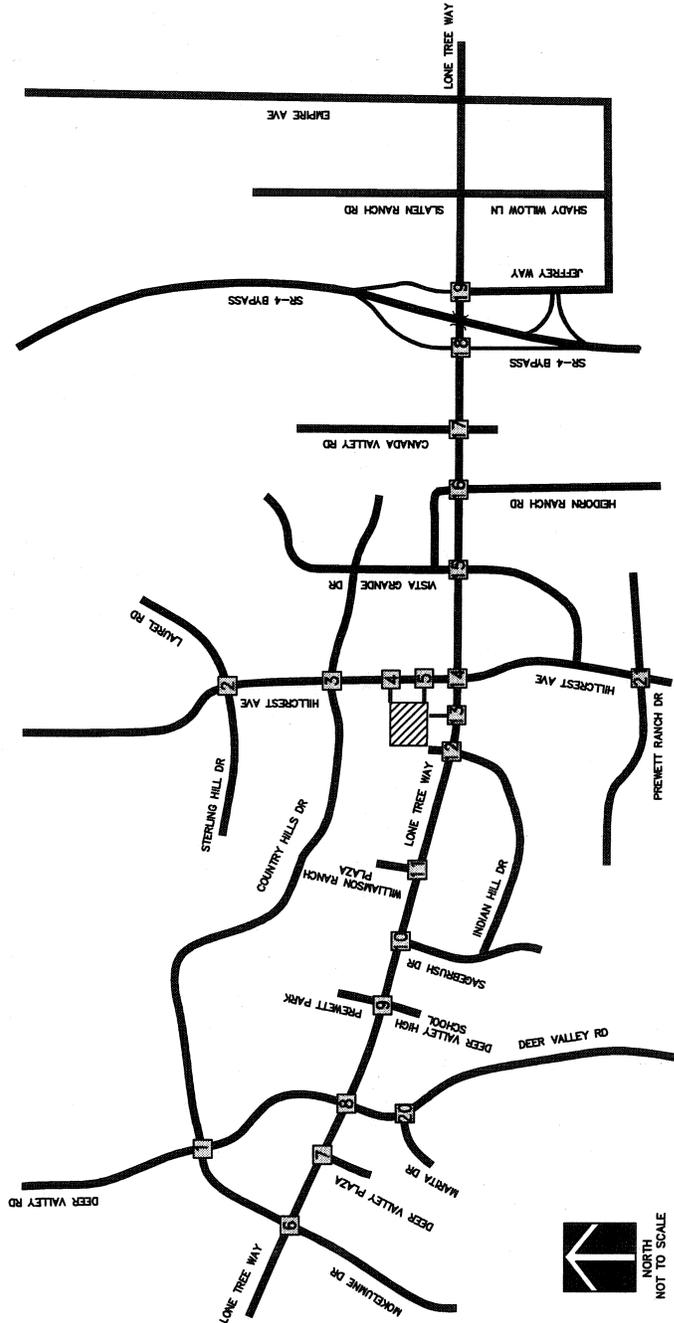
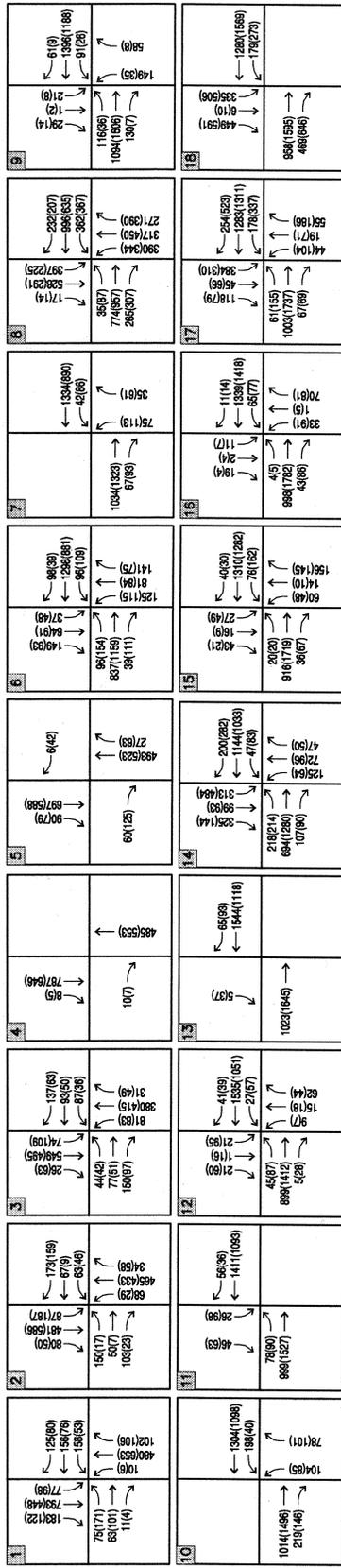
FIGURE 6



Antioch Walmart Expansion

APPROVED & PENDING PROJECT LOCATIONS



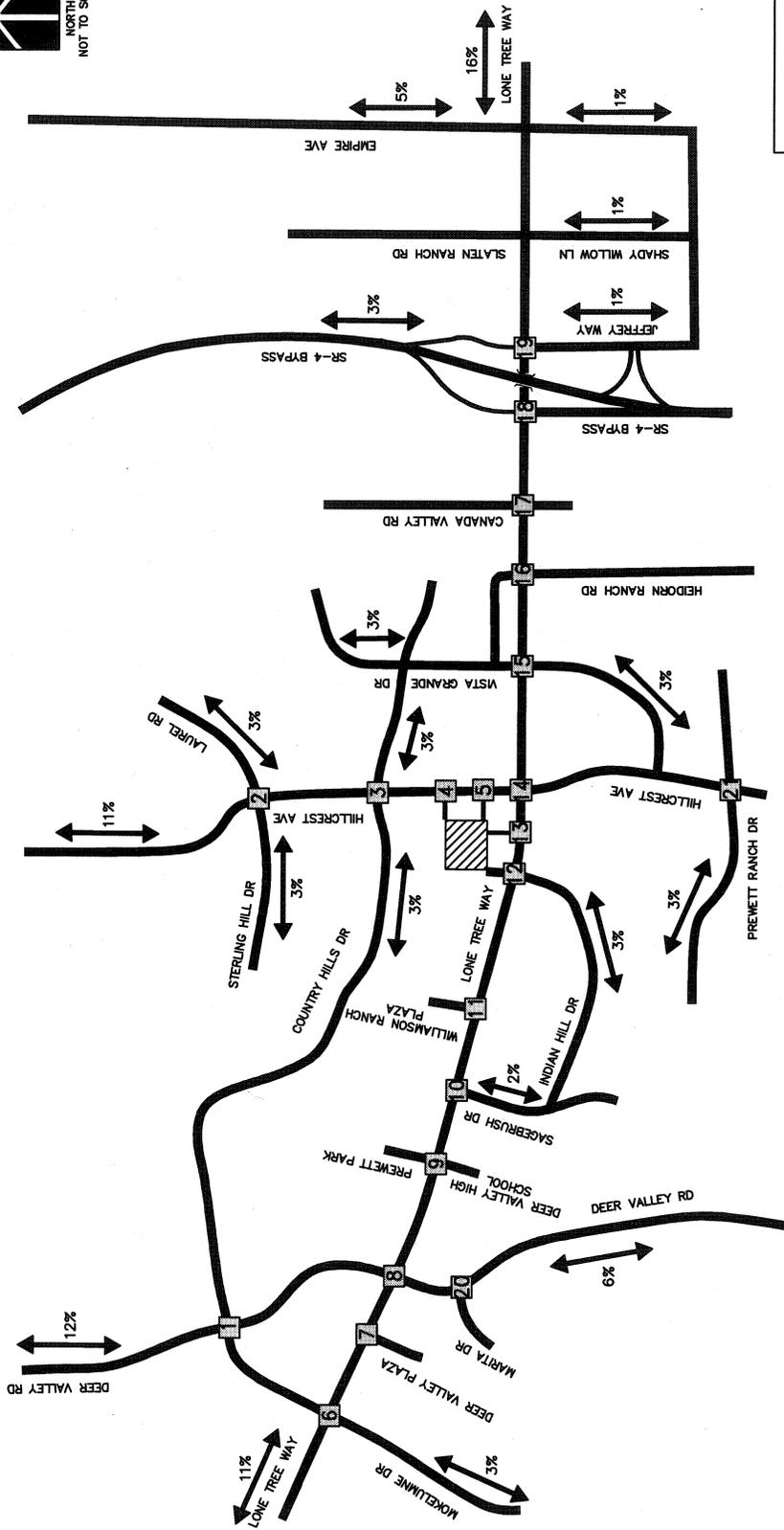


**FIGURE 8**

**Antioch Walmart Expansion**

**NEAR-TERM TRAFFIC VOLUMES**

Kimley-Horn and Associates, Inc.



**LEGEND**

- STUDY AREA INTERSECTIONS
- PROJECT SITE
- PROJECT TRIP DISTRIBUTION

FIGURE 9



1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20							

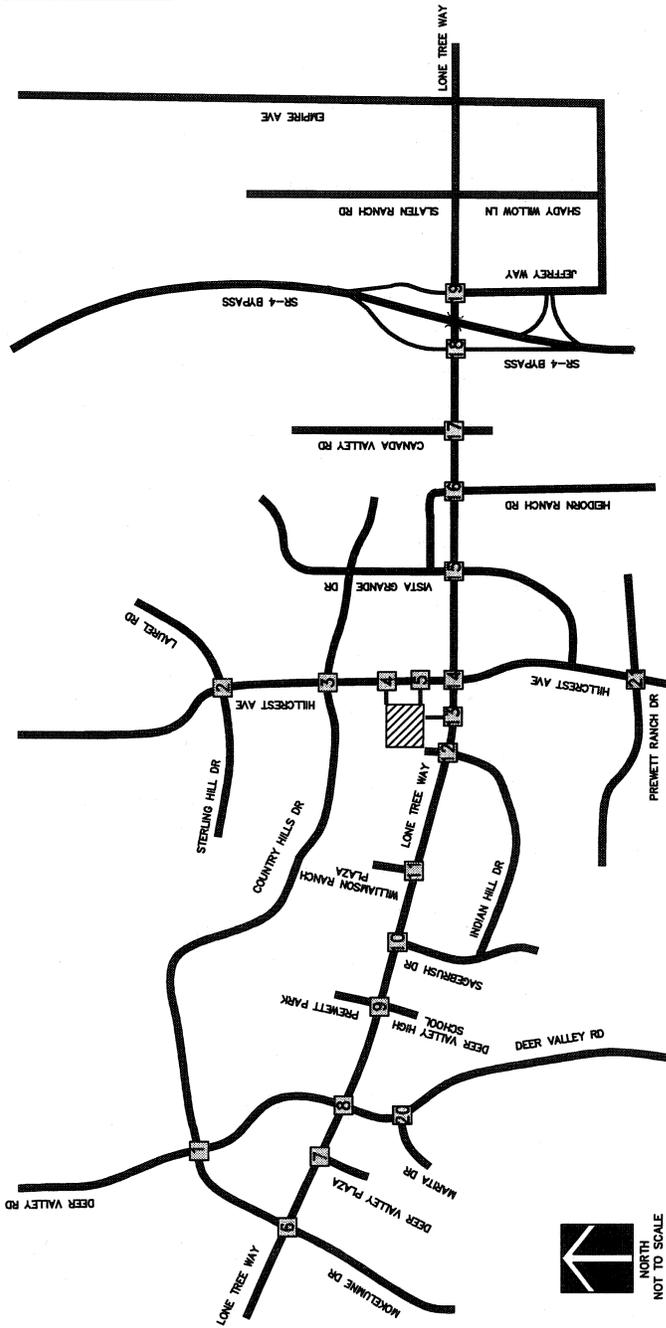


FIGURE 10

Antioch Walmart Expansion

NEW PROJECT GENERATED TRAFFIC VOLUMES







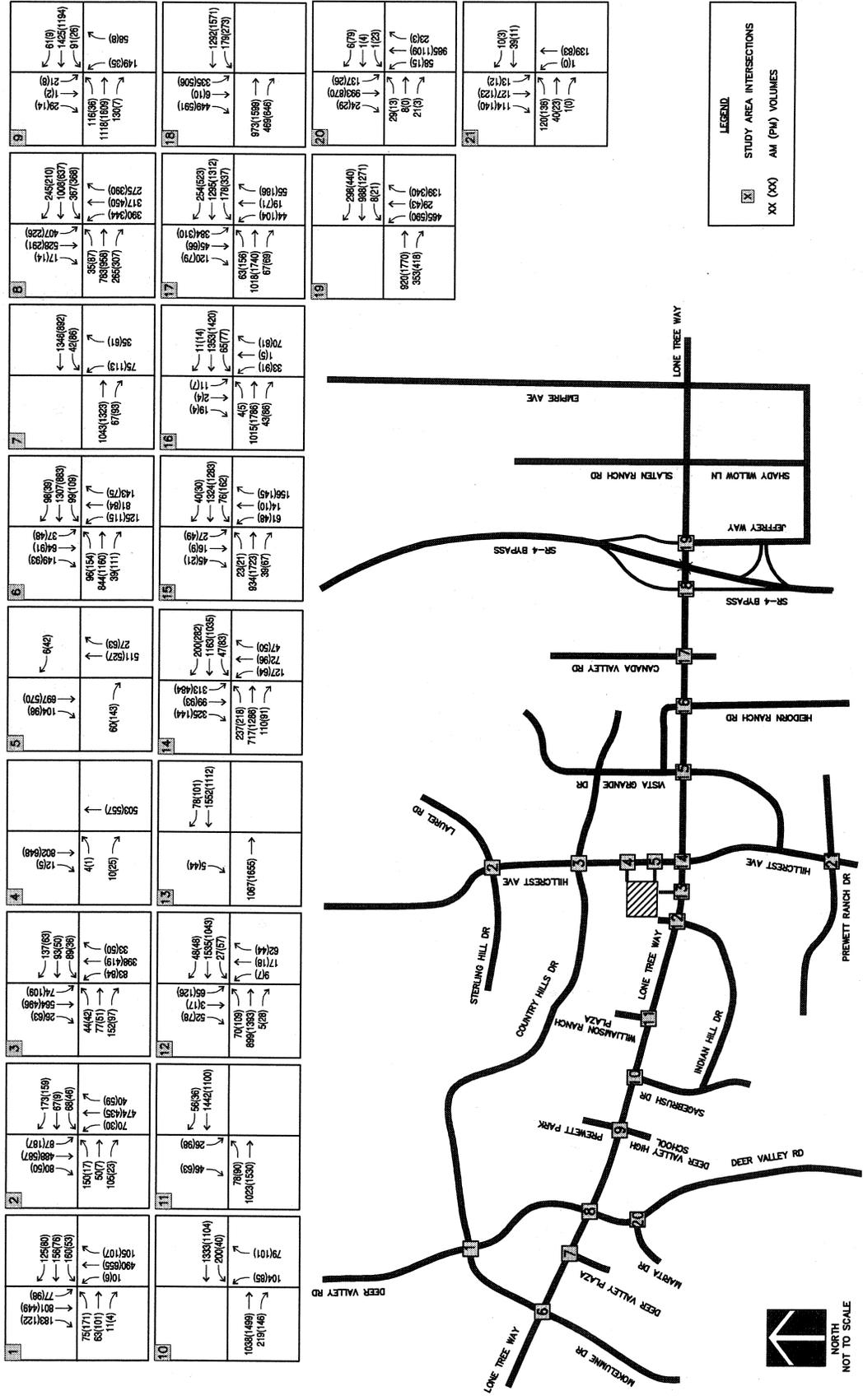


FIGURE 13



Antioch Walmart Expansion

NEAR-TERM + PROJECT TRAFFIC VOLUMES



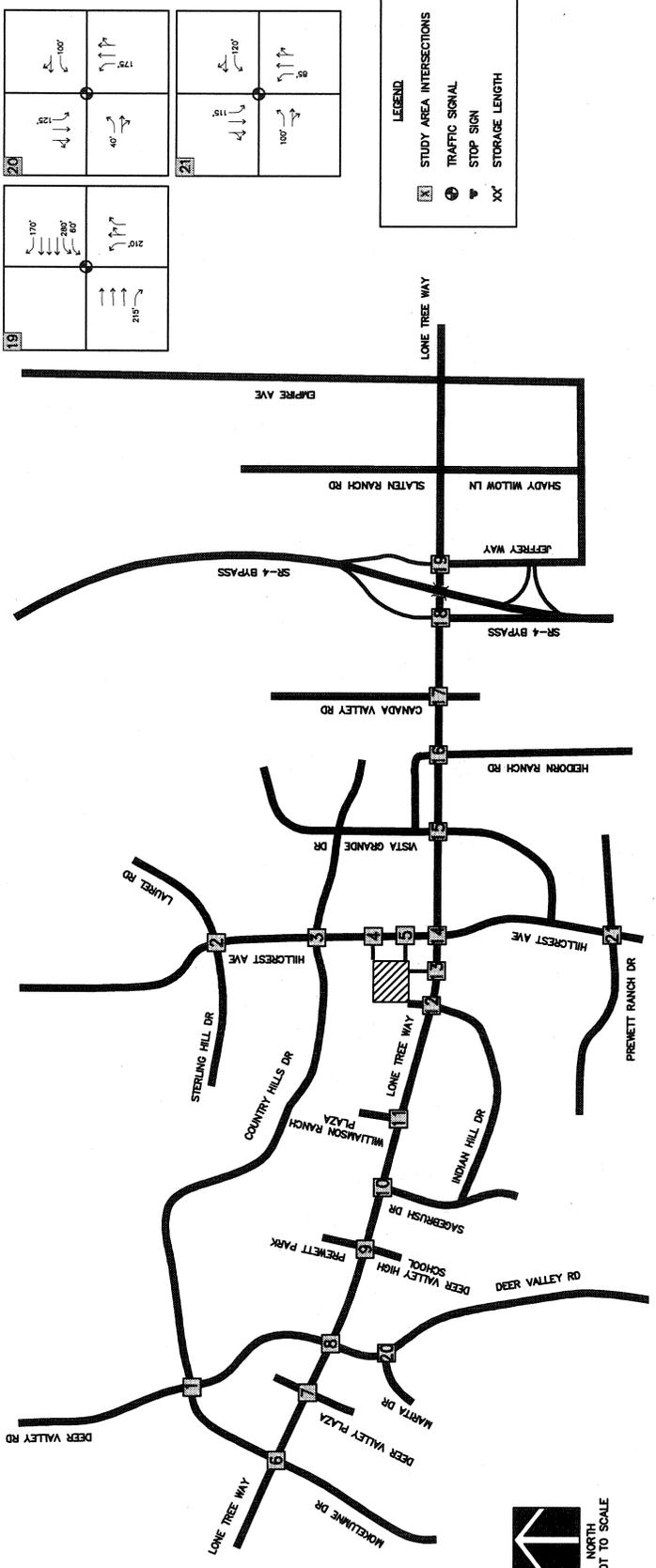
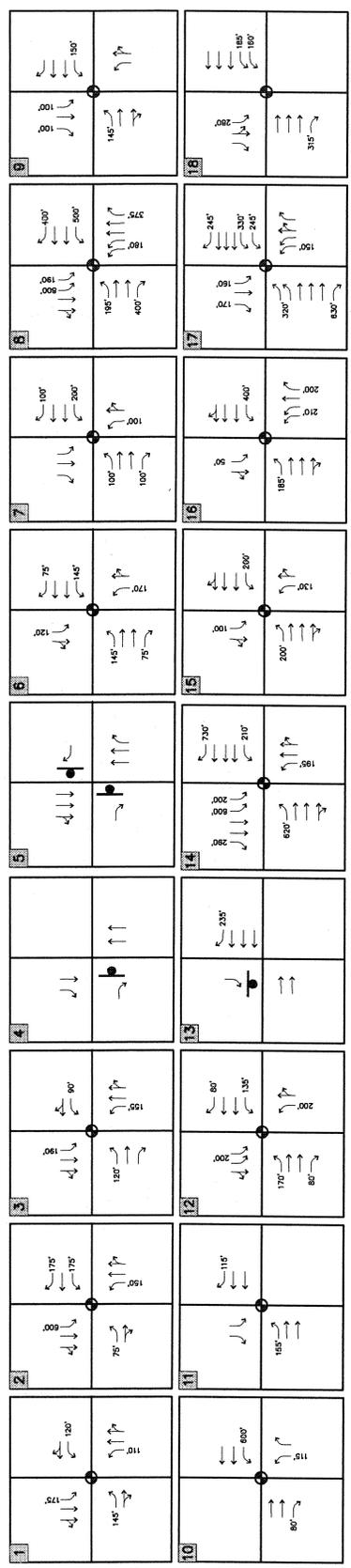


FIGURE 14



Antioch Walmart Expansion

LONG-TERM LANE GEOMETRY AND TRAFFIC CONTROL





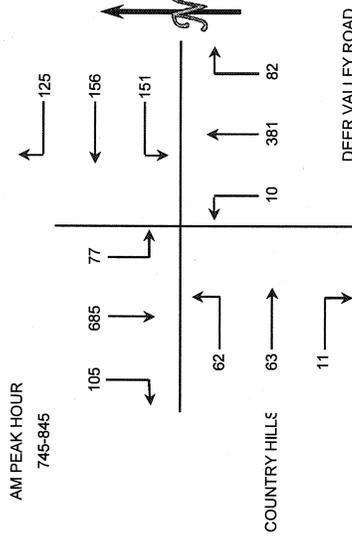
# **TURNING MOVEMENT VOLUMES**



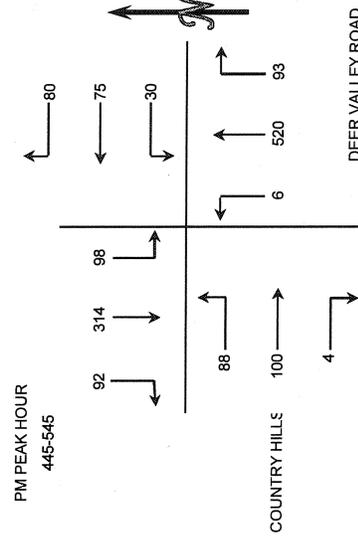
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIPOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S DEER VALLEY ROAD AND  
 E/W COUNTRY HILLS DRIVE  
 CITY: ANTIPOCH

15 MIN COUNTS													
7:00 AM TO 9:00 AM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	13	80	7	23	38	19	3	33	0	0	6	4	226
715-730	20	103	9	18	33	21	7	43	1	0	9	6	270
730-745	26	134	22	23	39	43	14	68	0	1	11	14	395
745-800	34	196	32	43	44	52	24	88	3	1	24	16	557
800-815	37	168	20	42	52	30	28	107	2	3	12	15	516
815-830	22	145	15	20	31	26	12	98	2	7	15	16	409
830-845	12	176	10	20	29	43	18	88	3	0	12	15	426
845-900	10	120	11	14	16	30	28	104	0	1	3	7	344
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
790-890	93	513	70	107	154	135	48	232	4	2	50	40	1448
715-815	117	601	83	126	168	146	73	306	6	5	56	51	1738
730-830	119	643	89	128	166	151	78	361	7	12	62	61	1877
745-845	105	685	77	125	156	151	82	381	10	11	63	62	1908
800-900	81	609	56	96	128	129	86	397	7	11	42	53	1695



15 MIN COUNTS													
4:00 PM TO 6:00 PM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	22	80	14	20	19	9	24	128	3	3	16	13	351
415-430	21	73	26	18	17	14	21	127	0	0	22	20	359
430-445	12	76	16	24	19	8	22	125	2	1	23	22	350
445-500	25	80	24	25	18	6	24	110	3	3	25	23	366
500-515	24	81	21	19	19	9	23	131	1	0	19	20	367
515-530	18	73	29	16	17	6	19	147	1	0	23	20	369
530-545	25	80	24	20	21	9	27	132	1	1	33	25	398
545-600	27	91	18	13	18	9	25	94	1	1	22	15	334
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-600	80	309	80	87	73	37	91	490	8	7	86	78	1426
415-615	82	310	87	86	73	37	90	493	6	4	89	85	1442
430-630	79	310	90	84	73	29	88	513	7	4	90	85	1452
445-645	82	314	96	80	75	30	93	520	6	4	100	88	1500
500-600	94	325	92	68	75	33	94	504	4	2	97	80	1488



# WILTEC

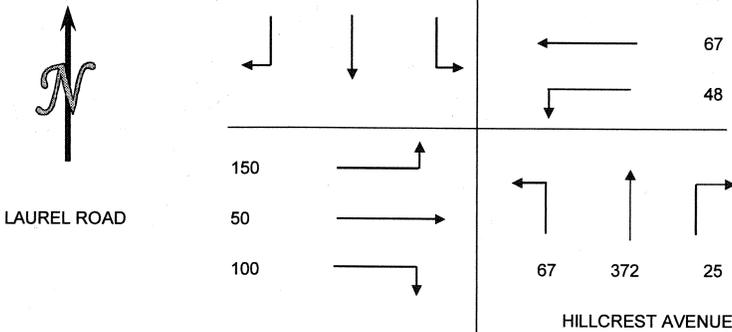
Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY - HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 7:00 AM TO 9:00 AM  
 INTERSECTION: N/S HILLCREST AVENUE  
 E/W LAUREL ROAD

15 MIN COUNTS PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
700-715	3	50	8	38	1	4	1	58	2	3	4	13	185
715-730	4	47	13	37	1	5	2	74	5	5	1	6	200
730-745	8	91	10	47	3	6	3	96	8	14	3	13	302
745-800	15	110	19	50	3	12	4	92	16	24	6	25	376
800-815	28	92	12	40	26	12	11	112	29	22	17	36	437
815-830	32	92	29	34	31	6	6	92	13	25	19	60	439
830-845	5	83	14	31	7	18	4	76	9	29	8	29	313
845-900	3	110	15	19	2	13	14	24	5	6	3	9	223
<b>HOUR TOTALS</b>													
700-800	30	298	50	172	8	27	10	320	31	46	14	57	1063
715-815	55	340	54	174	33	35	20	374	58	65	27	80	1315
730-830	83	385	70	171	63	36	24	392	66	85	45	134	1554
745-845	80	377	74	155	67	48	25	372	67	100	50	150	1565
800-900	68	377	70	124	66	49	35	304	56	82	47	134	1412

AM PEAK HOUR  
745-845



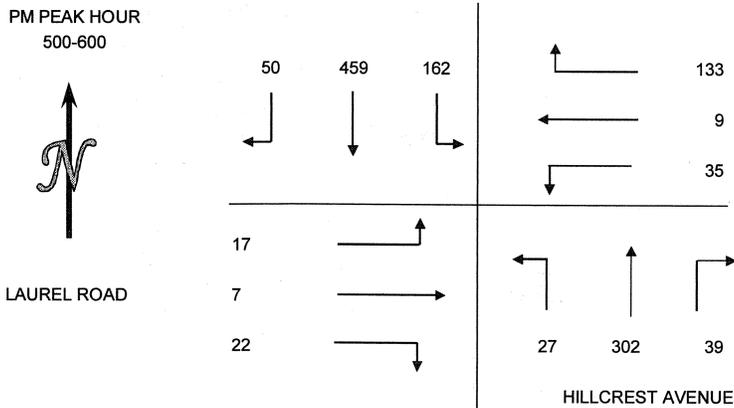
### PEDESTRIAN COUNTS

PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
15 MIN COUNTS				
700-715	0	0	1	1
715-730	0	0	3	1
730-745	4	0	1	0
745-800	2	5	10	1
800-815	1	1	6	0
815-830	1	5	3	1
830-845	0	1	0	0
845-900	0	5	0	0
<b>HOUR TOTALS</b>				
700-800	6	5	15	3
715-815	7	6	20	2
730-830	8	11	20	2
745-845	4	12	19	2
800-900	2	12	9	1

## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S HILLCREST AVENUE  
 E/W LAUREL ROAD

15 MIN COUNTS PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
400-415	7	104	27	42	0	5	8	87	7	8	4	6	305
415-430	7	90	35	35	4	4	6	90	3	2	0	5	281
430-445	11	105	28	34	2	7	7	75	5	7	2	6	289
445-500	8	119	30	37	1	3	9	77	7	0	3	2	296
500-515	11	106	42	45	1	10	10	81	5	5	2	4	322
515-530	12	123	37	29	3	15	6	80	8	4	2	3	322
530-545	14	114	43	27	3	3	8	72	11	5	2	4	306
545-600	13	116	40	32	2	7	15	69	3	8	1	6	312
<b>HOUR TOTALS</b>													
400-500	33	418	120	148	7	19	30	329	22	17	9	19	1171
415-515	37	420	135	151	8	24	32	323	20	14	7	17	1188
430-530	42	453	137	145	7	35	32	313	25	16	9	15	1229
445-545	45	462	152	138	8	31	33	310	31	14	9	13	1246
500-600	50	459	162	133	9	35	39	302	27	22	7	17	1262



PEDESTRIAN COUNTS				
PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
15 MIN COUNTS				
400-415	0	0	1	0
415-430	0	1	0	0
430-445	0	0	0	0
445-500	0	0	0	0
500-515	0	0	0	0
515-530	0	0	0	0
530-545	0	0	0	0
545-600	1	1	2	0
<b>HOUR TOTALS</b>				
400-500	0	1	1	0
415-515	0	1	0	0
430-530	0	0	0	0
445-545	0	0	0	0
500-600	1	1	2	0

# WILTEC

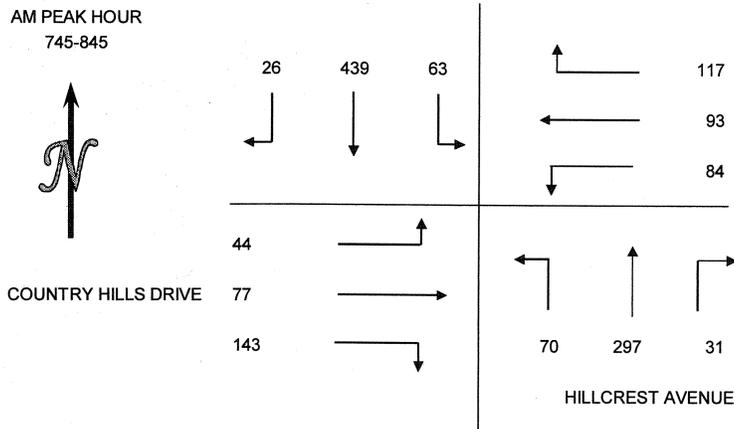
Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY - HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 7:00 AM TO 9:00 AM  
 INTERSECTION: N/S HILLCREST AVENUE  
 E/W COUNTRY HILLS DRIVE

15 MIN COUNTS PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
700-715	4	46	6	21	2	3	0	41	1	13	6	5	148
715-730	7	60	8	28	9	10	4	50	11	19	7	16	229
730-745	3	70	19	36	18	14	5	69	7	26	7	14	288
745-800	4	105	25	37	32	33	9	62	18	39	33	15	412
800-815	5	118	22	47	41	21	10	95	22	28	28	12	449
815-830	10	113	7	20	14	16	4	69	18	40	12	11	334
830-845	7	103	9	13	6	14	8	71	12	36	4	6	289
845-900	5	125	4	11	2	13	5	62	18	31	7	10	293
<b>HOURLY TOTALS</b>													
700-800	18	281	58	122	61	60	18	222	37	97	53	50	1077
715-815	19	353	74	148	100	78	28	276	58	112	75	57	1378
730-830	22	406	73	140	105	84	28	295	65	133	80	52	1483
745-845	26	439	63	117	93	84	31	297	70	143	77	44	1484
800-900	27	459	42	91	63	64	27	297	70	135	51	39	1365

AM PEAK HOUR  
745-845



PEDESTRIAN COUNTS				
PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
15 MIN COUNTS				
700-715	0	1	0	0
715-730	3	0	9	0
730-745	2	0	6	2
745-800	8	0	6	1
800-815	3	0	2	6
815-830	2	2	4	2
830-845	1	0	0	0
845-900	0	0	2	0
<b>HOURLY TOTALS</b>				
700-800	13	1	21	3
715-815	16	0	23	9
730-830	15	2	18	11
745-845	14	2	12	9
800-900	6	2	8	8

## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

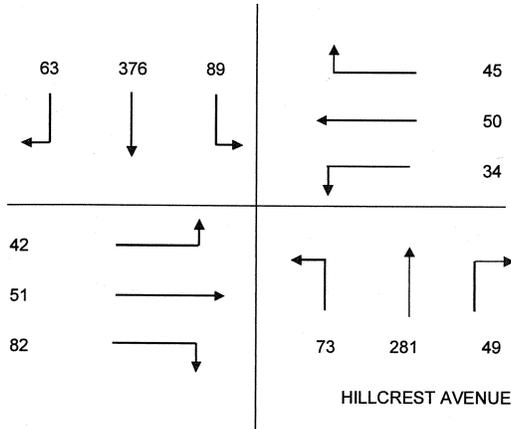
CLIENT: KIMLEY - HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S HILLCREST AVENUE  
 E/W COUNTRY HILLS DRIVE

15 MIN COUNTS PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
400-415	11	97	17	10	20	2	7	76	23	20	12	11	306
415-430	10	71	12	13	16	5	7	75	19	16	12	3	259
430-445	10	91	12	14	13	3	10	70	21	16	8	6	274
445-500	10	89	24	7	13	10	14	76	20	17	8	10	298
500-515	14	92	20	11	13	6	8	66	20	16	10	18	294
515-530	19	99	19	12	12	39	13	75	15	14	8	10	335
530-545	18	83	21	13	13	-19	17	71	15	22	20	8	282
545-600	12	102	29	9	12	8	11	69	23	30	13	6	324
<b>HOUR TOTALS</b>													
400-500	41	348	65	44	62	20	38	297	83	69	40	30	1137
415-515	44	343	68	45	55	24	39	287	80	65	38	37	1125
430-530	53	371	75	44	51	58	45	287	76	63	34	44	1201
445-545	61	363	84	43	51	36	52	288	70	69	46	46	1209
500-600	63	376	89	45	50	34	49	281	73	82	51	42	1235

PM PEAK HOUR  
500-600



COUNTRY HILLS DRIVE



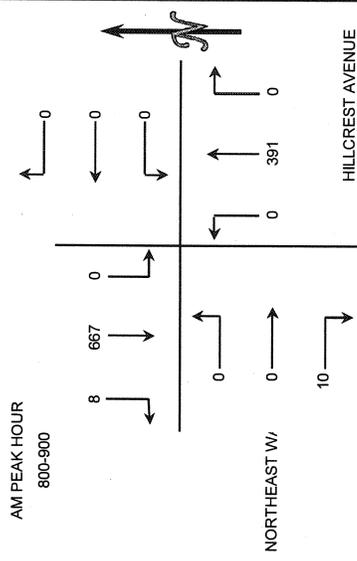
### PEDESTRIAN COUNTS

PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
15 MIN COUNTS				
400-415	0	0	5	0
415-430	0	0	0	0
430-445	4	0	1	0
445-500	0	1	0	0
500-515	0	0	1	0
515-530	0	0	2	0
530-545	1	0	2	0
545-600	1	0	0	0
<b>HOUR TOTALS</b>				
400-500	4	1	6	0
415-515	4	1	2	0
430-530	4	1	4	0
445-545	1	1	5	0
500-600	2	0	5	0

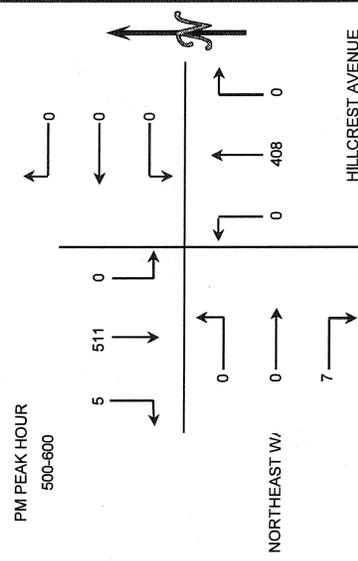
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S HILLCREST AVENUE  
 E/W NORTHEAST WALMART DRIVEWAY  
 CITY: ANTOCH

15 MIN COUNTS													
7:00 AM TO 9:00 AM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	0	65	0	0	0	0	0	33	0	0	0	0	98
715-730	2	96	0	0	0	0	0	54	0	1	0	0	153
730-745	3	131	0	0	0	0	0	81	0	0	0	0	215
745-800	1	162	0	0	0	0	0	90	0	0	0	0	253
800-815	1	142	0	0	0	0	0	117	0	2	0	0	262
815-830	2	160	0	0	0	0	0	100	0	2	0	0	264
830-845	3	173	0	0	0	0	0	92	0	2	0	0	270
845-900	2	192	0	0	0	0	0	82	0	4	0	0	280
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-900	6	454	0	0	0	0	0	258	0	1	0	0	719
715-815	7	531	0	0	0	0	0	342	0	3	0	0	883
730-830	7	595	0	0	0	0	0	388	0	4	0	0	984
745-845	7	637	0	0	0	0	0	399	0	6	0	0	1049
800-900	8	667	0	0	0	0	0	391	0	10	0	0	1076



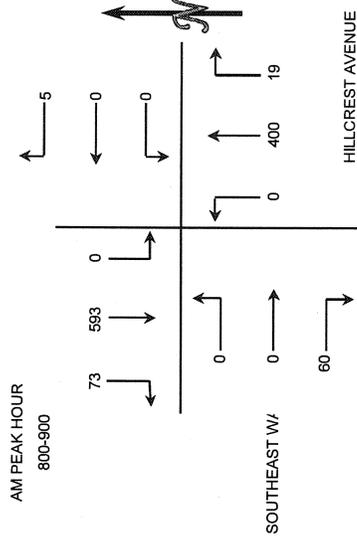
15 MIN COUNTS													
4:00 PM TO 6:00 PM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	1	129	0	0	0	0	0	101	0	2	0	0	233
415-430	3	104	0	0	0	0	0	114	0	0	0	0	221
430-445	1	120	0	0	0	0	0	97	0	1	0	0	219
445-500	0	138	0	0	0	0	0	114	0	2	0	0	254
500-515	2	112	0	0	0	0	0	91	0	1	0	0	206
515-530	0	121	0	0	0	0	0	101	0	2	0	0	224
530-545	0	137	0	0	0	0	0	100	0	1	0	0	238
545-600	3	141	0	0	0	0	0	116	0	3	0	0	263
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	5	491	0	0	0	0	0	426	0	5	0	0	927
415-515	6	474	0	0	0	0	0	416	0	4	0	0	900
430-530	3	491	0	0	0	0	0	403	0	6	0	0	903
445-545	2	508	0	0	0	0	0	406	0	6	0	0	922
500-600	5	511	0	0	0	0	0	408	0	7	0	0	931



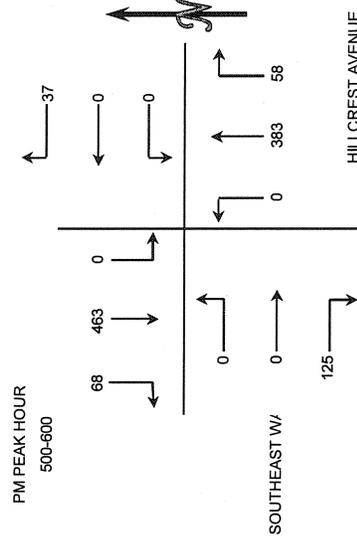
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S HILLCREST AVENUE AND SOUTHEAST WALMART DRIVEWAY  
 CITY: ANTIOCH

15 MIN COUNTS		7:00 AM TO 9:00 AM											
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	
700-715	2	58	0	0	0	0	1	34	0	1	0	0	96
715-730	2	91	0	0	0	0	0	54	0	4	0	0	151
730-745	15	117	0	2	0	0	2	76	0	9	0	0	221
745-800	10	151	0	0	0	0	0	91	0	5	0	0	257
800-815	20	131	0	1	0	0	2	126	0	13	0	0	293
815-830	22	127	0	1	0	0	5	93	0	15	0	0	263
830-845	15	164	0	2	0	0	5	97	0	15	0	0	298
845-900	16	171	0	1	0	0	7	84	0	17	0	0	296
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	
700-800	29	417	0	2	0	0	3	255	0	19	0	0	725
715-815	47	490	0	3	0	0	4	347	0	31	0	0	922
730-830	67	526	0	4	0	0	9	366	0	42	0	0	1034
745-845	67	573	0	4	0	0	12	407	0	48	0	0	1111
800-900	73	593	0	5	0	0	19	400	0	60	0	0	1150



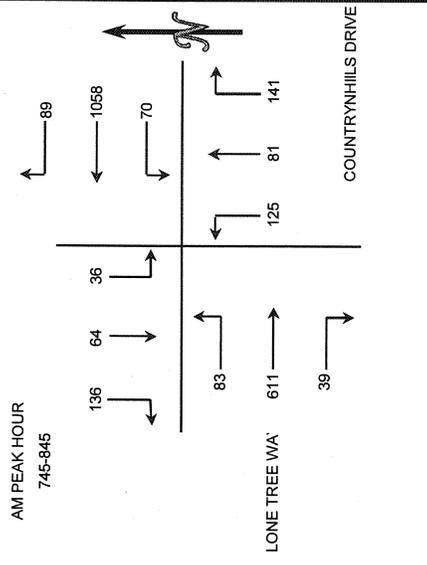
15 MIN COUNTS		4:00 PM TO 6:00 PM											
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	
400-415	21	111	0	6	0	0	11	97	0	29	0	0	275
415-430	13	99	0	8	0	0	16	106	0	32	0	0	274
430-445	14	111	0	14	0	0	12	85	0	28	0	0	264
445-500	14	107	0	9	0	0	23	98	0	34	0	0	285
500-515	18	106	0	5	0	0	14	85	0	24	0	0	252
515-530	20	112	0	7	0	0	10	101	0	30	0	0	280
530-545	17	119	0	15	0	0	16	91	0	40	0	0	298
545-600	13	126	0	10	0	0	18	106	0	31	0	0	304
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	
400-500	62	428	0	37	0	0	62	366	0	123	0	0	1098
415-515	59	423	0	36	0	0	65	374	0	118	0	0	1075
430-530	66	436	0	35	0	0	59	369	0	116	0	0	1081
445-545	69	444	0	36	0	0	63	375	0	128	0	0	1115
500-600	68	463	0	37	0	0	58	383	0	125	0	0	1134



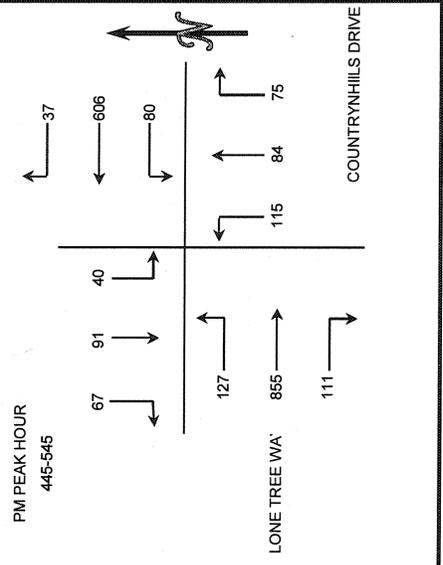
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S COUNTRYNHILLS DRIVE AND LONE TREE WAY  
 CITY: ANTIOCH

7:00 AM TO 9:00 AM												
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12
	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL
TOTAL												
700-715	32	8	0	1	154	7	5	6	31	8	87	7
715-730	23	8	2	5	189	7	7	8	22	9	114	11
730-745	32	20	0	17	215	16	19	20	35	10	167	30
745-800	31	16	8	28	262	22	44	32	40	13	173	26
800-815	42	20	7	28	279	20	37	20	36	9	159	24
815-830	30	15	13	24	242	16	19	13	25	6	126	15
830-845	33	13	8	9	275	12	41	16	24	11	153	18
845-900	22	8	3	4	217	20	21	6	28	7	131	11
<b>HOUR TOTALS</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
TIME	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL
700-800	118	52	10	51	820	52	75	66	128	40	541	74
715-815	128	64	17	78	945	65	107	80	133	41	613	91
730-830	135	71	28	97	998	74	119	85	136	38	825	95
745-845	136	64	36	89	1058	70	141	81	125	39	611	83
800-900	127	56	31	65	1013	68	118	55	113	33	569	68



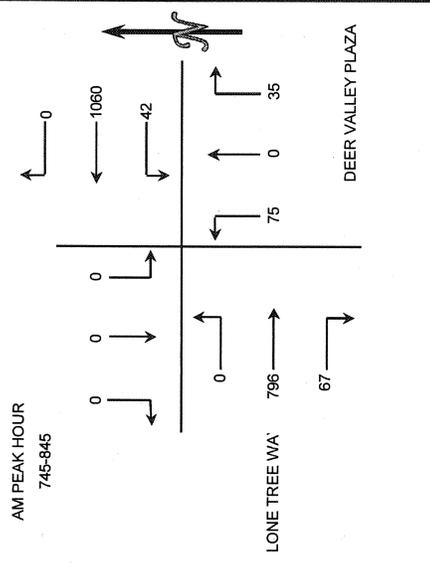
4:00 PM TO 6:00 PM												
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12
	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL
TOTAL												
400-415	16	14	8	7	178	14	15	16	27	15	236	22
415-430	13	17	11	5	150	17	19	15	23	10	244	30
430-445	15	14	8	10	154	13	32	16	35	27	218	29
445-500	18	17	13	10	138	24	21	32	44	16	224	34
500-515	18	20	10	13	167	19	17	14	20	33	202	33
515-530	18	20	6	8	128	20	14	15	26	31	215	28
530-545	13	34	11	6	173	17	23	23	25	31	214	32
545-600	19	17	6	9	152	16	15	15	22	14	202	31
<b>HOUR TOTALS</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
TIME	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL
400-500	62	62	40	32	620	68	87	79	129	68	922	115
415-515	64	68	42	38	609	73	89	77	122	86	888	126
430-530	69	71	37	41	587	76	84	77	125	107	859	124
445-545	67	91	40	37	606	80	75	84	115	111	855	127
500-600	68	91	33	36	620	72	69	67	93	109	833	124



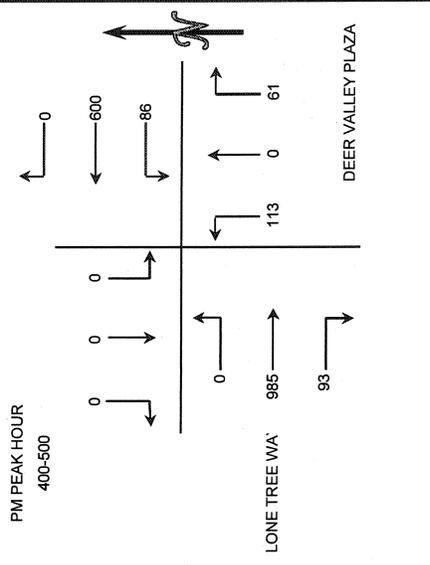
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIPOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S DEER VALLEY PLAZA  
 E/W LONE TREE WAY  
 CITY: ANTIPOCH

7:00 AM TO 9:00 AM												
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12
	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL
700-715	0	0	0	0	159	6	2	0	7	5	79	0
715-730	0	0	0	0	199	6	0	0	5	10	103	0
730-745	0	0	0	0	256	12	10	0	18	13	161	0
745-800	0	0	0	0	294	8	9	0	15	12	205	0
800-815	0	0	0	0	302	11	10	0	20	12	193	0
815-830	0	0	0	0	219	9	5	0	24	23	182	0
830-845	0	0	0	0	245	14	11	0	16	20	216	0
845-900	0	0	0	0	208	8	5	0	21	11	202	0
<b>HOUR TOTALS</b>												
TIME	1	2	3	4	5	6	7	8	9	10	11	12
	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL
700-800	0	0	0	0	908	32	21	0	45	40	548	0
715-815	0	0	0	0	1051	37	29	0	58	47	662	0
730-830	0	0	0	0	1071	40	34	0	77	60	741	0
745-845	0	0	0	0	1060	42	35	0	75	67	796	0
800-900	0	0	0	0	974	42	31	0	81	66	793	0



4:00 PM TO 6:00 PM												
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12
	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL
400-415	0	0	0	0	163	13	16	0	31	25	261	0
415-430	0	0	0	0	150	21	18	0	24	14	255	0
430-445	0	0	0	0	151	29	12	0	32	30	235	0
445-500	0	0	0	0	136	23	15	0	26	24	234	0
500-515	0	0	0	0	161	15	18	0	38	25	211	0
515-530	0	0	0	0	126	17	20	0	21	23	220	0
530-545	0	0	0	0	171	17	13	0	30	27	204	0
545-600	0	0	0	0	166	19	18	0	21	30	214	0
<b>HOUR TOTALS</b>												
TIME	1	2	3	4	5	6	7	8	9	10	11	12
	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL
400-500	0	0	0	0	600	86	61	0	113	93	985	0
415-515	0	0	0	0	598	88	63	0	120	93	935	0
430-530	0	0	0	0	574	84	65	0	117	102	900	0
445-545	0	0	0	0	594	72	66	0	115	99	869	0
500-600	0	0	0	0	624	68	69	0	110	105	849	0



## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

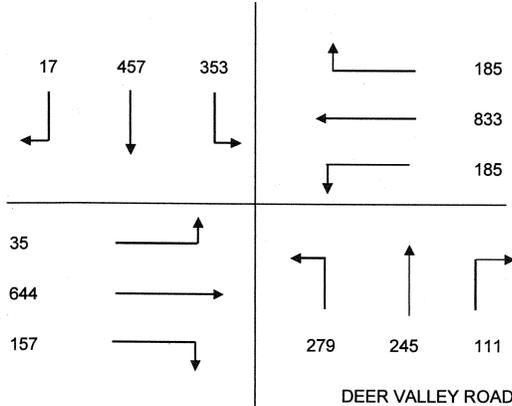
CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 7:00 AM TO 9:00 AM  
 INTERSECTION: N/S DEER VALLEY ROAD  
 E/W LONE TREE WAY

15 MIN COUNTS PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
700-715	5	54	26	6	113	17	2	25	48	25	62	1	384
715-730	1	90	42	12	140	30	4	36	52	42	88	4	541
730-745	9	94	70	25	192	27	17	55	55	32	116	5	697
745-800	4	122	107	51	226	42	37	61	79	52	195	12	988
800-815	3	129	83	46	230	46	19	81	73	29	124	9	872
815-830	4	112	75	36	195	49	26	61	57	29	146	9	799
830-845	6	94	88	52	182	48	29	42	70	47	179	5	842
845-900	2	78	104	68	158	54	42	68	64	35	160	17	850
<b>HOUR TOTALS</b>													
700-800	19	360	245	94	671	116	60	177	234	151	461	22	2610
715-815	17	435	302	134	788	145	77	233	259	155	523	30	3098
730-830	20	457	335	158	843	164	99	258	264	142	581	35	3356
745-845	17	457	353	185	833	185	111	245	279	157	644	35	3501
800-900	15	413	350	202	765	197	116	252	264	140	609	40	3363

AM PEAK HOUR  
745-845



LONE TREE WAY



DEER VALLEY ROAD

### PEDESTRIAN COUNTS

PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
<b>15 MIN COUNTS</b>				
700-715	1	0	3	2
715-730	0	0	4	3
730-745	0	5	13	13
745-800	3	8	4	1
800-815	0	1	16	6
815-830	1	5	10	6
830-845	0	6	21	10
845-900	0	4	9	0
<b>HOUR TOTALS</b>				
700-800	4	13	24	19
715-815	3	14	37	23
730-830	4	19	43	26
745-845	4	20	51	23
800-900	1	16	56	22

# WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

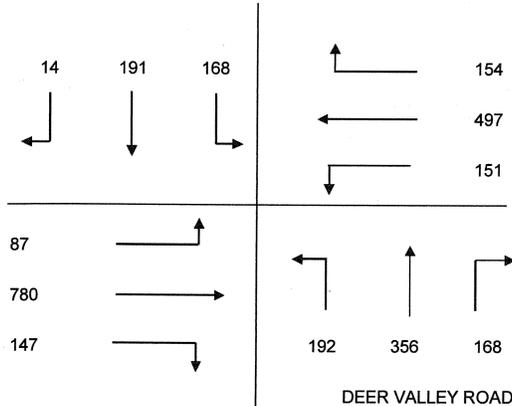
CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S DEER VALLEY ROAD  
 E/W LONE TREE WAY

15 MIN COUNTS PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
400-415	3	52	35	44	118	33	40	93	76	50	224	18	786
415-430	3	43	31	36	122	25	34	81	34	38	203	24	674
430-445	7	39	47	50	113	35	45	97	58	33	211	10	745
445-500	5	44	42	38	108	24	26	82	45	36	203	14	667
500-515	6	46	27	36	117	43	44	105	48	31	188	16	707
515-530	2	56	38	43	122	39	42	91	46	45	200	28	752
530-545	3	48	60	37	118	35	42	97	57	28	196	28	749
545-600	3	41	43	38	140	34	40	63	41	43	196	15	697
<b>HOUR TOTALS</b>													
400-500	18	178	155	168	461	117	145	353	213	157	841	66	2872
415-515	21	172	147	160	460	127	149	365	185	138	805	64	2793
430-530	20	185	154	167	460	141	157	375	197	145	802	68	2871
445-545	16	194	167	154	465	141	154	375	196	140	787	86	2875
500-600	14	191	168	154	497	151	168	356	192	147	780	87	2905

PM PEAK HOUR  
500-600



LONE TREE WAY



PEDESTRIAN COUNTS				
PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
15 MIN COUNTS				
400-415	0	9	2	2
415-430	8	2	2	1
430-445	0	0	2	0
445-500	0	0	0	2
500-515	0	0	8	0
515-530	2	3	3	0
530-545	0	0	1	0
545-600	0	0	1	1
<b>HOUR TOTALS</b>				
400-500	8	11	6	5
415-515	8	2	12	3
430-530	2	3	13	2
445-545	2	3	12	2
500-600	2	3	13	1

# WILTEC

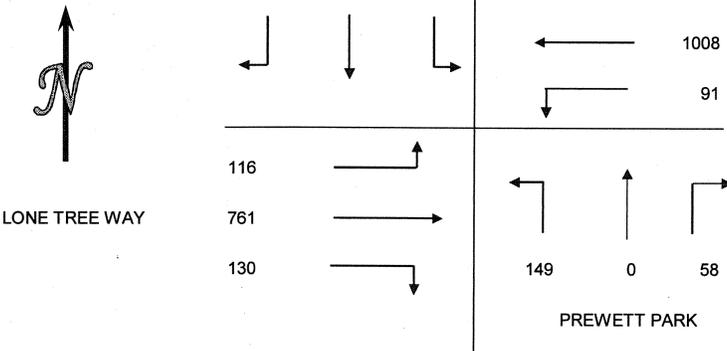
Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: TUESDAY MAY 13, 2008  
 PERIOD: 7:00 AM TO 9:00 AM  
 INTERSECTION: N/S PREWETT PARK  
 E/W LONE TREE WAY

15 MIN COUNTS PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
700-715	1	0	0	0	167	3	0	0	2	11	90	0	274
715-730	0	0	0	1	165	11	4	1	7	20	111	6	326
730-745	6	0	0	4	214	18	7	0	31	26	150	14	470
745-800	9	1	5	9	284	29	20	0	51	61	209	36	714
800-815	2	0	1	13	272	19	13	0	33	36	179	23	591
815-830	4	0	4	16	254	21	12	0	22	14	190	19	556
830-845	14	0	11	23	198	22	13	0	43	19	183	38	564
845-900	13	0	7	16	218	29	27	0	69	29	221	46	675
<b>HOUR TOTALS</b>													
700-800	16	1	5	14	830	61	31	1	91	118	560	56	1784
715-815	17	1	6	27	935	77	44	1	122	143	649	79	2101
730-830	21	1	10	42	1024	87	52	0	137	137	728	92	2331
745-845	29	1	21	61	1008	91	58	0	149	130	761	116	2425
800-900	33	0	23	68	942	91	65	0	167	98	773	126	2386

AM PEAK HOUR  
745-845



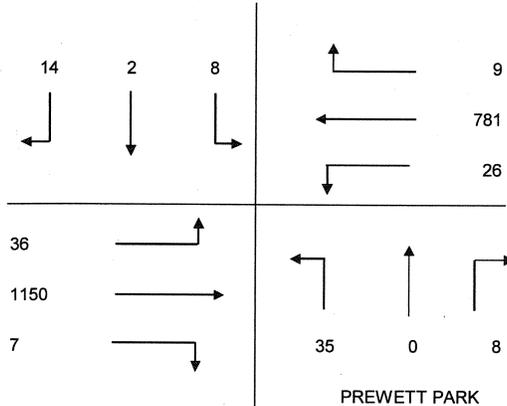
PEDESTRIAN COUNTS				
PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
15 MIN COUNTS				
700-715	2	0	2	3
715-730	1	0	3	6
730-745	0	1	0	14
745-800	0	10	0	17
800-815	1	4	1	14
815-830	0	6	1	15
830-845	0	13	0	18
845-900	0	19	0	19
<b>HOUR TOTALS</b>				
700-800	3	11	5	40
715-815	2	15	4	51
730-830	1	21	2	60
745-845	1	33	2	64
800-900	1	42	2	66

## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY - HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: TUESDAY MAY 13, 2008  
 PERIOD: 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S PREWETT PARK  
 E/W LONE TREE WAY

15 MIN COUNTS PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
400-415	7	0	4	1	204	3	5	0	17	5	277	9	532
415-430	1	0	5	5	181	4	8	0	11	4	238	9	466
430-445	3	0	1	2	195	4	1	0	4	0	243	6	459
445-500	5	1	1	2	197	3	1	0	8	2	284	10	514
500-515	3	0	2	3	199	7	3	0	5	1	273	12	508
515-530	5	1	3	1	165	2	3	0	5	3	316	6	510
530-545	1	0	2	3	220	14	1	0	17	1	277	8	544
545-600	2	0	3	2	189	12	3	0	5	0	256	10	482
<b>HOUR TOTALS</b>													
400-500	16	1	11	10	777	14	15	0	40	11	1042	34	1971
415-515	12	1	9	12	772	18	13	0	28	7	1038	37	1947
430-530	16	2	7	8	756	16	8	0	22	6	1116	34	1991
445-545	14	2	8	9	781	26	8	0	35	7	1150	36	2076
500-600	11	1	10	9	773	35	10	0	32	5	1122	36	2044

PM PEAK HOUR  
445-545



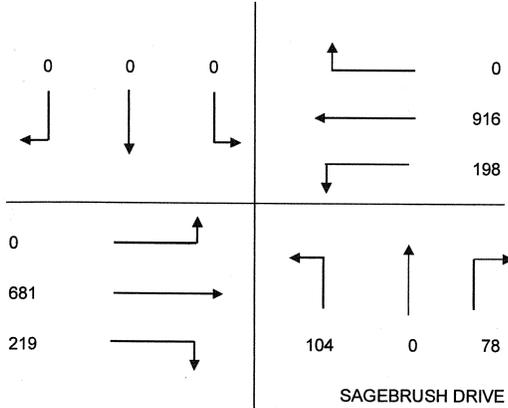
PEDESTRIAN COUNTS				
PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
15 MIN COUNTS				
400-415	1	2	0	0
415-430	0	0	0	2
430-445	0	0	1	2
445-500	0	0	3	1
500-515	0	0	1	1
515-530	0	1	2	0
530-545	0	0	3	2
545-600	0	0	1	1
<b>HOUR TOTALS</b>				
400-500	1	2	4	5
415-515	0	0	5	6
430-530	0	1	7	4
445-545	0	1	9	4
500-600	0	1	7	4

## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY - HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: TUESDAY MAY 13, 2008  
 PERIOD: 7:00 AM TO 9:00 AM  
 INTERSECTION: N/S SAGEBRUSH DRIVE  
 E/W LONE TREE WAY

15 MIN COUNTS PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
700-715	0	0	0	0	152	3	1	0	17	7	73	0	253
715-730	0	0	0	0	188	8	2	0	11	12	84	0	305
730-745	0	0	0	0	266	43	7	0	23	49	113	0	501
745-800	0	0	0	0	249	75	23	0	48	66	158	0	619
800-815	0	0	0	0	244	22	22	0	38	45	131	0	502
815-830	0	0	0	0	240	43	15	0	25	30	177	0	530
830-845	0	0	0	0	213	45	18	0	14	65	173	0	528
845-900	0	0	0	0	219	88	23	0	27	79	200	0	636
<b>HOUR TOTALS</b>													
700-800	0	0	0	0	855	129	33	0	99	134	428	0	1678
715-815	0	0	0	0	947	148	54	0	120	172	486	0	1927
730-830	0	0	0	0	999	183	67	0	134	190	579	0	2152
745-845	0	0	0	0	946	185	78	0	125	206	639	0	2179
800-900	0	0	0	0	916	198	78	0	104	219	681	0	2196

AM PEAK HOUR  
800-900



### PEDESTRIAN COUNTS

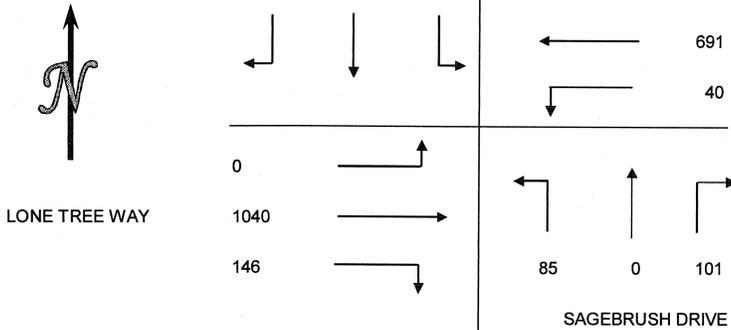
PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
15 MIN COUNTS				
700-715	0	0	1	0
715-730	0	2	1	0
730-745	0	0	0	6
745-800	0	0	7	2
800-815	0	0	1	5
815-830	0	0	3	0
830-845	0	0	0	3
845-900	0	2	2	11
<b>HOUR TOTALS</b>				
700-800	0	2	9	8
715-815	0	2	9	13
730-830	0	0	11	13
745-845	0	0	11	10
800-900	0	2	6	19

## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY - HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: TUESDAY MAY 13, 2008  
 PERIOD: 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S SAGEBRUSH DRIVE  
 E/W LONE TREE WAY

15 MIN COUNTS PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
400-415	0	0	0	0	185	16	12	0	13	41	227	0	494
415-430	0	0	0	0	176	13	16	0	12	28	211	0	456
430-445	0	0	0	0	177	10	11	0	14	39	215	0	466
445-500	0	0	0	0	166	5	6	0	12	36	243	0	468
500-515	0	0	0	0	211	15	24	0	22	43	281	0	596
515-530	0	0	0	0	150	14	45	0	31	26	277	0	543
530-545	0	0	0	0	164	6	26	0	20	41	239	0	496
545-600	0	0	0	0	140	9	46	0	27	22	211	0	455
<b>HOUR TOTALS</b>													
400-500	0	0	0	0	704	44	45	0	51	144	896	0	1884
415-515	0	0	0	0	730	43	57	0	60	146	950	0	1986
430-530	0	0	0	0	704	44	86	0	79	144	1016	0	2073
445-545	0	0	0	0	691	40	101	0	85	146	1040	0	2103
500-600	0	0	0	0	665	44	141	0	100	132	1008	0	2090

PM PEAK HOUR  
445-545

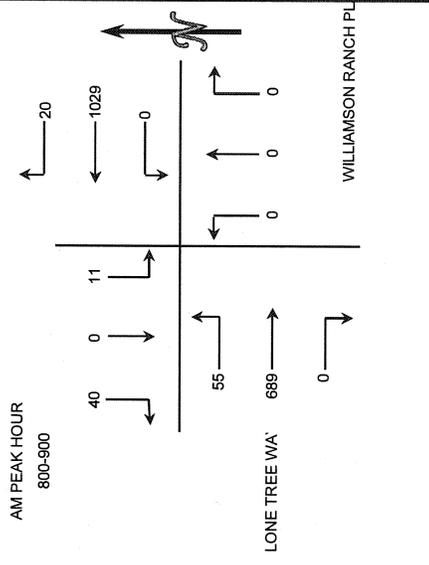


PEDESTRIAN COUNTS				
PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
15 MIN COUNTS				
400-415	2	0	2	4
415-430	0	0	3	0
430-445	0	0	0	2
445-500	0	0	1	0
500-515	0	0	0	0
515-530	0	0	1	0
530-545	0	0	4	0
545-600	0	0	0	0
<b>HOUR TOTALS</b>				
400-500	2	0	6	6
415-515	0	0	4	2
430-530	0	0	2	2
445-545	0	0	6	0
500-600	0	0	5	0

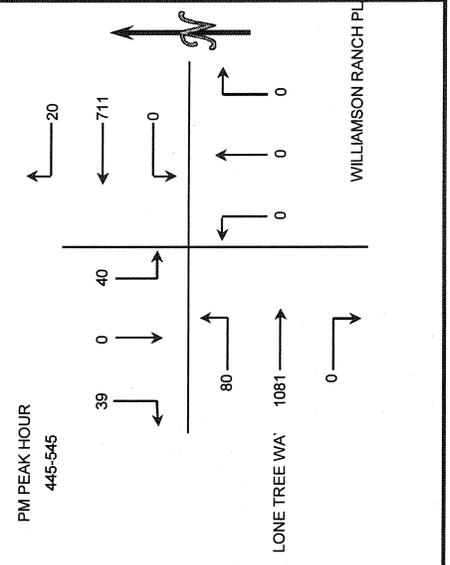
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: TUESDAY MAY 13, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S WILLIAMSON RANCH PLAZA  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

7:00 AM TO 9:00 AM																									
PERIOD	1		2		3		4		5		6		7		8		9		10		11		12		
	SBRT	SBTH	SBRT	SBTH	SBLT	SBLT	WBRT	WBRT	WBTH	WBTH	WBLT	WBLT	NBRT	NBRT	NBLT	NBLT	EBRT	EBRT	EBTH	EBTH	EBLT	EBLT	TOTAL	TOTAL	
700-715	1	0	0	0	3	143	0	0	0	0	0	0	0	0	0	0	0	0	0	56	5	208	5	253	
715-730	2	0	0	0	3	171	0	0	0	0	0	0	0	0	0	0	0	0	74	3	253	3	418		
730-745	5	0	1	3	294	0	0	0	0	0	0	0	0	0	0	0	0	0	108	7	418	7	542		
745-800	3	0	2	5	333	0	0	0	0	0	0	0	0	0	0	0	0	0	190	9	399	9	458		
800-815	6	0	2	4	252	0	0	0	0	0	0	0	0	0	0	0	0	0	125	10	399	10	468		
815-830	8	0	0	8	251	0	0	0	0	0	0	0	0	0	0	0	0	0	180	11	458	11	437		
830-845	14	0	3	3	241	0	0	0	0	0	0	0	0	0	0	0	0	0	160	16	437	16	550		
845-900	12	0	6	5	285	0	0	0	0	0	0	0	0	0	0	0	0	0	224	18	550	18	1844		
<b>HOUR TOTALS</b>																									
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	11	12	TOTAL									
700-800	11	0	3	14	941	0	0	0	0	0	0	0	24	428	24	1421	0	0	428	24	29	1612	29	1817	
715-815	16	0	5	15	1050	0	0	0	0	0	0	0	37	603	37	1817	0	0	603	37	46	1836	46	1844	
730-830	22	0	5	20	1130	0	0	0	0	0	0	0	0	655	46	1836	0	0	655	46	55	1844	55	1844	
745-845	31	0	7	20	1077	0	0	0	0	0	0	0	0	689	55	1844	0	0	689	55	18	1967	55	1967	
800-900	40	0	11	20	1029	0	0	0	0	0	0	0	0	689	55	1844	0	0	689	55	18	1967	55	1967	



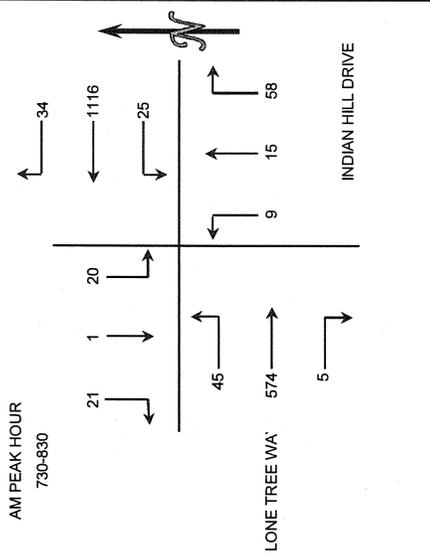
4:00 PM TO 6:00 PM																									
PERIOD	1		2		3		4		5		6		7		8		9		10		11		12		
	SBRT	SBTH	SBRT	SBTH	SBLT	SBLT	WBRT	WBRT	WBTH	WBTH	WBLT	WBLT	NBRT	NBRT	NBLT	NBLT	EBRT	EBRT	EBTH	EBTH	EBLT	EBLT	TOTAL	TOTAL	
400-415	20	0	7	2	188	0	0	0	0	0	0	0	0	0	0	0	0	0	234	25	476	25	446		
415-430	8	0	9	3	179	0	0	0	0	0	0	0	0	0	0	0	0	0	233	14	446	14	426		
430-445	6	0	8	5	193	0	0	0	0	0	0	0	0	0	0	0	0	0	195	19	426	19	465		
445-500	5	0	9	5	185	0	0	0	0	0	0	0	0	0	0	0	0	0	241	20	522	20	475		
500-515	16	0	12	9	195	0	0	0	0	0	0	0	0	0	0	0	0	0	268	22	475	22	509		
515-530	8	0	9	1	132	0	0	0	0	0	0	0	0	0	0	0	0	0	305	20	475	20	509		
530-545	10	0	10	5	199	0	0	0	0	0	0	0	0	0	0	0	0	0	267	18	509	18	461		
545-600	8	0	5	7	156	0	0	0	0	0	0	0	0	0	0	0	0	0	259	26	461	26	1967		
<b>HOUR TOTALS</b>																									
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	11	12	TOTAL									
400-500	39	0	33	15	745	0	0	0	0	0	0	0	76	903	76	1813	0	0	903	76	75	1859	75	1888	
415-515	35	0	38	22	752	0	0	0	0	0	0	0	0	1009	81	1888	0	0	1009	80	1971	80	1971		
430-530	35	0	38	20	705	0	0	0	0	0	0	0	0	1081	86	1967	0	0	1081	86	1967	86	1967		
445-545	39	0	40	20	711	0	0	0	0	0	0	0	0	1081	86	1967	0	0	1081	86	1967	86	1967		
500-600	42	0	36	22	682	0	0	0	0	0	0	0	0	1081	86	1967	0	0	1081	86	1967	86	1967		



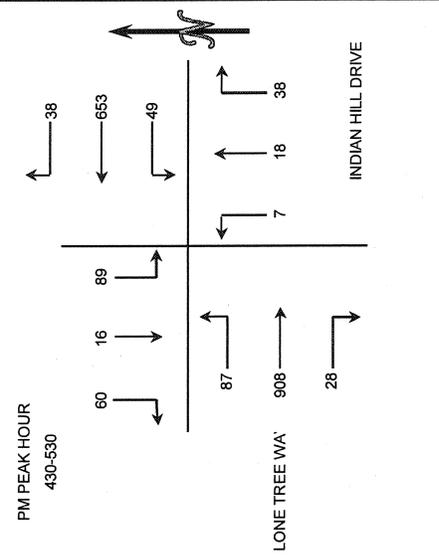
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: TUESDAY MAY 13, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S INDIAN HILL DRIVE AND E/W LONE TREE WAY  
 CITY: ANTIOCH

15 MIN COUNTS		7:00 AM TO 9:00 AM											
		1	2	3	4	5	6	7	8	9	10	11	12
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL	TOTAL
700-715	1	0	4	2	171	2	9	2	4	0	49	1	244
715-730	1	0	5	9	203	2	7	1	4	0	78	1	311
730-745	2	0	4	4	284	2	13	3	3	0	123	2	440
745-800	5	0	2	9	360	4	16	2	2	1	177	6	584
800-815	3	0	8	6	264	10	7	7	2	1	132	14	464
815-830	11	1	6	15	208	9	12	3	2	3	142	23	435
830-845	4	5	19	6	220	7	11	4	10	2	140	12	440
845-900	10	1	12	9	244	9	17	5	3	2	168	24	504
<b>HOUR TOTALS</b>		1	2	3	4	5	6	7	8	9	10	11	12
TIME	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL	TOTAL
700-800	9	0	15	24	1018	10	45	8	10	3	427	10	1578
715-815	11	0	19	28	1111	18	53	13	11	2	510	23	1799
730-830	21	1	20	34	1116	25	58	15	9	5	574	45	1923
745-845	23	6	35	36	1052	30	56	16	16	7	591	55	1923
800-900	28	7	45	36	936	35	57	19	17	8	582	73	1843



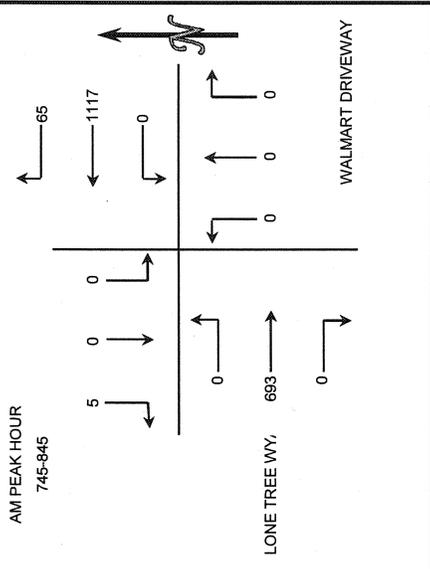
15 MIN COUNTS		4:00 PM TO 6:00 PM											
		1	2	3	4	5	6	7	8	9	10	11	12
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL	TOTAL
400-415	17	1	31	15	147	12	9	3	0	2	217	27	481
415-430	14	2	21	14	150	10	9	2	0	0	197	23	442
430-445	19	5	29	9	201	10	10	5	2	1	216	31	538
445-500	12	4	14	8	157	9	4	4	1	18	198	20	449
500-515	18	4	29	8	142	11	10	6	2	4	219	10	463
515-530	11	3	17	13	153	19	14	3	2	5	275	26	541
530-545	14	3	13	5	166	8	8	3	0	2	236	25	483
545-600	10	0	23	15	138	10	15	5	2	10	239	16	483
<b>HOUR TOTALS</b>		1	2	3	4	5	6	7	8	9	10	11	12
TIME	SBRT	SBTH	SBLT	WBRT	WBTH	WBTL	NBRT	NBTH	NBLT	EBRT	EBTH	EBTL	TOTAL
400-500	62	12	95	46	655	41	32	14	3	21	828	101	1910
415-515	63	15	93	39	650	40	33	17	5	23	830	84	1892
430-530	60	16	89	38	653	49	38	18	7	28	908	87	1991
445-545	55	14	73	34	618	47	36	16	5	29	928	81	1936
500-600	53	10	82	41	589	48	47	17	6	21	969	77	1970



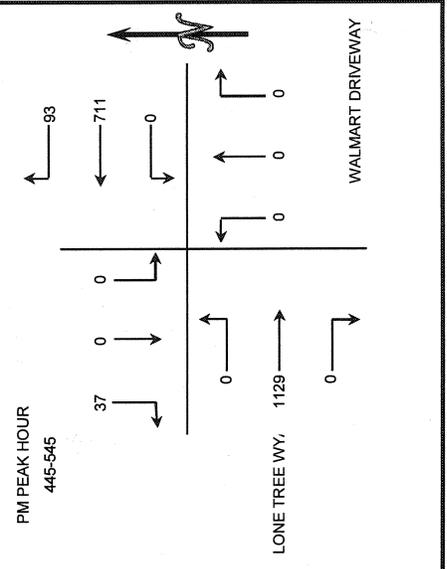
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: TUESDAY MAY 13, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S WALMART DRIVEWAY AND  
 E/W LONE TREE WYWAY  
 CITY: ANTIOCH

15 MIN COUNTS													
7:00 AM TO 9:00 AM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	1	0	0	5	141	0	0	0	0	0	69	0	216
715-730	0	0	0	1	196	0	0	0	0	0	82	0	279
730-745	3	0	0	6	286	0	0	0	0	0	117	0	412
745-800	0	0	0	7	340	0	0	0	0	0	184	0	531
800-815	2	0	0	16	267	0	0	0	0	0	166	0	451
815-830	2	0	0	12	250	0	0	0	0	0	165	0	429
830-845	1	0	0	30	260	0	0	0	0	0	178	0	469
845-900	2	0	0	19	273	0	0	0	0	0	211	0	505
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-800	4	0	0	19	963	0	0	0	0	0	452	0	1438
715-815	5	0	0	30	1089	0	0	0	0	0	549	0	1673
730-830	7	0	0	41	1143	0	0	0	0	0	632	0	1823
745-845	5	0	0	65	1117	0	0	0	0	0	693	0	1880
800-900	7	0	0	77	1050	0	0	0	0	0	720	0	1854



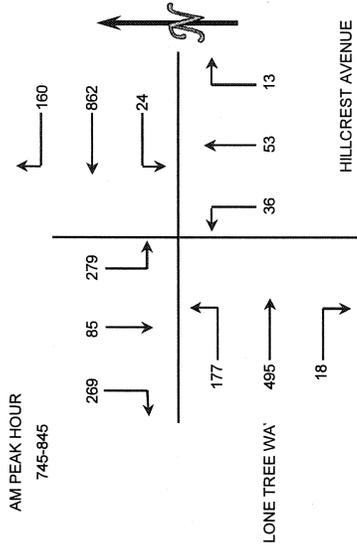
15 MIN COUNTS													
4:00 PM TO 6:00 PM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	9	0	0	25	173	0	0	0	0	0	253	0	460
415-430	9	0	0	20	192	0	0	0	0	0	232	0	453
430-445	10	0	0	21	166	0	0	0	0	0	215	0	412
445-500	10	0	0	20	190	0	0	0	0	0	255	0	475
500-515	9	0	0	26	180	0	0	0	0	0	273	0	488
515-530	7	0	0	21	153	0	0	0	0	0	328	0	509
530-545	11	0	0	26	188	0	0	0	0	0	273	0	498
545-600	6	0	0	24	171	0	0	0	0	0	268	0	469
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	38	0	0	86	721	0	0	0	0	0	955	0	1800
415-515	38	0	0	87	728	0	0	0	0	0	975	0	1828
430-530	36	0	0	88	689	0	0	0	0	0	1071	0	1884
445-545	37	0	0	93	711	0	0	0	0	0	1129	0	1970
500-600	33	0	0	97	692	0	0	0	0	0	1142	0	1954



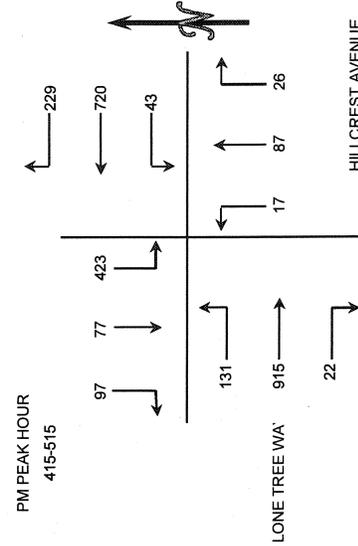
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S HILLCREST AVENUE AND  
 E/W LONE TREE WAY  
 CITY: ANTOCH

15 MIN COUNTS													
7:00 AM TO 9:00 AM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	18	8	52	38	116	1	2	20	5	2	75	7	344
715-730	34	7	38	17	151	4	4	8	2	2	66	8	341
730-745	47	12	39	23	212	3	1	18	6	4	92	11	468
745-800	80	29	70	41	240	5	5	16	10	4	136	54	690
800-815	57	20	74	41	217	10	5	17	10	3	128	61	643
815-830	46	11	72	46	218	5	2	12	7	7	114	32	572
830-845	86	25	63	32	187	4	1	8	9	4	117	30	566
845-900	90	30	78	41	172	3	9	6	14	3	138	55	639
<b>HOUR TOTALS</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>TOTAL</b>
	179	56	199	119	719	13	12	62	23	12	369	80	1843
700-800	218	68	221	122	820	22	15	59	28	13	422	134	2142
730-830	230	72	255	151	887	23	13	63	33	18	470	158	2373
745-845	269	85	279	160	862	24	13	53	36	18	495	177	2471
800-900	279	86	287	160	794	22	17	43	40	17	497	178	2420



15 MIN COUNTS													
4:00 PM TO 6:00 PM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	15	16	99	51	172	9	6	13	7	11	238	37	674
415-430	9	21	79	57	179	10	8	31	7	8	203	23	635
430-445	37	21	105	47	179	6	10	17	5	5	247	45	724
445-500	19	12	112	54	161	8	3	17	2	6	211	34	639
500-515	32	23	127	71	201	19	5	22	3	3	254	29	789
515-530	14	15	91	38	138	11	1	19	4	3	209	24	567
530-545	16	28	95	51	144	12	9	25	11	7	231	26	655
545-600	22	27	74	52	193	12	6	21	4	13	193	37	654
<b>HOUR TOTALS</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>TOTAL</b>
	80	70	395	209	691	33	27	78	21	30	889	139	2672
415-515	97	77	423	229	720	43	26	87	17	22	915	131	2787
430-530	102	71	435	210	679	44	19	75	14	17	921	132	2719
445-545	81	78	425	214	644	50	18	83	20	19	905	113	2650
500-600	84	93	387	212	676	54	21	87	22	26	887	116	2665



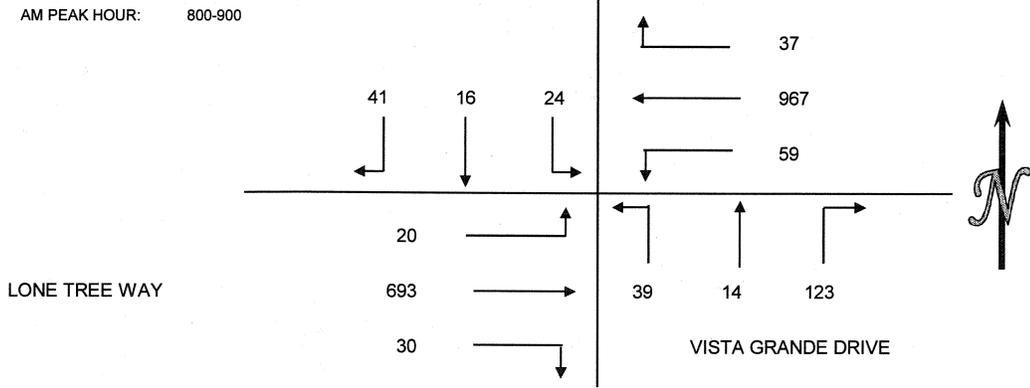
# WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 7:00 AM TO 9:00 AM  
 INTERSECTION: N/S VISTA GRANDE DRIVE  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

VEHICLE COUNTS													
15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	5	1	3	1	127	3	15	2	11	1	85	2	256
715-730	11	1	0	1	156	11	25	4	10	3	115	3	340
730-745	13	4	5	5	235	11	31	4	11	2	148	9	478
745-800	23	1	8	3	255	11	34	5	17	4	179	1	541
800-815	20	8	15	5	230	11	30	6	14	8	154	5	506
815-830	7	5	2	9	237	14	28	2	11	4	156	2	477
830-845	5	3	2	11	251	11	30	3	11	10	183	6	526
845-900	9	0	5	12	249	23	35	3	3	8	200	7	554
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-800	52	7	16	10	773	36	105	15	49	10	527	15	1615
715-815	67	14	28	14	876	44	120	19	52	17	596	18	1865
730-830	63	18	30	22	957	47	123	17	53	18	637	17	2002
745-845	55	17	27	28	973	47	122	16	53	26	672	14	2050
800-900	41	16	24	37	967	59	123	14	39	30	693	20	2063



PEDESTRIAN COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-715	0	0	0	1	1
715-730	2	0	0	0	2
730-745	1	1	2	1	5
745-800	0	0	0	1	1
800-815	0	0	0	0	0
815-830	0	0	0	0	0
830-845	0	0	0	0	0
845-900	0	0	0	0	0
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-800	3	1	2	3	9
715-815	3	1	2	2	8
730-830	1	1	2	2	6
745-845	0	0	0	1	1
800-900	0	0	0	0	0

BICYCLE COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-715	0	0	1	0	1
715-730	0	0	0	0	0
730-745	0	0	0	0	0
745-800	1	0	0	0	1
800-815	1	0	1	1	3
815-830	0	0	1	0	1
830-845	1	0	1	1	3
845-900	1	0	0	0	1
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-800	1	0	1	0	2
715-815	2	0	1	1	4
730-830	2	0	2	1	5
745-845	3	0	3	2	8
800-900	3	0	3	2	8

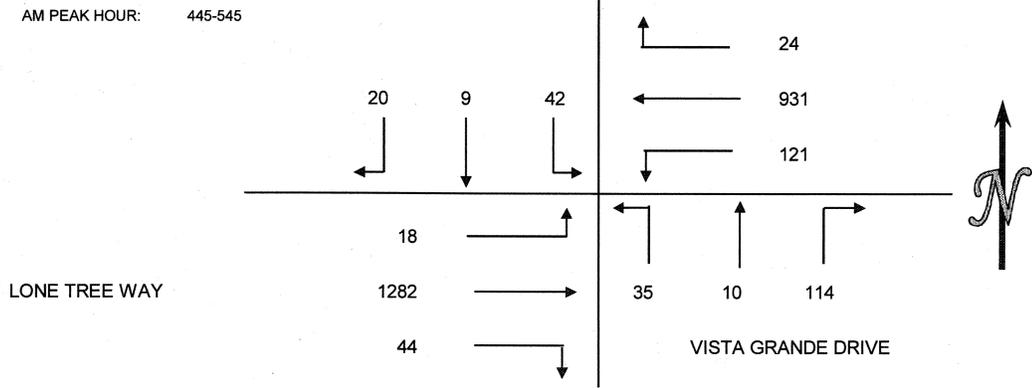
# WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S VISTA GRANDE DRIVE  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

VEHICLE COUNTS													
15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	6	2	4	7	218	33	29	4	8	19	309	10	649
415-430	4	1	8	8	183	29	34	4	10	11	296	5	593
430-445	3	1	7	7	198	21	29	3	10	10	329	9	627
445-500	6	0	11	8	229	28	27	2	12	10	312	5	650
500-515	6	3	15	6	250	29	31	2	10	15	315	3	685
515-530	2	2	8	7	247	31	24	2	7	9	327	5	671
530-545	6	4	8	3	205	33	32	4	6	10	328	5	644
545-600	8	2	6	5	232	29	33	6	11	6	267	9	614
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	19	4	30	30	828	111	119	13	40	50	1246	29	2519
415-515	19	5	41	29	860	107	121	11	42	46	1252	22	2555
430-530	17	6	41	28	924	109	111	9	39	44	1283	22	2633
445-545	20	9	42	24	931	121	114	10	35	44	1282	18	2650
500-600	22	11	37	21	934	122	120	14	34	40	1237	22	2614



PEDESTRIAN COUNTS					
15 MIN COUNTS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
PERIOD	LEG	LEG	LEG	LEG	TOTAL
400-415	0	2	0	0	2
415-430	0	1	0	0	1
430-445	0	1	2	1	4
445-500	0	1	2	0	3
500-515	2	0	0	0	2
515-530	0	0	0	0	0
530-545	1	2	0	0	3
545-600	1	0	0	0	1
HOUR TOTALS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
PERIOD	LEG	LEG	LEG	LEG	TOTAL
400-500	0	5	4	1	10
415-515	2	3	4	1	10
430-530	2	2	4	1	9
445-545	3	3	2	0	8
500-600	4	2	0	0	6

BICYCLE COUNTS					
15 MIN COUNTS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
PERIOD	LEG	LEG	LEG	LEG	TOTAL
400-415	0	0	0	0	0
415-430	0	0	0	0	0
430-445	1	1	0	0	2
445-500	0	0	3	0	3
500-515	0	0	0	0	0
515-530	1	0	0	2	3
530-545	0	0	0	0	0
545-600	0	0	0	0	0
HOUR TOTALS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
PERIOD	LEG	LEG	LEG	LEG	TOTAL
400-500	1	1	3	0	5
415-515	1	1	3	0	5
430-530	2	1	3	2	8
445-545	1	0	3	2	6
500-600	1	0	0	2	3

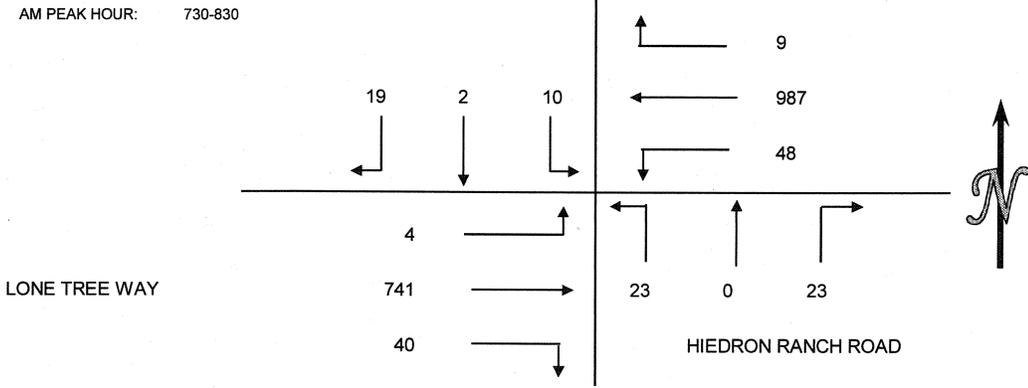
# WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 7:00 AM TO 9:00 AM  
 INTERSECTION: N/S HIEDRON RANCH ROAD  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

VEHICLE COUNTS													
15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	3	0	0	0	108	0	1	0	3	0	76	0	191
715-730	4	0	5	0	168	2	1	0	1	0	125	0	306
730-745	4	0	1	1	245	3	3	0	2	3	162	0	424
745-800	4	0	3	2	254	3	3	0	7	5	211	0	492
800-815	8	1	1	3	229	10	0	0	4	13	189	2	460
815-830	3	1	5	3	259	32	17	0	10	19	179	2	530
830-845	1	0	1	2	200	6	11	0	11	14	156	0	402
845-900	3	0	0	1	233	5	4	0	12	12	200	1	471
HOURLY TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-800	15	0	9	3	775	8	8	0	13	8	574	0	1413
715-815	20	1	10	6	896	18	7	0	14	21	687	2	1682
730-830	19	2	10	9	987	48	23	0	23	40	741	4	1906
745-845	16	2	10	10	942	51	31	0	32	51	735	4	1884
800-900	15	2	7	9	921	53	32	0	37	58	724	5	1863



PEDESTRIAN COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-715	0	0	2	0	2
715-730	0	0	0	0	0
730-745	0	0	0	0	0
745-800	0	2	0	0	2
800-815	0	0	0	0	0
815-830	1	0	1	0	2
830-845	0	0	0	0	0
845-900	1	0	1	0	2
HOURLY TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-800	0	2	2	0	4
715-815	0	2	0	0	2
730-830	1	2	1	0	4
745-845	1	2	1	0	4
800-900	2	0	2	0	4

BICYCLE COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-715	0	0	1	0	1
715-730	0	0	0	0	0
730-745	0	0	0	0	0
745-800	1	0	0	0	1
800-815	1	0	1	0	2
815-830	0	0	1	0	1
830-845	0	0	0	0	0
845-900	0	0	0	0	0
HOURLY TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-800	1	0	1	0	2
715-815	2	0	1	0	3
730-830	2	0	2	0	4
745-845	2	0	2	0	4
800-900	1	0	2	0	3

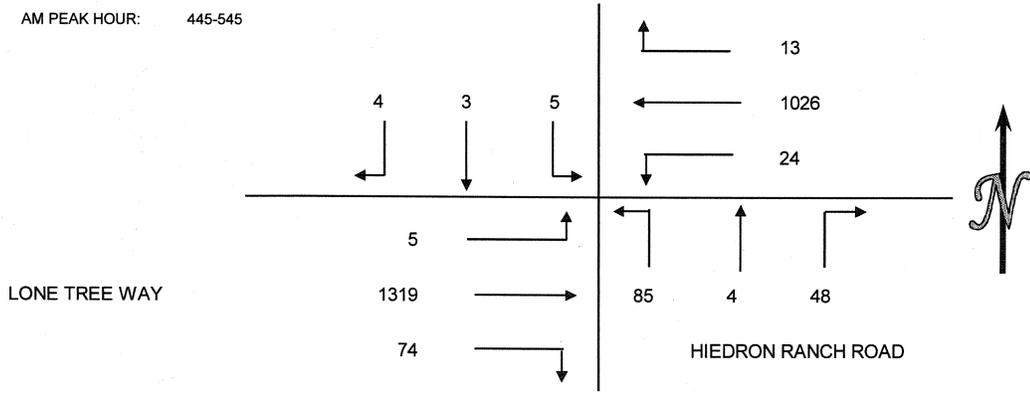
# WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S HIEDRON RANCH ROAD  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

VEHICLE COUNTS													
15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	0	0	1	5	233	7	11	0	18	12	332	0	619
415-430	0	0	1	3	239	8	14	0	15	20	332	1	633
430-445	1	1	1	4	228	8	12	1	16	18	342	3	635
445-500	1	2	2	3	247	4	12	0	22	24	338	1	656
500-515	1	0	0	3	254	9	12	1	23	17	325	1	646
515-530	1	1	2	6	280	5	14	2	19	19	320	2	671
530-545	1	0	1	1	245	6	10	1	21	14	336	1	637
545-600	0	1	2	5	267	8	10	2	33	13	249	3	593
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	2	3	5	15	947	27	49	1	71	74	1344	5	2543
415-515	3	3	4	13	968	29	50	2	76	79	1337	6	2570
430-530	4	4	5	16	1009	26	50	4	80	78	1325	7	2608
445-545	4	3	5	13	1026	24	48	4	85	74	1319	5	2610
500-600	3	2	5	15	1046	28	46	6	96	63	1230	7	2547



PEDESTRIAN COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	2	1	0	0	3
415-430	0	0	0	1	1
430-445	0	0	0	0	0
445-500	0	0	0	0	0
500-515	2	1	1	0	4
515-530	0	0	0	0	0
530-545	1	1	2	0	4
545-600	0	0	1	0	1
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	2	1	0	1	4
415-515	2	1	1	1	5
430-530	2	1	1	0	4
445-545	3	2	3	0	8
500-600	3	2	4	0	9

BICYCLE COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	0	0	0	0	0
415-430	1	0	0	0	1
430-445	0	0	0	0	0
445-500	0	0	3	0	3
500-515	0	0	0	0	0
515-530	0	0	0	0	0
530-545	0	0	0	0	0
545-600	0	0	0	0	0
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	1	0	3	0	4
415-515	1	0	3	0	4
430-530	0	0	3	0	3
445-545	0	0	3	0	3
500-600	0	0	0	0	0

# WILTEC

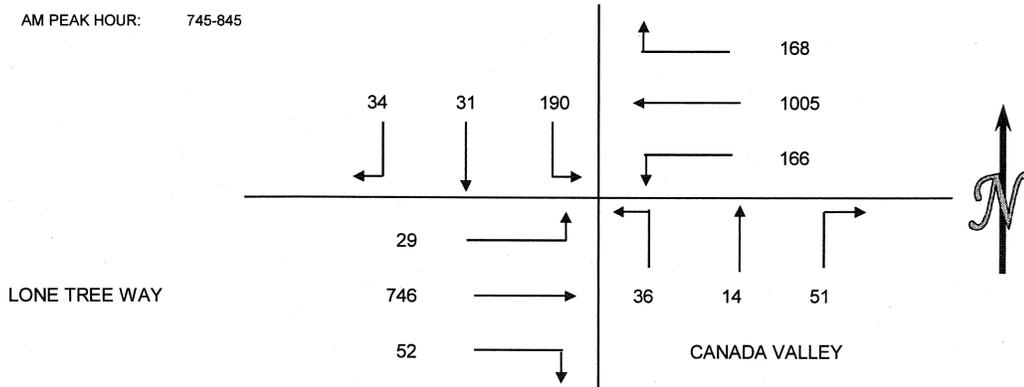
Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 7:00 AM TO 9:00 AM  
 INTERSECTION: N/S CANADA VALLEY  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

VEHICLE COUNTS													
15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	14	8	33	30	126	23	5	5	7	7	111	4	373
715-730	8	6	37	27	166	25	8	3	7	6	120	1	414
730-745	10	5	44	33	237	37	5	0	7	9	134	4	525
745-800	10	10	61	55	289	32	14	3	4	13	205	3	699
800-815	11	7	57	50	211	38	12	1	6	10	162	10	575
815-830	5	10	41	39	267	69	11	6	10	13	193	9	673
830-845	8	4	31	24	238	27	14	4	16	16	186	7	575
845-900	5	2	48	21	205	71	11	4	16	10	197	4	594
HOURLY TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-800	42	29	175	145	818	117	32	11	25	35	570	12	2011
715-815	39	28	199	165	903	132	39	7	24	38	621	18	2213
730-830	36	32	203	177	1004	176	42	10	27	45	694	26	2472
745-845	34	31	190	168	1005	166	51	14	36	52	746	29	2522
800-900	29	23	177	134	921	205	48	15	48	49	738	30	2417

AM PEAK HOUR: 745-845



PEDESTRIAN COUNTS					
15 MIN COUNTS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
700-715	0	3	1	0	4
715-730	0	0	0	0	0
730-745	0	1	0	0	1
745-800	0	0	0	0	0
800-815	0	0	0	0	0
815-830	1	1	0	0	2
830-845	0	0	1	0	1
845-900	0	0	0	0	0
HOURLY TOTALS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
PERIOD	LEG	LEG	LEG	LEG	TOTAL
700-800	0	4	1	0	5
715-815	0	1	0	0	1
730-830	1	2	0	0	3
745-845	1	1	1	0	3
800-900	1	1	1	0	3

BICYCLE COUNTS					
15 MIN COUNTS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
700-715	0	0	1	0	1
715-730	0	0	0	0	0
730-745	0	0	0	0	0
745-800	1	0	1	1	3
800-815	1	0	1	0	2
815-830	1	0	1	0	2
830-845	1	1	2	0	4
845-900	1	1	0	0	2
HOURLY TOTALS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
PERIOD	LEG	LEG	LEG	LEG	TOTAL
700-800	1	0	2	1	4
715-815	2	0	2	1	5
730-830	3	0	3	1	7
745-845	4	1	5	1	11
800-900	4	2	4	0	10

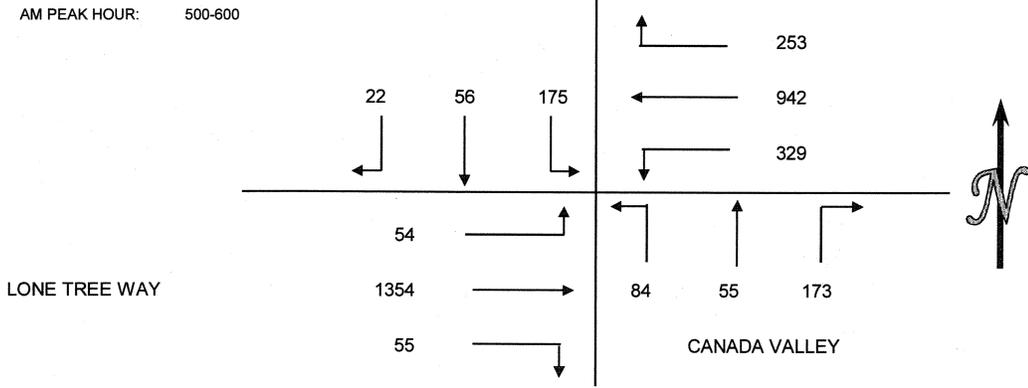
# WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S CANADA VALLEY  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

VEHICLE COUNTS													
15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	9	11	51	58	252	66	41	18	20	14	329	12	881
415-430	9	13	40	41	255	57	29	20	15	10	323	12	824
430-445	11	11	49	42	245	69	34	10	21	10	300	9	811
445-500	9	14	64	55	235	79	50	8	19	20	344	7	904
500-515	7	15	42	52	234	92	22	15	10	14	310	15	828
515-530	6	20	45	76	222	77	55	12	20	16	371	8	928
530-545	4	13	46	49	227	74	36	12	26	15	360	17	879
545-600	5	8	42	76	259	86	60	16	28	10	313	14	917
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	38	49	204	196	987	271	154	56	75	54	1296	40	3420
415-515	36	53	195	190	969	297	135	53	65	54	1277	43	3367
430-530	33	60	200	225	936	317	161	45	70	60	1325	39	3471
445-545	26	62	197	232	918	322	163	47	75	65	1385	47	3539
500-600	22	56	175	253	942	329	173	55	84	55	1354	54	3552



PEDESTRIAN COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	2	0	0	4	6
415-430	2	0	2	1	5
430-445	0	3	2	0	5
445-500	1	0	0	0	1
500-515	1	2	0	0	3
515-530	0	0	2	1	3
530-545	0	0	2	0	2
545-600	1	0	6	0	7
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	5	3	4	5	17
415-515	4	5	4	1	14
430-530	2	5	4	1	12
445-545	2	2	4	1	9
500-600	2	2	10	1	15

BICYCLE COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	0	0	0	0	0
415-430	0	0	0	0	0
430-445	0	0	0	0	0
445-500	0	0	0	1	1
500-515	0	0	2	0	2
515-530	0	0	0	0	0
530-545	0	0	2	0	2
545-600	0	0	0	0	0
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	0	0	0	1	1
415-515	0	0	2	1	3
430-530	0	0	2	1	3
445-545	0	0	4	1	5
500-600	0	0	4	0	4

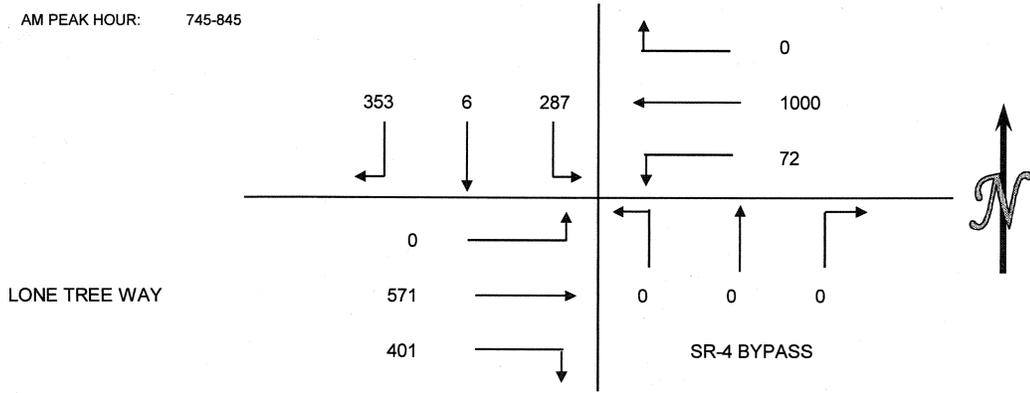
# WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 7:00 AM TO 9:00 AM  
 INTERSECTION: N/S SR-4 BYPASS  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

VEHICLE COUNTS													
15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	33	1	35	0	131	13	0	0	0	60	56	0	329
715-730	57	1	41	0	187	21	0	0	0	114	84	0	505
730-745	89	1	54	0	202	13	0	0	0	81	101	0	541
745-800	106	3	81	0	261	23	0	0	0	100	170	0	744
800-815	84	0	78	0	255	18	0	0	0	103	152	0	690
815-830	95	1	65	0	267	11	0	0	0	93	111	0	643
830-845	68	2	63	0	217	20	0	0	0	105	138	0	613
845-900	75	0	56	0	237	9	0	0	0	116	136	0	629
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-800	285	6	211	0	781	70	0	0	0	355	411	0	2119
715-815	336	5	254	0	905	75	0	0	0	398	507	0	2480
730-830	374	5	278	0	985	65	0	0	0	377	534	0	2618
745-845	353	6	287	0	1000	72	0	0	0	401	571	0	2690
800-900	322	3	262	0	976	58	0	0	0	417	537	0	2575



PEDESTRIAN COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-715	0	0	1	0	1
715-730	0	0	0	0	0
730-745	0	0	0	0	0
745-800	0	0	0	0	0
800-815	1	0	0	0	1
815-830	0	0	0	0	0
830-845	1	0	0	0	1
845-900	0	0	0	0	0
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-800	0	0	1	0	1
715-815	1	0	0	0	1
730-830	1	0	0	0	1
745-845	2	0	0	0	2
800-900	2	0	0	0	2

BICYCLE COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-715	0	0	0	0	0
715-730	0	0	0	0	0
730-745	1	0	0	0	1
745-800	1	0	0	0	1
800-815	1	0	1	0	2
815-830	0	0	1	0	1
830-845	1	0	0	0	1
845-900	2	0	0	0	2
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-800	2	0	0	0	2
715-815	3	0	1	0	4
730-830	3	0	2	0	5
745-845	3	0	2	0	5
800-900	4	0	2	0	6

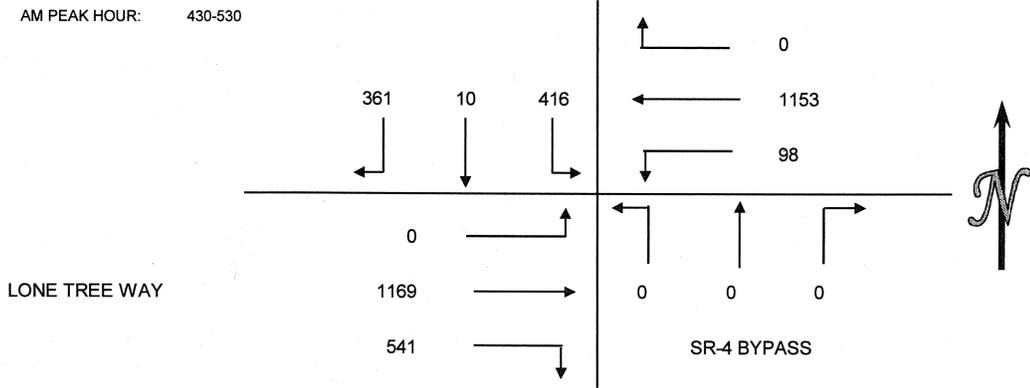
# WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIOD: 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S SR-4 BYPASS  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

VEHICLE COUNTS													
15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	84	2	80	0	322	35	0	0	0	129	285	0	937
415-430	83	3	125	0	280	35	0	0	0	141	266	0	933
430-445	88	0	109	0	300	33	0	0	0	111	245	0	886
445-500	84	4	102	0	260	18	0	0	0	156	306	0	930
500-515	97	3	122	0	289	22	0	0	0	125	287	0	945
515-530	92	3	83	0	304	25	0	0	0	149	331	0	987
530-545	97	3	93	0	261	35	0	0	0	102	293	0	884
545-600	88	1	113	0	330	31	0	0	0	91	270	0	924
hour totals	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	339	9	416	0	1162	121	0	0	0	537	1102	0	3686
415-515	352	10	458	0	1129	108	0	0	0	533	1104	0	3694
430-530	361	10	416	0	1153	98	0	0	0	541	1169	0	3748
445-545	370	13	400	0	1114	100	0	0	0	532	1217	0	3746
500-600	374	10	411	0	1184	113	0	0	0	467	1181	0	3740



PEDESTRIAN COUNTS					
15 MIN COUNTS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
400-415	4	1	0	0	5
415-430	0	0	0	0	0
430-445	0	0	0	0	0
445-500	2	0	1	0	3
500-515	0	0	0	0	0
515-530	0	0	0	0	0
530-545	4	0	1	0	5
545-600	1	0	1	0	2
hour totals	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
400-500	6	1	1	0	8
415-515	2	0	1	0	3
430-530	2	0	1	0	3
445-545	6	0	2	0	8
500-600	5	0	2	0	7

BICYCLE COUNTS					
15 MIN COUNTS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
400-415	0	0	0	0	0
415-430	0	0	0	0	0
430-445	0	0	0	0	0
445-500	0	0	1	0	1
500-515	0	0	0	0	0
515-530	0	0	0	0	0
530-545	0	0	2	0	2
545-600	0	0	1	0	1
hour totals	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
400-500	0	0	1	0	1
415-515	0	0	1	0	1
430-530	0	0	1	0	1
445-545	0	0	3	0	3
500-600	0	0	3	0	3

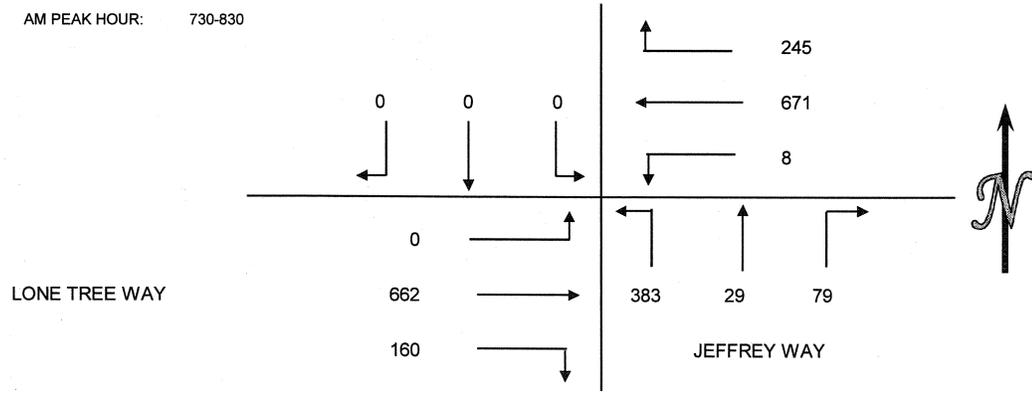
# WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: TUESDAY MAY 13, 2008  
 PERIOD: 7:00 AM TO 9:00 AM  
 INTERSECTION: N/S JEFFREY WAY  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

VEHICLE COUNTS													
15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	0	0	0	63	134	4	9	5	64	29	92	0	400
715-730	0	0	0	55	146	1	12	7	84	40	118	0	463
730-745	0	0	0	62	184	2	12	9	94	61	141	0	565
745-800	0	0	0	67	159	2	27	6	97	39	183	0	580
800-815	0	0	0	72	183	2	21	10	107	39	191	0	625
815-830	0	0	0	44	145	2	19	4	85	21	147	0	467
830-845	0	0	0	33	132	2	11	1	69	23	138	0	409
845-900	0	0	0	53	128	2	11	7	89	32	141	0	463
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-800	0	0	0	247	623	9	60	27	339	169	534	0	2008
715-815	0	0	0	256	672	7	72	32	382	179	633	0	2233
730-830	0	0	0	245	671	8	79	29	383	160	662	0	2237
745-845	0	0	0	216	619	8	78	21	358	122	659	0	2081
800-900	0	0	0	202	588	8	62	22	350	115	617	0	1964



PEDESTRIAN COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-715	0	0	0	0	0
715-730	0	0	0	0	0
730-745	0	0	0	0	0
745-800	0	0	0	0	0
800-815	0	0	0	0	0
815-830	1	0	0	0	1
830-845	1	0	0	0	1
845-900	0	1	0	0	1
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-800	0	0	0	0	0
715-815	0	0	0	0	0
730-830	1	0	0	0	1
745-845	2	0	0	0	2
800-900	2	1	0	0	3

BICYCLE COUNTS					
15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-715	0	0	1	0	1
715-730	0	0	0	0	0
730-745	1	0	0	0	1
745-800	1	0	0	0	1
800-815	1	0	1	0	2
815-830	1	0	1	0	2
830-845	0	0	0	0	0
845-900	3	0	1	0	4
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
700-800	2	0	1	0	3
715-815	3	0	1	0	4
730-830	4	0	2	0	6
745-845	3	0	2	0	5
800-900	5	0	3	0	8

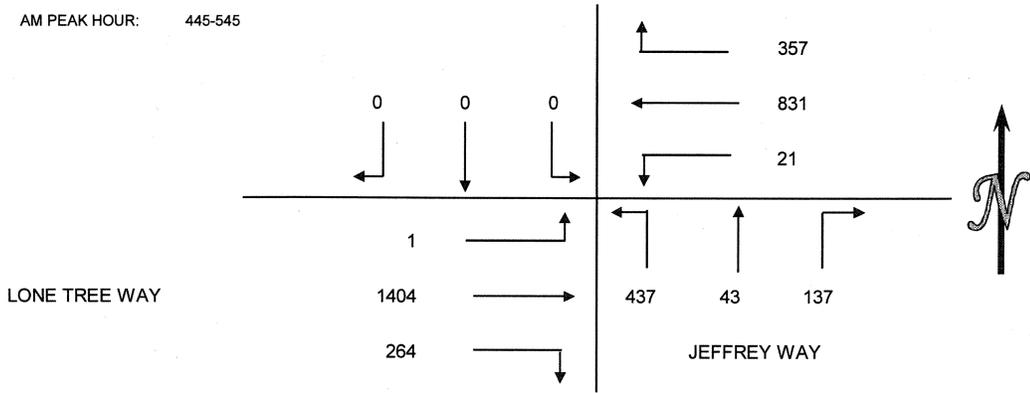
# WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

## INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: KIMLEY -HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIOCH TRAFFIC COUNTS  
 DATE: TUESDAY MAY 13, 2008  
 PERIOD: 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S JEFFREY WAY  
 E/W LONE TREE WAY  
 CITY: ANTIOCH

VEHICLE COUNTS													
15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	0	0	0	66	215	4	24	6	125	63	359	0	862
415-430	0	0	0	85	226	9	21	10	116	63	355	1	886
430-445	0	0	0	70	207	9	20	9	87	71	307	0	780
445-500	0	0	0	78	199	6	36	15	104	72	331	0	841
500-515	0	0	0	100	236	3	45	10	135	61	368	0	958
515-530	0	0	0	79	191	8	25	8	96	58	336	1	802
530-545	0	0	0	100	205	4	31	10	102	73	369	0	894
545-600	0	0	0	95	183	6	35	8	108	51	350	0	836
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	0	0	0	299	847	28	101	40	432	269	1352	1	3369
415-515	0	0	0	333	868	27	122	44	442	267	1361	1	3465
430-530	0	0	0	327	833	26	126	42	422	262	1342	1	3381
445-545	0	0	0	357	831	21	137	43	437	264	1404	1	3495
500-600	0	0	0	374	815	21	136	36	441	243	1423	1	3490



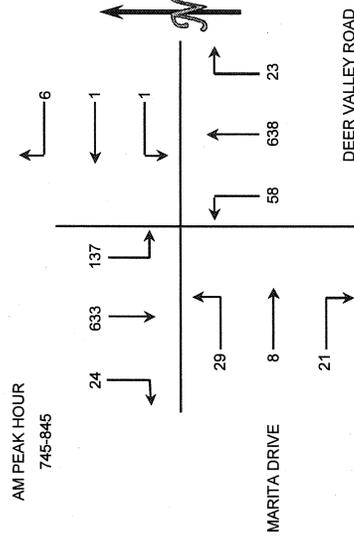
PEDESTRIAN COUNTS					
15 MIN COUNTS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
400-415	3	0	0	0	3
415-430	1	0	0	0	1
430-445	0	0	1	0	1
445-500	1	1	0	0	2
500-515	1	0	0	0	1
515-530	0	0	1	0	1
530-545	0	0	1	0	1
545-600	5	0	0	0	5
PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
400-500	5	1	1	0	7
415-515	3	1	1	0	5
430-530	2	1	2	0	5
445-545	2	1	2	0	5
500-600	6	0	2	0	8

BICYCLE COUNTS					
15 MIN COUNTS	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
400-415	0	0	0	0	0
415-430	0	0	0	0	0
430-445	1	0	0	0	1
445-500	0	0	3	0	3
500-515	0	0	0	0	0
515-530	0	0	0	0	0
530-545	0	0	0	0	0
545-600	0	0	1	0	1
PERIOD	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	TOTAL
400-500	1	0	3	0	4
415-515	1	0	3	0	4
430-530	1	0	3	0	4
445-545	0	0	3	0	3
500-600	0	0	1	0	1

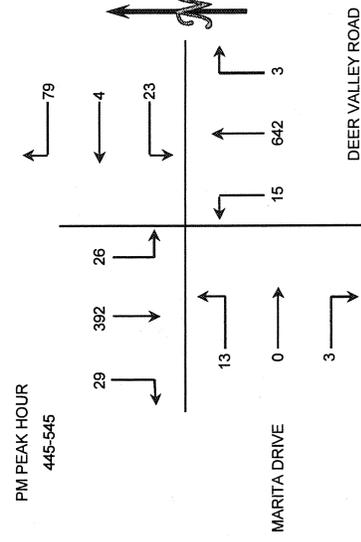
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIPOCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S DEER VALLEY ROAD AND MARITA DRIVE  
 CITY: EW ANTIPOCH

15 MIN COUNTS													
7:00 AM TO 9:00 AM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-716	3	72	17	0	0	0	3	67	0	0	0	0	165
715-730	1	111	32	1	0	1	12	94	1	2	2	2	259
730-745	1	131	40	0	0	0	7	139	9	1	1	10	339
745-800	4	157	54	0	1	0	10	193	18	5	4	8	454
800-816	8	169	24	2	0	0	3	188	21	5	1	6	427
815-830	5	151	31	2	0	0	7	125	10	4	3	10	348
830-845	7	156	28	2	0	1	3	132	9	7	0	5	350
845-900	7	129	20	3	0	3	9	174	24	4	1	10	384
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-800	9	471	143	1	1	1	32	493	28	8	7	23	1217
715-815	14	568	150	3	1	1	32	614	49	13	8	26	1479
730-830	18	608	149	4	1	0	27	645	58	15	9	34	1568
745-845	24	633	137	6	1	1	23	638	58	21	8	29	1579
800-900	27	605	103	9	0	4	22	619	64	20	5	31	1509



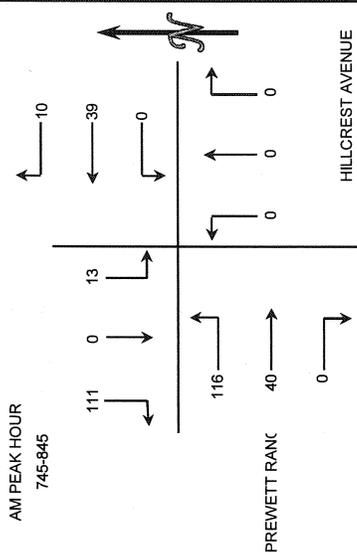
15 MIN COUNTS													
4:00 PM TO 6:00 PM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-416	8	119	16	17	1	6	6	156	1	1	0	2	333
415-430	5	103	6	10	1	2	3	131	4	1	0	5	271
430-445	6	80	7	19	2	4	1	167	2	0	1	3	292
445-500	5	102	3	15	2	6	1	145	3	0	0	3	285
500-515	8	97	5	26	1	11	0	169	2	1	0	3	323
515-530	6	99	7	19	0	1	2	152	6	0	0	3	295
530-545	10	94	11	19	1	5	0	176	4	2	0	4	326
545-600	11	110	9	19	0	4	0	122	4	0	0	5	284
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	24	404	32	61	6	18	11	599	10	2	1	13	1181
415-515	24	382	21	70	6	23	5	612	11	2	1	14	1171
430-530	25	378	22	79	5	22	4	633	13	1	1	12	1195
445-545	29	392	26	79	4	23	3	642	15	3	0	13	1229
500-600	35	400	32	83	2	21	2	619	16	3	0	15	1228



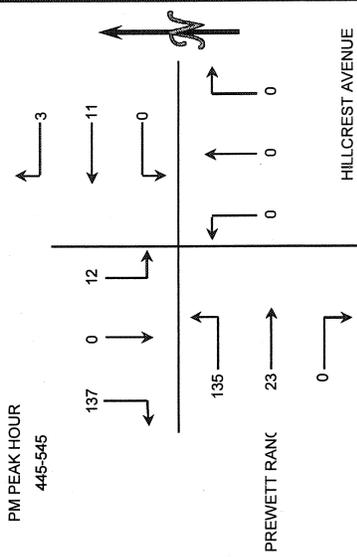
## INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.  
 PROJECT: ANTIQCH TRAFFIC COUNTS  
 DATE: THURSDAY MAY 15, 2008  
 PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM  
 INTERSECTION: N/S HILLCREST AVENUE AND PREWETT RANCH DRIVE  
 E/W PREWETT RANCH DRIVE  
 CITY: ANTIQCH

7:00 AM TO 9:00 AM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-716	7	0	0	2	8	0	0	0	0	0	0	14	31
715-730	10	0	0	4	5	0	0	0	0	0	1	21	41
730-745	19	0	0	2	11	0	0	0	0	0	3	15	50
745-800	33	0	3	5	13	0	0	0	0	0	4	27	85
800-815	33	0	6	1	15	0	0	0	0	0	14	32	101
815-830	25	0	2	2	8	0	0	0	0	0	11	31	79
830-845	20	0	2	2	3	0	0	0	0	0	11	26	64
845-900	14	0	3	0	4	0	0	0	0	0	8	22	51
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
700-800	69	0	3	13	37	0	0	0	0	0	8	77	207
716-815	95	0	9	12	44	0	0	0	0	0	22	95	277
730-830	110	0	11	10	47	0	0	0	0	0	32	105	315
745-845	111	0	13	10	39	0	0	0	0	0	40	116	329
800-900	92	0	13	5	30	0	0	0	0	0	44	111	295



4:00 PM TO 6:00 PM													
PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	
	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	30	0	0	1	0	0	0	0	0	0	8	36	75
415-430	20	0	4	0	4	0	0	0	0	0	7	26	61
430-445	31	0	4	4	5	0	0	0	0	0	10	31	85
445-500	35	0	4	1	5	0	0	0	0	0	5	30	80
500-515	42	0	2	0	2	0	0	0	0	0	5	38	89
515-530	23	0	4	2	4	0	0	0	0	0	6	27	66
530-545	37	0	2	0	0	0	0	0	0	0	7	40	86
545-600	31	0	6	3	6	0	0	0	0	0	8	24	78
<b>HOUR TOTALS</b>													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
400-500	116	0	12	6	14	0	0	0	0	0	30	123	301
415-515	128	0	14	5	16	0	0	0	0	0	27	125	315
430-530	131	0	14	7	16	0	0	0	0	0	26	126	320
445-545	137	0	12	3	11	0	0	0	0	0	23	135	321
500-600	133	0	14	5	12	0	0	0	0	0	26	129	319





**EXISTING CONDITIONS  
(TRAFFIX & SYNCRHO)**



Anioch Wal-Mart Expansion  
Scenario Report

Scenario: Existing AM  
 Command: None  
 Volume: Existing AM  
 Geometry: Existing  
 Impact Fee: Default Impact Fee  
 Trip Generation: None  
 Paths: Near-Term  
 Routes: Default Path  
 Configuration: Default Route  
 Default Configuration

Anioch Wal-Mart Expansion  
Impact Analysis Report  
Level Of Service

Intersection	Base Del/V LOS Veh	Future Del/V LOS Veh	Change in
# 1 Deer Valley Rd/ Country Hills	A xxxxx 0.435	A xxxxx 0.435	+ 0.000 V/C
# 2 Hillcrest Avenue/Laurel Road	A xxxxx 0.311	A xxxxx 0.311	+ 0.000 V/C
# 3 Hillcrest Avenue/Country Hills	A xxxxx 0.353	A xxxxx 0.353	+ 0.000 V/C
# 4 Hillcrest Avenue/Driveway	B 13.0 0.000	B 13.0 0.000	+ 0.000 D/V
# 5 Hillcrest Avenue/South Drivewa	B 10.1 0.000	B 10.1 0.000	+ 0.000 D/V
# 6 Lone Tree Way/Mokelumne Dr	B xxxxx 0.627	B xxxxx 0.627	+ 0.000 V/C
# 7 Lone Tree Way/Deer Valley Plaz	A xxxxx 0.352	A xxxxx 0.352	+ 0.000 V/C
# 8 Lone Tree Way/Deer Valley Rd	B xxxxx 0.629	B xxxxx 0.629	+ 0.000 V/C
# 9 Lone Tree Way/Deer Valley HS	A xxxxx 0.465	A xxxxx 0.465	+ 0.000 V/C
# 10 Lone Tree Way/Sagebrush Drive	A xxxxx 0.374	A xxxxx 0.374	+ 0.000 V/C
# 11 Lone Tree Way/Williamson Ranch	A xxxxx 0.338	A xxxxx 0.338	+ 0.000 V/C
# 12 Lone Tree Way/Indian Hill Dr/W	A xxxxx 0.423	A xxxxx 0.423	+ 0.000 V/C
# 13 Lone Tree Way/Driveway	B 10.8 0.000	B 10.8 0.000	+ 0.000 D/V
# 14 Lone Tree Way/Hillcrest Avenue	A xxxxx 0.396	A xxxxx 0.396	+ 0.000 V/C
# 15 Lone Tree Way/Vista Grande Dri	A xxxxx 0.386	A xxxxx 0.386	+ 0.000 V/C
# 16 Lone Tree Way/Heidorn Ranch Ro	A xxxxx 0.224	A xxxxx 0.224	+ 0.000 V/C
# 17 Lone Tree Way/Canada Valley Ro	A xxxxx 0.344	A xxxxx 0.344	+ 0.000 V/C
# 18 Lone Tree Way/SB SR-4 Bypass	A xxxxx 0.416	A xxxxx 0.416	+ 0.000 V/C
# 19 Lone Tree Way/NB SR-4 Bypass (	A xxxxx 0.265	A xxxxx 0.265	+ 0.000 V/C
# 20 Deer Valley Road/Marita Drive	A xxxxx 0.293	A xxxxx 0.293	+ 0.000 V/C
# 21 Hillcrest Ave/Prewett Ranch Dr	A 8.3 0.176	A 8.3 0.176	+ 0.000 V/C

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 Anioch Wal-Mart Expansion  
 -----  
 Level Of Service Computation Report  
 CATALOS Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #1 Deer Valley Rd/ Country Hills Dr  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.435  
 Loss Time (sec): 9 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 33 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Deer Valley Road Country Hills Drive  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Protected Protected Protected Permitted Permitted  
 Rights: Include Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Lanes: 1 0 1 1 0 1 0 1 0 1 0 0 1 0 0 1 0 1 0  
 -----  
 Volume Module:  
 Base Vol: 10 381 82 77 685 105 62 63 11 151 156 125  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 10 381 82 77 685 105 62 63 11 151 156 125  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 10 381 82 77 685 105 62 63 11 151 156 125  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 10 381 82 77 685 105 62 63 11 151 156 125  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 10 381 82 77 685 105 62 63 11 151 156 125  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
 RTOR Vol: 10 381 82 77 685 105 62 63 11 151 156 125  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 10 381 82 77 685 105 62 63 11 151 156 125  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 1.65 0.35 1.00 1.73 0.27 1.00 0.85 0.15 1.00 0.56 0.44  
 Final Sat.: 1720 2831 609 1720 2983 457 1720 1464 256 1720 955 765  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.01 0.13 0.13 0.04 0.23 0.23 0.04 0.04 0.04 0.04 0.09 0.16  
 Crit Volume: 10 395 62  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

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 Anioch Wal-Mart Expansion  
 -----  
 Level Of Service Computation Report  
 CATALOS Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #2 Hillcrest Avenue/Laurel Road  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.311  
 Loss Time (sec): 9 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 27 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Hillcrest Avenue Laurel Road  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Protected Protected Protected Permitted Permitted  
 Rights: Ignore Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Lanes: 1 0 1 1 1 1 0 1 1 0 1 0 1 0 1 0 1 0 1  
 -----  
 Volume Module:  
 Base Vol: 67 372 25 74 377 80 150 50 100 48 67 164  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 67 372 25 74 377 80 150 50 100 48 67 164  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 67 372 25 74 377 80 150 50 100 48 67 164  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 67 372 25 74 377 80 150 50 100 48 67 164  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 67 372 25 74 377 80 150 50 100 48 67 164  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
 RTOR Vol: 67 372 25 74 377 80 150 50 100 48 67 90  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 67 372 25 74 377 80 150 50 100 48 67 90  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
 Adjustment: 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 2.00 1.00 1.00 1.65 0.35 1.00 0.33 0.67 1.00 1.00 1.00  
 Final Sat.: 1720 3440 1563 1720 2838 602 1720 573 1147 1720 1720 1720  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.04 0.11 0.02 0.04 0.13 0.13 0.09 0.09 0.09 0.03 0.04 0.05  
 Crit Volume: 67 229 150  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*





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 Anioch Wal-Mart Expansion  
 -----  
 Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #7 Lone Tree Way/Deer Valley Plaza Lone Tree Way  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.352  
 Loss time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 22 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Deer Valley Plaza Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Protected Protected Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Lanes: 1 0 0 1 0 0 0 0 0 0 2 0 1 1 0 2 0 0  
 -----  
 Volume Module:  
 Base Vol: 75 0 35 0 0 0 0 796 67 42 1060 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 75 0 35 0 0 0 0 796 67 42 1060 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 75 0 35 0 0 0 0 796 67 42 1060 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 75 0 35 0 0 0 0 796 67 42 1060 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 75 0 35 0 0 0 0 796 67 42 1060 0  
 RTOR Reduct: 0 0 35 0 0 0 0 0 0 0 0 0  
 RTOR Vol: 75 0 0 0 0 0 0 0 796 0 42 1060 0  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 75 0 0 0 0 0 0 796 0 42 1060 0  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 2.00 1.00 1.00 2.00 0.00  
 Final Sat.: 1720 0 1720 0 0 0 0 3440 1720 1720 3440 0  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.04 0.00 0.00 0.00 0.00 0.00 0.00 0.23 0.00 0.02 0.31 0.00  
 Crit Volume: 75 0 0 0 0 0 0 530 0 0 0 0  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

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 Anioch Wal-Mart Expansion  
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 Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #8 Lone Tree Way/Deer Valley Rd Lone Tree Way  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.629  
 Loss time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 61 Level Of Service: B  
 \*\*\*\*\*  
 Street Name: Deer Valley Road Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Protected Protected Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Lanes: 2 0 1 1 0 1 0 1 1 0 1 0 2 0 1 1 0 2 0 1  
 -----  
 Volume Module:  
 Base Vol: 279 245 111 353 457 17 35 644 157 185 833 185  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 279 245 111 353 457 17 35 644 157 185 833 185  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 279 245 111 353 457 17 35 644 157 185 833 185  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 279 245 111 353 457 17 35 644 157 185 833 185  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 279 245 111 353 457 17 35 644 157 185 833 185  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 153 0  
 RTOR Vol: 279 245 111 353 457 17 35 644 4 185 833 0  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 279 245 111 353 457 17 35 644 4 185 833 0  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 2.00 1.38 0.62 1.00 1.93 0.07 1.00 2.00 1.00 1.00 2.00 1.00  
 Final Sat.: 3000 2271 1029 1650 3182 118 1650 3300 1650 1650 3300 1650  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.09 0.11 0.11 0.21 0.14 0.14 0.02 0.20 0.00 0.11 0.25 0.00  
 Crit Volume: 178 353 322 185  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*



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 Anioch Wal-Mart Expansion  
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 Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #11 Lone Tree Way/Williamson Ranch Plaza (OSH)  
 \*\*\*\*\*  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.338  
 Loss time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 22 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Williamson Ranch Plaza (OSH) Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Protected Protected Protected Protected Protected Protected  
 Rights: Include Include Include Include Include Include  
 Min. Green: 0  
 Lanes: 0 0 0 0 1 0 0 0 1 1 0 2 0 0 1 1 0 2 0 0 1 1 0 2 0 1  
 -----  
 Volume Module:  
 Base Vol: 0 0 0 11 0 40 55 689 0 0 1029 20  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 11 0 40 55 689 0 0 1029 20  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 11 0 40 55 689 0 0 1029 20  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 0 0 0 11 0 40 55 689 0 0 1029 20  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 0 0 0 11 0 40 55 689 0 0 1029 20  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 11  
 RTOR Vol: 0 0 0 11 0 40 55 689 0 0 1029 9  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 0 0 0 11 0 40 55 689 0 0 1029 9  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 0.00 0.00 0.00 1.00 0.00 1.00 1.00 2.00 0.00 0.00 2.00 1.00  
 Final Sat.: 0 0 0 1720 0 1720 1720 3440 0 0 3440 1720  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.00 0.00 0.00 0.01 0.00 0.00 0.03 0.20 0.00 0.00 0.30 0.01  
 Crit Volume: 0 11 55 514 514  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

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 Anioch Wal-Mart Expansion  
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 Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #12 Lone Tree Way/Indian Hill Dr/Williamson Ranch Plaza (Wal-Mart, OSH)  
 \*\*\*\*\*  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.423  
 Loss time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 40 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Indian Hill Dr/Williamson Ranch Pl Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Split Phase Split Phase Protected Protected Protected  
 Rights: Include Include Include Include Include Include  
 Min. Green: 0  
 Lanes: 1 0 0 1 0 2 0 0 1 0 1 0 2 0 1 1 0 2 0 1 1 0 2 0 1  
 -----  
 Volume Module:  
 Base Vol: 9 15 58 20 1 21 45 574 5 25 1116 34  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 9 15 58 20 1 21 45 574 5 25 1116 34  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 9 15 58 20 1 21 45 574 5 25 1116 34  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 9 15 58 20 1 21 45 574 5 25 1116 34  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 9 15 58 20 1 21 45 574 5 25 1116 34  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 11  
 RTOR Vol: 9 15 58 20 1 21 45 574 0 25 1116 23  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 9 15 58 20 1 21 45 574 0 25 1116 23  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 0.21 0.79 2.00 0.05 0.95 1.00 2.00 1.00 1.00 2.00 1.00  
 Final Sat.: 1650 339 1311 3000 75 1575 1650 3300 1650 1650 3300 1650  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.01 0.04 0.04 0.01 0.01 0.01 0.03 0.17 0.00 0.02 0.34 0.01  
 Crit Volume: 73 45 45 45 45 45 45 45 45 45 45 45  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*



Anioch Wal-Mart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

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Intersection #15 Lone Tree Way/Vista Grande Drive

Cycle (sec): 130  
Loss Time (sec): 9 (Y+R=4.0 sec)  
Optimal Cycle: 30  
Critical Vol./Cap.(X): 0.386  
Average Delay (sec/veh): xxxxxx  
Level Of Service: A

Street Name: Vista Grande Drive Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Permitted Permitted Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Lanes: 1 0 0 1 0 0 1 0 1 0 2 0 1 1 0 2 0 1

Volume Module:  
Base Vol: 39 14 123 24 16 41 20 693 30 59 967 37  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 39 14 123 24 16 41 20 693 30 59 967 37  
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 39 14 123 24 16 41 20 693 30 59 967 37  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 39 14 123 24 16 41 20 693 30 59 967 37  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 39 14 123 24 16 41 20 693 30 59 967 37  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 39 14 123 24 16 41 20 693 0 59 967 13  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 39 14 123 24 16 41 20 693 0 59 967 13

Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.10 0.90 1.00 0.28 0.72 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 1720 176 1544 1720 483 1237 1720 3440 1720 1720 3440 1720  
Capacity Analysis Module:  
Vol/Sat: 0.02 0.08 0.08 0.01 0.03 0.03 0.01 0.20 0.00 0.03 0.28 0.01  
Crit Volume: 137 24 20 484  
Crit Moves: \*\*\*\*

Anioch Wal-Mart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #16 Lone Tree Way/Heidorn Ranch Road

Cycle (sec): 120  
Loss Time (sec): 12 (Y+R=4.0 sec)  
Optimal Cycle: 29  
Critical Vol./Cap.(X): 0.224  
Average Delay (sec/veh): xxxxxx  
Level Of Service: A

Street Name: Heidorn Ranch Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Split Phase Split Phase Protected Protected  
Rights: Include Include Include Include  
Min. Green: 2 0 1 0 1 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:  
Base Vol: 23 0 23 10 2 19 4 741 40 48 987 9  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 23 0 23 10 2 19 4 741 40 48 987 9  
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 23 0 23 10 2 19 4 741 40 48 987 9  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 23 0 23 10 2 19 4 741 40 48 987 9  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 23 0 23 10 2 19 4 741 40 48 987 9  
RTOR Reduct: 0 0 23 0 0 0 0 0 0 0 0 0  
RTOR Vol: 23 0 0 10 2 19 4 741 40 48 987 9  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 23 0 0 10 2 19 4 741 40 48 987 9

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 2.00 1.00 1.00 1.00 0.10 0.90 1.00 2.85 0.15 1.00 2.97 0.03  
Final Sat.: 3000 1650 1650 1650 157 1493 1650 4696 254 1650 4905 45  
Capacity Analysis Module:  
Vol/Sat: 0.01 0.00 0.00 0.01 0.01 0.01 0.00 0.16 0.16 0.03 0.20 0.20  
Crit Volume: 12 21 4 332  
Crit Moves: \*\*\*\*

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 Anioch Wal-Mart Expansion  
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 Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)  
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 Anioch Wal-Mart Expansion  
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 Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)  
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Intersection #17 Lone Tree Way/Canada Valley Road  
 \*\*\*\*\*  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.344  
 Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 35 Level Of Service: A  
 \*\*\*\*\*

Intersection #18 Lone Tree Way/SB SR-4 Bypass  
 \*\*\*\*\*  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.416  
 Loss Time (sec): 9 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 40 Level Of Service: A  
 \*\*\*\*\*

Street Name: Canada Valley Road Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Protected Protected Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Lanes: 2 0 0 1 1 1 0 1 0 1 1 0 3 0 1 2 0 3 0 1  
 \*\*\*\*\*

Street Name: SB SR-4 Bypass Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Protected Protected Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Lanes: 0 0 0 0 0 1 1 0 0 1 0 0 3 0 1 2 0 3 0 0  
 \*\*\*\*\*

Volume Module:  
 Base Vol: 36 14 51 190 31 34 29 746 52 166 1005 168  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 36 14 51 190 31 34 29 746 52 166 1005 168  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 36 14 51 190 31 34 29 746 52 166 1005 168  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 36 14 51 190 31 34 29 746 52 166 1005 168  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 36 14 51 190 31 34 29 746 52 166 1005 168  
 RTOR Reduct: 0 0 51 0 0 29 0 0 20 0 0 168  
 RTOR Vol: 36 14 0 190 31 5 29 746 32 166 1005 0  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 36 14 0 190 31 5 29 746 32 166 1005 0  
 \*\*\*\*\*

Volume Module:  
 Base Vol: 0 0 0 287 6 353 0 571 401 72 1000 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 287 6 353 0 571 401 72 1000 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 287 6 353 0 571 401 72 1000 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 0 0 0 287 6 353 0 571 401 72 1000 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 0 0 0 287 6 353 0 571 401 72 1000 0  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
 RTOR Vol: 0 0 0 287 6 353 0 571 401 72 1000 0  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 0 0 0 287 6 353 0 571 401 72 1000 0  
 \*\*\*\*\*

Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 0.91 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 2.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.00 3.00 1.00  
 Final Sat.: 3000 1650 1500 1650 1650 1650 1650 1650 1650 3000 4950 1650  
 \*\*\*\*\*

Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 0.00 0.00 0.00 1.96 0.04 1.00 0.00 0.00 3.00 1.00 2.00 3.00  
 Final Sat.: 0 0 0 2938 68 1650 0 4950 1650 3000 4950 0  
 \*\*\*\*\*

Capacity Analysis Module:  
 Vol/Sat: 0.01 0.01 0.00 0.12 0.02 0.00 0.02 0.15 0.02 0.06 0.20 0.00  
 Crit Volume: 14 190 29 335  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

Capacity Analysis Module:  
 Vol/Sat: 0.00 0.00 0.00 0.10 0.09 0.21 0.00 0.12 0.24 0.02 0.20 0.00  
 Crit Volume: 0 353 190 333  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

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 Anioch Wal-Mart Expansion  
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 Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #19 Lone Tree Way/NB SR-4 Bypass (Jeffrey Way)  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.265  
 Loss Time (sec): 25 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 25 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: NB SR-4 Bypass (Jeffrey Way) Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Split Phase Split Phase Permitted Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Lanes: 1 1 0 0 1 0 0 0 0 0 0 3 0 1 1 0 3 0 1  
 -----  
 Volume Module:  
 Base Vol: 383 29 79 0 0 0 0 662 160 8 671 245  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 383 29 79 0 0 0 0 662 160 8 671 245  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 383 29 79 0 0 0 0 662 160 8 671 245  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 383 29 79 0 0 0 0 662 160 8 671 245  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 383 29 79 0 0 0 0 662 160 8 671 245  
 RTOR Reduct: 0 0 8 0 0 0 0 0 0 0 160 0 0  
 RTOR Vol: 383 29 71 0 0 0 0 662 0 8 671 245  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 383 29 71 0 0 0 0 662 0 8 671 245  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
 Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.86 0.14 1.00 0.00 0.00 0.00 0.00 3.00 1.00 1.00 3.00 1.00  
 Final Sat.: 2907 242 1720 0 0 0 0 5160 1720 1720 5160 1720  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.13 0.12 0.04 0.00 0.00 0.00 0.00 0.13 0.00 0.00 0.13 0.14  
 Crit Volume: 206 0 221 8  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

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 Anioch Wal-Mart Expansion  
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 Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #20 Deer Valley Road/Marita Drive  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.293  
 Loss Time (sec): 9 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 26 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Deer Valley Road Marita Drive  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Protected Protected Protected Permitted Permitted  
 Rights: Include Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Lanes: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0  
 -----  
 Volume Module:  
 Base Vol: 58 638 23 137 633 24 29 8 21 1 1 6  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 58 638 23 137 633 24 29 8 21 1 1 6  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 58 638 23 137 633 24 29 8 21 1 1 6  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 58 638 23 137 633 24 29 8 21 1 1 6  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 58 638 23 137 633 24 29 8 21 1 1 6  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
 RTOR Vol: 58 638 23 137 633 24 29 8 21 1 1 6  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 58 638 23 137 633 24 29 8 21 1 1 6  
 -----  
 Saturation Flow Module:  
 Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 1.93 0.07 1.00 1.93 0.07 1.00 0.28 0.72 1.00 0.14 0.86  
 Final Sat.: 1720 3320 120 1720 3314 126 1720 474 1246 1720 246 1474  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.03 0.19 0.19 0.08 0.19 0.19 0.02 0.02 0.02 0.00 0.00 0.00  
 Crit Volume: 331 137 29  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

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Anioch Wal-Mart Expansion  
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Level Of Service Computation Report  
2000 HCM 4-Way Stop Method (Future Volume Alternative)  
\*\*\*\*\*  
Intersection #21 Hillcrest Ave/Prewett Ranch Dr  
Cycle (sec): 100 Critical Vol./Cap.(X): 0.176  
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 8.3  
Optimal Cycle: 0 Level Of Service: A  
\*\*\*\*\*

Street Name: Hillcrest Ave Prewett Dr  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Stop Sign Stop Sign Stop Sign Stop Sign  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Lanes: 1 0 0 1 0 0 0 1 0 0 1 0 1 0 0 1 0 0

Volume Module:  
Base Vol: 0 0 0 13 0 111 116 40 0 0 39 10  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 0 0 0 13 0 111 116 40 0 0 39 10  
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 0 0 0 13 0 111 116 40 0 0 39 10  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 0 0 0 13 0 111 116 40 0 0 39 10  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 0 0 0 13 0 111 116 40 0 0 39 10  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
M/F Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 0 0 0 13 0 111 116 40 0 0 39 10

Saturation Flow Module:  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 1.00 0.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 0.80 0.20  
Final Sat: 614 671 0 630 0 798 661 727 0 645 581 149

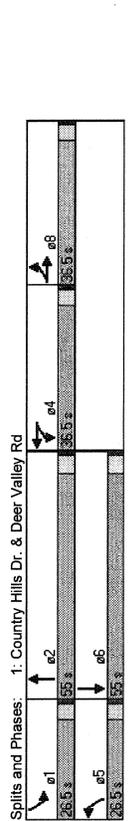
Capacity Analysis Module:  
Vol/Sat: 0.00 0.00 xxxxx 0.02 xxxxx 0.14 0.18 0.06 xxxxx 0.00 0.07 0.07  
Crit Moves: \*\*\*\*\*  
Delay/Veh: 0.0 0.0 0.0 8.4 0.0 7.7 9.2 7.8 0.0 0.0 7.8 7.8  
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
AdjDel/Veh: 0.0 0.0 0.0 8.4 0.0 7.7 9.2 7.8 0.0 0.0 7.8 7.8  
LOS by Move: \* \* \* A \* A A A \* \* A A  
ApproachDel: xxxxxx 7.8 8.8 7.8  
Delay Adj: xxxxxx 1.00 1.00 1.00  
ApprAdjDel: xxxxxx 7.8 8.8 7.8  
LOS by Appr: \* A A A  
AllWayAVGQ: 0.0 0.0 0.0 0.5 0.0 3.7 5.1 1.4 1.4 0.0 1.7 1.7  
\*\*\*\*\*  
Note: Queue reported is the distance per lane in feet.  
\*\*\*\*\*

1: Country Hills Dr. & Deer Valley Rd  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1822	0	1770	1724	0	1770	3396	0	1770	3428	0
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Flt Permitted	1765	1822	0	1770	1724	0	1741	3396	0	1729	3428	0
Satd. Flow (perm)	5	24	0	24	18	0	18	361	82	77	685	105
Satd. Flow (RTOR)	62	63	11	151	156	125	10	351	82	77	685	105
Volume (vph)	75	89	0	184	360	0	13	583	0	93	952	0
Lane Group Flow (vph)	Split											
Turn Type	Split											
Permitted Phases	Split											
Protected Phases	Split											
Total Split (s)	36.5	36.5	0.0	36.5	36.5	0.0	26.5	55.0	0.0	26.5	55.0	0.0
Act Effct Green (s)	11.6	11.6	0.0	25.8	25.8	0.0	6.7	28.3	0.0	6.7	28.3	0.0
Actuated g/C Ratio	0.14	0.14	0.0	0.31	0.31	0.0	0.10	0.34	0.0	0.10	0.34	0.0
v/c Ratio	0.31	0.35	0.0	0.36	0.66	0.0	0.08	0.51	0.0	0.07	0.64	0.0
Control Delay	45.4	44.0	0.0	30.8	35.2	0.0	50.2	26.8	0.0	45.9	23.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	44.0	0.0	30.8	35.2	0.0	50.2	26.8	0.0	45.9	23.5	0.0
LOS	D C D C D C D C D C D C											
Approach Delay	44.7											
Approach LOS	D C C C											
Queue Length 50th (ft)	36	40	0	76	147	0	6	135	0	44	186	0
Queue Length 95th (ft)	95	106	0	169	297	0	27	203	0	113	344	0
Infernal Link Dist. (ft)	50	308	0	274	860	0	150	860	0	150	220	0
Turn Bay Length (ft)	586	607	0	687	693	0	431	1727	0	462	1885	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.15	0.0	0.28	0.52	0.0	0.03	0.34	0.0	0.20	0.51	0.0

Intersection Summary  
 Cycle Length: 154.5  
 Actuated Cycle Length: 83.6  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 39.2  
 Intersection Signal Delay: 39.2  
 Intersection Signal Delay: 39.2  
 Intersection LOS: C  
 Intersection Capacity Utilization: 59.6%  
 Analysis Period (min): 15



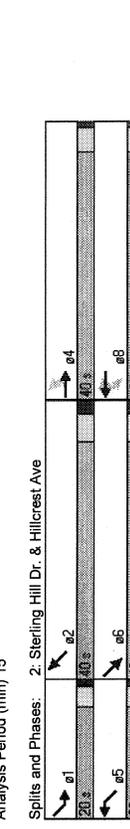
Splits and Phases: 1: Country Hills Dr. & Deer Valley Rd

2: Sterling Hill Dr. & Hillcrest Ave  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SEL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1640	0	1770	1863	1563	1770	3419	0	1770	3502	0
Satd. Flow (prot)	0.907	0.907	0	0.907	0.907	0.907	0.907	0.907	0	0.907	0.907	0
Flt Permitted	1312	1640	0	990	1863	1563	1766	3419	0	1746	3502	0
Satd. Flow (perm)	115	189	0	189	189	29	29	29	0	8	8	0
Satd. Flow (RTOR)	150	50	100	48	67	164	74	377	80	67	372	25
Volume (vph)	208	208	0	55	77	189	85	525	0	88	522	0
Lane Group Flow (vph)	Perm Prot											
Turn Type	Perm Prot											
Permitted Phases	Perm Prot											
Protected Phases	Perm Prot											
Total Split (s)	40.0	40.0	0.0	40.0	40.0	20.0	40.0	20.0	0.0	20.0	40.0	0.0
Act Effct Green (s)	22.3	22.3	0.0	22.3	22.3	10.9	22.3	10.9	0.0	11.1	22.3	0.0
Actuated g/C Ratio	0.22	0.22	0.0	0.22	0.22	0.11	0.22	0.11	0.0	0.11	0.22	0.0
v/c Ratio	0.71	0.46	0.0	0.25	0.19	0.38	0.44	0.26	0.0	0.45	0.26	0.0
Control Delay	48.3	17.0	0.0	32.0	30.0	6.4	48.0	11.7	0.0	48.1	12.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	17.0	0.0	32.0	30.0	6.4	48.0	11.7	0.0	48.1	12.1	0.0
LOS	D B B C C C A D D B D B											
Approach Delay	32.6											
Approach LOS	C B B B											
Queue Length 50th (ft)	125	50	0	29	41	0	51	74	0	53	77	0
Queue Length 95th (ft)	137	66	0	55	68	44	92	136	0	82	118	0
Infernal Link Dist. (ft)	468	190	0	115	115	140	140	140	0	220	220	0
Turn Bay Length (ft)	75	190	0	190	366	689	301	2050	0	170	2095	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.31	0.0	0.15	0.11	0.27	0.28	0.26	0.0	0.29	0.25	0.0

Intersection Summary  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 26 (26%), Referenced to phase 2 NWT and 6 SET, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 20.2  
 Intersection Signal Delay: 20.2  
 Intersection Signal Delay: 20.2  
 Intersection LOS: C  
 Intersection Capacity Utilization: 57.5%  
 Analysis Period (min): 15

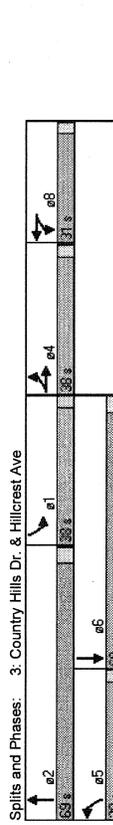


Splits and Phases: 2: Sterling Hill Dr. & Hillcrest Ave

3: Country Hills Dr. & Hillcrest Ave  
Antioch Walmart Expansion

4: Northeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBS	SBL	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBS	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1638	0	1770	1673	0	1770	3472	0	1770	3502
Satd. Flow (prot)	0.950	0	0	0.950	0	0	0.950	0	0	0.950	0
Fit Permitted	1770	1638	0	1770	1673	0	1770	3472	0	1770	3502
Satd. Flow (perm)	48	77	143	84	93	117	70	297	31	63	439
Satd. Flow (RTOR)	44	77	143	84	93	117	70	297	31	63	439
Volume (vph)	58	289	0	125	314	0	90	421	0	69	511
Lane Group Flow (vph)	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Turn Type	4	4	4	8	8	8	5	2	1	6	6
Protected Phases											
Permitted Phases											
Total Spill (s)	38.0	38.0	0.0	31.0	31.0	0.0	38.0	69.0	0.0	38.0	69.0
Act Effect Green (s)	27.2	27.2	0.0	28.1	28.1	0.0	13.2	68.8	0.0	13.1	66.4
Actuated g/c Ratio	0.19	0.19	0.00	0.19	0.19	0.00	0.09	0.47	0.09	0.09	0.45
v/c Ratio	0.18	0.84	0.37	0.37	0.91	0.57	0.26	0.45	0.45	0.32	0.45
Control Delay	51.7	70.1	57.8	83.0	83.0	79.3	26.0	74.0	27.8	74.0	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.7	70.1	57.8	83.0	83.0	79.3	26.0	74.0	27.8	74.0	27.8
LOS	D	E	E	F	F	E	C	E	C	E	C
Approach Delay	67.0	67.0	0.0	75.8	75.8	0.0	35.4	33.3	0.0	33.3	33.3
Approach LOS	E	E	E	E	E	E	D	C	D	C	C
Queue Length 50th (ft)	47	228	106	274	274	85	130	64	164	64	164
Queue Length 95th (ft)	78	279	135	289	289	129	165	122	240	122	240
Internal Link Dist (ft)	120	266	140	263	263	140	1068	165	165	165	1583
Turn Bay Length (ft)	401	409	339	345	345	368	1628	363	1583	363	1583
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.71	0.37	0.91	0.91	0.24	0.26	0.19	0.32	0.19	0.32
Intersection Summary											
Cycle Length	176										
Actuated Cycle Length	147										
Control Type	Actuated-Uncoordinated										
Maximum v/c Ratio	0.91										
Intersection Signal Delay	50.0										
Intersection LOS	D										
Intersection Capacity Utilization	57.7%										
Analysis Period (min)	15										



Movement	EBL	EBR	NBL	NBT	SBL	SBR
Lane Configurations	EBL	EBR	NBL	NBT	SBL	SBR
Sign Control	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	10	0	391	867	8
Peak Hour Factor	0.63	0.63	0.84	0.84	0.87	0.87
Hourly flow rate (vph)	0	16	0	465	767	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				592	1148	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	999	767	776			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	999	729	739			
IC, 2 stage (s)	6.8	6.9	4.1			
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	100			
dm capacity (veh/h)	208	314	742			
Direction Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	16	233	233	767	9	
Volume Left	0	0	0	0	0	
Volume Right	16	0	0	0	9	
cSH	314	1700	1700	1700	1700	
Volume to Capacity	0.05	0.14	0.14	0.45	0.01	
Queue Length 95th (ft)	4	0	0	0	0	
Control Delay (s)	17.1	0.0	0.0	0.0	0.0	
Lane LOS	C	C	C	C	C	
Approach Delay (s)	17.1	0.0	0.0	0.0	0.0	
Approach LOS	C	C	C	C	C	
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	45.1%					
Analysis Period (min)	15					
ICU Level of Service	A					

5: Southeast Driveway & Hillcrest Ave  
Antioch Wal-Mart Expansion

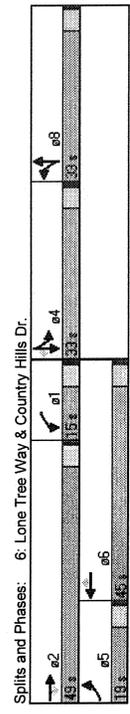
Existing Conditions  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	Stop	0%	0%	Stop	0%	0%	Free	0%	0%	Free	0%
Sign Control	0	0	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0	0	0
Volume (veh/h)	0	60	0	0	5	0	400	19	0	593	73
Peak Hour Factor	0.88	0.88	0.88	0.63	0.63	0.82	0.82	0.82	0.89	0.89	0.89
Heavy Flow Rate (vph)	0	68	0	0	8	0	488	23	0	566	82
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type	None			None							
Median storage (veh)											
Upstream signal (ft)									298		
pX, platoon unblocked											
VC, conflicting volume	959	1218	263	776	1236	244	748			511	
VC1, stage 1 cont vol											
VC2, stage 2 cont vol											
VCu, unblocked vol	959	1218	263	778	1236	244	748			511	
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1	
IC, 2 stage (s)											
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2	
po queue free %	100	100	91	100	100	99	100			100	
EW capacity (veh/h)	209	179	735	260	175	757	866			1050	
Direction Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	68	8	244	244	23	267	267	215			
Volume Left	0	0	0	0	0	0	0	0			
Volume Right	68	8	0	0	23	0	0	82			
gSH	735	757	1700	1700	1700	1700	1700	1700			
Volume to Capacity	0.09	0.01	0.14	0.14	0.01	0.16	0.16	0.13			
Queue Length 95th (ft)	8	1	0	0	0	0	0	0			
Control Delay (s)	10.4	9.8	0.0	0.0	0.0	0.0	0.0	0.0			
Lane LOS	B	A	A	A	A	A	A	A			
Approach Delay (s)	10.4	9.8	0.0	0.0	0.0	0.0	0.0	0.0			
Approach LOS	B	A	A	A	A	A	A	A			
<b>Intersection Summary</b>											
Average Delay	0.6										
Intersection Capacity Utilization	23.5%										
Analysis Period (min)	15										
ICU Level of Service	A										

6: Lone Tree Way & Country Hills Dr.  
Antioch Wal-Mart Expansion

Existing Conditions  
AM Peak

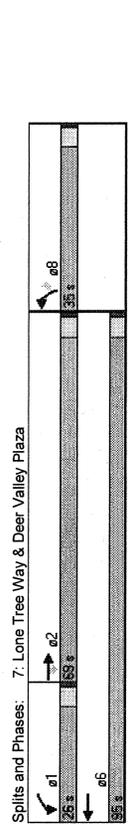
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	3539	1583	1770	1686	0	1770	1863
Satd. Flow (prot)	0.950			0.950			0.950			0.950	
Fit Permitted	1754	3539	1125	1593	3539	1466	1770	1686	0	1770	1863
Satd. Flow (perm)	83	611	39	70	1058	89	125	81	141	36	64
Volume (vph)	97	710	45	75	1138	96	167	296	0	42	74
Lane Group Flow (vph)											
Turn Type	Prot	Perm	Prot	Prot	Perm	Split	Split	Split	Split	Split	Perm
Protected Phases	5	2	1	6	8	8	4	4			
Permitted Phases											
Total Spk (\$)	19.0	49.0	15.0	45.0	45.0	33.0	33.0	33.0	0.0	33.0	33.0
Act Effct Green (s)	14.4	68.2	12.0	65.7	65.7	25.7	25.7	25.7	12.2	12.2	12.2
Actuated g/C Ratio	0.11	0.52	0.52	0.09	0.51	0.61	0.20	0.20	0.09	0.09	0.09
v/c Ratio	0.49	0.38	0.07	0.46	0.64	0.13	0.48	0.77	0.25	0.43	0.55
Control Delay	62.2	20.8	12.8	52.1	18.2	9.1	49.3	51.5	57.3	62.4	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	20.8	12.8	52.1	18.2	9.1	49.3	51.5	57.3	62.4	15.3
LOS	E	C	B	D	B	A	D	D	E	E	B
Approach Delay	25.1										
Approach LOS	B										
Queue Length 50th (ft)	78	180	9	58	185	9	126	190	33	60	0
Queue Length 95th (ft)	125	268	35	110	457.5	18	145	203	66	102	57
Internal Link Dist (ft)	1420			740			709				
Turn Bay Length (ft)	144	75	146	73	167		156				
Base Capacity (vph)	229	1856	600	163	1790	764	425	483	408	430	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.38	0.07	0.46	0.64	0.13	0.39	0.65	0.10	0.17	0.33
<b>Intersection Summary</b>											
Cycle Length	130										
Actuated Cycle Length	130										
Offset: 74 (57%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow											
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	0.77										
Intersection Signal Delay	27.5										
Intersection Capacity Utilization	63.4%										
Analysis Period (min)	15										
ICU Level of Service	B										
Queue shown is maximum after two cycles.											



7: Lone Tree Way & Deer Valley Plaza  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1333	1701	3539	1770	1583
Satd. Flow (RTOR)	45	45	45	45	45	45
Volume (vph)	796	67	42	1060	75	35
Lane Group Flow (vph)	875	74	48	1205	82	38
Turn Type	2	1	1	6	8	8
Permitted Phases	2	1	1	6	8	8
Total Split (s)	69.0	26.0	26.0	95.0	35.0	35.0
Act Effct Green (s)	103.0	103.0	10.5	114.4	12.4	12.4
Actuated g/C Ratio	0.79	0.79	0.08	0.88	0.10	0.10
v/c Ratio	0.31	0.07	0.34	0.39	0.49	0.21
Control Delay	1.3	0.3	66.5	0.5	64.8	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.3	0.3	66.5	0.5	64.8	18.1
LOS	A	A	E	A	E	B
Approach Delay	1.2	1.2	3.0	50.0	0.0	0.0
Approach LOS	A	A	A	D	D	D
Queue Length 50th (ft)	23	1	43	6	67	0
Queue Length 95th (ft)	35	m0	m/2	10	117	34
Internal Link Dist (ft)	740	100	197	850	704	95
Turn Bay Length (ft)	2894	1065	313	3115	436	418
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.07	0.15	0.39	0.19	0.09

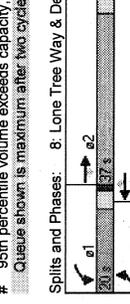


Splits and Phases: 7: Lone Tree Way & Deer Valley Plaza

8: Lone Tree Way & Deer Valley Rd  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3318
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1767	3539	1413	1726	3539	1537	3342
Satd. Flow (RTOR)	68	68	68	68	68	68	68
Volume (vph)	35	644	157	185	833	185	279
Lane Group Flow (vph)	43	795	194	199	886	199	310
Turn Type	5	2	2	1	6	3	8
Permitted Phases	5	2	2	1	6	3	8
Total Split (s)	17.0	37.0	37.0	20.0	40.0	30.0	32.0
Act Effct Green (s)	10.1	44.8	44.8	19.6	56.3	18.1	21.8
Actuated g/C Ratio	0.08	0.34	0.34	0.16	0.43	0.14	0.17
v/c Ratio	0.31	0.65	0.37	0.75	0.58	0.28	0.66
Control Delay	78.9	35.5	22.8	62.2	24.1	10.1	59.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.9	35.5	22.8	62.2	24.1	10.1	59.2
LOS	E	D	C	E	C	B	E
Approach Delay	34.9	27.6	27.6	53.2	0.0	0.0	49.2
Approach LOS	C	C	C	D	D	D	D
Queue Length 50th (ft)	89	203	37	112	328	42	128
Queue Length 95th (ft)	72	333	133	#290	#471	121	172
Internal Link Dist (ft)	850	850	1580	1580	825	825	420
Turn Bay Length (ft)	195	73	192	75	181	150	150
Base Capacity (vph)	181	1219	531	269	1532	702	713
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.65	0.37	0.74	0.58	0.28	0.43



Splits and Phases: 8: Lone Tree Way & Deer Valley Rd

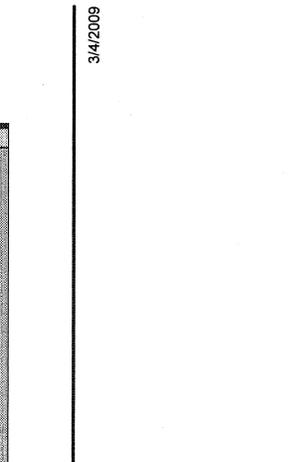
9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3438	0	1770	3502	0	1770	1532	0	1770	1863	1583
Flt Permitted	0.950	0.950	0	0.372	0.372	0	0.688	0.688	0	0.688	0.688	0.688
Satd. Flow (perm)	1769	3438	0	1768	3502	0	1600	1532	0	1237	1863	1432
Volume (vph)	16	761	130	91	1008	61	149	259	0	58	21	1
Lane Group Flow (vph)	141	1087	0	101	1188	0	276	107	0	41	2	57
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	1	6	6	6	8	8	4	4	4	4
Permitted Phases	20.0	47.0	0.0	15.0	42.0	0.0	68.0	68.0	0.0	35.0	35.0	35.0
Total Split (s)	17.3	70.9	0.0	14.6	68.2	0.0	35.5	35.5	0.0	12.3	12.3	12.3
Act Effect Green (s)	0.13	0.55	0.11	0.52	0.27	0.27	0.27	0.27	0.09	0.09	0.09	0.09
Actuated g/C Ratio	0.60	0.58	0.51	0.65	0.63	0.18	0.63	0.18	0.35	0.01	0.30	0.30
v/c Ratio	50.8	27.8	75.2	14.3	46.4	0.6	46.4	0.6	63.1	52.0	17.6	17.6
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	50.8	27.8	75.2	14.3	46.4	0.6	46.4	0.6	63.1	52.0	17.6	17.6
Total Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS	D	C	E	B	B	D	A	A	E	D	D	B
Approach Delay	30.4	19.0	0.0	33.6	33.6	0.0	36.9	36.9	0.0	36.9	36.9	36.9
Approach LOS	C	B	B	C	C	C	D	D	D	D	D	D
Queue Length 50th (ft)	116	463	89	268	186	0	33	33	2	2	2	2
Queue Length 95th (ft)	m146	450	m127	#463	140	0	39	39	5	5	5	5
Internal Link Dist (ft)	1580	1580	1580	605	609	0	819	819	0	0	0	0
Turn Bay Length (ft)	145	148	148	148	148	103	102	102	0	0	0	0
Base Capacity (vph)	257	1883	205	1639	800	896	304	459	395	395	395	395
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.58	0.48	0.65	0.34	0.12	0.13	0.00	0.14	0.00	0.14	0.14

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 16 (12%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 26.2  
 Analysis Period (min): 15  
 Intersection Capacity Utilization: 62.2%  
 ICU Level of Service: B  
 Intersection LOS: C

\* User Entered Value  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



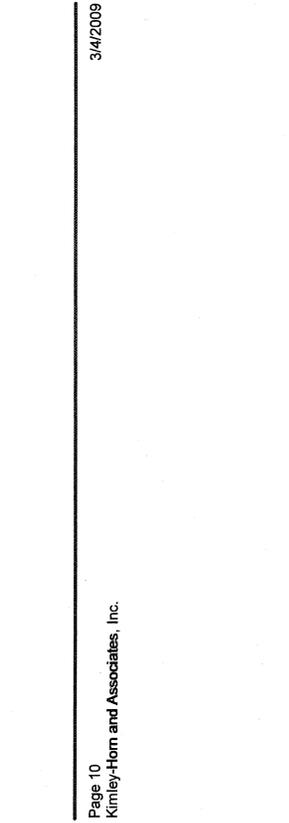
9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3438	0	1770	3502	0	1770	1532	0	1770	1863	1583
Flt Permitted	0.950	0.950	0	0.372	0.372	0	0.688	0.688	0	0.688	0.688	0.688
Satd. Flow (perm)	1769	3438	0	1768	3502	0	1600	1532	0	1237	1863	1432
Volume (vph)	16	761	130	91	1008	61	149	259	0	58	21	1
Lane Group Flow (vph)	141	1087	0	101	1188	0	276	107	0	41	2	57
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	1	6	6	6	8	8	4	4	4	4
Permitted Phases	20.0	47.0	0.0	15.0	42.0	0.0	68.0	68.0	0.0	35.0	35.0	35.0
Total Split (s)	17.3	70.9	0.0	14.6	68.2	0.0	35.5	35.5	0.0	12.3	12.3	12.3
Act Effect Green (s)	0.13	0.55	0.11	0.52	0.27	0.27	0.27	0.27	0.09	0.09	0.09	0.09
Actuated g/C Ratio	0.60	0.58	0.51	0.65	0.63	0.18	0.63	0.18	0.35	0.01	0.30	0.30
v/c Ratio	50.8	27.8	75.2	14.3	46.4	0.6	46.4	0.6	63.1	52.0	17.6	17.6
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	50.8	27.8	75.2	14.3	46.4	0.6	46.4	0.6	63.1	52.0	17.6	17.6
Total Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS	D	C	E	B	B	D	A	A	E	D	D	B
Approach Delay	30.4	19.0	0.0	33.6	33.6	0.0	36.9	36.9	0.0	36.9	36.9	36.9
Approach LOS	C	B	B	C	C	C	D	D	D	D	D	D
Queue Length 50th (ft)	116	463	89	268	186	0	33	33	2	2	2	2
Queue Length 95th (ft)	m146	450	m127	#463	140	0	39	39	5	5	5	5
Internal Link Dist (ft)	1580	1580	1580	605	609	0	819	819	0	0	0	0
Turn Bay Length (ft)	145	148	148	148	148	103	102	102	0	0	0	0
Base Capacity (vph)	257	1883	205	1639	800	896	304	459	395	395	395	395
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.58	0.48	0.65	0.34	0.12	0.13	0.00	0.14	0.00	0.14	0.14

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 16 (12%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 26.2  
 Analysis Period (min): 15  
 Intersection Capacity Utilization: 62.2%  
 ICU Level of Service: B  
 Intersection LOS: C

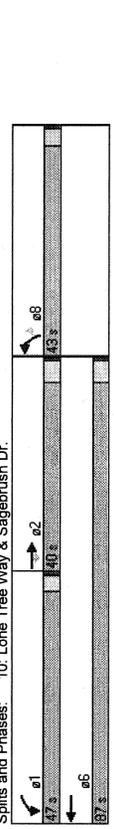
\* User Entered Value  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



10: Lone Tree Way & Sagebrush Dr.  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	44	44	44	44	44
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770
Fit Permitted	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1482	1760	3539	1715
Satd. Flow (RTOR)	99	219	198	916	104
Volume (vph)	681	219	198	916	104
Lane Group Flow (vph)	841	270	230	1065	162
Turn Type	Perm	Prot	Perm	Perm	Perm
Protected Phases	2	1	6	8	8
Permitted Phases	4.0	40.0	47.0	87.0	43.0
Total Split (s)	80.1	80.1	24.2	107.3	16.7
Act Effct Green (s)	0.62	0.62	0.19	0.83	0.13
Actuated g/C Ratio	0.39	0.28	0.70	0.36	0.71
v/c Ratio	4.8	1.6	70.8	1.7	70.5
Control Delay	0.0	0.0	0.0	0.0	0.0
Queue Delay	4.8	1.6	70.8	1.7	70.5
Total Delay	4.8	1.6	70.8	1.7	70.5
LOS	A	A	E	A	B
Approach Delay	4.0	13.9	45.3		
Approach LOS	A	B	D		
Queue Length 50th (ft)	35	0	145	5	134
Queue Length 95th (ft)	43	2	255	100	133
Internal Link Dist (ft)	605		1855	497	
Turn Bay Length (ft)	80	142		116	
Base Capacity (vph)	2150	951	599	2920	545
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.39	0.28	0.36	0.30	0.22
<b>Intersection Summary</b>					
Cycle Length	130				
Actuated Cycle Length	130				
Offset	40 (31%) Referenced to phase 2:EBT and 6:WBT, Start of Yellow				
Control Type	Actuated-Coordinated				
Maximum v/c Ratio	0.71				
Intersection Signal Delay	13.1				
Intersection Capacity Utilization	46.5%				
Analysis Period (min)	15				
Intersection LOS	B				
ICU Level of Service	A				

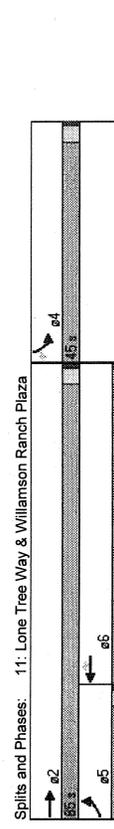


Splits and Phases: 10: Lone Tree Way & Sagebrush Dr.

11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBL	WBT	WBR	SBL	SBR
Lane Configurations	44	44	44	44	44
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	3539	1770	1583
Fit Permitted	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1762	3539	3539	1504	1770
Satd. Flow (RTOR)	56	689	1029	20	11
Volume (vph)	71	895	1319	26	15
Lane Group Flow (vph)	71	895	1319	26	15
Turn Type	Prot	Perm	Perm	Perm	Perm
Protected Phases	5	2	6	4	4
Permitted Phases	25.0	85.0	60.0	45.0	45.0
Total Split (s)	9.6	115.8	105.0	10.8	10.8
Act Effct Green (s)	0.67	0.89	0.81	0.81	0.08
Actuated g/C Ratio	0.54	0.28	0.46	0.02	0.10
v/c Ratio	71.1	4.1	4.0	0.1	52.5
Control Delay	0.0	0.0	0.0	0.0	0.0
Queue Delay	71.1	4.1	4.0	0.1	52.5
Total Delay	71.1	4.1	4.0	0.1	52.5
LOS	E	A	A	A	D
Approach Delay	9.0	3.9	24.1		
Approach LOS	A	A	C		
Queue Length 50th (ft)	50	65	7	0	12
Queue Length 95th (ft)	76	202	20	m0	24
Internal Link Dist (ft)	1855	820	405		
Turn Bay Length (ft)	155		113		
Base Capacity (vph)	300	3152	2859	1217	539
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.24	0.28	0.46	0.02	0.03
<b>Intersection Summary</b>					
Cycle Length	130				
Actuated Cycle Length	130				
Offset	115 (89%) Referenced to phase 2:EBT and 6:WBT, Start of Yellow				
Control Type	Actuated-Coordinated				
Maximum v/c Ratio	0.54				
Intersection Signal Delay	6.6				
Intersection Capacity Utilization	49.6%				
Analysis Period (min)	15				
Intersection LOS	A				
ICU Level of Service	A				



Splits and Phases: 11: Lone Tree Way & Williamson Ranch Plaza

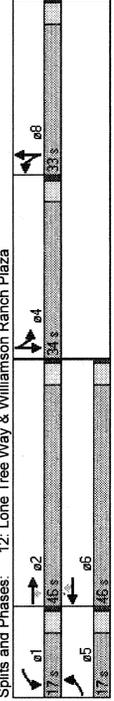
12: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

13: Lone Tree Way & Wai-Mart Driveway  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Stand. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1641	0	3433	1574	0
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0	0.950	1574	0
Satd. Flow (perm)	1756	3539	1286	1670	3539	1455	1763	1641	0	3433	1574	0
Satd. Flow (RTOR)	45	574	5	25	1116	34	9	15	58	20	1	21
Volume (vph)	56	716	6	32	1413	43	11	92	0	53	66	0
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Split	Split	Split	Split	Split	Split
Turn Type	5	2	2	1	6	8	8	8	8	4	4	4
Protected Phases	17.0	46.0	46.0	17.0	46.0	46.0	33.0	33.0	0.0	34.0	34.0	0.0
Total Spill (s)	11.1	77.9	77.9	10.9	75.0	75.0	21.0	21.0	0.0	13.1	13.1	0.0
Act Effect Green (s)	0.09	0.60	0.60	0.58	0.58	0.58	0.16	0.16	0.16	0.10	0.10	0.0
Actuated g/C Ratio	0.37	0.34	0.01	0.22	0.69	0.05	0.04	0.28	0.15	0.28	0.15	0.0
v/c Ratio	63.7	12.1	5.8	77.3	15.6	2.0	39.8	15.0	51.2	16.0	16.0	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	63.7	12.1	5.8	77.3	15.6	2.0	39.8	15.0	51.2	16.0	16.0	0.0
Total Delay	E	B	A	E	B	A	D	B	D	D	B	B
LOS	15.8	15.8	15.8	16.6	16.6	16.6	17.7	17.7	32.8	32.8	32.8	0.0
Approach Delay	B	B	B	B	B	B	B	B	C	C	C	0.0
Approach LOS	29	300	2	28	533	1	7	13	22	2	2	0
Queue Length 50th (ft)	52	337	m8	m54	#735	m1	21	44	14	0	0	0
Queue Length 95th (ft)	158	820	78	150	430	200	356	356	440	0	0	0
Internal Link Dist (ft)	193	2119	771	181	2641	850	408	435	819	417	417	0
Turn Bay Length (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.34	0.01	0.17	0.69	0.05	0.03	0.21	0.06	0.14	0.06	0.14
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	97 (75%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow											
Maximum v/c Ratio	0.69											
Intersection Signal Delay	17.1											
Intersection LOS	B											
Intersection Capacity Utilization	52.8%											
Analysis Period (min)	15											
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
m. Volume for 95th percentile queue is metered by upstream signal.												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Sign Control	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	693	1177	65	0	5	0	0	0	0	0	0
Peak Hour Factor	0.82	0.82	0.85	0.85	0.42	0.42	0	0	0	0	0	0
Hourly flow rate (vph)	0	845	1314	76	0	12	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0
Walking Speed (ft/s)	0	0	0	0	0	0	0	0	0	0	0	0
Percent Blockage	0	0	0	0	0	0	0	0	0	0	0	0
Right turn flare (veh)	0	0	0	0	0	0	0	0	0	0	0	0
Median type	None	None	None	None	None	None	None	None	None	None	None	None
Median storage (veh)	0	0	0	0	0	0	0	0	0	0	0	0
Upstream signal (ft)	0	510	500	0	0	0	0	0	0	0	0	0
pX, platoon unblocked	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
v/c, conflicting volume	1391	1391	1391	1391	1391	1391	1391	1391	1391	1391	1391	1391
vC1, stage 1 conf vol	0	0	0	0	0	0	0	0	0	0	0	0
vC2, stage 2 conf vol	0	0	0	0	0	0	0	0	0	0	0	0
vCu, unblocked vol	1125	1125	1125	1125	1125	1125	1125	1125	1125	1125	1125	1125
IC, single (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
IC, 2 stage (s)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
IF (s)	100	100	100	100	100	100	100	100	100	100	100	100
p0 queue free %	529	529	529	529	529	529	529	529	529	529	529	529
pk capacity (veh/h)	423	423	423	423	423	423	423	423	423	423	423	423
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	SB 1	SB 2	SB 3	SB 4	SB 5	SB 6
Volume Total	423	423	438	438	438	438	76	12	0	0	0	0
Volume Left	0	0	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0	0	0	0	0
cS	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.25	0.25	0.26	0.26	0.26	0.26	0.04	0.01	0.01	0.01	0.01	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Approach LOS	A	A	A	A	A	A	A	A	A	A	A	A
Intersection Summary												
Average Delay	0.0											
Intersection Capacity Utilization	31.6%											
Analysis Period (min)	15											
ICU Level of Service	A											



Splits and Phases: 12: Lone Tree Way & Williamson Ranch Plaza

14: Lone Tree Way & Hillcrest Ave  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	5085	1583	1770	3420	0	1900	3288	1583
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Flt Permitted	1760	3539	1511	1748	5085	1515	1762	3420	0	1591	3264	1554
Satd. Flow (perm)	177	495	18	24	862	160	36	53	13	279	85	269
Satd. Flow (RTOR)	201	562	20	30	1078	200	40	72	0	175	280	336
Volume (vph)	201	562	20	30	1078	200	40	72	0	175	280	336
Lane Group Flow (vph)	201	562	20	30	1078	200	40	72	0	175	280	336
Turn Type	Prot	Perm	Prot	Perm	Prot	Perm	Split	Split	Split	Split	Perm	Perm
Protected Phases	5	2	2	1	6	6	6	6	6	4	4	4
Permitted Phases	29.0	47.0	47.0	18.0	36.0	36.0	23.0	23.0	0.0	42.0	42.0	42.0
Total Split (s)	22.9	75.2	75.2	9.1	57.2	57.2	16.3	16.3	22.1	22.1	22.1	22.1
Act Effct Green (s)	0.18	0.58	0.58	0.07	0.44	0.44	0.14	0.14	0.17	0.17	0.17	0.17
Actuated g/C Ratio	0.65	0.27	0.27	0.02	0.24	0.24	0.16	0.16	0.54	0.50	0.50	0.62
v/c Ratio	79.1	18.0	18.0	16.2	71.8	23.0	4.9	45.5	36.8	54.6	51.2	9.7
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	79.1	18.0	18.0	16.2	71.8	23.0	4.9	45.5	36.8	54.6	51.2	9.7
Total Delay	79.1	18.0	18.0	16.2	71.8	23.0	4.9	45.5	36.8	54.6	51.2	9.7
LOS	E	B	B	E	C	A	D	D	D	D	D	A
Approach Delay	33.7			21.3			40.2			34.3		
Approach LOS	C			C			D			C		
Queue Length 50th (ft)	179	47	1	26	212	16	32	24	151	120	0	0
Queue Length 95th (ft)	255	232	18	m49	314	60	60	42	187	134	40	40
Internal Link Dist (ft)	420			690			2575			218		
Turn Bay Length (ft)	203	205	208	205	208	230	230	295	295	295	291	291
Base Capacity (vph)	357	2047	882	204	2237	779	324	638	570	886	701	701
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.27	0.02	0.15	0.48	0.26	0.12	0.11	0.31	0.28	0.48	0.48

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 28.7  
 Intersection Capacity Utilization: 61.7%  
 Analysis Period (min): 15  
 \* User Entered Value  
 m Volume for 95th percentile queue is metered by upstream signal.



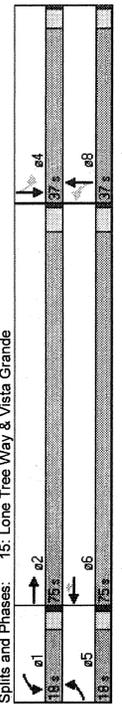
Splits and Phases: 14: Lone Tree Way & Hillcrest Ave

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	5050	1770	3539	1583	1770	1583	1770	1583	1770	1662	0
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Flt Permitted	1770	5050	1770	3539	1548	1120	1583	1770	1583	1770	1662	0
Satd. Flow (perm)	20	693	30	59	967	37	39	14	123	24	16	41
Satd. Flow (RTOR)	23	841	0	63	1029	39	49	174	0	51	121	0
Volume (vph)	23	841	0	63	1029	39	49	174	0	51	121	0
Lane Group Flow (vph)	23	841	0	63	1029	39	49	174	0	51	121	0
Turn Type	Prot	Perm	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	2	1	6	6	6	6	6	4	4	4
Permitted Phases	18.0	75.0	0.0	18.0	75.0	75.0	37.0	37.0	0.0	37.0	37.0	0.0
Total Split (s)	9.7	97.5		12.5	102.5	102.5	13.3	13.3		13.3	13.3	
Act Effct Green (s)	0.07	0.75		0.10	0.79	0.79	0.10	0.10		0.10	0.10	
Actuated g/C Ratio	0.17	0.22		0.37	0.37	0.37	0.03	0.03		0.03	0.03	
v/c Ratio	59.3	10.4		56.4	3.6	2.8	64.5	18.3		73.1	24.8	
Control Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Queue Delay	59.3	10.4		56.4	3.6	2.8	64.5	18.3		73.1	24.8	
Total Delay	59.3	10.4		56.4	3.6	2.8	64.5	18.3		73.1	24.8	
LOS	E	B		E	A	A	E	B		E	C	
Approach Delay	11.7			6.6			28.4			35.0		
Approach LOS	B			A			C			D		
Queue Length 50th (ft)	18	141		54	51	0	38	14		42	27	
Queue Length 95th (ft)	m39	89		105	137	12	68	55		41	11	
Internal Link Dist (ft)	665			1050			786			614		
Turn Bay Length (ft)	197	204	203	203	203	203	203	203	203	203	203	203
Base Capacity (vph)	3789	208	2791	1225	293	532	248	498		248	498	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.11	0.22		0.30	0.37	0.03	0.17	0.33		0.21	0.24	

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 55 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.57  
 Intersection Signal Delay: 12.8  
 Intersection Capacity Utilization: 55.1%  
 Analysis Period (min): 15  
 \* User Entered Value  
 m Volume for 95th percentile queue is metered by upstream signal.



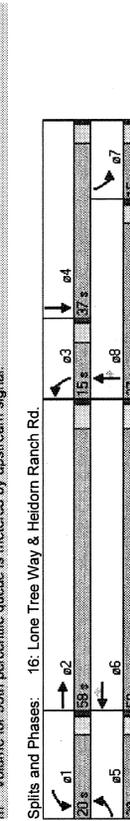
Splits and Phases: 15: Lone Tree Way & Vista Grande

16: Lone Tree Way & Heidorn Ranch Rd.  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	5038	0	1770	3539	1583	3433	1863	1583	1770	1615	0
Flt Permitted	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0
Satd. Flow (perm)	1768	5038	0	1768	3539	1544	3433	1863	1561	1765	1615	0
Satd. Flow (RTOR)	8	741	40	48	987	9	23	0	23	10	2	19
Volume (vph)	4	858	0	54	1109	10	53	0	53	13	27	0
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	1	6	6	6	3	8	8	7	4	4
Protected Phases												
Permitted Phases												
Total Split (s)	20.0	58.0	0.0	20.0	58.0	15.0	37.0	37.0	15.0	37.0	0.0	0.0
Act Effct Green (s)	8.4	93.0	0.0	11.9	103.2	103.2	9.9	15.8	9.1	12.5	0.0	0.0
Actuated g/C Ratio	0.06	0.72	0.09	0.79	0.79	0.06	0.12	0.07	0.10	0.10	0.15	0.15
v/c Ratio	0.04	0.24	0.33	0.39	0.01	0.20	0.10	0.10	0.10	0.15	0.15	0.15
Control Delay	77.0	11.8	76.6	1.4	0.8	57.7	0.3	57.9	20.0	20.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.0	11.8	76.6	1.4	0.8	57.7	0.3	57.9	20.0	20.0	0.0	0.0
LOS	E	B	E	A	A	E	A	E	A	E	B	B
Approach Delay	12.1			4.9							32.3	
Approach LOS	B			A							C	
Queue Length 50th (ft)	4	31	49	23	0	22	0	11	2	2	2	2
Queue Length 95th (ft)	m13	318	80	38	m1	20	872	0	27	21	21	21
Internal Link Dist (ft)	1060		900									
Turn Bay Length (ft)	194	3607	410	100	100	317	317	699	163	440	53	440
Base Capacity (vph)	231	3607	231	2810	1227	317	317	699	163	440	53	440
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.24	0.23	0.39	0.01	0.17	0.17	0.08	0.08	0.06	0.06	0.06

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 55 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.39  
 Intersection Signal Delay: 9.4  
 Intersection Capacity Utilization: 48.2%  
 Analysis Period (min): 15  
 Volume for 95th percentile queue is metered by upstream signal.

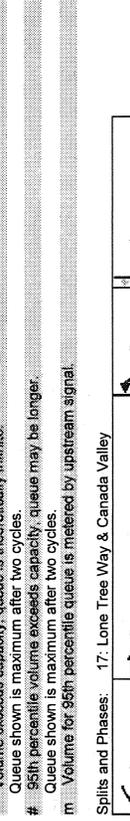


17: Lone Tree Way & Canada Valley  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

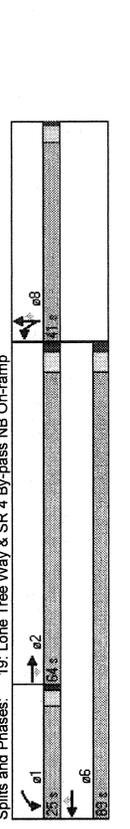
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	5085	1583	3433	3539	1583	3433	1583	1504	1770	1863	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1769	5085	1557	3430	3539	1542	3433	1588	1482	1767	1863	1563
Satd. Flow (RTOR)	49	746	52	166	1005	168	36	14	51	190	31	34
Volume (vph)	31	794	55	187	1129	169	49	47	41	241	39	43
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	1	6	6	6	3	8	8	7	4	4
Protected Phases												
Permitted Phases												
Total Split (s)	20.0	53.0	25.0	58.0	58.0	20.0	32.0	32.0	20.0	32.0	32.0	32.0
Act Effct Green (s)	12.6	80.9	80.9	12.0	83.9	83.9	7.2	9.8	9.8	17.0	19.6	19.6
Actuated g/C Ratio	0.10	0.62	0.62	0.09	0.65	0.65	0.06	0.08	0.08	0.13	0.15	0.15
v/c Ratio	0.18	0.25	0.06	0.59	0.49	0.18	0.26	0.32	0.27	0.04	0.14	0.16
Control Delay	36.7	2.8	6.2	76.0	8.0	61.7	32.6	16.9	125.1	48.8	13.2	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	2.8	6.2	76.0	8.0	61.7	32.6	16.9	125.1	48.8	13.2	13.2
LOS	D	A	A	E	A	A	E	C	B	F	D	B
Approach Delay	3.8			15.5			38.9			100.7		
Approach LOS	A			B			D			F		
Queue Length 50th (ft)	23	13	0	78	137	1	20	16	0	~219	30	0
Queue Length 95th (ft)	62	16	1	m110	227	m4	34	37	23	#316	49	24
Internal Link Dist (ft)	900											
Turn Bay Length (ft)	300	120	300	150	150	449	378	362	231	422	387	387
Base Capacity (vph)	231	3165	967	581	2283	1064	449	378	362	422	387	387
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.25	0.06	0.32	0.49	0.18	0.11	0.12	0.11	1.04	0.09	0.11

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 37 (28%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.04  
 Intersection Signal Delay: 22.7  
 Intersection Capacity Utilization: 58.3%  
 Analysis Period (min): 15  
 Volume for 95th percentile queue is metered by upstream signal.



18: Lone Tree Way & SR 4 Bypass SB Off-ramp  
Antioch Walmart Expansion

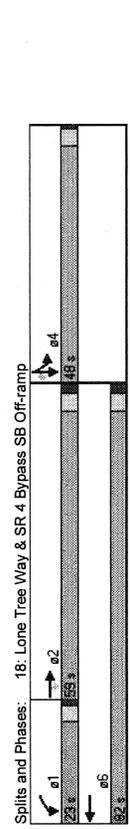
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Flt Permitted	0	0	0	0	0	0	0	0	0	0	0	0
Satd. Flow (perm)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (RTOR)	0	571	401	72	1000	0	0	0	287	6	353	0
Volume (vph)	0	634	446	77	1064	0	0	0	169	178	415	0
Lane Group Flow (vph)	0	634	446	77	1064	0	0	0	169	178	415	0
Turn Type	2	2	2	1	6				4	4	4	
Protected Phases	2	2	2	1	6				4	4	4	
Permitted Phases	0.0	59.0	59.0	23.0	82.0	0.0	0.0	0.0	48.0	48.0	48.0	0.0
Total Split (\$)	81.2	81.2	81.2	9.0	91.2	0.0	0.0	0.0	32.8	32.8	32.8	0.0
Act Effct Green (s)	0.82	0.82	0.82	0.07	0.70	0.0	0.0	0.0	0.25	0.25	0.25	0.0
Actuated g/C Ratio	0.20	0.39	0.32	0.30	0.30	0.0	0.0	0.0	0.40	0.41	0.87	0.0
v/c Ratio	11.8	4.1	56.9	7.2	7.2	0.0	0.0	0.0	41.3	41.7	51.6	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	11.8	4.1	56.9	7.2	7.2	0.0	0.0	0.0	41.3	41.7	51.6	0.0
Total Delay	11.8	4.1	56.9	7.2	7.2	0.0	0.0	0.0	41.3	41.7	51.6	0.0
LOS	B	A	A	E	A				D	D	D	D
Approach Delay	8.7			10.6					47.0			
Approach LOS	A			B					D			
Queue Length 50th (ft)	66	31	26	124					125	131	259	
Queue Length 95th (ft)	m64	m50	m51	200					162	167	311	
Internal Link Dist (ft)	775			750				536			618	
Turn Bay Length (ft)	400	325										
Base Capacity (vph)	3178	1144	528	3563					562	564	618	
Starvation Cap Reductn	0	0	0	0					0	0	0	
Spillback Cap Reductn	0	0	0	0					0	0	0	
Storage Cap Reductn	0	0	0	0					0	0	0	
Reduced v/c Ratio	0.20	0.39	0.15	0.30					0.29	0.30	0.67	
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	72 (56%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	9.87											
Intersection Signal Delay	19.2											
Intersection Capacity Utilization	48.2%											
Analysis Period (min)	15											
m	Volume for 95th percentile queue is metered by upstream signal.											



Splits and Phases: 18: Lone Tree Way & SR 4 Bypass SB Off-ramp

19: Lone Tree Way & SR 4 By-pass NB On-ramp  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Flt Permitted	0	0	0	0	0	0	0	0	0	0	0	0
Satd. Flow (perm)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (RTOR)	0	571	401	72	1000	0	0	0	287	6	353	0
Volume (vph)	0	634	446	77	1064	0	0	0	169	178	415	0
Lane Group Flow (vph)	0	634	446	77	1064	0	0	0	169	178	415	0
Turn Type	2	2	2	1	6				4	4	4	
Protected Phases	2	2	2	1	6				4	4	4	
Permitted Phases	0.0	54.0	54.0	25.0	89.0	0.0	0.0	0.0	41.0	41.0	41.0	0.0
Total Split (\$)	99.4	99.4	99.4	7.0	101.4	0.0	0.0	0.0	22.6	22.6	22.6	0.0
Act Effct Green (s)	0.76	0.76	0.76	0.08	0.78	0.0	0.0	0.0	0.17	0.17	0.17	0.0
Actuated g/C Ratio	0.19	0.15	0.05	0.19	0.22	0.0	0.0	0.0	0.17	0.17	0.17	0.0
v/c Ratio	8.8	4.4	59.0	4.3	1.0	68.1	0.0	0.0	70.9	9.9	9.9	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	8.8	4.4	59.0	4.3	1.0	68.1	0.0	0.0	70.9	9.9	9.9	0.0
Total Delay	8.8	4.4	59.0	4.3	1.0	68.1	0.0	0.0	70.9	9.9	9.9	0.0
LOS	A	A	A	E	A				E	E	A	
Approach Delay	7.9			3.9					59.9			
Approach LOS	A			A					E			
Queue Length 50th (ft)	77	19	3	49					194	204	0	
Queue Length 95th (ft)	95	35	13	85					264	276	42	
Internal Link Dist (ft)	750			640					935		1166	
Turn Bay Length (ft)	150	315										
Base Capacity (vph)	3887	1237	581	3965	1285				491	486	526	
Starvation Cap Reductn	0	0	0	0					0	0	0	
Spillback Cap Reductn	0	0	0	0					0	0	0	
Storage Cap Reductn	0	0	0	0					0	0	0	
Reduced v/c Ratio	0.19	0.15	0.02	0.19	0.22	0.0	0.0	0.0	0.46	0.48	0.17	
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	88 (68%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	9.80											
Intersection Signal Delay	17.7											
Intersection Capacity Utilization	44.7%											
Analysis Period (min)	15											
m	Intersection LOS: B ICU Level of Service A											



Splits and Phases: 19: Lone Tree Way & SR 4 By-pass NB On-ramp

20: Marita Dr. & Deer Valley Rd  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1619	0	1770	1581	0	1770	3516	0	1770	3516	0
Satd. Flow (prot)	0.744			0.735			0.850			0.850		
Flt Permitted	1367	1619	0	1347	1581	0	1757	3516	0	1753	3516	0
Satd. Flow (perm)	25			18			4			3		
Satd. Flow (RTOR)	29	8	21	1	6	137	633	24	58	638	23	
Volume (vph)	34	34	0	3	21	0	149	714	0	72	816	0
Lane Group Flow (vph)	Perm	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	8			4			6			5		2
Protected Phases												
Total Split (s)	33.0	33.0	0.0	33.0	33.0	0.0	38.0	81.0	0.0	28.0	71.0	0.0
Act Effct Green (s)	16.6	16.6		16.6	16.6		16.6	85.7		11.9	76.0	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.14	0.73		0.10	0.68	
v/c Ratio	0.18	0.14		0.02	0.09		0.60	0.28		0.41	0.35	
Control Delay	44.8	20.7		41.0	19.4		57.5	9.1		58.1	12.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	44.8	20.7		41.0	19.4		57.5	9.1		58.1	12.2	
LOS	D	C		D	B		E	A		E	B	
Approach Delay	32.8			22.1			17.4			15.9		
Approach LOS	C			C			B			B		
Queue Length 50th (ft)	23	6		2	2		98	81		48	114	
Queue Length 95th (ft)	51	32		4	1		188	202		97	237	
Internal Link Dist (ft)	345			427			825			845		
Turn Bay Length (ft)	309	386		305	372		457	2557		335	2328	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.09		0.01	0.06		0.33	0.28		0.21	0.35	
Intersection Summary												
Cycle Length	142											
Actuated Cycle Length	117.9											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.60											
Intersection Signal Delay	17.3											
Intersection Capacity Utilization	48.9%											
Analysis Period (min)	15											



21: Prewett Ranch Dr & Hillcrest Ave  
Antioch Walmart Expansion

Existing Conditions  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	116	40	0	0	39	10	0	0	0	13	0	111
Sign Control	0.85	0.85	0.85	0.85	0.85	0.85	1.00	1.00	1.00	0.79	0.79	0.79
Volume (vph)	136	47	0	0	57	15	0	0	0	16	0	141
Peak Hour Factor	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Hourly flow rate (vph)	136	47	0	72	0	0	16	141				
Directions Lane #	136	47	0	72	0	0	16	141				
Volume Total (vph)	136	0	0	0	0	0	16	141				
Volume Left (vph)	0	0	0	15	0	0	0	141				
Volume Right (vph)	0	0	0	0	0	0	0	0				
Hadj (s)	0.53	0.03	0.00	-0.11	0.00	0.00	0.53	-0.87				
Departure Headway (s)	5.5	5.0	5.1	5.0	5.3	5.3	5.7	4.5				
Degree Utilization, x	0.21	0.07	0.00	0.10	0.00	0.00	0.03	0.18				
Capacity (veh/h)	630	695	691	695	644	644	599	760				
Control Delay (s)	8.7	7.1	6.9	7.3	7.1	7.1	7.6	7.2				
Approach Delay (s)	8.3		7.3		0.0		7.3					
Approach LOS	A		A		A		A					
Intersection Summary												
Delay	7.7											
HCM Level of Service	A											
Intersection Capacity Utilization	23.1%											
Analysis Period (min)	15											

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 Anioch Wal-Mart Expansion  
 -----  
 Scenario Report

Existing PM  
 Command: None  
 Volume: Existing PM  
 Geometry: Existing  
 Impact Fee: Default Impact Fee  
 Trip Generation: None  
 Trip Distribution: Near-Term  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

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 Anioch Wal-Mart Expansion  
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 Impact Analysis Report  
 Level Of Service

Intersection	Base Del/V/LOS Veh C	Future Del/V/LOS Veh C	Change in
# 1 Deer Valley Rd/ Country Hills	A xxxxx 0.376	A xxxxx 0.376	+ 0.000 V/C
# 2 Hillcrest Avenue/Laurel Road	A xxxxx 0.219	A xxxxx 0.219	+ 0.000 V/C
# 3 Hillcrest Avenue/Country Hills	A xxxxx 0.267	A xxxxx 0.267	+ 0.000 V/C
# 4 Hillcrest Avenue/Driveway	B 11.5 0.000	B 11.5 0.000	+ 0.000 D/V
# 5 Hillcrest Avenue/South Drivewa	B 10.2 0.000	B 10.2 0.000	+ 0.000 D/V
# 6 Lone Tree Way/Mokelumme Dr	A xxxxx 0.500	A xxxxx 0.500	+ 0.000 V/C
# 7 Lone Tree Way/Deer Valley Plaz	A xxxxx 0.402	A xxxxx 0.402	+ 0.000 V/C
# 8 Lone Tree Way/Deer Valley Rd	A xxxxx 0.588	A xxxxx 0.588	+ 0.000 V/C
# 9 Lone Tree Way/Deer Valley HS	A xxxxx 0.373	A xxxxx 0.373	+ 0.000 V/C
# 10 Lone Tree Way/Sagebrush Drive	A xxxxx 0.375	A xxxxx 0.375	+ 0.000 V/C
# 11 Lone Tree Way/Williamson Ranch	A xxxxx 0.337	A xxxxx 0.337	+ 0.000 V/C
# 12 Lone Tree Way/Indian Hill Dr/W	A xxxxx 0.385	A xxxxx 0.385	+ 0.000 V/C
# 13 Lone Tree Way/Driveway	A 9.9 0.000	A 9.9 0.000	+ 0.000 D/V
# 14 Lone Tree Way/Hillcrest Avenue	A xxxxx 0.479	A xxxxx 0.479	+ 0.000 V/C
# 15 Lone Tree Way/Vista Grande Dri	A xxxxx 0.540	A xxxxx 0.540	+ 0.000 V/C
# 16 Lone Tree Way/Heidorn Ranch Ro	A xxxxx 0.329	A xxxxx 0.329	+ 0.000 V/C
# 17 Lone Tree Way/Canada Valley Ro	A xxxxx 0.523	A xxxxx 0.523	+ 0.000 V/C
# 18 Lone Tree Way/SB SR-4 Bypass	A xxxxx 0.579	A xxxxx 0.579	+ 0.000 V/C
# 19 Lone Tree Way/NB SR-4 Bypass (	A xxxxx 0.438	A xxxxx 0.438	+ 0.000 V/C
# 20 Deer Valley Road/Marita Drive	A xxxxx 0.258	A xxxxx 0.258	+ 0.000 V/C
# 21 Hillcrest Ave/Prewett Ranch Dr	A 8.5 0.206	A 8.5 0.206	+ 0.000 V/C







Anioch Wal-Mart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #7 Lone Tree Way/Deer Valley Plaza  
\*\*\*\*\*  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.402  
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 24 Level Of Service: A

Street Name: Deer Valley Plaza Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Protected Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Lanes: 1 0 0 0 1 0 0 0 0 0 0 2 0 1 1 0 2 0 0

Volume Module:  
Base Vol: 113 0 61 0 0 0 0 985 93 86 600 0  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 113 0 61 0 0 0 0 985 93 86 600 0  
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 113 0 61 0 0 0 0 985 93 86 600 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 113 0 61 0 0 0 0 985 93 86 600 0  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 113 0 61 0 0 0 0 985 93 86 600 0  
RTOR Reduct: 0 0 61 0 0 0 0 0 0 93 0 0  
RTOR Vol: 113 0 0 0 0 0 0 985 0 86 600 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 113 0 0 0 0 0 0 985 0 86 600 0

Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 2.00 1.00 1.00 2.00 0.00  
Final Sat.: 1720 0 1720 0 0 0 0 3440 1720 1720 3440 0  
Capacity Analysis Module:  
Vol/Sat: 0.07 0.00 0.00 0.00 0.00 0.00 0.00 0.29 0.00 0.05 0.17 0.00  
Crit Volume: 113 0 493 86  
Crit Moves: \*\*\*\*

Anioch Wal-Mart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #8 Lone Tree Way/Deer Valley Rd  
\*\*\*\*\*  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.588  
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 55 Level Of Service: A

Street Name: Deer Valley Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Protected Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Lanes: 2 0 1 0 1 0 1 0 1 0 1 0 2 0 1 1 0 2 0 1

Volume Module:  
Base Vol: 192 356 168 168 191 14 87 780 147 151 497 154  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 192 356 168 168 191 14 87 780 147 151 497 154  
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 192 356 168 168 191 14 87 780 147 151 497 154  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 192 356 168 168 191 14 87 780 147 151 497 154  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 192 356 168 168 191 14 87 780 147 151 497 154  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 106 0 0  
RTOR Vol: 192 356 168 168 191 14 87 780 41 151 497 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 192 356 168 168 191 14 87 780 41 151 497 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 2.00 1.36 0.64 1.00 1.86 0.14 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 3000 2242 1058 1650 3075 225 1650 3300 1650 1650 3300 1650  
Capacity Analysis Module:  
Vol/Sat: 0.06 0.16 0.16 0.10 0.06 0.06 0.05 0.24 0.03 0.09 0.15 0.00  
Crit Volume: 262 168 390 151  
Crit Moves: \*\*\*\*











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Anioch Wal-Mart Expansion  
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Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)  
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\*\*\*\*\*  
Intersection #19 Lone Tree Way/NB SR-4 Bypass (Jeffrey Way)  
Cycle (sec): 100 Critical Vol./Cap.(X): 0.438  
Loss time (sec): 9 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 33 Level Of Service: A  
-----

Street Name: NB SR-4 Bypass (Jeffrey Way) Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Split Phase Split Phase Permitted Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Lanes: 1 1 0 0 1 0 0 0 0 0 0 0 3 0 1 1 0 3 0 1  
-----

Volume Module:  
Base Vol: 437 43 137 0 0 0 0 1404 264 21 831 357  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 437 43 137 0 0 0 0 1404 264 21 831 357  
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 437 43 137 0 0 0 0 1404 264 21 831 357  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 437 43 137 0 0 0 0 1404 264 21 831 357  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 437 43 137 0 0 0 0 1404 264 21 831 357  
RTOR Reduct: 0 0 21 0 0 0 0 0 0 0 0 0  
RTOR Vol: 437 43 116 0 0 0 0 1404 24 21 831 357  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 437 43 116 0 0 0 0 1404 24 21 831 357  
-----

Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.82 0.18 1.00 0.00 0.00 0.00 0.00 3.00 1.00 1.00 3.00 1.00  
Final Sat.: 2847 308 1720 0 0 0 0 5160 1720 1720 5160 1720  
-----  
Capacity Analysis Module:  
Vol/Sat: 0.15 0.14 0.07 0.00 0.00 0.00 0.00 0.27 0.01 0.01 0.16 0.21  
Crit Volume: 240 0 468 21  
Crit Moves: \*\*\*\*  
-----

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Anioch Wal-Mart Expansion  
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Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)  
-----

\*\*\*\*\*  
Intersection #20 Deer Valley Road/Marita Drive  
Cycle (sec): 100 Critical Vol./Cap.(X): 0.258  
Loss time (sec): 9 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 25 Level Of Service: A  
-----

Street Name: Deer Valley Road Marita Drive  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Protected Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Lanes: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 0 1 0  
-----

Volume Module:  
Base Vol: 15 642 3 26 392 29 13 0 3 23 4 79  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 15 642 3 26 392 29 13 0 3 23 4 79  
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 15 642 3 26 392 29 13 0 3 23 4 79  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 15 642 3 26 392 29 13 0 3 23 4 79  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 15 642 3 26 392 29 13 0 3 23 4 79  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 15 642 3 26 392 29 13 0 3 23 4 79  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 15 642 3 26 392 29 13 0 3 23 4 79  
-----

Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 1.99 0.01 1.00 1.86 0.14 1.00 0.00 1.00 1.00 0.05 0.95  
Final Sat.: 1720 3424 16 1720 3203 237 1720 0 1720 1720 83 1637  
-----  
Capacity Analysis Module:  
Vol/Sat: 0.01 0.19 0.19 0.02 0.12 0.12 0.01 0.00 0.00 0.01 0.05 0.05  
Crit Volume: 323 26 13  
Crit Moves: \*\*\*\*  
-----

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 Anloch Wal-Mart Expansion  
 -----  
 Level Of Service Computation Report  
 -----

2000 HCM 4-Way Stop Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #21 Hillcrest Ave/Prewett Ranch Dr  
 \*\*\*\*\*  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.206  
 Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 8.5  
 Optimal Cycle: 0 Level Of Service: A  
 \*\*\*\*\*

Street Name: Hillcrest Ave Prewett Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Stop Sign Stop Sign  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Lanes: 1 0 0 1 0 0 0 1 1 0 0 1 0 1 0 0 1 0  
 -----

Volume Module:

Base Vol:	0	0	0	12	0	137	135	23	0	0	11	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	12	0	137	135	23	0	0	11	3
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	12	0	137	135	23	0	0	11	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	12	0	137	135	23	0	0	11	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	12	0	137	135	23	0	0	11	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	12	0	137	135	23	0	0	11	3

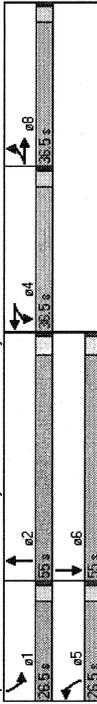
Saturation Flow Module:  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 1.00 0.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 0.79 0.21  
 Final Sat.: 622 681 0 640 0 815 656 720 0 636 565 154  
 -----  
 Capacity Analysis Module:  
 Vol/Sat: 0.00 0.00 xxxxx 0.02 xxxxx 0.17 0.21 0.03 xxxxx 0.00 0.02 0.02  
 Crit Moves: \*\*\*\*\*  
 Delay/Veh: 0.0 0.0 0.0 8.3 0.0 7.8 9.4 7.7 0.0 0.0 7.7 7.7  
 Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 AdjDel/Veh: 0.0 0.0 0.0 8.3 0.0 7.8 9.4 7.7 0.0 0.0 7.7 7.7  
 LOS By Move: \* \* \* \* \* A \* \* \* \* \* A \* \* \* \* \* A \* \* \* \* \*  
 ApproachDel: xxxxxxx 7.9 9.2 9.2 7.7  
 Delay Adj: xxxxxx 1.00 1.00 1.00  
 ApprAdjDel: xxxxxxx 7.9 9.2 9.2 7.7  
 LOS By Appr: \* \* \* \* \* A \* \* \* \* \* A \* \* \* \* \* A \* \* \* \* \*  
 AllWayAvgQ: 0.0 0.0 0.0 0.5 0.0 4.7 6.2 0.8 0.8 0.0 0.5 0.5  
 \*\*\*\*\*  
 Note: Queue reported is the distance per lane in feet.  
 \*\*\*\*\*

1: Country Hills Dr. & Deer Valley Rd.  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1851	0	1770	1702	0	1770	3423	0	1770	3389	0
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1766	1851	0	1770	1702	0	1756	3423	0	1737	3389	0
Satd. Flow (perm)	1	1	0	32	32	0	14	14	0	27	27	0
Satd. Flow (RTOR)	88	100	4	30	75	80	6	520	93	98	314	92
Volume (vph)	109	128	0	33	170	0	6	659	0	105	437	0
Lane Group Flow (vph)	Split											
Turn Type	Split											
Protected Phases	Split											
Permitted Phases	Split											
Total Split (s)	36.5	38.5	0.0	36.5	36.5	0.0	26.5	55.0	0.0	26.5	55.0	0.0
Act Effct Green (s)	13.3	13.3	0.0	16.0	16.0	0.0	7.9	41.4	0.0	12.6	53.9	0.0
Actuated g/C Ratio	0.14	0.14	0.0	0.17	0.17	0.0	0.08	0.46	0.0	0.14	0.59	0.0
v/c Ratio	0.43	0.48	0.0	0.11	0.53	0.0	0.04	0.42	0.0	0.44	0.22	0.0
Control Delay	38.0	38.5	0.0	30.3	29.9	0.0	47.3	22.2	0.0	39.3	12.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.0	38.5	0.0	30.3	29.9	0.0	47.3	22.2	0.0	39.3	12.2	0.0
LOS	D C C C C C D D C											
Approach Delay	38.2 D											
Approach LOS	D											
Queue Length 50th (ft)	42	49	0	12	53	0	2	118	0	41	46	0
Queue Length 95th (ft)	123	140	0	47	156	0	19	294	0	135	158	0
Internal Link Dist (ft)	308											
Turn Bay Length (ft)	50											
Base Capacity (vph)	553	579	0	566	566	0	378	2030	0	428	2209	0
Starvation Cap Reductn	0											
Spillback Cap Reductn	0											
Storage Cap Reductn	0											
Reduced v/c Ratio	0.20	0.22	0.0	0.06	0.30	0.0	0.02	0.32	0.0	0.25	0.20	0.0
Intersection Summary												
Cycle Length	154.5											
Actuated Cycle Length	90.8											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.53											
Intersection Signal Delay	24.0											
Intersection Capacity Utilization	51.6%											
Analysis Period (min)	15											
Intersection LOS: C, ICU Level of Service A												

Splits and Phases: 1: Country Hills Dr. & Deer Valley Rd.

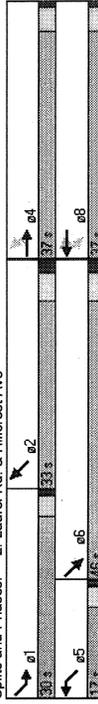


2: Laurel Rd. & Hillcrest Ave  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	NBL	NBT	NBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1635	0	1770	1863	1583	1770	3466	0	1770	3470	0
Satd. Flow (prot)	0.750	0.750	0	0.728	0.728	0.653	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1396	1635	0	1353	1863	1563	1768	3466	0	1770	3470	0
Satd. Flow (perm)	34	34	0	35	35	9	133	162	459	50	27	302
Satd. Flow (RTOR)	17	7	22	44	44	11	188	165	519	0	30	379
Volume (vph)	27	45	0	44	44	11	188	165	519	0	30	379
Lane Group Flow (vph)	Perm											
Turn Type	Perm											
Protected Phases	Perm											
Permitted Phases	Perm											
Total Split (s)	37.0	37.0	0.0	37.0	37.0	8	30.0	46.0	0.0	17.0	33.0	0.0
Act Effct Green (s)	13.3	13.3	0.0	13.3	13.3	13.3	15.1	73.4	0.0	8.1	62.6	0.0
Actuated g/C Ratio	0.13	0.13	0.0	0.13	0.13	0.13	0.15	0.73	0.0	0.08	0.63	0.0
v/c Ratio	0.15	0.18	0.0	0.24	0.24	0.04	0.47	0.62	0.20	0.21	0.17	0.0
Control Delay	36.1	16.2	0.0	38.8	32.9	9.7	49.4	6.2	45.7	9.9	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	16.2	0.0	38.8	32.9	9.7	49.4	6.2	45.7	9.9	0.0	0.0
LOS	D B B D C A D A D A											
Approach Delay	23.7 B											
Approach LOS	B											
Queue Length 50th (ft)	16	6	0	26	6	0	100	45	18	42	0	0
Queue Length 95th (ft)	24	17	0	42	16	31	158	123	46	111	0	0
Internal Link Dist (ft)	468											
Turn Bay Length (ft)	75											
Base Capacity (vph)	475	578	0	460	833	642	478	2563	248	2178	0	0
Starvation Cap Reductn	0											
Spillback Cap Reductn	0											
Storage Cap Reductn	0											
Reduced v/c Ratio	0.06	0.08	0.0	0.10	0.02	0.26	0.35	0.20	0.12	0.17	0.0	0.0
Intersection Summary												
Cycle Length	100											
Actuated Cycle Length	100											
Offset	21 (21%) Referenced to phase 2: NWT and 6: SET, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.62											
Intersection Signal Delay	15.8											
Intersection Capacity Utilization	48.8%											
Analysis Period (min)	15											
Intersection LOS: B, ICU Level of Service A												

Splits and Phases: 2: Laurel Rd. & Hillcrest Ave





5. Southeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

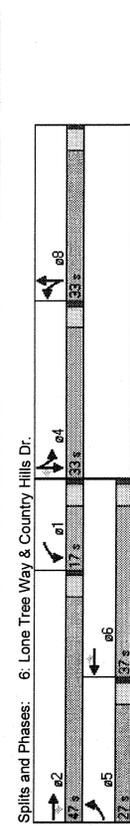
Existing Conditions  
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grade	0	0	125	0	0	37	0	383	58	0	463	68
Volumes (veh/h)	0.78	0.76	0.78	0.62	0.62	0.89	0.89	0.89	0.89	0.96	0.96	0.96
Peak Hour Factor	0	0	160	0	0	60	0	430	65	0	462	71
Hourly flow rate (vph)	0	0	160	0	0	60	0	430	65	0	462	71
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)								347				
Px, platoon unblocked												
Vc, conflicting volume	793	1013	196	751	963	215	553					496
Vc1, stage 1 cont vol												
Vc2, stage 2 cont vol												
Vcu, unblocked vol	793	1013	196	751	963	215	553					496
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1					4.1
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	100	100	80	100	100	92	100					100
SM capacity (veh/h)	258	237	812	240	247	790	1013					1064
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	160	60	215	215	215	65	193	167				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	160	60	0	0	0	65	0	0				71
C/S/H	812	790	1700	1700	1700	1700	1700	1700				1700
Volume to Capacity	0.20	0.08	0.13	0.13	0.04	0.11	0.11	0.10				
Queue Length 95th (ft)	18	6	0	0	0	0	0	0				
Control Delay (s)	10.5	9.9	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS	B	A	A	A	A	A	A	A				
Approach Delay (s)	10.5	9.9	0.0	0.0	0.0	0.0	0.0	0.0				
Approach LOS	B	A	A	A	A	A	A	A				
Intersection Summary												
Average Delay	1.8											
Intersection Capacity Utilization	24.9%											
ICU Level of Service	A											
Analysis Period (min)	15											

6. Lone Tree Way & Country Hills Dr.  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

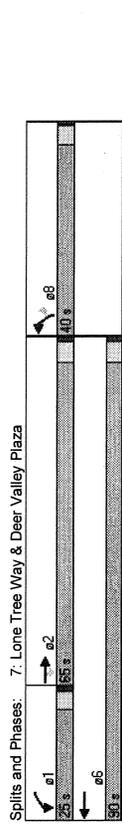
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1720	0	1770	1863	1583
Flt Permitted	0.966			0.966			0.966			0.966		
Satd. Flow (perm)	1762	3539	1386	1721	3539	1529	1755	1720	0	1768	1863	1549
Satd. Flow (RTOR)			41			17		32				79
Volume (vph)	127	855	111	80	606	37	115	84	75	40	91	67
Lane Group Flow (vph)	132	891	116	88	666	41	162	224	0	47	107	79
Turn Type	Prot	Perm	Prot	Prot	Perm	Split	Split	Split	Split	Split	Perm	Perm
Protected Phases	5	2	1	6	8	8	8	8	8	4	4	4
Permitted Phases	2	2	2	6	6	6	6	6	6	6	6	6
Total Split (s)	27.0	47.0	47.0	17.0	37.0	33.0	33.0	33.0	0.0	33.0	33.0	33.0
Act Effct Green (s)	16.7	65.8	65.8	14.0	63.1	63.1	21.7	21.7	0.0	16.5	16.5	16.5
Actuated g/C Ratio	0.13	0.51	0.51	0.11	0.49	0.49	0.17	0.17	0.0	0.13	0.13	0.13
v/c Ratio	0.58	0.50	0.16	0.46	0.39	0.05	0.55	0.72	0.21	0.45	0.30	0.30
Control Delay	65.0	24.9	15.0	58.8	24.5	16.9	55.7	55.9	49.9	56.7	12.1	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.0	24.9	15.0	58.8	24.5	16.9	55.7	55.9	49.9	56.7	12.1	12.1
LOS	E	C	B	E	C	B	E	E	E	D	E	B
Approach Delay	28.3											
Approach LOS	C											
Queue Length 50th (ft)	106	242	31	66	148	3	127	156	37	87	0	0
Queue Length 95th (ft)	166	427	93	m136	364	m14	141	166	62	120	37	0
Internal Link Dist (ft)	144	1420	75	146	740	73	167	675	156	577	156	156
Turn Bay Length (ft)	327	1791	722	191	1718	761	408	422	408	438	418	418
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.50	0.16	0.46	0.39	0.05	0.40	0.53	0.12	0.25	0.19	0.19
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	80 (62%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.72											
Intersection Signal Delay	33.4											
Intersection LOS	C											
Intersection Capacity Utilization	58.4%											
ICU Level of Service	B											
Analysis Period (min)	15											
Volume for 95th percentile queue is metered by upstream signal.												



7: Lone Tree Way & Deer Valley Plaza  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	3539	1583	1770	3539	1770
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950
Fit Permitted	3539	1436	1741	3539	1770
Satd. Flow (perm)	47	86	600	113	61
Satd. Flow (RTOR)	1048	99	95	659	145
Volume (vph)	995	93	86	600	113
Lane Group Flow (vph)	1048	99	95	659	145
Turn Type	Perm	Prot	Perm	Prot	Perm
Protected Phases	2	1	6	8	8
Permitted Phases	2	1	6	8	8
Total Split (s)	65.0	25.0	90.0	40.0	40.0
Act Effect Green (s)	80.4	13.9	107.4	16.6	16.6
Actuated g/C Ratio	0.70	0.11	0.63	0.13	0.13
v/c Ratio	0.43	0.10	0.50	0.23	0.29
Control Delay	2.1	0.5	58.0	5.9	66.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	0.5	58.0	5.9	66.2
LOS	A	A	E	A	B
Approach Delay	2.0	A	12.5	47.5	B
Approach LOS	A	B	D	D	D
Queue Length 50th (ft)	36	1	85	93	118
Queue Length 95th (ft)	43	m0	145	0	154
Internal Link Dist (ft)	740	0	850	704	31
Turn Bay Length (ft)	100	197	300	2923	504
Base Capacity (vph)	2462	1013	300	2923	504
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.10	0.32	0.23	0.29
Intersection Summary					
Cycle Length	130				
Actuated Cycle Length	130				
Offset	94 (72%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow				
Control Type	Actuated-Coordinated				
Maximum v/c Ratio	0.64				
Intersection Signal Delay	10.5				
Intersection Capacity Utilization	48.3%				
Analysis Period (min)	15				
m	Volume for 85th percentile queue is metered by upstream signal.				

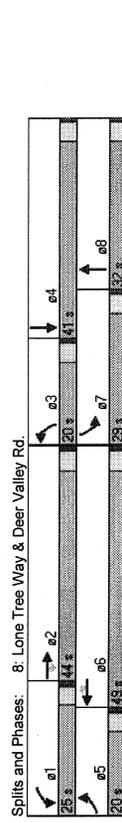


Splits and Phases: 7: Lone Tree Way & Deer Valley Plaza

8: Lone Tree Way & Deer Valley Rd.  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	3539	1583	3433	3352	0	2000	3501	0
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1767	3539	1523	1760	3539	1551	3427	3352	0	1766	3501	0
Satd. Flow (perm)	57	57	57	101	101	55	55	55	0	55	55	0
Satd. Flow (RTOR)	87	780	147	151	497	154	192	356	168	168	191	14
Volume (vph)	100	897	169	159	523	162	223	609	0	200	244	0
Lane Group Flow (vph)	100	897	169	159	523	162	223	609	0	200	244	0
Turn Type	Prot	Perm	Prot	Prot	Perm	Prot	Prot	Perm	Prot	Prot	Perm	Prot
Protected Phases	5	2	2	1	6	3	8	7	4	4	4	4
Permitted Phases	5	2	2	1	6	3	8	7	4	4	4	4
Total Split (s)	20.0	44.0	44.0	25.0	49.0	49.0	20.0	32.0	0.0	29.0	41.0	0.0
Act Effect Green (s)	13.5	53.0	53.0	17.8	57.3	57.3	14.7	27.0	0.0	20.2	32.5	0.0
Actuated g/C Ratio	0.10	0.41	0.41	0.14	0.44	0.44	0.11	0.21	0.0	0.16	0.25	0.0
v/c Ratio	0.55	0.62	0.26	0.65	0.34	0.22	0.57	0.62	0.0	0.64	0.28	0.0
Control Delay	80.8	25.4	14.8	73.0	29.6	17.2	60.4	54.4	0.0	60.7	38.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.8	25.4	14.8	73.0	29.6	17.2	60.4	54.4	0.0	60.7	38.2	0.0
LOS	F	C	B	E	C	B	E	D	E	D	D	D
Approach Delay	28.6	C	35.4	D	D	D	D	D	D	D	D	D
Approach LOS	C	D	D	D	D	D	D	D	D	D	D	D
Queue Length 50th (ft)	81	160	22	134	100	8	92	235	0	160	64	0
Queue Length 95th (ft)	139	318	100	218	0	165	127	285	0	213	107	0
Internal Link Dist (ft)	195	850	73	192	1580	75	181	825	0	400	1028	0
Turn Bay Length (ft)	231	1442	854	300	1560	740	449	802	0	400	1028	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.62	0.26	0.53	0.34	0.22	0.50	0.76	0.0	0.50	0.24	0.0
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	80 (62%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.82											
Intersection Signal Delay	40.0											
Intersection Capacity Utilization	59.5%											
Analysis Period (min)	15											
n	User Entered Value											



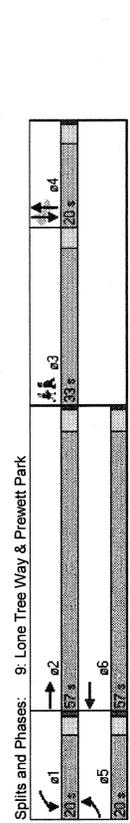
Splits and Phases: 8: Lone Tree Way & Deer Valley Rd.

9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3535	0	1770	3531	0	1770	1561	0	1770	1863	1583
Flt Permitted	0.950	0.950	0	0.755	0.755	0	0.747	0.747	0	0.747	0.747	0.747
Satd. Flow (perm)	1770	3535	0	1766	3531	0	1394	1561	0	1388	1863	1550
Satd. Flow (RTOR)	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	36	1150	7	26	781	9	35	0	8	8	2	14
Lane Group Flow (vph)	36	1258	0	30	918	0	71	16	0	15	4	25
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	1	6	1	4	4	4	4	4	4	4
Permitted Phases	20.0	57.0	0.0	20.0	57.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0
Total Split (s)	9.8	89.8	0.0	9.0	86.8	0.0	13.0	13.0	0.0	13.0	13.0	13.0
Act Effct Green (s)	0.07	0.67	0.00	0.10	0.10	0.00	0.10	0.10	0.00	0.10	0.10	0.10
Actuated g/C Ratio	0.29	0.52	0.00	0.24	0.39	0.00	0.51	0.03	0.00	0.11	0.02	0.14
v/c Ratio	66.1	7.8	70.8	5.6	67.4	0.1	53.0	50.5	19.7	53.0	50.5	19.7
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	7.8	70.8	5.6	67.4	0.1	53.0	50.5	19.7	53.0	50.5	19.7
LOS	E	A	E	A	E	A	E	A	D	D	D	B
Approach Delay	9.6	7.6	7.6	7.6	7.6	7.6	55.1	55.1	33.9	33.9	33.9	33.9
Approach LOS	A	A	A	A	A	A	E	E	C	C	C	C
Queue Length 50th (ft)	32	141	24	67	58	0	12	12	3	3	3	3
Queue Length 95th (ft)	m53	175	m56	123	56	0	20	20	9	9	9	9
Internal Link Dist (ft)	145	1580	148	605	609	609	819	819	102	102	102	102
Turn Bay Length (ft)	231	2442	231	2359	182	649	182	244	224	224	224	224
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.52	0.13	0.39	0.39	0.02	0.08	0.02	0.08	0.02	0.11	0.11

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 113.87%. Referenced to phase 2, EBT and 6, WBT, Start of Yellow  
 Control Type: Actuated/Coordinated  
 Maximum v/c Ratio: 0.52  
 Intersection LOS: B  
 Intersection Capacity Utilization: 47.4%  
 Analysis Period (min): 15  
 m: Volume for 95th percentile queue is metered by upstream signal.



9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

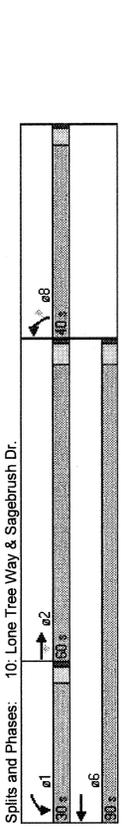
Existing Conditions  
PM Peak

Lane Group	93
Lane Configurations	
Total Lost Time (s)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Total Split (s)	33.0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

10: Lone Tree Way & Sagebrush Dr.  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	3539	1583	1770	3539	1770	1583
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950
Flt Permitted	3539	1511	1763	3539	1770	1583
Satd. Flow (perm)	55	55	55	55	55	55
Satd. Flow (RTOR)	1040	146	40	691	85	101
Volume (vph)	1130	159	49	853	139	168
Lane Group Flow (vph)	Perm	Prot	Prot	Perm	Perm	Perm
Turn Type	2	2	1	6	8	8
Protected Phases						
Permitted Phases	60.0	60.0	30.0	90.0	40.0	40.0
Total Split (s)	101.3	101.3	9.1	105.3	14.7	14.7
Act Effct Green (s)	0.78	0.78	0.07	0.84	0.11	0.11
Actuated g/C Ratio	0.41	0.13	0.40	0.29	0.69	0.51
v/c Ratio	1.1	0.3	0.3	0.74	1.0	0.72
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.1	0.3	0.3	0.74	1.0	0.72
LOS	A	A	E	A	E	B
Approach Delay	1.0			4.9	40.1	
Approach LOS	A			A	D	
Queue Length 50th (ft)	17	0	37	16	115	0
Queue Length 95th (ft)	10	1	76	7	116	3
Internal Link Dist (ft)	606			1855	497	
Turn Bay Length (ft)	80	142		116		
Base Capacity (vph)	2757	1190	368	2974	504	569
Starvation Cap Reductn	149	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.13	0.13	0.29	0.28	0.28
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 122 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.69						
Intersection Signal Delay: 7.2						
Intersection Capacity Utilization: 44.6%						
Analysis Period (min): 15						
Intersection LOS: A						
ICU Level of Service: A						

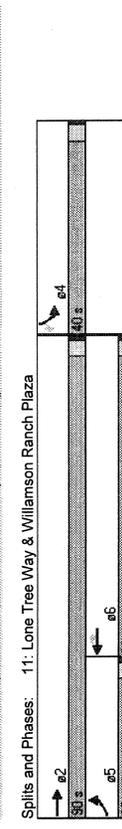


Splits and Phases: 10: Lone Tree Way & Sagebrush Dr.

11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBL	EBT	WBL	WBT	SBL	SBT
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	3539	1583	1770	1583
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950
Flt Permitted	1731	3539	3539	1451	1770	1562
Satd. Flow (perm)	55	55	55	55	55	55
Satd. Flow (RTOR)	80	1081	711	20	40	39
Volume (vph)	90	1215	790	22	56	55
Lane Group Flow (vph)	Prot	Perm	Perm	Perm	Perm	Perm
Turn Type	5	2	6	6	4	4
Protected Phases						
Permitted Phases	30.0	90.0	60.0	60.0	40.0	40.0
Total Split (s)	11.5	114.5	99.5	99.5	12.1	12.1
Act Effct Green (s)	0.09	0.86	0.77	0.77	0.09	0.09
Actuated g/C Ratio	0.58	0.39	0.29	0.02	0.34	0.28
v/c Ratio	75.2	3.0	0.9	0.1	58.3	15.5
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.2	3.0	0.9	0.1	58.3	15.5
LOS	E	A	A	A	E	B
Approach Delay	6.0	0.9			37.1	
Approach LOS	A	A			D	
Queue Length 50th (ft)	70	6	9	0	46	0
Queue Length 95th (ft)	106	427	20	m0	62	20
Internal Link Dist (ft)	1655	820			457	
Turn Bay Length (ft)	155				113	
Base Capacity (vph)	368	3118	2707	1113	604	464
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.39	0.29	0.02	0.11	0.11
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 75 (58%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.58						
Intersection Signal Delay: 6.9						
Intersection Capacity Utilization: 42.1%						
Analysis Period (min): 15						
Intersection LOS: A						
ICU Level of Service: A						

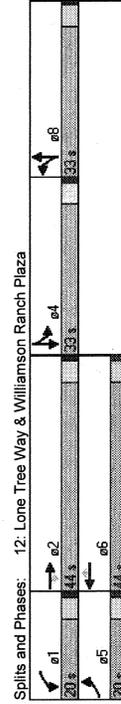


Splits and Phases: 11: Lone Tree Way & Williamson Ranch Plaza

12: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	3539	1583	1770	1655	0	3433	1626	0
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1724	3539	1422	1742	3539	1419	1767	1655	0	3419	1626	0
Satd. Flow (RTOR)	87	908	28	49	653	38	7	18	38	89	16	60
Volume (vph)	104	1081	33	58	777	45	10	78	0	114	98	0
Lane Group Flow (vph)	Prot	Perm	Prot	Perm	Prot	Perm	Split	Split	Split	Split	Split	Split
Turn Type	5	2	1	6	8	8	8	8	8	4	4	4
Protected Phases												
Permitted Phases	20.0	44.0	44.0	20.0	44.0	44.0	33.0	33.0	0.0	33.0	33.0	0.0
Act Erct Green (s)	14.3	82.2	82.2	12.6	78.1	78.1	13.1	13.1	0.0	14.6	14.6	0.0
Actuated g/C Ratio	0.11	0.63	0.63	0.10	0.60	0.60	0.10	0.10	0.0	0.11	0.11	0.0
v/c Ratio	0.54	0.48	0.04	0.34	0.37	0.05	0.06	0.36	0.0	0.30	0.39	0.0
Control Delay	74.6	12.3	4.9	66.7	9.0	3.4	47.7	24.4	52.9	19.6	19.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.6	12.3	4.9	66.7	9.0	3.4	47.7	24.4	52.9	19.6	19.6	0.0
LOS	E	B	A	E	A	A	D	C	D	D	D	B
Approach Delay	17.4			12.7			27.1			37.5		
Approach LOS	B			B			C			D		
Queue Length 50th (ft)	83	164	3	51	35	0	8	20	0	47	17	
Queue Length 95th (ft)	108	4549	21	93	151	6	18	39		56	46	
Internal Link Dist. (ft)	520			420			731			440		
Turn Bay Length (ft)	158	2237	902	231	2127	871	408	423	200	792	434	
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.46	0.04	0.25	0.37	0.05	0.02	0.18		0.14	0.23	
Intersection Summary												
Cycle Length	130			130			130			130		
Actuated Cycle Length	130			130			130			130		
Offset: 63 (41%): Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.54												
Intersection Signal Delay: 17.8												
Intersection LOS: B												
Intersection Capacity Utilization: 48.1%												
Analysis Period (min): 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												



13: Lone Tree Way & Wal-Mart Driveway  
Antioch Walmart Expansion

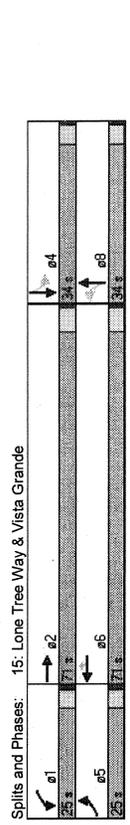
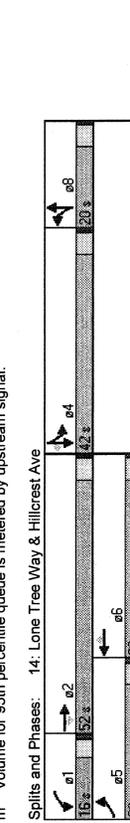
Existing Conditions  
PM Peak

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	3539	1583	1770	1655	0	3433	1626	0
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1724	3539	1422	1742	3539	1419	1767	1655	0	3419	1626	0
Satd. Flow (RTOR)	87	908	28	49	653	38	7	18	38	89	16	60
Volume (vph)	104	1081	33	58	777	45	10	78	0	114	98	0
Lane Group Flow (vph)	Prot	Perm	Prot	Perm	Prot	Perm	Split	Split	Split	Split	Split	Split
Turn Type	5	2	1	6	8	8	8	8	8	4	4	4
Protected Phases												
Permitted Phases	20.0	44.0	44.0	20.0	44.0	44.0	33.0	33.0	0.0	33.0	33.0	0.0
Act Erct Green (s)	14.3	82.2	82.2	12.6	78.1	78.1	13.1	13.1	0.0	14.6	14.6	0.0
Actuated g/C Ratio	0.11	0.63	0.63	0.10	0.60	0.60	0.10	0.10	0.0	0.11	0.11	0.0
v/c Ratio	0.54	0.48	0.04	0.34	0.37	0.05	0.06	0.36	0.0	0.30	0.39	0.0
Control Delay	74.6	12.3	4.9	66.7	9.0	3.4	47.7	24.4	52.9	19.6	19.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.6	12.3	4.9	66.7	9.0	3.4	47.7	24.4	52.9	19.6	19.6	0.0
LOS	E	B	A	E	A	A	D	C	D	D	D	B
Approach Delay	17.4			12.7			27.1			37.5		
Approach LOS	B			B			C			D		
Queue Length 50th (ft)	83	164	3	51	35	0	8	20	0	47	17	
Queue Length 95th (ft)	108	4549	21	93	151	6	18	39		56	46	
Internal Link Dist. (ft)	520			420			731			440		
Turn Bay Length (ft)	158	2237	902	231	2127	871	408	423	200	792	434	
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.46	0.04	0.25	0.37	0.05	0.02	0.18		0.14	0.23	
Intersection Summary												
Cycle Length	130			130			130			130		
Actuated Cycle Length	130			130			130			130		
Offset: 63 (41%): Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.54												
Intersection Signal Delay: 17.8												
Intersection LOS: B												
Intersection Capacity Utilization: 48.1%												
Analysis Period (min): 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

14: Lone Tree Way & Hillcrest Ave  
Antioch Walmart Expansion

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1770	3539	1583	1770	5055	1583	1770	3388	0	2000	3272	1583
0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
1765	3539	1520	1765	5055	1517	1749	3388	0	1583	3230	1534
18	269	18	269	18	269	18	269	25	18	269	118
131	915	22	43	720	229	17	87	26	423	77	97
146	1017	24	51	847	269	24	160	0	258	352	118
Prot											
5	2	1	6	6	8	8	8	8	4	4	4
Permitted Phases											
30.0	52.0	52.0	38.0	38.0	20.0	20.0	20.0	0.0	42.0	42.0	42.0
16.7	66.3	66.3	10.4	56.0	56.0	17.3	17.3	0.0	26.1	26.1	26.1
0.74	0.51	0.51	0.068	0.43	0.43	0.13	0.13	0.0	0.20	0.20	0.20
0.57	0.56	0.03	0.36	0.39	0.33	0.10	0.34	0.0	0.64	0.54	0.29
76.4	18.4	12.2	52.8	31.9	13.1	47.7	43.7	0.0	54.6	48.8	8.5
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76.4	18.4	12.2	52.8	31.9	13.1	47.7	43.7	0.0	54.6	48.8	8.5
LOS	E	B	B	C	B	D	D	D	D	D	A
Approach	25.4	C	28.5	C	44.3	C	44.3	44.3	44.3	44.3	44.3
Queue Length 50th (ft)	120	73	0	41	195	66	19	56	221	147	0
Queue Length 95th (ft)	202	289	m11	84	194	110	34	64	269	167	37
Internal Link Dist (ft)	203	430	205	208	590	230	2575	295	1680	291	543
Base Capacity (vph)	368	1855	784	177	2188	806	268	535	600	982	543
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.56	0.03	0.29	0.39	0.33	0.09	0.30	0.43	0.36	0.22
Intersection Summary											
Cycle Length: 130											
Actuated Cycle Length: 130											
Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 98 (75%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Control Type: Actuated-Coordinated											
Maximum v/c Ratio: 0.64	Maximum v/c Ratio: 0.56	Maximum v/c Ratio: 0.64									
Intersection Signal Delay: 31.8	Intersection Signal Delay: 11.4	Intersection Signal Delay: 31.8									
Intersection Capacity Utilization 62.0%	Intersection Capacity Utilization 58.5%	Intersection Capacity Utilization 62.0%									
Analysis Period (min) 15											
m User Entered Value											
m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.	m Volume for 95th percentile queue is metered by upstream signal.



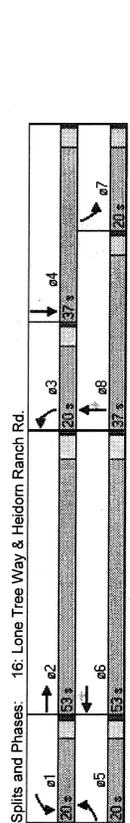
Splits and Phases: 14: Lone Tree Way & Hillcrest Ave

Splits and Phases: 15: Lone Tree Way & Vista Grande

16: Lone Tree Way & Heidorn Ranch Rd.  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	5037	0	1770	3539	1583	3433	1863	1583	1770	1699	0
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0
Fit Permitted	1768	5037	0	1768	3539	1538	3433	1863	1561	1765	1699	0
Satd. Flow (perm)	8	74	24	1026	13	85	4	48	5	3	4	7
Satd. Flow (RTOR)	5	1319	0	26	1127	14	112	5	63	8	12	0
Volume (vph)	5	1451	0	26	1127	14	112	5	63	8	12	0
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	1	6	3	3	8	8	7	4		
Protected Phases	5	2	1	6	3	3	8	8	7	4		
Permitted Phases	20.0	53.0	0.0	20.0	53.0	20.0	37.0	37.0	20.0	37.0	0.0	0.0
Total Split (s)	8.5	97.4	0.0	9.9	103.2	103.2	12.0	15.8	15.8	8.6	11.8	
Act Effct Green (s)	0.07	0.75	0.08	0.79	0.79	0.09	0.12	0.12	0.07	0.09	0.09	
Actuated g/C Ratio	0.04	0.38	0.19	0.40	0.01	0.35	0.02	0.26	0.07	0.07	0.07	
v/c Ratio	81.4	3.5	70.6	4.2	2.7	58.1	44.0	12.6	57.8	33.0		
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Queue Length	81.4	3.5	70.6	4.2	2.7	58.1	44.0	12.6	57.8	33.0		
Total Delay	F	A	E	A	A	E	D	B	E	C		
LOS	3.7	A	A	A	A	E	D	B	E	C		
Approach Delay	3.7	5.7		5.7	41.8		41.8	42.9				
Approach LOS	A	A		A	D		D	D				
Queue Length 50th (ft)	4	30	23	52	1	46	4	0	6	4		
Queue Length 95th (ft)	m11	262	m32	390	m2	63	11	24	15	12		
Internal Link Dist (ft)	1055		905		905		972		316			
Turn Bay Length (ft)	194	410	410	100					53			
Base Capacity (vph)	231	3774	231	2810	1222	449	487	455	231	450		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.02	0.38	0.11	0.40	0.01	0.25	0.01	0.14	0.03	0.03		
Intersection Summary												
Cycle Length	130			130								
Actuated Cycle Length	130			130								
Offset	114 (86%)			Referenced to phase 2:EBT and 6:WBT, Start of Yellow								
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.46											
Intersection Signal Delay	7.2			Intersection LOS: A								
Intersection Capacity Utilization	45.3%			ICU Level of Service A								
Analysis Period (min)	15											
m	Volume for 95th percentile queue is metered by upstream signal.											

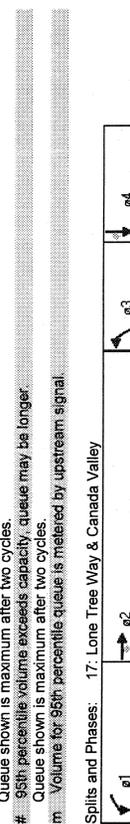


Splits and Phases: 16: Lone Tree Way & Heidorn Ranch Rd.

17: Lone Tree Way & Canada Valley  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	5085	1583	3433	3407	0	3433	1638	1504	1770	1863	1583
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Fit Permitted	1768	5085	1534	3420	3407	0	3424	1638	1481	1764	1863	1562
Satd. Flow (perm)	31	31	31	37	37	0	27	171	171	171	171	30
Satd. Flow (RTOR)	54	1354	55	329	942	253	84	55	173	175	175	56
Volume (vph)	58	1458	59	366	1328	0	112	133	171	240	240	77
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	2	1	6	3	8	8	7	4		
Protected Phases	5	2	2	1	6	3	8	8	7	4		
Permitted Phases	20.0	58.0	58.0	30.0	68.0	0.0	20.0	22.0	22.0	20.0	22.0	22.0
Total Split (s)	14.8	69.2	69.2	18.2	74.5		13.7	13.5	13.5	17.0	18.8	18.8
Act Effct Green (s)	0.11	0.53	0.53	0.14	0.57		0.11	0.10	0.10	0.13	0.14	0.14
Actuated g/C Ratio	0.29	0.54	0.07	0.76	0.68		0.31	0.68	0.56	1.04	0.29	0.12
v/c Ratio	37.9	9.8	2.8	66.3	15.0		58.2	61.5	14.5	124.0	50.4	15.7
Control Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Queue Length	37.9	9.8	2.8	66.3	15.0		58.2	61.5	14.5	124.0	50.4	15.7
Total Delay	D	A	A	E	B		E	E	B	F	D	B
LOS	10.5	B	B	26.1	C		41.3	D	D	F	F	F
Approach Delay	40	152	1	136	316		47	81	0	218	57	0
Approach LOS	72	106	9	m177	528		63	126	33	#275	83	18
Queue Length 50th (ft)	300	120	300	150			150					
Queue Length 95th (ft)	231	2708	831	713	1967		505	262	362	231	305	281
Internal Link Dist (ft)	0	0	0	0	0		0	0	0	0	0	0
Turn Bay Length (ft)	0	0	0	0	0		0	0	0	0	0	0
Base Capacity (vph)	0	0	0	0	0		0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.54	0.07	0.51	0.68		0.22	0.61	0.47	1.04	0.25	0.11
Intersection Summary												
Cycle Length	130			130								
Actuated Cycle Length	130			130								
Offset	87 (67%)			Referenced to phase 2:EBT and 6:WBT, Start of Yellow								
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	1.04			Intersection LOS: C								
Intersection Signal Delay	27.8			ICU Level of Service B								
Intersection Capacity Utilization	63.9%											
Analysis Period (min)	15											
n	Volume for 95th percentile queue is metered by upstream signal.											

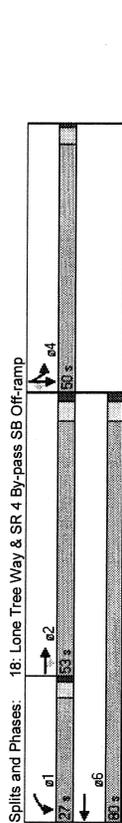


Splits and Phases: 17: Lone Tree Way & Canada Valley

18: Lone Tree Way & SR 4 By-pass SB Off-ramp  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Fit Permitted	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (perm)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (RTOR)	0	1169	541	98	1153	0	0	0	416	10	361	54
Volume (vph)	0	1313	608	113	1325	0	0	0	234	244	406	0
Lane Group Flow (vph)	0	1313	608	113	1325	0	0	0	234	244	406	0
Turn Type	2	1	6	1	6	1	6	1	6	1	6	1
Protected Phases	2	1	6	1	6	1	6	1	6	1	6	1
Permitted Phases	0.0	53.0	53.0	27.0	80.0	0.0	0.0	0.0	50.0	50.0	50.0	0.0
Total Split (s)	0.0	75.3	75.3	10.1	88.4	0.0	0.0	0.0	35.6	35.6	35.6	0.0
Act Effct Green (s)	0.0	86	86	0.08	0.68	0.0	0.0	0.0	0.27	0.27	0.27	0.0
Actuated g/C Ratio	0.45	0.52	0.42	0.38	0.51	0.0	0.0	0.0	0.53	0.86	0.86	0.0
v/c Ratio	17.2	5.5	73.9	5.9	5.9	0.0	0.0	0.0	42.4	42.9	55.7	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	5.5	73.9	5.9	5.9	0.0	0.0	0.0	42.4	42.9	55.7	0.0
LOS	B	A	E	A	A	D	D	D	D	D	D	E
Approach Delay	13.5	0	0	11.3	0	0	0	0	48.7	0	0	0
Approach LOS	B	B	B	B	B	D	D	D	D	D	D	D
Queue Length 50th (ft)	165	32	49	92	125	174	183	286	227	236	363	0
Queue Length 95th (ft)	m227	m93	m68	125	760	871	528	528	227	236	363	0
Internal Link Dist (ft)	760	400	325	760	760	871	528	528	227	236	363	0
Turn Bay Length (ft)	2946	1160	634	3459	3459	608	610	607	608	610	607	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.52	0.18	0.38	0.38	0.38	0.40	0.67	0.38	0.40	0.67	0.0
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	100 (77%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.86											
Intersection Signal Delay	20.1											
Intersection LOS	C											
Intersection Capacity Utilization	66.4%											
ICU Level of Service	B											
Analysis Period (min)	15											
Volume for 95th percentile queue is metered by upstream signal.												

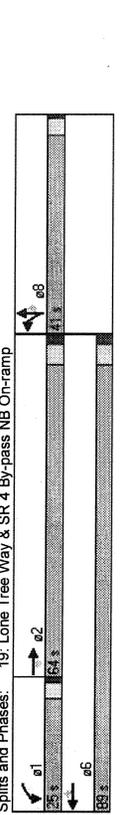


Splits and Phases: 18: Lone Tree Way & SR 4 By-pass SB Off-ramp

19: Lone Tree Way & SR 4 By-pass NB On-ramp  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	0	5085	1583	3433	5085	1583	1681	1699	1583	0	0	0
Satd. Flow (prot)	0	5085	1583	3433	5085	1583	1681	1699	1583	0	0	0
Fit Permitted	0	5085	1583	3433	5085	1583	1681	1699	1583	0	0	0
Satd. Flow (perm)	0	5085	1583	3433	5085	1545	1681	1699	1553	0	0	0
Satd. Flow (RTOR)	0	1404	264	21	831	357	437	43	137	0	0	0
Volume (vph)	0	1494	281	24	934	401	289	304	169	0	0	0
Lane Group Flow (vph)	0	1494	281	24	934	401	289	304	169	0	0	0
Turn Type	2	1	6	1	6	6	6	6	6	1	6	1
Protected Phases	2	1	6	1	6	6	6	6	6	1	6	1
Permitted Phases	0.0	64.0	64.0	25.0	89.0	89.0	41.0	41.0	41.0	0.0	0.0	0.0
Total Split (s)	0.0	89.9	89.9	7.1	96.0	96.0	28.0	28.0	28.0	0.0	0.0	0.0
Act Effct Green (s)	0.0	0.89	0.89	0.05	0.74	0.74	0.22	0.22	0.22	0.0	0.0	0.0
Actuated g/C Ratio	0.42	0.25	0.13	0.25	0.32	0.32	0.80	0.83	0.36	0.0	0.0	0.0
v/c Ratio	5.1	2.4	60.0	6.3	6.3	6.3	63.9	67.0	7.4	0.0	0.0	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	2.4	60.0	6.3	6.3	6.3	63.9	67.0	7.4	0.0	0.0	0.0
LOS	A	A	E	A	A	A	E	E	A	E	A	A
Approach Delay	4.7	0	0	5.8	0	0	52.6	0	0	0	0	0
Approach LOS	A	A	A	A	A	D	D	D	D	D	D	D
Queue Length 50th (ft)	126	31	10	80	0	246	281	0	0	0	0	0
Queue Length 95th (ft)	254	82	25	130	31	281	296	37	0	0	0	0
Internal Link Dist (ft)	760	150	315	920	150	936	1156	1156	315	0	0	0
Turn Bay Length (ft)	3516	1135	561	3754	1246	481	497	575	575	0	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.25	0.04	0.25	0.32	0.32	0.59	0.61	0.29	0.0	0.0	0.0
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	10 (8%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.83											
Intersection Signal Delay	14.4											
Intersection LOS	B											
Intersection Capacity Utilization	47.6%											
ICU Level of Service	A											
Analysis Period (min)	15											



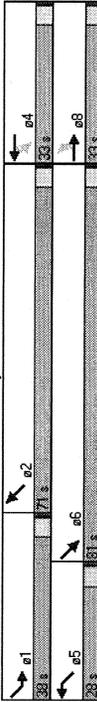
Splits and Phases: 19: Lone Tree Way & SR 4 By-pass NB On-ramp

20: Marita Dr. & Deer Valley Rd.  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	NBL	NBT	NBR	NBR	NBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	NBL	NBT	NBR	NBR	NBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Split (s)	17.0	15.83	0	17.0	15.98	0	17.0	15.89	0	17.0	15.89	0	17.0	15.89
Actuated g/C Ratio	0.5689	0.755	0	0.755	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950
Maximum v/c Ratio	10.60	15.83	0	14.06	15.98	0	17.61	15.89	0	17.34	15.89	0	17.34	15.89
Control Delay	47.5	0.0	0	47.7	15.9	0	47.6	15.9	0	48.0	15.9	0	48.0	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	0.0	0.0	47.7	15.9	0	47.6	15.9	0	48.0	15.9	0	48.0	15.9
LOS	D	A	A	D	B	B	D	A	A	D	A	D	A	D
Approach Delay	39.2	0.0	0.0	22.8	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Approach LOS	D	D	D	C	A	A	A	A	A	A	A	A	A	A
Queue Length 50th (ft)	11	0	0	19	3	3	18	22	9	69	9	69	9	69
Queue Length 95th (ft)	26	0	0	40	27	27	46	68	32	117	32	117	32	117
Internal Link Dist (ft)	345			427			825			845			845	
Turn Bay Length (ft)														
Base Capacity (vph)	252	758	0	334	466	456	2800	342	2725	342	2725	342	2725	342
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.01	0.10	0.10	0.26	0.07	0.19	0.05	0.26	0.05	0.26	0.05	0.26	0.05
Intersection Summary														
Cycle Length	142													
Actuated Cycle Length	106.9													
Control Type	Actuated-Uncoordinated													
Maximum v/c Ratio	0.47													
Intersection Signal Delay	8.1													
Intersection Capacity Utilization	36.2%													
Analysis Period (min)	15													

Splits and Phases: 20: Marita Dr. & Deer Valley Rd.



21: Prewett Ranch Dr & Hillcrest Ave  
Antioch Walmart Expansion

Existing Conditions  
PM Peak

	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	NBL	NBT	NBR	NBR	NBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	NBL	NBT	NBR	NBR	NBR
Lane Configurations	135	23	0	0	11	3	0	0	0	0	0	0	12	0
Sign Control	Stop	Stop	0	0	0	0	0	0	0	0	0	0	0	0
Volume (vph)	0.84	0.84	0.84	0.39	0.39	0.39	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85
Peak Hour Factor	161	27	0	0	28	8	0	0	0	0	0	0	14	0
Hourly flow rate (vph)	161	27	0	0	28	8	0	0	0	0	0	0	14	0
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 2	SB 2	SB 2	SB 2	SB 2	SB 2
Volume Total (vph)	161	27	0	36	0	0	14	161						
Volume Left (vph)	161	0	0	0	0	0	0	14						
Volume Right (vph)	0	0	0	0	0	0	0	0						
Head (s)	0.53	0.08	0.00	-0.12	0.00	0.00	0.53	-0.57						
Departure Headway (s)	5.5	5.0	5.1	5.0	5.3	5.3	5.6	4.4						
Degree Utilization, x	0.24	0.04	0.00	0.05	0.00	0.00	0.02	0.20						
Capacity (veh/h)	630	693	682	685	654	654	608	775						
Control Delay (s)	9.1	7.0	6.9	7.1	7.1	7.1	7.6	7.3						
Approach Delay (s)	8.8	7.1	7.1	7.1	7.1	7.1	7.3	7.3						
Approach LOS	A	A	A	A	A	A	A	A						
Intersection Summary														
Delay	8.0													
HCM Level of Service	A													
Intersection Capacity Utilization	24.1%													
Analysis Period (min)	15													

# **TRIP GENERATION**







**APPROVED & PENDING DEVELOPMENT  
INFORMATION**



# Trip Generation Planner (ITE 8th Edition)



Renaissance at Bluerock  
097311002.1

Project Name  
Project Number

Weekday Trip Generation  
Trips Based on Average Rates/Equations

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips	AM Trips	PM Trips	Trips	AM Trips	PM Trips	Trips	Trips	AM Trips	PM Trips	Trips	Trips		
									In	Out	In	Out	In	Out	In	Out	In	Out	In	Out		
210	Single-Family Detached Housing	Dwelling Unit(s)	71	Avg	9.57	0.75	1.01	680	53	72	13	40	45	27	680	53	72	13	40	45	27	
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.82															
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58															
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35															
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39															
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72															
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52															
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78															
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38															
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55															
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59															
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27															
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23															
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16															
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17															
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22															
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29															
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26															
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75															
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62															
					<b>Totals</b>				680	53	72	13	40	45	27	680	53	72	13	40	45	27
					<b>Reduction</b>				95	7	10	2	6	6	4							
					<b>Grand Total</b>				585	46	62	11	34	39	23							

Notes:  
(1) AM and/or PM rates correspond to peak hour of generator

- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Park Ridge  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates			Total Trips						Net Trips after Pass-By Reduction									
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips					
210	Single-Family Detached Housing	Dwelling Unit(s)	562	Avg	9.57	0.75	1.01	5380	422	568	106	316	358	210	5380	422	568	106	316	358	210		
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.96	0.55																
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																
<b>Totals</b>					<b>5380</b>	<b>422</b>	<b>568</b>	<b>106</b>	<b>316</b>	<b>358</b>	<b>210</b>	<b>5380</b>	<b>422</b>	<b>568</b>	<b>106</b>	<b>316</b>	<b>358</b>	<b>210</b>	<b>5380</b>	<b>422</b>	<b>568</b>	<b>210</b>	
<b>Reduction</b>					<b>753</b>	<b>59</b>	<b>80</b>	<b>15</b>	<b>44</b>	<b>50</b>	<b>29</b>	<b>4627</b>	<b>363</b>	<b>488</b>	<b>91</b>	<b>272</b>	<b>308</b>	<b>181</b>					
<b>Grand Total</b>					<b>14%</b>	<b>5380</b>	<b>422</b>	<b>568</b>	<b>106</b>	<b>316</b>	<b>358</b>	<b>210</b>	<b>5380</b>	<b>422</b>	<b>568</b>	<b>106</b>	<b>316</b>	<b>358</b>	<b>210</b>	<b>5380</b>	<b>422</b>	<b>568</b>	<b>210</b>

Notes: (1) AM and/or PM rates correspond to peak hour of generator

- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
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# Trip Generation Planner (ITE 8th Edition)



Deer Valley Business Park  
097311002.1

Weekday Trip Generation  
Trips Based on Average Rates/Equations

Project Name  
Project Number

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Avg	Daily Trips	AM Trips	PM Trips	Avg	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips				
					Rate	Rate	Rate	Rate or Eq	In	Out	In	Out	In	Out	In	Out	In	Out				
710	General Office Building (1)	1,000 Sq Ft	84.45	11.01	1.55	1.49	1.40	930	131	126	115	16	21	105	930	131	126	115	16	21	105	
714	Corporate Headquarters Building(1)	1,000 Sq Ft		7.98	1.49	1.40																
715	Single Tenant Office Building (1)	1,000 Sq Ft		11.57	1.80	1.73																
720	Medical-Dental Office Building	1,000 Sq Ft		36.13	2.30	3.46																
730	Government Office Building (1)	1,000 Sq Ft		68.93	5.88	1.21																
731	State Motor Vehicles Department	1,000 Sq Ft		166.02	9.84	17.09																
732	United States Post Office	1,000 Sq Ft		108.19	8.21	11.12																
733	Government Office Complex	1,000 Sq Ft		27.92	2.21	2.85																
750	Office Park (1)	1,000 Sq Ft		11.42	1.71	1.48																
760	Research and Development Center (1)	1,000 Sq Ft		8.11	1.22	1.07																
770	Business Park (1)	1,000 Sq Ft		12.76	1.43	1.29																
				<b>Totals</b>				930	131	126	115	16	21	105	930	131	126	115	16	21	105	
				<b>Reduction</b>				214	30	29	26	4	5	24								
				<b>Grand Total</b>				716	101	97	89	12	16	81								

Notes:

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- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
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# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Hidden Glen  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips				Net Trips after Pass-By Reduction									
					Daily Rate	AM Rate	PM Rate	Avg	AM Trips	PM Trips	Daily Trips	AM Trips	PM Trips	Daily Trips	AM Trips	PM Trips	Daily Trips					
									In	Out	In	Out	In	Out	In	Out	In	Out				
210	Single-Family Detached Housing	Dwelling Unit(s)	371	Avg	9.57	0.75	1.01		3552	278	375	70	208	236	139	3552	278	375	70	208	236	139
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62															
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58															
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35															
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39															
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72															
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52															
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78															
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38															
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55															
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59															
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27															
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23															
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16															
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17															
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22															
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29															
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26															
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75															
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62															
				Totals	3552	278	375	70	208	236	139	3552	278	375	70	208	236	139				
				Reduction	487	39	53	10	29	33	19											
				Grand Total	3065	239	323	60	179	203	120											

Notes:  
 (1) AM and/or PM rates correspond to peak hour of generator

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- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
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# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**  
**Trips Based on Average Rates/Equations**

**Project Name**  
 Meadow Creek Village

**Project Number**  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Rate	AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips		
									In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	
210	Single-Family Detached Housing	Dwelling Unit(s)	97	Avg	9.57	0.75	1.01	0.62	930	73	98	18	55	62	36	930	73	98	18	55	62	36			
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					930	73	98	18	55	62	36	930	73	98	18	55	62	36	930	73	98	18	55	62	36
<b>Reduction</b>					130	10	14	3	8	9	5	130	10	14	3	8	9	5	130	10	14	3	8	9	5
<b>Grand Total</b>					800	63	84	15	47	53	31	800	63	84	15	47	53	31	800	63	84	15	47	53	31

Notes:

- (1) AM and/or PM rates correspond to peak hour of generator
- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
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# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**  
**Trips Based on Average Rates/Equations**

**Project Name**  
 Monterra (Nelson Ranch)

**Project Number**  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates			Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out
210	Single-Family Detached Housing	Dwelling Unit(s)	360	Avg	9.57	0.75	1.01	3446	270	364	68	202	229	135	3446	270	364	68	202	229	135
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62														
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58														
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35														
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39														
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72														
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52														
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78														
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38														
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55														
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59														
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27														
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23														
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16														
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17														
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22														
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29														
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26														
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75														
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62														
<b>Totals</b>					<b>3446</b>	<b>270</b>	<b>364</b>	<b>68</b>	<b>202</b>	<b>229</b>	<b>135</b>	<b>3446</b>	<b>270</b>	<b>364</b>	<b>68</b>	<b>202</b>	<b>229</b>	<b>135</b>			
<b>Reduction</b>					<b>482</b>	<b>38</b>	<b>51</b>	<b>10</b>	<b>28</b>	<b>32</b>	<b>19</b>	<b>482</b>	<b>38</b>	<b>51</b>	<b>10</b>	<b>28</b>	<b>32</b>	<b>19</b>			
<b>Grand Total</b>					<b>2964</b>	<b>232</b>	<b>313</b>	<b>58</b>	<b>174</b>	<b>197</b>	<b>116</b>	<b>2964</b>	<b>232</b>	<b>313</b>	<b>58</b>	<b>174</b>	<b>197</b>	<b>116</b>			

**Notes:**

- (1) AM and/or PM rates correspond to peak hour of generator
- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Sand Creek Ranch - Rivergate  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips				Net Trips after Pass-By Reduction								
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	Daily Trips	AM Trips	PM Trips	Daily Trips	AM Trips	PM Trips					
					or Eq	Rate	Rate	Rate	In	Out	In	Out	In	Out	In	Out					
210	Single-Family Detached Housing	Dwelling Unit(s)	239	Avg	9.57	0.75	1.01	2288	179	241	45	134	152	89	2288	179	241	45	134	152	89
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.82														
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58														
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35														
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39														
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72														
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52														
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78														
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38														
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55														
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59														
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27														
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23														
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16														
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17														
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22														
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29														
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26														
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75														
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62														
				Totals	2288	179	241	45	134	152	89	2288	179	241	45	134	152	89			
				Reduction	320	25	34	6	19	21	12										
				Grand Total	1968	154	207	39	115	131	77										

Notes:

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- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
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# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
Trips Based on Average Rates/Equations

Lone Tree Business Ctr (Williamson  
Ranch Plaza)  
097311002.1

Project Name  
Project Number

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Trip Rates			Total Trips						Net Trips after Pass-By Reduction						
				Daily Rate	AM Rate	PM Rate	Daily Trips		AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips		
							In	Out	In	Out	In	Out	In	Out	In	Out			
710	General Office Building (1)	1,000 Sq Ft	Avg	11.01	1.55	1.49	438	62	59	7	10	49	438	62	59	7	10	49	
714	Corporate Headquarters Building (1)	1,000 Sq Ft	Avg	7.98	1.49	1.40													
715	Single Tenant Office Building (1)	1,000 Sq Ft	Avg	11.57	1.80	1.73													
720	Medical-Dental Office Building	1,000 Sq Ft	Avg	36.13	2.30	3.46													
730	Government Office Building (1)	1,000 Sq Ft	Avg	68.93	5.88	1.21													
731	State Motor Vehicles Department	1,000 Sq Ft	Avg	166.02	9.84	17.09													
732	United States Post Office	1,000 Sq Ft	Avg	108.19	8.21	11.12													
733	Government Office Complex	1,000 Sq Ft	Avg	27.92	2.21	2.85													
760	Research and Development Center (1)	1,000 Sq Ft	Avg	8.11	1.22	1.07													
770	Business Park (1)	1,000 Sq Ft	Avg	12.76	1.43	1.29													
<b>Totals</b>							<b>438</b>	<b>62</b>	<b>59</b>	<b>7</b>	<b>10</b>	<b>49</b>	<b>438</b>	<b>62</b>	<b>59</b>	<b>7</b>	<b>10</b>	<b>49</b>	
<b>Reduction</b>							<b>101</b>	<b>14</b>	<b>13</b>	<b>2</b>	<b>2</b>	<b>11</b>							
<b>Grand Total</b>							<b>337</b>	<b>48</b>	<b>45</b>	<b>5</b>	<b>8</b>	<b>38</b>							

Notes:

(1) AM and/or PM rates correspond to peak hour of generator

23%

- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
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# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
Trips Based on Average Rates/Equations

Project Name  
Project Number

Antioch Town Center  
097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips				Net Trips after Pass-By Reduction						
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips	AM Trips	PM Trips	Trips	Daily Trips	AM Trips	PM Trips	Trips			
812	Building Materials and Lumber Store	1,000 Sq Ft	Avg	45.16	2.60	4.49		45.16											
813	Free Standing Discount Superstore	1,000 Sq Ft	Avg	53.13	1.67	4.61		53.13											
814	Specialty Retail Center	1,000 Sq Ft	Avg	44.32	*	2.71		44.32											
815	Free Standing Discount Store	1,000 Sq Ft	138.56	57.24	1.06	5.00		57.24	100	47	347	346	7932	147	575	100	47	288	287
816	Hardware/Paint Store	1,000 Sq Ft	Avg	51.29	1.08	4.84		51.29											
817	Nursery (Garden Center)	1,000 Sq Ft	Avg	36.08	1.31	3.80		36.08											
818	Nursery (Wholesale)	1,000 Sq Ft	Avg	39.00	2.40	5.17		39.00											
820	Shopping Center	1,000 Sq Ft	Avg	42.94	1.00	3.73		42.94											
823	Factory Outlet Center	1,000 Sq Ft	Avg	26.59	0.67	2.29		26.59											
841	New Car Sales	1,000 Sq Ft	Avg	33.34	2.03	2.59		33.34											
843	Automobile Parts Sales	1,000 Sq Ft	Avg	61.91	2.21	5.98		61.91											
848	Tire Store	1,000 Sq Ft	Avg	24.87	2.89	4.15		24.87											
849	Tire Superstore	1,000 Sq Ft	Avg	20.36	1.34	2.11		20.36											
850	Supermarket	1,000 Sq Ft	Avg	102.24	3.59	10.50		102.24											
851	Convenience Market (Open 24 Hours)	1,000 Sq Ft	Avg	737.99	67.03	52.41		737.99											
852	Convenience Market (Open 15-16 Hours)	1,000 Sq Ft	Avg	*	31.02	34.57		*											
853	Convenience Market w/ Gasoline Pumps	Fueling Position(s)	Avg	542.60	16.57	19.07		542.60											
854	Discount Supermarket	1,000 Sq Ft	Avg	96.82	2.74	8.90		96.82											
857	Discount Club	1,000 Sq Ft	Avg	41.80	0.56	4.24		41.80											
860	Wholesale Market	1,000 Sq Ft	Avg	6.73	0.51	0.88		6.73											
861	Sporting Goods Superstore	1,000 Sq Ft	Avg	*	3.10			*											
862	Home Improvement Superstore	1,000 Sq Ft	Avg	29.80	1.26	2.37		29.80											
863	Electronics Superstore	1,000 Sq Ft	Avg	45.04	0.28	4.50		45.04											
864	Toy/Children's Superstore	1,000 Sq Ft	Avg	*	4.99			*											
865	Baby Superstore	1,000 Sq Ft	Avg	*	1.82			*											
866	Pet Supply Superstore	1,000 Sq Ft	Avg	*	3.38			*											
867	Office Supply Superstore	1,000 Sq Ft	Avg	*	3.40			*											
868	Book Superstore	1,000 Sq Ft	Avg	*	19.53			*											
869	Discount Home Furnishing Superstore	1,000 Sq Ft	Avg	20.00	0.57	1.57		20.00											
872	Bed and Linen Superstore	1,000 Sq Ft	Avg	*	2.22			*											
875	Department Store	1,000 Sq Ft	Avg	22.88	0.53	1.78		22.88											
876	Apparel Store	1,000 Sq Ft	Avg	66.40	1.00	3.83		66.40											
879	Arts and Crafts Store (1)	1,000 Sq Ft	Avg	56.55	4.65	6.21		56.55											
880	Pharmacy/Drugstore w/o Drive-Through Window	1,000 Sq Ft	Avg	90.06	3.20	8.42		90.06											
881	Pharmacy/Drugstore w/ Drive-Through Window	1,000 Sq Ft	Avg	88.16	2.66	10.35		88.16											
890	Furniture Store	1,000 Sq Ft	Avg	5.06	0.17	0.45		5.06											
896	Video Rental Store	1,000 Sq Ft	Avg	*	13.60			*											
				Totals	7932	147	693	100	47	347	346	7932	147	575	100	47	288	287	
				Reduction	4363	81	381	55	26	191	190	4363	81	381	55	26	191	190	
				Grand Total	3569	66	312	45	21	156	156	3569	66	312	45	21	156	156	

Notes:

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# Trip Generation Planner (ITE 8th Edition)



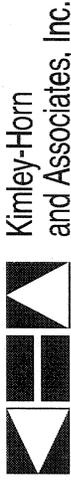
**Weekday Trip Generation**      **Project Name**      **Venture Commerce Center**  
**Trips Based on Average Rates/Equations**      **Project Number**      **097311002.1**

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Avg Rate	Daily Trips	AM Trips	PM Trips	Avg Trips	Daily Trips	AM Trips	PM Trips	Avg Trips	Daily Trips	AM Trips	PM Trips	Avg Trips					
710	General Office Building (1)	1,000 Sq Ft	46.1	Avg	11.01	1.55	1.49	1.40	508	71	69	62	9	12	57	508	71	69	62	9	12	57			
714	Corporate Headquarters Building(1)	1,000 Sq Ft		Avg	7.98	1.49	1.40																		
715	Single Tenant Office Building (1)	1,000 Sq Ft		Avg	11.57	1.80	1.73																		
720	Medical-Dental Office Building	1,000 Sq Ft		Avg	36.13	2.30	3.46																		
730	Government Office Building (1)	1,000 Sq Ft		Avg	68.93	5.88	1.21																		
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732	United States Post Office	1,000 Sq Ft		Avg	108.19	8.21	11.12																		
733	Government Office Complex	1,000 Sq Ft		Avg	27.92	2.21	2.85																		
750	Office Park (1)	1,000 Sq Ft		Avg	11.42	1.71	1.48																		
760	Research and Development Center (1)	1,000 Sq Ft		Avg	8.11	1.22	1.07																		
770	Business Park (1)	1,000 Sq Ft		Avg	12.76	1.43	1.29																		
<b>Totals</b>					<b>508</b>	<b>71</b>	<b>69</b>	<b>62</b>	<b>9</b>	<b>12</b>	<b>57</b>	<b>508</b>	<b>71</b>	<b>69</b>	<b>62</b>	<b>9</b>	<b>12</b>	<b>57</b>	<b>508</b>	<b>71</b>	<b>69</b>	<b>62</b>	<b>9</b>	<b>12</b>	<b>57</b>
<b>Reduction</b>					<b>117</b>	<b>16</b>	<b>16</b>	<b>14</b>	<b>2</b>	<b>3</b>	<b>13</b>	<b>117</b>	<b>16</b>	<b>16</b>	<b>14</b>	<b>2</b>	<b>3</b>	<b>13</b>	<b>117</b>	<b>16</b>	<b>16</b>	<b>14</b>	<b>2</b>	<b>3</b>	<b>13</b>
<b>Grand Total</b>					<b>391</b>	<b>55</b>	<b>53</b>	<b>48</b>	<b>7</b>	<b>9</b>	<b>44</b>	<b>391</b>	<b>55</b>	<b>53</b>	<b>48</b>	<b>7</b>	<b>9</b>	<b>44</b>	<b>391</b>	<b>55</b>	<b>53</b>	<b>48</b>	<b>7</b>	<b>9</b>	<b>44</b>

Notes:  
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 C Includes weekday rates only  
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 E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition  
 F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition  
 G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition  
 H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**  
**Trips Based on Average Rates/Equations**

**Project Name**  
**Project Number**

Zeka Ranch Estates  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction									
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips							
								In	Out	In	Out	In	Out	In	Out								
210	Single-Family Detached Housing	Dwelling Unit(s)	314	Avg	9.57	0.75	1.01	3006	236	317	59	177	200	117	200	117	3006	236	317	59	177	200	117
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.82																
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																
<b>Totals</b>					<b>3006</b>	<b>236</b>	<b>317</b>	<b>59</b>	<b>177</b>	<b>200</b>	<b>117</b>	<b>200</b>	<b>117</b>	<b>200</b>	<b>117</b>	<b>200</b>	<b>3006</b>	<b>236</b>	<b>317</b>	<b>59</b>	<b>177</b>	<b>200</b>	<b>117</b>
<b>Reduction</b>					<b>421</b>	<b>33</b>	<b>44</b>	<b>8</b>	<b>25</b>	<b>28</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>421</b>	<b>33</b>	<b>44</b>	<b>8</b>	<b>25</b>	<b>28</b>	<b>16</b>
<b>Grand Total</b>					<b>2585</b>	<b>203</b>	<b>273</b>	<b>51</b>	<b>152</b>	<b>172</b>	<b>101</b>	<b>152</b>	<b>172</b>	<b>101</b>	<b>101</b>	<b>101</b>	<b>2585</b>	<b>203</b>	<b>273</b>	<b>51</b>	<b>152</b>	<b>172</b>	<b>101</b>

Notes:

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- H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)



Office LT  
097311002.1

Weekday Trip Generation  
Trips Based on Average Rates/Equations

Project Name  
Project Number

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction								
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	
710	General Office Building (1)	1,000 Sq Ft	1429	Avg	11.01	1.55	1.49	15734	2215	2129	1949	266	362	1767	15734	2215	2129	1949	266	362	1767	
714	Corporate Headquarters Building (1)	1,000 Sq Ft		Avg	7.98	1.49	1.40															
715	Single Tenant Office Building (1)	1,000 Sq Ft		Avg	11.57	1.80	1.73															
720	Medical-Dental Office Building	1,000 Sq Ft		Avg	36.13	2.30	3.46															
730	Government Office Building (1)	1,000 Sq Ft		Avg	68.93	5.88	1.21															
731	State Motor Vehicles Department	1,000 Sq Ft		Avg	166.02	9.84	17.09															
732	United States Post Office	1,000 Sq Ft		Avg	108.19	8.21	11.12															
733	Government Office Complex	1,000 Sq Ft		Avg	27.92	2.21	2.85															
750	Office Park (1)	1,000 Sq Ft		Avg	11.42	1.71	1.48															
760	Research and Development Center (1)	1,000 Sq Ft		Avg	8.11	1.22	1.07															
770	Business Park (1)	1,000 Sq Ft		Avg	12.76	1.43	1.29															
				Totals	15734	2215	2129	1949	266	362	1767	15734	2215	2129	1949	266	362	1767				
				eBART Red.	1888	266	255	234	32	43	212											
				Subtotal	13846	1949	1874	1715	234	319	1555											
				Reduction	2492	351	337	309	42	57	280											
				Grand Total	11354	1598	1536	1406	192	261	1275											

Notes:

(1) AM and/or PM rates correspond to peak hour of generator

- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
Trips Based on Average Rates/Equations

Deer Valley Estates  
097311002.1

Project Name  
Project Number

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction											
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out				
210	Single-Family Detached Housing	Dwelling Unit(s)	136	Avg	9.57	0.75	1.01	1302	102	137	26	76	86	51	1302	102	137	26	76	86	51				
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>1302</b>	<b>102</b>	<b>137</b>	<b>26</b>	<b>76</b>	<b>86</b>	<b>51</b>	<b>1302</b>	<b>102</b>	<b>137</b>	<b>26</b>	<b>76</b>	<b>86</b>	<b>51</b>	<b>1302</b>	<b>102</b>	<b>137</b>	<b>26</b>	<b>76</b>	<b>86</b>	<b>51</b>
<b>Reduction</b>					<b>182</b>	<b>14</b>	<b>19</b>	<b>4</b>	<b>11</b>	<b>12</b>	<b>7</b>	<b>182</b>	<b>14</b>	<b>19</b>	<b>4</b>	<b>11</b>	<b>12</b>	<b>7</b>	<b>182</b>	<b>14</b>	<b>19</b>	<b>4</b>	<b>11</b>	<b>12</b>	<b>7</b>
<b>Grand Total</b>					<b>1120</b>	<b>88</b>	<b>118</b>	<b>22</b>	<b>65</b>	<b>74</b>	<b>44</b>	<b>1120</b>	<b>88</b>	<b>118</b>	<b>22</b>	<b>65</b>	<b>74</b>	<b>44</b>	<b>1120</b>	<b>88</b>	<b>118</b>	<b>22</b>	<b>65</b>	<b>74</b>	<b>44</b>

Notes:

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- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

14%





# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**  
**Trips Based on Average Rates/Equations**

**Project Name**  
 Roddy Ranch

**Project Number**  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates			Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out
210	Single-Family Detached Housing	Dwelling Unit(s)	574	Avg	9.57	0.75	1.01	5494	431	580	108	323	365	215	5494	431	580	108	323	365	215
220	Apartment	Dwelling Unit(s)	126	Avg	6.65	0.51	0.62	838	64	78	13	51	51	27	838	64	78	13	51	51	27
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58														
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35														
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39														
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72														
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52														
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78														
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38														
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55														
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59														
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27														
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23														
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16														
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17														
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22														
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29														
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26														
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75														
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62														
310	Hotel	Room(s)	250	Avg	8.17	0.56	0.59	2044	140	148	85	55	78	70	2044	140	148	85	55	78	70
311	All Suites Hotel	Room(s)		Avg	4.90	0.38	0.40														
312	Business Hotel	Occupied Room(s)		Avg	7.27	0.58	0.62														
320	Motel	Room(s)		Avg	5.63	0.45	0.47														
330	Resort Hotel	Room(s)		Avg	*	0.37	0.49														
<b>Totals</b>								<b>5494</b>	<b>431</b>	<b>580</b>	<b>108</b>	<b>323</b>	<b>365</b>	<b>215</b>	<b>5494</b>	<b>431</b>	<b>580</b>	<b>108</b>	<b>323</b>	<b>365</b>	<b>215</b>
<b>Reduction</b>					14%			<b>769</b>	<b>60</b>	<b>81</b>	<b>15</b>	<b>45</b>	<b>51</b>	<b>30</b>							
<b>Sub Total 1</b>								<b>4725</b>	<b>371</b>	<b>499</b>	<b>93</b>	<b>278</b>	<b>314</b>	<b>185</b>							
<b>Totals</b>					14%			<b>838</b>	<b>64</b>	<b>78</b>	<b>13</b>	<b>51</b>	<b>51</b>	<b>27</b>							
<b>Sub Total 2</b>								<b>721</b>	<b>55</b>	<b>67</b>	<b>11</b>	<b>44</b>	<b>44</b>	<b>23</b>							
<b>Totals</b>					42%			<b>2044</b>	<b>140</b>	<b>148</b>	<b>85</b>	<b>55</b>	<b>78</b>	<b>70</b>							
<b>Reduction</b>								<b>858</b>	<b>59</b>	<b>62</b>	<b>36</b>	<b>23</b>	<b>33</b>	<b>29</b>							
<b>Sub Total 3</b>								<b>1186</b>	<b>81</b>	<b>86</b>	<b>49</b>	<b>32</b>	<b>45</b>	<b>41</b>							
<b>Grand Total</b>								<b>6631</b>	<b>136</b>	<b>153</b>	<b>60</b>	<b>76</b>	<b>89</b>	<b>64</b>							

Notes:  
 (1) AM and/or PM rates correspond to peak hour of generator  
 A Trip generation data from ITE Trip Generation, 8th Edition  
 B AM/PM rates correspond to peak of adjacent street traffic (if data available)  
 C Includes weekday rates only  
 D Total trips include pass-by trips w/ no internal capture  
 E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition  
 F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition  
 G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition  
 H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
Trips Based on Average Rates/Equations

Project Name  
Project Number

Amber Park  
097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Rate	AM Trips		PM Trips		Daily Trips	AM Trips		PM Trips		Daily Trips	AM Trips		PM Trips				
									In	Out	In	Out		In	Out	In	Out		In	Out					
210	Single-Family Detached Housing	Dwelling Unit(s)	99	Avg	9.57	0.75	1.01		948	74	100	19	55	63	37	948	74	100	19	55	63	37			
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>948</b>	<b>74</b>	<b>100</b>	<b>19</b>	<b>55</b>	<b>63</b>	<b>37</b>	<b>948</b>	<b>74</b>	<b>100</b>	<b>19</b>	<b>55</b>	<b>63</b>	<b>37</b>	<b>948</b>	<b>74</b>	<b>100</b>	<b>19</b>	<b>55</b>	<b>63</b>	<b>37</b>
<b>Reduction</b>					<b>133</b>	<b>10</b>	<b>14</b>	<b>3</b>	<b>8</b>	<b>9</b>	<b>5</b>	<b>133</b>	<b>10</b>	<b>14</b>	<b>3</b>	<b>8</b>	<b>9</b>	<b>5</b>	<b>133</b>	<b>10</b>	<b>14</b>	<b>3</b>	<b>8</b>	<b>9</b>	<b>5</b>
<b>Grand Total</b>					<b>815</b>	<b>64</b>	<b>86</b>	<b>16</b>	<b>47</b>	<b>54</b>	<b>32</b>	<b>815</b>	<b>64</b>	<b>86</b>	<b>16</b>	<b>47</b>	<b>54</b>	<b>32</b>	<b>815</b>	<b>64</b>	<b>86</b>	<b>16</b>	<b>47</b>	<b>54</b>	<b>32</b>

Notes:

(1) AM and/or PM rates correspond to peak hour of generator

- A Trip generation data from ITE Trip Generation, 8th Edition
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- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
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- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**      **Project Name** Brighton Station  
**Trips Based on Average Rates/Equations**      **Project Number** 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Avg Rate	Daily Trips	AM Trips	PM Trips	Avg Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out				
210	Single-Family Detached Housing	Dwelling Unit(s)	38	Avg	9.57	0.75	1.01	0.82	364	29	38	7	22	24	14	364	29	38	7	22	24	14			
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>364</b>	<b>29</b>	<b>38</b>	<b>7</b>	<b>22</b>	<b>24</b>	<b>14</b>	<b>364</b>	<b>29</b>	<b>38</b>	<b>7</b>	<b>22</b>	<b>24</b>	<b>14</b>	<b>364</b>	<b>29</b>	<b>38</b>	<b>7</b>	<b>22</b>	<b>24</b>	<b>14</b>
<b>Reduction</b>					<b>51</b>	<b>4</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>51</b>	<b>4</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>51</b>	<b>4</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>2</b>	
<b>Grand Total</b>					<b>313</b>	<b>25</b>	<b>33</b>	<b>6</b>	<b>19</b>	<b>21</b>	<b>12</b>	<b>313</b>	<b>25</b>	<b>33</b>	<b>6</b>	<b>19</b>	<b>21</b>	<b>12</b>	<b>313</b>	<b>25</b>	<b>33</b>	<b>6</b>	<b>19</b>	<b>12</b>	

Notes:  
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- C Includes weekday rates only
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- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
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- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells





# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Alexandra Homes-Parkside Villas  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction								
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips		PM Trips		Daily Trips	AM Trips		PM Trips						
									In	Out	In	Out		In	Out	In	Out					
210	Single-Family Detached Housing	Dwelling Unit(s)	37	Avg	9.57	0.75	1.01	356	28	37	7	21	23	14	356	28	37	7	21	23	14	
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62															
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58															
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35															
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39															
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72															
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52															
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78															
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38															
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55															
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59															
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27															
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23															
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16															
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17															
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22															
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29															
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26															
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75															
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62															
								<b>Totals</b>	<b>356</b>	<b>28</b>	<b>37</b>	<b>7</b>	<b>21</b>	<b>23</b>	<b>14</b>	<b>356</b>	<b>28</b>	<b>37</b>	<b>7</b>	<b>21</b>	<b>23</b>	<b>14</b>
								<b>Reduction</b>	<b>50</b>	<b>4</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>50</b>	<b>4</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>
								<b>Grand Total</b>	<b>306</b>	<b>24</b>	<b>32</b>	<b>6</b>	<b>18</b>	<b>20</b>	<b>306</b>	<b>24</b>	<b>32</b>	<b>6</b>	<b>18</b>	<b>20</b>	<b>12</b>	

Notes:

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- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Carmel Estates  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Avg	Daily Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips					
									In	Out	In	Out	In	Out	In	Out						
210	Single-Family Detached Housing	Dwelling Unit(s)	106	Avg	9.57	0.75	1.01		1016	80	107	20	60	67	40	1016	80	107	20	60	67	40
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62															
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58															
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35															
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39															
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72															
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52															
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78															
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38															
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55															
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59															
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27															
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23															
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16															
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17															
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22															
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29															
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26															
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75															
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.82															
<b>Totals</b>					1016	80	107	20	60	67	40	1016	80	107	20	60	67	40				
<b>Reduction</b>					142	11	15	3	8	9	6	142	11	15	3	8	9	6				
<b>Grand Total</b>					874	69	92	17	52	58	34	874	69	92	17	52	58	34				

Notes:

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- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
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# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
Trips Based on Average Rates/Equations

Project Name  
Project Number

Terreno Homes  
097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips	AM Trips	PM Trips	Trips	AM Trips	PM Trips	Trips	Trips	AM Trips	PM Trips	Trips						
									In	Out	In	Out	In	Out	In	Out	In	Out	In	Out					
210	Single-Family Detached Housing	Dwelling Unit(s)	134	Avg	9.57	0.75	1.01	0.62	1284	101	135	25	76	85	50	1284	101	135	25	76	85	50			
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>1284</b>	<b>101</b>	<b>135</b>	<b>25</b>	<b>76</b>	<b>85</b>	<b>50</b>	<b>1284</b>	<b>101</b>	<b>135</b>	<b>25</b>	<b>76</b>	<b>85</b>	<b>50</b>	<b>1284</b>	<b>101</b>	<b>135</b>	<b>25</b>	<b>76</b>	<b>85</b>	<b>50</b>
<b>Reduction</b>					<b>180</b>	<b>14</b>	<b>19</b>	<b>4</b>	<b>11</b>	<b>12</b>	<b>7</b>	<b>180</b>	<b>14</b>	<b>19</b>	<b>4</b>	<b>11</b>	<b>12</b>	<b>7</b>	<b>180</b>	<b>14</b>	<b>19</b>	<b>4</b>	<b>11</b>	<b>12</b>	<b>7</b>
<b>Grand Total</b>					<b>1104</b>	<b>87</b>	<b>116</b>	<b>22</b>	<b>65</b>	<b>73</b>	<b>43</b>	<b>1104</b>	<b>87</b>	<b>116</b>	<b>22</b>	<b>65</b>	<b>73</b>	<b>43</b>	<b>1104</b>	<b>87</b>	<b>116</b>	<b>22</b>	<b>65</b>	<b>73</b>	<b>43</b>

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# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**  
**Trips Based on Average Rates/Equations**

**Project Name**  
**Project Number**

**Bridle Gate**  
**097311002.1**

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates			Total Trips						Net Trips after Pass-By Reduction											
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips									
210	Single-Family Detached Housing	Dwelling Unit(s)	166	Avg	9.57	0.75	1.01	1590	125	168	31	94	106	62	1590	125	168	31	94	106	62				
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>1590</b>	<b>125</b>	<b>168</b>	<b>31</b>	<b>94</b>	<b>106</b>	<b>62</b>	<b>1590</b>	<b>125</b>	<b>168</b>	<b>31</b>	<b>94</b>	<b>106</b>	<b>62</b>	<b>1590</b>	<b>125</b>	<b>168</b>	<b>31</b>	<b>94</b>	<b>106</b>	<b>62</b>
<b>Reduction</b>					<b>223</b>	<b>18</b>	<b>24</b>	<b>4</b>	<b>13</b>	<b>15</b>	<b>9</b>	<b>223</b>	<b>18</b>	<b>24</b>	<b>4</b>	<b>13</b>	<b>15</b>	<b>9</b>	<b>223</b>	<b>18</b>	<b>24</b>	<b>4</b>	<b>13</b>	<b>15</b>	<b>9</b>
<b>Grand Total</b>					<b>1367</b>	<b>108</b>	<b>144</b>	<b>27</b>	<b>81</b>	<b>91</b>	<b>53</b>	<b>1367</b>	<b>108</b>	<b>144</b>	<b>27</b>	<b>81</b>	<b>91</b>	<b>53</b>	<b>1367</b>	<b>108</b>	<b>144</b>	<b>27</b>	<b>81</b>	<b>91</b>	<b>53</b>

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# Trip Generation Planner (ITE 8th Edition)



Blackhawk-Nunn-Cox Property  
097311002.1

Project Name  
Project Number

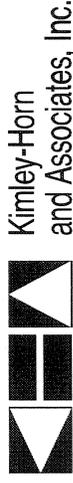
Weekday Trip Generation  
Trips Based on Average Rates/Equations

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Rate	AM Trips		PM Trips		AM Trips		PM Trips		AM Trips		PM Trips			
									In	Out	In	Out	In	Out	In	Out	In	Out				
210	Single-Family Detached Housing	Dwelling Unit(s)	58	Avg	9.57	0.75	1.01	0.82	556	44	59	11	33	37	22	556	44	59	11	33	37	22
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.82															
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58															
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35															
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39															
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72															
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52															
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78															
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38															
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55															
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59															
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27															
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23															
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16															
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17															
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22															
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29															
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26															
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75															
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62															
					<b>Totals</b>				<b>556</b>	<b>44</b>	<b>59</b>	<b>11</b>	<b>33</b>	<b>37</b>	<b>22</b>	<b>556</b>	<b>44</b>	<b>59</b>	<b>11</b>	<b>33</b>	<b>37</b>	<b>22</b>
					<b>Reduction</b>				<b>78</b>	<b>6</b>	<b>8</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>3</b>							
					<b>Grand Total</b>				<b>478</b>	<b>38</b>	<b>51</b>	<b>9</b>	<b>28</b>	<b>32</b>	<b>19</b>							

Notes:

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- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**  
**Trips Based on Average Rates/Equations**

**Project Name**  
**Project Number**

Vic Stewarts  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips				Net Trips after Pass-By Reduction									
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips	AM Trips	PM Trips	Out	AM Trips	PM Trips	Out	AM Trips	PM Trips	Out				
812	Building Materials and Lumber Store	1,000 Sq Ft		Avg	45.16	2.60	4.49															
813	Free Standing Discount Superstore	1,000 Sq Ft		Avg	53.13	1.67	4.61															
814	Specialty Retail Center	1,000 Sq Ft		Avg	44.32	*	2.71															
815	Free Standing Discount Store	1,000 Sq Ft		Avg	57.24	1.06	5.00															
816	Hardware/Paint Store	1,000 Sq Ft		Avg	51.29	1.08	4.84															
817	Nursery (Garden Center)	1,000 Sq Ft		Avg	36.08	1.31	3.80															
818	Nursery (Wholesale)	1,000 Sq Ft		Avg	39.00	2.40	5.17															
820	Shopping Center	1,000 Sq Ft	16.1	Avg	42.94	1.00	3.73	682	16	60	10	6	29	31	692	16	40	10	6	19	21	
823	Factory Outlet Center	1,000 Sq Ft		Avg	26.59	0.67	2.29															
841	New Car Sales	1,000 Sq Ft		Avg	33.34	2.03	2.59															
843	Automobile Parts Sales	1,000 Sq Ft		Avg	61.91	2.21	5.98															
848	Tire Store	1,000 Sq Ft		Avg	24.87	2.89	4.15															
849	Tire Superstore	1,000 Sq Ft		Avg	20.36	1.34	2.11															
850	Supermarket	1,000 Sq Ft		Avg	102.24	3.59	10.50															
851	Convenience Market (Open 24 Hours)	1,000 Sq Ft		Avg	737.99	67.03	52.41															
852	Convenience Market (Open 15-16 Hours)	1,000 Sq Ft		Avg	*	31.02	34.57															
853	Convenience Market w/ Gasoline Pumps	Fueling Position(s)		Avg	542.60	16.57	19.07															
854	Discount Supermarket	1,000 Sq Ft		Avg	96.82	2.74	8.90															
857	Discount Club	1,000 Sq Ft		Avg	41.80	0.56	4.24															
860	Wholesale Market	1,000 Sq Ft		Avg	6.73	0.51	0.88															
861	Sporting Goods Superstore	1,000 Sq Ft		Avg	*	*	3.10															
862	Home Improvement Superstore	1,000 Sq Ft		Avg	29.80	1.26	2.37															
863	Electronics Superstore	1,000 Sq Ft		Avg	45.04	0.28	4.50															
864	Toy/Children's Superstore	1,000 Sq Ft		Avg	*	*	4.99															
865	Baby Superstore	1,000 Sq Ft		Avg	*	*	1.82															
866	Pet Supply Superstore	1,000 Sq Ft		Avg	*	*	3.38															
867	Office Supply Superstore	1,000 Sq Ft		Avg	*	*	3.40															
868	Book Superstore	1,000 Sq Ft		Avg	*	*	19.53															
869	Discount Home Furnishing Superstore	1,000 Sq Ft		Avg	20.00	0.57	1.57															
872	Bed and Linen Superstore	1,000 Sq Ft		Avg	*	*	2.22															
875	Department Store	1,000 Sq Ft		Avg	22.88	0.53	1.78															
876	Apparel Store	1,000 Sq Ft		Avg	66.40	1.00	3.83															
879	Arts and Crafts Store (1)	1,000 Sq Ft		Avg	56.55	4.65	6.21															
880	Pharmacy/Drugstore w/o Drive-Through Window	1,000 Sq Ft		Avg	90.06	3.20	8.42															
881	Pharmacy/Drugstore w/ Drive-Through Window	1,000 Sq Ft		Avg	88.16	2.66	10.35															
890	Furniture Store	1,000 Sq Ft		Avg	5.06	0.17	0.45															
896	Video Rental Store	1,000 Sq Ft		Avg	*	*	13.60															
911	Walk-In Bank	1,000 Sq Ft		Avg	*	*	12.13															
912	Drive-In Bank	1,000 Sq Ft		Avg	148.15	12.35	25.82															
918	Hair Salon	1,000 Sq Ft		Avg	*	1.21	1.45															
920	Copy, Print and Express Ship Store	1,000 Sq Ft		Avg	*	2.78	7.41															
925	Drinking Place	1,000 Sq Ft		Avg	*	*	11.34															
931	Quality Restaurant	1,000 Sq Ft		Avg	89.95	0.81	7.49															

# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Vic Stewarts  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates			Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips					
932	High-Turnover (Sit-Down) Restaurant	1,000 Sq Ft	10.7	Avg	127.15	11.52	11.15	1362	123	119	64	59	70	49	1362	123	68	64	59	40	28
933	Fast-Food Restaurant w/o D.T.	1,000 Sq Ft		Avg	716.00	43.87	26.15														
933-1	Fast-Food Restaurant w/o D.T. - Yogurt	1,000 Sq Ft		Avg	*	*	15.12														
934	Fast-Food Restaurant w/ D.T.	1,000 Sq Ft		Avg	496.12	49.35	33.84														
935	Fast-Food Restaurant w/ D.T. No Indoor Seats	1,000 Sq Ft		Avg	*	*	153.85														
936	Coffee/Donut Shop w/o D.T.	1,000 Sq Ft		Avg	*	*	40.57														
936-1	Donut/Ice Cream Shop w/o D.T.	1,000 Sq Ft		Avg	*	*	20.00														
936-2	Donut/Sandwich Shop w/o D.T.	1,000 Sq Ft		Avg	*	59.75	13.00														
937	Coffee/Donut Shop w/ D.T.	1,000 Sq Ft		Avg	818.58	110.75	42.93														
938	Coffee/Donut Shop w/ D.T. No Indoor Seats	1,000 Sq Ft		Avg	1800.00	303.33	75.00														
939	Bread/Donut/Bagel Shop w/o D.T.	1,000 Sq Ft		Avg	*	70.22	28.00														
940	Bread/Donut/Bagel Shop w/ D.T.	1,000 Sq Ft		Avg	*	36.92	19.56														
941	Quick Lubrication Vehicle Shop	Service Position(s)		Avg	40.00	3.00	5.19														
942	Automobile Care Center	1,000 Sq Ft		Avg	*	2.94	3.38														
943	Automobile Parts and Service Center	1,000 Sq Ft		Avg	*	*	4.46														
944	Gasoline/Service Station	Fueling Position(s)		Avg	168.56	12.16	13.86														
945	Gasoline Station w/ Convenience Market	Fueling Position(s)		Avg	162.78	10.16	13.38														
946	Gasoline Station w/ Conv. Mkt. & Car Wash	Fueling Position(s)		Avg	152.84	11.93	13.94														
947	Self-Service Car Wash (1)	Wash Stall(s)		Avg	108.00	8.00	5.54														
948	Automated Car Wash	1,000 Sq Ft		Avg	*	*	14.12														
<b>Totals</b>					<b>692</b>	<b>16</b>	<b>60</b>	<b>10</b>	<b>6</b>	<b>29</b>	<b>31</b>										
<b>Reduction</b>					<b>367</b>	<b>8</b>	<b>32</b>	<b>5</b>	<b>3</b>	<b>15</b>	<b>16</b>										
<b>Sub Total 1</b>					<b>325</b>	<b>8</b>	<b>28</b>	<b>5</b>	<b>3</b>	<b>14</b>	<b>15</b>										
<b>Totals</b>					<b>1362</b>	<b>123</b>	<b>119</b>	<b>64</b>	<b>59</b>	<b>70</b>	<b>49</b>										
<b>Reduction</b>					<b>667</b>	<b>60</b>	<b>58</b>	<b>31</b>	<b>29</b>	<b>34</b>	<b>24</b>										
<b>Sub Total 2</b>					<b>695</b>	<b>63</b>	<b>61</b>	<b>33</b>	<b>30</b>	<b>36</b>	<b>25</b>										
<b>Grand Total</b>					<b>1020</b>	<b>70</b>	<b>89</b>	<b>37</b>	<b>33</b>	<b>49</b>	<b>40</b>										

- Notes:
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  - C Includes weekday rates only
  - D Total trips include pass-by trips w/ no internal capture
  - E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
  - F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
  - G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
  - H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Palmilla  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips				Net Trips after Pass-By Reduction												
					Daily Rate	AM Rate	PM Rate	Avg	Daily Trips	AM Trips	PM Trips	Avg	Daily Trips	AM Trips	PM Trips	Avg	Daily Trips	AM Trips	PM Trips						
210	Single-Family Detached Housing	Dwelling Unit(s)	460	Avg	9.57	0.75	1.01		4404	345	465	86	259	293	172	4404	345	465	86	259	293	172			
220	Apartment	Dwelling Unit(s)	108	Avg	6.65	0.51	0.62		720	55	67	11	44	44	23	720	55	67	11	44	44	23			
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)	11	Avg	5.81	0.44	0.52		64	5	6	1	4	4	2	64	5	6	1	4	4	2			
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>5188</b>	<b>405</b>	<b>538</b>	<b>98</b>	<b>307</b>	<b>341</b>	<b>197</b>	<b>5188</b>	<b>405</b>	<b>538</b>	<b>98</b>	<b>307</b>	<b>341</b>	<b>197</b>	<b>5188</b>	<b>405</b>	<b>538</b>	<b>98</b>	<b>307</b>	<b>341</b>	<b>197</b>
<b>Reduction</b>					<b>726</b>	<b>57</b>	<b>75</b>	<b>14</b>	<b>43</b>	<b>48</b>	<b>28</b>	<b>726</b>	<b>57</b>	<b>75</b>	<b>14</b>	<b>43</b>	<b>48</b>	<b>28</b>	<b>726</b>	<b>57</b>	<b>75</b>	<b>14</b>	<b>43</b>	<b>48</b>	<b>28</b>
<b>Grand Total</b>					<b>4462</b>	<b>348</b>	<b>463</b>	<b>84</b>	<b>264</b>	<b>293</b>	<b>169</b>	<b>4462</b>	<b>348</b>	<b>463</b>	<b>84</b>	<b>264</b>	<b>293</b>	<b>169</b>	<b>4462</b>	<b>348</b>	<b>463</b>	<b>84</b>	<b>264</b>	<b>169</b>	

Notes:  
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- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation** **Project Name** Passport Homes  
**Trips Based on Average Rates/Equations** **Project Number** 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips	AM Trips		PM Trips		Daily Trips	AM Trips		PM Trips								
										In	Out	In	Out		In	Out	In	Out							
210	Single-Family Detached Housing	Dwelling Unit(s)	59	Avg	9.57	0.75	1.01		566	44	60	11	33	38	22	566	44	60	11	33	38	22			
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.82																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.82																		
<b>Totals</b>					<b>566</b>	<b>44</b>	<b>60</b>	<b>11</b>	<b>33</b>	<b>38</b>	<b>22</b>	<b>566</b>	<b>44</b>	<b>60</b>	<b>11</b>	<b>33</b>	<b>38</b>	<b>22</b>	<b>566</b>	<b>44</b>	<b>60</b>	<b>11</b>	<b>33</b>	<b>38</b>	<b>22</b>
<b>Reduction</b>					<b>79</b>	<b>6</b>	<b>8</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>79</b>	<b>6</b>	<b>8</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>79</b>	<b>6</b>	<b>8</b>	<b>2</b>	<b>5</b>	<b>3</b>	
<b>Grand Total</b>					<b>487</b>	<b>38</b>	<b>52</b>	<b>9</b>	<b>28</b>	<b>33</b>	<b>19</b>	<b>487</b>	<b>38</b>	<b>52</b>	<b>9</b>	<b>28</b>	<b>33</b>	<b>19</b>	<b>487</b>	<b>38</b>	<b>52</b>	<b>9</b>	<b>28</b>	<b>33</b>	<b>19</b>

Notes: (1) AM and/or PM rates correspond to peak hour of generator

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- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
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# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Prewett Ranch (Suncrest Homes)  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction								
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips	Daily Trips	AM Trips	PM Trips	AM Trips	PM Trips			
210	Single-Family Detached Housing	Dwelling Unit(s)	240	Avg	9.57	0.75	1.01	2298	180	242	45	135	152	90	2298	180	242	45	135	152	90	
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62															
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58															
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35															
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39															
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72															
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52															
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78															
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38															
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55															
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59															
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27															
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23															
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16															
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17															
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22															
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29															
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26															
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75															
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62															
								<b>Totals</b>	<b>2298</b>	<b>180</b>	<b>242</b>	<b>45</b>	<b>135</b>	<b>152</b>	<b>90</b>	<b>2298</b>	<b>180</b>	<b>242</b>	<b>45</b>	<b>135</b>	<b>152</b>	<b>90</b>
								<b>Reduction</b>	<b>322</b>	<b>25</b>	<b>34</b>	<b>6</b>	<b>19</b>	<b>21</b>	<b>13</b>	<b>322</b>	<b>25</b>	<b>34</b>	<b>6</b>	<b>19</b>	<b>21</b>	<b>13</b>
								<b>Grand Total</b>	<b>1976</b>	<b>155</b>	<b>208</b>	<b>39</b>	<b>116</b>	<b>131</b>	<b>77</b>	<b>1976</b>	<b>155</b>	<b>208</b>	<b>39</b>	<b>116</b>	<b>131</b>	<b>77</b>

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- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Steeplechase  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates			Total Trips						Net Trips after Pass-By Reduction											
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out				
210	Single-Family Detached Housing	Dwelling Unit(s)	116	Avg	9.57	0.75	1.01	1112	87	117	22	65	74	43	1112	87	117	22	65	74	43				
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)	16	Avg	5.81	0.44	0.52	94	7	8	1	6	5	3	94	7	8	1	6	5	3				
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>1206</b>	<b>94</b>	<b>125</b>	<b>23</b>	<b>71</b>	<b>79</b>	<b>46</b>	<b>1206</b>	<b>94</b>	<b>125</b>	<b>23</b>	<b>71</b>	<b>79</b>	<b>46</b>	<b>1206</b>	<b>94</b>	<b>125</b>	<b>23</b>	<b>71</b>	<b>79</b>	<b>46</b>
<b>Reduction</b>					<b>169</b>	<b>13</b>	<b>18</b>	<b>3</b>	<b>10</b>	<b>11</b>	<b>6</b>	<b>169</b>	<b>13</b>	<b>18</b>	<b>3</b>	<b>10</b>	<b>11</b>	<b>6</b>	<b>169</b>	<b>13</b>	<b>18</b>	<b>3</b>	<b>10</b>	<b>11</b>	<b>6</b>
<b>Grand Total</b>					<b>1037</b>	<b>81</b>	<b>108</b>	<b>20</b>	<b>61</b>	<b>68</b>	<b>40</b>	<b>1037</b>	<b>81</b>	<b>108</b>	<b>20</b>	<b>61</b>	<b>68</b>	<b>40</b>	<b>1037</b>	<b>81</b>	<b>108</b>	<b>20</b>	<b>61</b>	<b>68</b>	<b>40</b>

Notes:

(1) AM and/or PM rates correspond to peak hour of generator

- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells









# Trip Generation Planner (ITE 8th Edition)

Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Smith Parcel  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction							
				Daily Rate	AM Rate	PM Rate	Avg	Daily Trips		AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips			
								In	Out	In	Out	In	Out	In	Out	In	Out				
210	Single-Family Detached Housing	Dwelling Unit(s)	50	9.57	0.75	1.01	Avg	480	38	51	10	28	32	19	480	38	51	10	28	32	19
220	Apartment	Dwelling Unit(s)		6.65	0.51	0.62	Avg														
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		6.59	0.46	0.58	Avg														
222	High-Rise Apartment	Dwelling Unit(s)		4.20	0.30	0.35	Avg														
223	Mid-Rise Apartment	Dwelling Unit(s)		*	0.30	0.39	Avg														
224	Rental Townhouse	Dwelling Unit(s)		*	0.70	0.72	Avg														
230	Residential Condominium/Townhouse	Dwelling Unit(s)		5.81	0.44	0.52	Avg														
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		*	0.67	0.78	Avg														
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		4.18	0.34	0.38	Avg														
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		*	0.56	0.55	Avg														
240	Mobile Home Park	Occ. Dwelling Unit(s)		4.99	0.44	0.59	Avg														
251	Senior Adult Housing-Detached	Dwelling Unit(s)		3.71	0.22	0.27	Avg														
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		3.96	0.17	0.23	Avg														
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		3.48	0.13	0.16	Avg														
253	Congregate Care Facility	Dwelling Unit(s)		2.02	0.06	0.17	Avg														
254	Assisted Living	Bed(s)		2.66	0.14	0.22	Avg														
255	Continuing Care Retirement Community	Occupied Unit(s)		2.81	0.18	0.29	Avg														
260	Recreational Homes	Dwelling Unit(s)		3.16	0.16	0.26	Avg														
265	Timeshare	Dwelling Unit(s)		10.03	0.48	0.75	Avg														
270	Residential Planned Unit Development	Dwelling Unit(s)		7.50	0.51	0.62	Avg														
812	Building Materials and Lumber Store	1,000 Sq Ft		45.16	2.60	4.49	Avg														
813	Free Standing Discount Superstore	1,000 Sq Ft		53.13	1.67	4.61	Avg														
814	Specialty Retail Center	1,000 Sq Ft		44.32	*	2.71	Avg														
815	Free Standing Discount Store	1,000 Sq Ft		57.24	1.06	5.00	Avg														
816	Hardware/Paint Store	1,000 Sq Ft		51.29	1.08	4.84	Avg														
817	Nursery (Garden Center)	1,000 Sq Ft		36.08	1.31	3.80	Avg														
818	Nursery (Wholesale)	1,000 Sq Ft		39.00	2.40	5.17	Avg														
820	Shopping Center	1,000 Sq Ft	111	42.94	1.00	3.73	Avg	4768	111	414	68	43	203	211	4768	111	273	68	43	134	139
823	Factory Outlet Center	1,000 Sq Ft		26.59	0.67	2.29	Avg														
841	New Car Sales	1,000 Sq Ft		33.34	2.03	2.59	Avg														
843	Automobile Parts Sales	1,000 Sq Ft		61.91	2.21	5.98	Avg														
848	Tire Store	1,000 Sq Ft		24.87	2.89	4.15	Avg														
849	Tire Superstore	1,000 Sq Ft		20.36	1.34	2.11	Avg														
850	Supermarket	1,000 Sq Ft		102.24	3.59	10.50	Avg														
851	Convenience Market (Open 24 Hours)	1,000 Sq Ft		737.99	67.03	52.41	Avg														
852	Convenience Market (Open 15-16 Hours)	1,000 Sq Ft		*	31.02	34.57	Avg														
853	Convenience Market w/ Gasoline Pumps	Fueling Position(s)		542.60	16.57	19.07	Avg														
854	Discount Supermarket	1,000 Sq Ft		96.82	2.74	8.90	Avg														
857	Discount Club	1,000 Sq Ft		41.80	0.56	4.24	Avg														
860	Wholesale Market	1,000 Sq Ft		6.73	0.51	0.88	Avg														
861	Sporting Goods Superstore	1,000 Sq Ft		*	*	3.10	Avg														
862	Home Improvement Superstore	1,000 Sq Ft		29.80	1.26	2.37	Avg														
863	Electronics Superstore	1,000 Sq Ft		45.04	0.28	4.50	Avg														



# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**  
**Trips Based on Average Rates/Equations**

Tierra Villas  
 097311002.1

**Project Name**  
**Project Number**

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction						
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips				
210	Single-Family Detached Housing	Dwelling Unit(s)	122	Avg	9.57	0.75	1.01	1168	92	123	46	1168	92	123	46	1168	92	123	46	
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62													
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58													
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35													
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39													
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72													
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52													
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78													
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38													
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55													
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59													
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27													
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23													
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16													
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17													
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22													
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29													
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26													
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75													
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62													
<b>Totals</b>					<b>1168</b>	<b>92</b>	<b>123</b>	<b>46</b>	<b>1168</b>	<b>92</b>	<b>123</b>	<b>46</b>	<b>1168</b>	<b>92</b>	<b>123</b>	<b>46</b>	<b>1168</b>	<b>92</b>	<b>123</b>	<b>46</b>
<b>Reduction</b>					<b>164</b>	<b>13</b>	<b>17</b>	<b>6</b>	<b>164</b>	<b>13</b>	<b>17</b>	<b>6</b>	<b>164</b>	<b>13</b>	<b>17</b>	<b>6</b>	<b>164</b>	<b>13</b>	<b>17</b>	<b>6</b>
<b>Grand Total</b>					<b>1004</b>	<b>79</b>	<b>106</b>	<b>40</b>	<b>1004</b>	<b>79</b>	<b>106</b>	<b>40</b>	<b>1004</b>	<b>79</b>	<b>106</b>	<b>40</b>	<b>1004</b>	<b>79</b>	<b>106</b>	<b>40</b>

**Notes:**

- (1) AM and/or PM rates correspond to peak hour of generator
- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Bluerock Buisness Center  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction													
					Daily Rate	AM Rate	PM Rate	Rate	AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips					
									In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out				
710	General Office Building (1)	1,000 Sq Ft	48,724	Avg	11.01	1.55	1.49	1.49	76	73	67	9	12	61	538	76	73	67	9	12	61	538	76	73	67	9	12	61
714	Corporate Headquarters Building (1)	1,000 Sq Ft		Avg	7.98	1.49	1.40																					
715	Single Tenant Office Building (1)	1,000 Sq Ft		Avg	11.57	1.80	1.73																					
720	Medical-Dental Office Building	1,000 Sq Ft		Avg	36.13	2.30	3.46																					
730	Government Office Building (1)	1,000 Sq Ft		Avg	68.93	5.88	1.21																					
731	State Motor Vehicles Department	1,000 Sq Ft		Avg	166.02	9.84	17.09																					
732	United States Post Office	1,000 Sq Ft		Avg	108.19	8.21	11.12																					
733	Government Office Complex	1,000 Sq Ft		Avg	27.92	2.21	2.85																					
750	Office Park (1)	1,000 Sq Ft		Avg	11.42	1.71	1.48																					
760	Research and Development Center (1)	1,000 Sq Ft		Avg	8.11	1.22	1.07																					
770	Business Park (1)	1,000 Sq Ft		Avg	12.76	1.43	1.29																					
<b>Totals</b>									76	73	67	9	12	61	538	76	73	67	9	12	61	538	76	73	67	9	12	61
<b>Reduction</b>									17	17	15	2	3	14	124	17	17	15	2	3	14	124	17	17	15	2	3	14
<b>Grand Total</b>									59	56	52	7	9	47	414	59	56	52	7	9	47	414	59	56	52	7	9	47

23%  
 AM and/or PM rates correspond to peak hour of generator

- (1) AM and/or PM rates correspond to peak hour of generator
- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Kaiser Medical Center  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips				Net Trips after Pass-By Reduction									
					Daily Rate	AM Rate	PM Rate	Avg	Daily Trips	AM Trips	PM Trips	Avg	Daily Trips	AM Trips	PM Trips	Avg	Daily Trips	AM Trips	PM Trips			
610	Hospital	1,000 Sq Ft	159.8	Avg	16.50	1.12	1.14		2634	179	182	106	73	76	106	2634	179	182	106	73	76	106
620	Nursing Home	Bed(s)		Avg	2.37	0.17	0.22															
630	Clinic	1,000 Sq Ft		Avg	31.45	*	5.18															
640	Animal Hospital/Veterinary Clinic	1,000 Sq Ft		Avg	*	4.08	4.72															
710	General Office Building (1)	1,000 Sq Ft		Avg	11.01	1.55	1.49															
714	Corporate Headquarters Building (1)	1,000 Sq Ft		Avg	7.98	1.49	1.40															
715	Single Tenant Office Building (1)	1,000 Sq Ft		Avg	11.57	1.80	1.73															
720	Medical-Dental Office Building	1,000 Sq Ft	108.45	Avg	36.13	2.30	3.46		3920	249	375	197	52	101	274	3920	249	375	197	52	101	274
730	Government Office Building (1)	1,000 Sq Ft		Avg	68.93	5.88	1.21															
731	State Motor Vehicles Department	1,000 Sq Ft		Avg	166.02	9.84	17.09															
732	United States Post Office	1,000 Sq Ft		Avg	108.19	8.21	11.12															
733	Government Office Complex	1,000 Sq Ft		Avg	27.92	2.21	2.85															
750	Office Park (1)	1,000 Sq Ft		Avg	11.42	1.71	1.48															
760	Research and Development Center (1)	1,000 Sq Ft		Avg	8.11	1.22	1.07															
770	Business Park (1)	1,000 Sq Ft		Avg	12.76	1.43	1.29															
<b>Totals</b>					2634	179	182	106	73	76	106	6554	428	557	303	125	177	380				
<b>Reduction</b>					711	48	49	29	20	21	29											
<b>Sub Total 1</b>					1923	131	133	77	53	55	77											
<b>Totals</b>					3920	249	375	197	52	101	274											
<b>Reduction</b>					1568	100	150	79	21	40	110											
<b>Sub Total 2</b>					2352	149	225	118	31	61	164											
<b>Grand Total</b>					4276	280	358	196	84	116	242											

Notes:

- (1) AM and/or PM rates correspond to peak hour of generator
- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)

Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Lakeview Center  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips				Net Trips after Pass-By Reduction								
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips	AM Trips	PM Trips	Trips	Daily Trips	AM Trips	PM Trips	Trips					
812	Building Materials and Lumber Store	1,000 Sq Ft		Avg	45.16	2.60	4.49														
813	Free Standing Discount Superstore	1,000 Sq Ft		Avg	53.13	1.67	4.61														
814	Specialty Retail Center	1,000 Sq Ft		Avg	44.32	*	2.71														
815	Free Standing Discount Store	1,000 Sq Ft		Avg	57.24	1.06	5.00														
816	Hardware/Paint Store	1,000 Sq Ft		Avg	51.29	1.08	4.84														
817	Nursery (Garden Center)	1,000 Sq Ft		Avg	36.08	1.31	3.80														
818	Nursery (Wholesale)	1,000 Sq Ft		Avg	39.00	2.40	5.17														
820	Shopping Center	1,000 Sq Ft	9	Avg	42.94	1.00	3.73	388	9	34	5	4	17	17	388	9	22	5	4	11	
823	Factory Outlet Center	1,000 Sq Ft		Avg	26.59	0.67	2.29														
841	New Car Sales	1,000 Sq Ft		Avg	33.34	2.03	2.59														
843	Automobile Parts Sales	1,000 Sq Ft		Avg	61.91	2.21	5.98														
848	Tire Store	1,000 Sq Ft		Avg	24.87	2.89	4.15														
849	Tire Superstore	1,000 Sq Ft		Avg	20.36	1.34	2.11														
850	Supermarket	1,000 Sq Ft	14	Avg	102.24	3.59	10.50	1432	50	147	31	19	75	72	1432	50	94	31	19	48	
851	Convenience Market (Open 24 Hours)	1,000 Sq Ft		Avg	737.99	67.03	52.41														
852	Convenience Market (Open 15-16 Hours)	1,000 Sq Ft		Avg	*	31.02	34.57														
853	Convenience Market w/ Gasoline Pumps	1,000 Sq Ft		Avg	542.60	16.57	19.07														
854	Discount Supermarket	1,000 Sq Ft		Avg	96.82	2.74	8.90														
857	Discount Club	1,000 Sq Ft		Avg	41.80	0.56	4.24														
860	Wholesale Market	1,000 Sq Ft		Avg	6.73	0.51	0.88														
861	Sporting Goods Superstore	1,000 Sq Ft		Avg	*	*	3.10														
862	Home Improvement Superstore	1,000 Sq Ft		Avg	29.80	1.26	2.37														
863	Electronics Superstore	1,000 Sq Ft		Avg	45.04	0.28	4.50														
864	Toy/Children's Superstore	1,000 Sq Ft		Avg	*	*	4.99														
865	Baby Superstore	1,000 Sq Ft		Avg	*	*	1.82														
866	Pet Supply Superstore	1,000 Sq Ft		Avg	*	*	3.38														
867	Office Supply Superstore	1,000 Sq Ft		Avg	*	*	3.40														
868	Book Superstore	1,000 Sq Ft		Avg	*	*	19.53														
869	Discount Home Furnishing Superstore	1,000 Sq Ft		Avg	20.00	0.57	1.57														
872	Bed and Linen Superstore	1,000 Sq Ft		Avg	*	*	2.22														
875	Department Store	1,000 Sq Ft		Avg	22.88	0.53	1.78														
876	Apparel Store	1,000 Sq Ft		Avg	66.40	1.00	3.83														
879	Arts and Crafts Store (1)	1,000 Sq Ft		Avg	56.55	4.65	6.21														
880	Pharmacy/Drugstore w/ Drive-Through Window	1,000 Sq Ft	15	Avg	90.06	3.20	8.42	1352	48	126	28	20	63	63	1352	48	59	28	20	30	
881	Pharmacy/Drugstore w/ Drive-Through Window	1,000 Sq Ft		Avg	88.16	2.66	10.35														
890	Furniture Store	1,000 Sq Ft		Avg	5.06	0.17	0.45														
896	Video Rental Store	1,000 Sq Ft		Avg	*	*	13.60														
911	Walk-In Bank	1,000 Sq Ft		Avg	*	*	12.13														
912	Drive-In Bank	1,000 Sq Ft		Avg	148.15	12.35	25.82														
918	Hair Salon	1,000 Sq Ft		Avg	*	1.21	1.45														
920	Copy, Print and Express Ship Store	1,000 Sq Ft		Avg	*	2.78	7.41														
925	Drinking Place	1,000 Sq Ft		Avg	*	*	11.34														
931	Quality Restaurant	1,000 Sq Ft		Avg	89.95	0.81	7.49														





# Trip Generation Planner (ITE 8th Edition)

Weekday Trip Generation  
Trips Based on Average Rates/Equations

Project Name  
Project Number

Lone Tree Landing  
097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction					
				Daily Rate	AM Rate	PM Rate	Avg	AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips			
								In	Out	In	Out	In	Out	In	Out	In	Out		
710	General Office Building (1)	1,000 Sq Ft	9.595	11.01	1.55	1.49	Avg	106	15	14	2	12	106	15	14	2	12		
714	Corporate Headquarters Building(1)	1,000 Sq Ft		7.98	1.49	1.40	Avg												
715	Single Tenant Office Building (1)	1,000 Sq Ft		11.57	1.80	1.73	Avg												
720	Medical-Dental Office Building	1,000 Sq Ft		Avg	36.13	2.30	3.46												
730	Government Office Building (1)	1,000 Sq Ft		Avg	68.93	5.88	1.21												
731	State Motor Vehicles Department	1,000 Sq Ft		Avg	166.02	9.84	17.09												
732	United States Post Office	1,000 Sq Ft		Avg	108.19	8.21	11.12												
733	Government Office Complex	1,000 Sq Ft		Avg	27.92	2.21	2.85												
750	Office Park (1)	1,000 Sq Ft		Avg	11.42	1.71	1.48												
760	Research and Development Center (1)	1,000 Sq Ft		Avg	8.11	1.22	1.07												
770	Business Park (1)	1,000 Sq Ft		Avg	12.76	1.43	1.29												
812	Building Materials and Lumber Store	1,000 Sq Ft		Avg	45.16	2.60	4.49												
813	Free Standing Discount Superstore	1,000 Sq Ft		Avg	53.13	1.67	4.61												
814	Specialty Retail Center	1,000 Sq Ft		Avg	44.32	*	2.71												
815	Free Standing Discount Store	1,000 Sq Ft		Avg	57.24	1.06	5.00												
816	Hardware/Paint Store	1,000 Sq Ft		Avg	51.29	1.08	4.84												
817	Nursery (Wholesale)	1,000 Sq Ft		Avg	36.08	1.31	3.80												
818	Nursery (Garden Center)	1,000 Sq Ft		Avg	39.00	2.40	5.17												
820	Shopping Center	1,000 Sq Ft	33.713	Avg	42.94	1.00	3.73	1448	34	126	21	13	62	64	1448	34	83		
823	Factory Outlet Center	1,000 Sq Ft		Avg	26.59	0.67	2.29												
841	New Car Sales	1,000 Sq Ft		Avg	33.34	2.03	2.59												
843	Automobile Parts Sales	1,000 Sq Ft		Avg	61.91	2.21	5.98												
848	Tire Store	1,000 Sq Ft		Avg	24.87	2.89	4.15												
849	Tire Superstore	1,000 Sq Ft		Avg	20.36	1.34	2.11												
850	Supermarket	1,000 Sq Ft		Avg	102.24	3.59	10.50												
851	Convenience Market (Open 24 Hours)	1,000 Sq Ft		Avg	737.99	67.03	52.41												
852	Convenience Market (Open 15-16 Hours)	1,000 Sq Ft		Avg	*	31.02	34.57												
853	Convenience Market w/ Gasoline Pumps	1,000 Sq Ft		Avg	542.60	16.57	19.07												
854	Discount Supermarket	1,000 Sq Ft		Avg	96.82	2.74	8.90												
857	Discount Club	1,000 Sq Ft		Avg	41.80	0.56	4.24												
860	Wholesale Market	1,000 Sq Ft		Avg	6.73	0.51	0.88												
861	Sporting Goods Superstore	1,000 Sq Ft		Avg	*	*	3.10												
862	Home Improvement Superstore	1,000 Sq Ft		Avg	29.80	1.26	2.37												
863	Electronics Superstore	1,000 Sq Ft		Avg	45.04	0.28	4.50												
864	Toy/Children's Superstore	1,000 Sq Ft		Avg	*	*	4.99												
865	Baby Superstore	1,000 Sq Ft		Avg	*	*	1.82												
866	Pet Supply Superstore	1,000 Sq Ft		Avg	*	*	3.38												
867	Office Supply Superstore	1,000 Sq Ft		Avg	*	*	3.40												
868	Book Superstore	1,000 Sq Ft		Avg	*	*	19.53												
869	Discount Home Furnishing Superstore	1,000 Sq Ft		Avg	20.00	0.57	1.57												
872	Bed and Linen Superstore	1,000 Sq Ft		Avg	*	*	2.22												
875	Department Store	1,000 Sq Ft		Avg	22.88	0.53	1.78												
876	Apparel Store	1,000 Sq Ft		Avg	66.40	1.00	3.83												









# Trip Generation Planner (ITE 8th Edition)



Sand Creek Estates  
097311002.1

Project Name  
Project Number

Weekday Trip Generation  
Trips Based on Average Rates/Equations

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out		
210	Single-Family Detached Housing	Dwelling Unit(s)	190	Avg	9.57	0.75	1.01	1820	143	192	36	107	121	71	1820	143	192	36	107	121	71
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.82														
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58														
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35														
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39														
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72														
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78														
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38														
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.56	0.55														
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59														
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	3.71	0.22	0.27														
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.96	0.17	0.23														
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.48	0.13	0.16														
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	2.02	0.06	0.17														
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.66	0.14	0.22														
254	Assisted Living	Bed(s)		Avg	2.81	0.18	0.29														
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	3.16	0.16	0.26														
260	Recreational Homes	Dwelling Unit(s)		Avg	10.03	0.48	0.75														
265	Timeshare	Dwelling Unit(s)		Avg	7.50	0.51	0.82														
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg																	
<b>Totals</b>								1820	143	192	36	107	121	71	1820	143	192	36	107	121	71
<b>Reduction</b>								255	20	27	5	15	17	10							
<b>Grand Total</b>								1565	123	165	31	92	104	61							

Notes:

- (1) AM and/or PM rates correspond to peak hour of generator
- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation** **Project Name** Hillcrest Village  
**Trips Based on Average Rates/Equations** **Project Number** 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips				Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips	AM Trips	PM Trips	Trips	Daily Trips	AM Trips	PM Trips	Trips				
									In	Out	In	Out	In	Out	In	Out				
710	General Office Building (1)	1,000 Sq Ft	96	Avg	11.01	1.55	1.49	1.49	1058	149	143	18	24	119	1058	149	143	18	24	119
714	Corporate Headquarters Building(1)	1,000 Sq Ft		Avg	7.98	1.49	1.40													
715	Single Tenant Office Building (1)	1,000 Sq Ft		Avg	11.57	1.80	1.73													
720	Medical-Dental Office Building	1,000 Sq Ft		Avg	36.13	2.30	3.46													
730	Government Office Building (1)	1,000 Sq Ft		Avg	68.93	5.88	1.21													
731	State Motor Vehicles Department	1,000 Sq Ft		Avg	166.02	9.84	17.09													
732	United States Post Office	1,000 Sq Ft		Avg	108.19	8.21	11.12													
733	Government Office Complex	1,000 Sq Ft		Avg	27.92	2.21	2.85													
750	Office Park (1)	1,000 Sq Ft		Avg	11.42	1.71	1.48													
760	Research and Development Center (1)	1,000 Sq Ft		Avg	8.11	1.22	1.07													
770	Business Park (1)	1,000 Sq Ft		Avg	12.76	1.43	1.29													
<b>Totals</b>					<b>1058</b>	<b>149</b>	<b>143</b>	<b>18</b>	<b>24</b>	<b>119</b>	<b>1058</b>	<b>149</b>	<b>143</b>	<b>18</b>	<b>24</b>	<b>119</b>				
<b>Reduction</b>					<b>243</b>	<b>34</b>	<b>33</b>	<b>4</b>	<b>6</b>	<b>27</b>										
<b>Grand Total</b>					<b>815</b>	<b>115</b>	<b>110</b>	<b>14</b>	<b>18</b>	<b>92</b>										

Notes: (1) AM and/or PM rates correspond to peak hour of generator

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- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Tingdahl  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Rate	AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips		
									In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	
210	Single-Family Detached Housing	Dwelling Unit(s)	2	Avg	9.57	0.75	1.01		20	2	2	1	1	1	1	1	1	1	20	2	2	1	1	1	1
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>20</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>20</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Reduction</b>					<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Grand Total</b>					<b>17</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>17</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	

Notes:

- (1) AM and/or PM rates correspond to peak hour of generator
- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells







# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**      **Project Name**      7662 Stonewood  
**Trips Based on Average Rates/Equations**      **Project Number**      097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips				Net Trips after Pass-By Reduction												
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips	AM Trips	PM Trips	Trips	Daily Trips	AM Trips	PM Trips	Trips									
210	Single-Family Detached Housing	Dwelling Unit(s)	215	Avg	9.57	0.75	1.01		2058	161	217	40	121	137	80	2058	161	217	40	121	137	80			
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.28																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					2058	161	217	40	121	137	80	2058	161	217	40	121	137	80	2058	161	217	40	121	137	80
<b>Reduction</b>					288	23	30	6	17	19	11	288	23	30	6	17	19	11	288	23	30	6	17	19	11
<b>Grand Total</b>					1770	138	187	34	104	118	69	1770	138	187	34	104	118	69	1770	138	187	34	104	118	69

**Notes:**

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- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
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# Trip Generation Planner (ITE 8th Edition)



8541 Ryder, Cortina, Sagewood &  
Tanglewood  
097311002.1

**Weekday Trip Generation**      **Project Name**  
**Trips Based on Average Rates/Equations**      **Project Number**

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction					
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips	AM Trips	PM Trips	Trips	Daily Trips	AM Trips	PM Trips	Trips	Daily Trips	AM Trips	PM Trips	Trips
					9.57	0.75	1.01	1.01	4738	371	500	185	4738	371	500	185	4738	371	500	185
210	Single-Family Detached Housing	Dwelling Unit(s)	495	Avg	6.65	0.51	0.82		4738	371	500	185	4738	371	500	185				
220	Apartment	Dwelling Unit(s)		Avg	6.59	0.46	0.58													
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	4.20	0.30	0.35													
222	High-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39													
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.70	0.72													
224	Rental Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52													
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78													
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38													
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.56	0.55													
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59													
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	3.71	0.22	0.27													
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.96	0.17	0.23													
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.48	0.13	0.16													
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	2.02	0.06	0.17													
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.66	0.14	0.22													
254	Assisted Living	Bed(s)		Avg	2.81	0.18	0.29													
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	3.16	0.16	0.26													
260	Recreational Homes	Dwelling Unit(s)		Avg	10.03	0.48	0.75													
265	Timeshare	Dwelling Unit(s)		Avg	7.50	0.51	0.62													
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg																
<b>Totals</b>					<b>4738</b>	<b>371</b>	<b>500</b>	<b>185</b>	<b>4738</b>	<b>371</b>	<b>500</b>	<b>185</b>	<b>4738</b>	<b>371</b>	<b>500</b>	<b>185</b>	<b>4738</b>	<b>371</b>	<b>500</b>	<b>185</b>
<b>Reduction</b>					<b>663</b>	<b>52</b>	<b>70</b>	<b>44</b>	<b>663</b>	<b>52</b>	<b>70</b>	<b>44</b>	<b>663</b>	<b>52</b>	<b>70</b>	<b>44</b>	<b>663</b>	<b>52</b>	<b>70</b>	<b>44</b>
<b>Grand Total</b>					<b>4075</b>	<b>319</b>	<b>430</b>	<b>271</b>	<b>4075</b>	<b>319</b>	<b>430</b>	<b>271</b>	<b>4075</b>	<b>319</b>	<b>430</b>	<b>271</b>	<b>4075</b>	<b>319</b>	<b>430</b>	<b>271</b>

- Notes:
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# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**  
**Trips Based on Average Rates/Equations**

**Project Name**  
**Project Number**

8731 Magnolia Park  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips	AM Trips	PM Trips					
								In	Out	In	Out	In	Out	In	Out						
210	Single-Family Detached Housing	Dwelling Unit(s)	202	Avg	9.57	0.75	1.01	1934	152	204	38	114	129	75	1934	152	204	38	114	129	75
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62														
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58														
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35														
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39														
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72														
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52														
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78														
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38														
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55														
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59														
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27														
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23														
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16														
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17														
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22														
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29														
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26														
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75														
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62														
<b>Totals</b>					<b>1934</b>	<b>152</b>	<b>204</b>	<b>38</b>	<b>114</b>	<b>129</b>	<b>75</b>	<b>1934</b>	<b>152</b>	<b>204</b>	<b>38</b>	<b>114</b>	<b>129</b>	<b>75</b>			
<b>Reduction</b>					<b>271</b>	<b>21</b>	<b>29</b>	<b>5</b>	<b>16</b>	<b>18</b>	<b>11</b>	<b>1663</b>	<b>131</b>	<b>175</b>	<b>98</b>	<b>111</b>	<b>65</b>				
<b>Grand Total</b>					<b>1663</b>	<b>131</b>	<b>175</b>	<b>33</b>	<b>98</b>	<b>111</b>	<b>65</b>										

Notes:

(1) AM and/or PM rates correspond to peak hour of generator

A Trip generation data from ITE Trip Generation, 8th Edition

B AM/PM rates correspond to peak of adjacent street traffic (if data available)

C Includes weekday rates only

D Total trips include pass-by trips w/ no internal capture

E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition

F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition

G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition

H Enter data only in green shaded cells

14%



# Trip Generation Planner (ITE 8th Edition)

Project Name: 8736 Pleasant Meadows  
 Project Number: 097311002.1

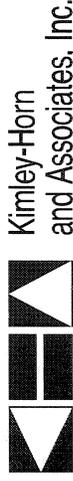
Weekday Trip Generation  
 Trips Based on Average Rates/Equations

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out		
210	Single-Family Detached Housing	Dwelling Unit(s)	44	Avg	9.57	0.75	1.01	422	33	44	8	25	28	16	422	33	44	8	25	28	16
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62														
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58														
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35														
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39														
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72														
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52														
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78														
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38														
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55														
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59														
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27														
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23														
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16														
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17														
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22														
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29														
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26														
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75														
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.82														
<b>Totals</b>					422	33	44	8	25	28	16	422	33	44	8	25	28	16			
<b>Reduction</b>					59	5	6	1	4	4	2										
<b>Grand Total</b>					363	28	38	7	22	24	14										

Notes:  
 (1) AM and/or PM rates correspond to peak hour of generator

- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

8787 Rosewood Estates  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Rate	AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips								
									In	Out	In	Out	In	Out	In	Out	In	Out							
210	Single-Family Detached Housing	Dwelling Unit(s)	60	Avg	9.57	0.75	1.01		576	45	61	11	34	38	23	576	45	61	11	34	38	23			
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.82																		
<b>Totals</b>					576	45	61	11	34	38	23	576	45	61	11	34	38	23	576	45	61	11	34	38	23
<b>Reduction</b>					81	6	9	2	5	5	3	81	6	9	2	5	5	3	81	6	9	2	5	3	
<b>Grand Total</b>					495	39	52	9	29	33	20	495	39	52	9	29	33	20	495	39	52	9	29	33	20

Notes: 14%

(1) AM and/or PM rates correspond to peak hour of generator

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- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



Kimley-Horn  
and Associates, Inc.

**Weekday Trip Generation**      **Project Name**      8803 Brownstone 10  
**Trips Based on Average Rates/Equations**      **Project Number**      097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips		PM Trips		Daily Trips	AM Trips		PM Trips		Daily Trips	AM Trips		PM Trips				
									In	Out	In	Out		In	Out	In	Out		In	Out					
210	Single-Family Detached Housing	Dwelling Unit(s)	50	Avg	9.57	0.75	1.01	480	38	51	10	28	32	19	480	38	51	10	28	32	19				
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>480</b>	<b>38</b>	<b>51</b>	<b>10</b>	<b>28</b>	<b>32</b>	<b>19</b>	<b>480</b>	<b>38</b>	<b>51</b>	<b>10</b>	<b>28</b>	<b>32</b>	<b>19</b>	<b>480</b>	<b>38</b>	<b>51</b>	<b>10</b>	<b>28</b>	<b>32</b>	<b>19</b>
<b>Reduction</b>					<b>67</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>67</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>67</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>4</b>	<b>3</b>	
<b>Grand Total</b>					<b>413</b>	<b>33</b>	<b>44</b>	<b>9</b>	<b>24</b>	<b>28</b>	<b>16</b>	<b>413</b>	<b>33</b>	<b>44</b>	<b>9</b>	<b>24</b>	<b>28</b>	<b>16</b>	<b>413</b>	<b>33</b>	<b>44</b>	<b>9</b>	<b>24</b>	<b>16</b>	

Notes: (1) AM and/or PM rates correspond to peak hour of generator

- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

8807 Villa Grove  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips		PM Trips		Daily Trips	AM Trips		PM Trips									
									In	Out	In	Out		In	Out	In	Out								
210	Single-Family Detached Housing	Dwelling Unit(s)	50	Avg	9.57	0.75	1.01	480	38	51	10	28	32	19	480	38	51	10	28	32	19				
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.36																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>480</b>	<b>38</b>	<b>51</b>	<b>10</b>	<b>28</b>	<b>32</b>	<b>19</b>	<b>480</b>	<b>38</b>	<b>51</b>	<b>10</b>	<b>28</b>	<b>32</b>	<b>19</b>	<b>480</b>	<b>38</b>	<b>51</b>	<b>10</b>	<b>28</b>	<b>32</b>	<b>19</b>
<b>Reduction</b>					<b>67</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>67</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>67</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>4</b>	<b>3</b>	
<b>Grand Total</b>					<b>413</b>	<b>33</b>	<b>44</b>	<b>9</b>	<b>24</b>	<b>28</b>	<b>16</b>	<b>413</b>	<b>33</b>	<b>44</b>	<b>9</b>	<b>24</b>	<b>28</b>	<b>16</b>	<b>413</b>	<b>33</b>	<b>44</b>	<b>9</b>	<b>24</b>	<b>28</b>	<b>16</b>

Notes:

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- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
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# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

8975 Shiloh  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out		
210	Single-Family Detached Housing	Dwelling Unit(s)	75	Avg	9.57	0.75	1.01	718	56	76	14	42	48	28	718	56	76	14	42	48	28
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62														
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58														
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35														
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39														
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72														
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52														
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78														
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38														
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55														
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59														
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27														
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23														
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16														
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17														
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22														
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29														
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26														
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75														
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62														
<b>Totals</b>								718	56	76	14	42	48	28	718	56	76	14	42	48	28
<b>Reduction</b>								101	8	11	2	6	7	4							
<b>Grand Total</b>								617	48	65	12	36	41	24							

Notes:

- (1) AM and/or PM rates correspond to peak hour of generator
- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
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- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells

# Trip Generation Planner (ITE 8th Edition)



8980 Brownstone Estates  
097311002.1

Project Name  
Project Number

Weekday Trip Generation  
Trips Based on Average Rates/Equations

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates				Total Trips						Net Trips after Pass-By Reduction										
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips		AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips						
									In	Out	In	Out	In	Out	In	Out	In	Out							
210	Single-Family Detached Housing	Dwelling Unit(s)	96	Avg	9.57	0.75	1.01	920	72	97	18	54	61	36	920	72	97	18	54	61	36				
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62																		
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58																		
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35																		
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39																		
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72																		
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52																		
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78																		
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38																		
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55																		
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59																		
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27																		
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23																		
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16																		
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17																		
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22																		
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29																		
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.28																		
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75																		
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62																		
<b>Totals</b>					<b>920</b>	<b>72</b>	<b>97</b>	<b>18</b>	<b>54</b>	<b>61</b>	<b>36</b>	<b>920</b>	<b>72</b>	<b>97</b>	<b>18</b>	<b>54</b>	<b>61</b>	<b>36</b>	<b>920</b>	<b>72</b>	<b>97</b>	<b>18</b>	<b>54</b>	<b>61</b>	<b>36</b>
<b>Reduction</b>					<b>129</b>	<b>10</b>	<b>14</b>	<b>3</b>	<b>8</b>	<b>9</b>	<b>5</b>	<b>129</b>	<b>10</b>	<b>14</b>	<b>3</b>	<b>8</b>	<b>9</b>	<b>5</b>	<b>129</b>	<b>10</b>	<b>14</b>	<b>3</b>	<b>8</b>	<b>9</b>	<b>5</b>
<b>Grand Total</b>					<b>791</b>	<b>62</b>	<b>83</b>	<b>15</b>	<b>46</b>	<b>52</b>	<b>31</b>	<b>791</b>	<b>62</b>	<b>83</b>	<b>15</b>	<b>46</b>	<b>52</b>	<b>31</b>	<b>791</b>	<b>62</b>	<b>83</b>	<b>15</b>	<b>46</b>	<b>52</b>	<b>31</b>

Notes:

- (1) AM and/or PM rates correspond to peak hour of generator
- A Trip generation data from ITE Trip Generation, 8th Edition
- B AM/PM rates correspond to peak of adjacent street traffic (if data available)
- C Includes weekday rates only
- D Total trips include pass-by trips w/ no internal capture
- E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition
- F Internal capture rates from ITE Trip Generation Handbook, 2nd Edition
- G Worksheet is intended as a planning tool. Verify results w/ ITE Trip Generation, 8th Edition
- H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)



**Weekday Trip Generation**      **Project Name**      9088 Cedarwood Estates  
**Trips Based on Average Rates/Equations**      **Project Number**      097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates			Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out		
210	Single-Family Detached Housing	Dwelling Unit(s)	34	Avg	9.57	0.75	1.01	326	26	34	7	19	21	13	326	26	34	7	19	21	13
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62														
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58														
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35														
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39														
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72														
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52														
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78														
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38														
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55														
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59														
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27														
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23														
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16														
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17														
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22														
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29														
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26														
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75														
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.62														
<b>Totals</b>								326	26	34	7	19	21	13	326	26	34	7	19	21	13
<b>Reduction</b>								46	4	5	1	3	3	2							
<b>Grand Total</b>								280	22	29	6	16	18	11							

Notes:  
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 C Includes weekday rates only  
 D Total trips include pass-by trips w/ no internal capture  
 E Pass-by rates from ITE Trip Generation Handbook, 2nd Edition  
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 H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)

**Weekday Trip Generation**      **Project Name**      7426759076557760 Amberwood  
**Trips Based on Average Rates/Equations**      **Project Number**      097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips						Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Rate	Daily Trips		AM Trips		PM Trips		Daily Trips		AM Trips		PM Trips			
									In	Out	In	Out	In	Out	In	Out	In	Out				
210	Single-Family Detached Housing	Dwelling Unit(s)	87	Avg	9.57	0.75	1.01		834	65	88	16	49	55	33	834	65	88	16	49	55	33
220	Apartment	Dwelling Unit(s)		Avg	6.65	0.51	0.62															
221	Low-Rise Apartment	Occ. Dwelling Unit(s)		Avg	6.59	0.46	0.58															
222	High-Rise Apartment	Dwelling Unit(s)		Avg	4.20	0.30	0.35															
223	Mid-Rise Apartment	Dwelling Unit(s)		Avg	*	0.30	0.39															
224	Rental Townhouse	Dwelling Unit(s)		Avg	*	0.70	0.72															
230	Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	5.81	0.44	0.52															
231	Low-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	*	0.67	0.78															
232	High-Rise Residential Condominium/Townhouse	Dwelling Unit(s)		Avg	4.18	0.34	0.38															
233	Luxury Condominium/Townhouse	Occ. Dwelling Unit(s)		Avg	*	0.56	0.55															
240	Mobile Home Park	Occ. Dwelling Unit(s)		Avg	4.99	0.44	0.59															
251	Senior Adult Housing-Detached	Dwelling Unit(s)		Avg	3.71	0.22	0.27															
251X-a	Senior Adult Housing (CA Pulte Dell Webb)	Dwelling Unit(s)		Avg	3.96	0.17	0.23															
252	Senior Adult Housing-Attached	Occ. Dwelling Unit(s)		Avg	3.48	0.13	0.16															
253	Congregate Care Facility	Dwelling Unit(s)		Avg	2.02	0.06	0.17															
254	Assisted Living	Bed(s)		Avg	2.66	0.14	0.22															
255	Continuing Care Retirement Community	Occupied Unit(s)		Avg	2.81	0.18	0.29															
260	Recreational Homes	Dwelling Unit(s)		Avg	3.16	0.16	0.26															
265	Timeshare	Dwelling Unit(s)		Avg	10.03	0.48	0.75															
270	Residential Planned Unit Development	Dwelling Unit(s)		Avg	7.50	0.51	0.82															
<b>Totals</b>					834	65	88	16	49	55	33	834	65	88	16	49	55	33				
<b>Reduction</b>					117	9	12	2	7	8	5											
<b>Grand Total</b>					717	56	76	14	42	47	28											

Notes: (1) AM and/or PM rates correspond to peak hour of generator

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- H Enter data only in green shaded cells



# Trip Generation Planner (ITE 8th Edition)



Weekday Trip Generation  
 Trips Based on Average Rates/Equations

Project Name  
 Project Number

Rite Aid  
 097311002.1

ITE Code	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Trip Rates				Total Trips				Net Trips after Pass-By Reduction							
					Daily Rate	AM Rate	PM Rate	Avg Rate	Daily Trips	AM Trips	PM Trips	Avg Trips	Daily Trips	AM Trips	PM Trips	Avg Trips				
812	Building Materials and Lumber Store	1,000 Sq Ft		Avg	45.16	2.60	4.49													
813	Free Standing Discount Superstore	1,000 Sq Ft		Avg	53.13	1.67	4.61													
814	Specialty Retail Center	1,000 Sq Ft		Avg	44.32	*	2.71													
815	Free Standing Discount Store	1,000 Sq Ft		Avg	57.24	1.06	5.00													
816	Hardware/Paint Store	1,000 Sq Ft		Avg	51.29	1.08	4.84													
817	Nursery (Garden Center)	1,000 Sq Ft		Avg	36.08	1.31	3.80													
818	Nursery (Wholesale)	1,000 Sq Ft		Avg	39.00	2.40	5.17													
820	Shopping Center	1,000 Sq Ft		Avg	42.94	1.00	3.73													
823	Factory Outlet Center	1,000 Sq Ft		Avg	26.59	0.67	2.29													
841	New Car Sales	1,000 Sq Ft		Avg	33.34	2.03	2.59													
843	Automobile Parts Sales	1,000 Sq Ft		Avg	61.91	2.21	5.98													
848	Tire Store	1,000 Sq Ft		Avg	24.87	2.89	4.15													
849	Tire Superstore	1,000 Sq Ft		Avg	20.36	1.34	2.11													
850	Supermarket	1,000 Sq Ft		Avg	102.24	3.59	10.50													
851	Convenience Market (Open 24 Hours)	1,000 Sq Ft		Avg	737.99	67.03	52.41													
852	Convenience Market (Open 15-16 Hours)	1,000 Sq Ft		Avg	*	31.02	34.57													
853	Convenience Market w/ Gasoline Pumps	Fueling Position(s)		Avg	542.60	16.57	19.07													
854	Discount Supermarket	1,000 Sq Ft		Avg	96.82	2.74	8.90													
857	Discount Club	1,000 Sq Ft		Avg	41.80	0.56	4.24													
860	Wholesale Market	1,000 Sq Ft		Avg	6.73	0.51	0.88													
861	Sporting Goods Superstore	1,000 Sq Ft		Avg	*	*	3.10													
862	Home Improvement Superstore	1,000 Sq Ft		Avg	29.80	1.26	2.37													
863	Electronics Superstore	1,000 Sq Ft		Avg	45.04	0.28	4.50													
864	Toy/Children's Superstore	1,000 Sq Ft		Avg	*	*	4.99													
865	Baby Superstore	1,000 Sq Ft		Avg	*	*	1.82													
866	Pet Supply Superstore	1,000 Sq Ft		Avg	*	*	3.38													
867	Office Supply Superstore	1,000 Sq Ft		Avg	*	*	3.40													
868	Book Superstore	1,000 Sq Ft		Avg	*	*	19.53													
869	Discount Home Furnishing Superstore	1,000 Sq Ft		Avg	20.00	0.57	1.57													
872	Bed and Linen Superstore	1,000 Sq Ft		Avg	*	*	2.22													
875	Department Store	1,000 Sq Ft		Avg	22.88	0.53	1.78													
876	Apparel Store	1,000 Sq Ft		Avg	66.40	1.00	3.83													
879	Arts and Crafts Store (1)	1,000 Sq Ft		Avg	56.55	4.65	6.21													
880	Pharmacy/Drugstore w/o Drive-Through Window	1,000 Sq Ft	17.34	Avg	90.06	3.20	8.42													
881	Pharmacy/Drugstore w/ Drive-Through Window	1,000 Sq Ft		Avg	86.16	2.66	10.35													
890	Furniture Store	1,000 Sq Ft		Avg	5.06	0.17	0.45													
896	Video Rental Store	1,000 Sq Ft		Avg	*	*	13.60													
					Totals				1562	55	146	32	23	73	73	34	23	34	35	35
					Reduction				859	30	80	18	13	40	40	40	40	40	40	40
					Grand Total				703	25	66	14	10	33	33	33	33	33	33	33

Notes:  
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A Trip generation data from ITE Trip Generation, 8th Edition  
 B AM/PM rates correspond to peak of adjacent street traffic (if data available)

AntiochWalMartExpansion05-ApprovedTripGen.xls  
 Kimley-Horn and Associates, Inc.  
 2009 CQJ, Jim West, San Ramon, CA



# Trip Generation Planner (ITE 8th Edition)



Empire Station Mixed Use Project (3 Office Bldgs)  
097311002.1

**Weekday Trip Generation**      **Project Name**  
**Trips Based on Average Rates/Equations**      **Project Number**

ITE Code	Land Use Description	Independent Variable	No. of Units or Eq	Avg Rate	Trip Rates			Total Trips						Net Trips after Pass-By Reduction									
					Daily Rate	AM Rate	PM Rate	Daily Trips	AM Trips	PM Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out	Daily Trips	AM Trips In	AM Trips Out	PM Trips In	PM Trips Out				
710	General Office Building (1)	1,000 Sq Ft	9	Avg 11.01	1.55	1.49	100	14	13	12	2	2	2	11	100	14	13	12	2	2	11		
714	Corporate Headquarters Building (1)	1,000 Sq Ft		Avg 7.98	1.49	1.40																	
715	Single Tenant Office Building (1)	1,000 Sq Ft		Avg 11.57	1.80	1.73																	
720	Medical-Dental Office Building	1,000 Sq Ft		Avg 36.13	2.30	3.46																	
730	Government Office Building (1)	1,000 Sq Ft		Avg 68.93	5.88	1.21																	
731	State Motor Vehicles Department	1,000 Sq Ft		Avg 166.02	9.84	17.09																	
732	United States Post Office	1,000 Sq Ft		Avg 108.19	8.21	11.12																	
733	Government Office Complex	1,000 Sq Ft		Avg 27.92	2.21	2.85																	
750	Office Park (1)	1,000 Sq Ft		Avg 11.42	1.71	1.48																	
760	Research and Development Center (1)	1,000 Sq Ft		Avg 8.11	1.22	1.07																	
770	Business Park (1)	1,000 Sq Ft		Avg 12.76	1.43	1.29																	
<b>Totals</b>							<b>100</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>11</b>	<b>100</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>2</b>	<b>2</b>	<b>11</b>		
<b>Reduction</b>							<b>23</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>										
<b>Grand Total</b>							<b>77</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>8</b>									

Notes:  
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**EXISTING + APPROVED TRAFFIC CONDITIONS  
(TRAFFIX & SYNCRHO)**



Antioch Walmart Expansion  
Near Term AM

Scenario: Near Term AM  
 Command: Near Term AM  
 Volume: Near-Term AM  
 Geometry: Near-Term  
 Impact Fee: Default Impact Fee  
 Trip Generation: Approved AM  
 Trip Distribution: Near-Term  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

Antioch Walmart Expansion  
Near Term AM

Impact Analysis Report  
Level Of Service

Intersection	Base Del/V LOS Veh	Future Del/V LOS Veh	Change in
# 1 Deer Valley Rd/ Country Hills	A xxxxx 0.435	A xxxxx 0.469	+ 0.034 V/C
# 2 Hillcrest Avenue/Laurel Road	A xxxxx 0.311	A xxxxx 0.332	+ 0.020 V/C
# 3 Hillcrest Avenue/Country Hills	A xxxxx 0.353	A xxxxx 0.386	+ 0.033 V/C
# 4 Hillcrest Avenue/Driveway	B 13.0 0.022	B 14.0 0.024	+ 0.949 D/V
# 5 Hillcrest Avenue/South Drivewa	B 10.1 0.078	B 10.3 0.082	+ 0.257 D/V
# 6 Lone Tree Way/Mokelumne Dr	B xxxxx 0.627	C xxxxx 0.714	+ 0.087 V/C
# 7 Lone Tree Way/Deer Valley Plaz	A xxxxx 0.367	A xxxxx 0.450	+ 0.083 V/C
# 8 Lone Tree Way/Deer Valley Rd	A xxxxx 0.544	C xxxxx 0.719	+ 0.175 V/C
# 9 Lone Tree Way/Deer Valley HS	A xxxxx 0.448	A xxxxx 0.552	+ 0.105 V/C
# 10 Lone Tree Way/Sagebrush Drive	A xxxxx 0.389	A xxxxx 0.462	+ 0.073 V/C
# 11 Lone Tree Way/Williamson Ranch	A xxxxx 0.352	A xxxxx 0.482	+ 0.131 V/C
# 12 Lone Tree Way/Indian Hill Dr/W	A xxxxx 0.423	A xxxxx 0.544	+ 0.121 V/C
# 13 Lone Tree Way/Driveway	B 10.8 0.008	B 12.1 0.010	+ 1.296 D/V
# 14 Lone Tree Way/Hillcrest Avenue	A xxxxx 0.394	A xxxxx 0.501	+ 0.107 V/C
# 15 Lone Tree Way/Vista Grande Dri	A xxxxx 0.300	A xxxxx 0.388	+ 0.088 V/C
# 16 Lone Tree Way/Heidorn Ranch Ro	A xxxxx 0.224	A xxxxx 0.299	+ 0.075 V/C
# 17 Lone Tree Way/Canada Valley Ro	A xxxxx 0.336	A xxxxx 0.523	+ 0.187 V/C
# 18 Lone Tree Way/SB SR-4 Bypass	A xxxxx 0.416	A xxxxx 0.531	+ 0.115 V/C
# 19 Lone Tree Way/NB SR-4 Bypass (	A xxxxx 0.273	A xxxxx 0.362	+ 0.089 V/C
# 20 Deer Valley Road/Marita Drive	A xxxxx 0.293	A xxxxx 0.392	+ 0.100 V/C
# 21 Hillcrest Ave/Prewett Ranch Dr	A xxxxx 0.153	A xxxxx 0.162	+ 0.009 V/C







Antioch Walmart Expansion  
Near Term AM

Antioch Walmart Expansion  
Near Term AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #7 Lone Tree Way/Deer Valley Plaza

Intersection #7 Lone Tree Way/Deer Valley Plaza

Cycle (sec): 130  
Loss Time (sec): 6  
Optimal Cycle: 26

Cycle (sec): 130  
Loss Time (sec): 6  
Optimal Cycle: 26

Street Name: Deer Valley Plaza  
Approach: North Bound South Bound East Bound West Bound

Street Name: Deer Valley Plaza  
Approach: North Bound South Bound East Bound West Bound

Control: Protected Permitted Protected Protected  
Rights: Include Include Include Include

Control: Protected Permitted Protected Protected  
Rights: Include Include Include Include

Min. Green: 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Min. Green: 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 0 1 0 0 0 0 0 2 0 1 1 0 2 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 2 0 1 1 0 2 0 0

Volume Module:

Volume Module:

Base Vol: 75 0 35 0 0 0 0 796 67 42 1060 0  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 75 0 35 0 0 0 0 796 67 42 1060 0  
Added Vol: 0 0 0 0 0 0 0 109 0 0 274 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 75 0 35 0 0 0 0 905 67 42 1334 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 75 0 35 0 0 0 0 905 67 42 1334 0  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 75 0 35 0 0 0 0 905 67 42 1334 0  
RTOR Reduct: 0 0 35 0 0 0 0 0 0 0 0 0  
RTOR Vol: 75 0 0 0 0 0 0 905 0 42 1334 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 75 0 0 0 0 0 0 905 0 42 1334 0

Base Vol: 75 0 35 0 0 0 0 796 67 42 1060 0  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 75 0 35 0 0 0 0 796 67 42 1060 0  
Added Vol: 0 0 0 0 0 0 0 109 0 0 274 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 75 0 35 0 0 0 0 905 67 42 1334 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 75 0 35 0 0 0 0 905 67 42 1334 0  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 75 0 35 0 0 0 0 905 67 42 1334 0  
RTOR Reduct: 0 0 35 0 0 0 0 0 0 0 0 0  
RTOR Vol: 75 0 0 0 0 0 0 905 0 42 1334 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 75 0 0 0 0 0 0 905 0 42 1334 0

Saturation Flow Module:

Saturation Flow Module:

Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 2.00 1.00 1.00 2.00 0.00  
Final Sat.: 1650 0 1650 0 0 0 0 3300 1650 1650 3300 0

Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 2.00 1.00 1.00 2.00 0.00  
Final Sat.: 1650 0 1650 0 0 0 0 3300 1650 1650 3300 0

Capacity Analysis Module:

Capacity Analysis Module:

Vol/Sat: 0.05 0.00 0.00 0.00 0.00 0.00 0.00 0.27 0.00 0.03 0.40 0.00  
Crit Volume: 75 0  
Crit Moves: \*\*\*\*

Vol/Sat: 0.05 0.00 0.00 0.00 0.00 0.00 0.00 0.27 0.00 0.03 0.40 0.00  
Crit Volume: 75 0  
Crit Moves: \*\*\*\*

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Antioch Walmart Expansion Near Term AM

Level Of Service Computation Report CCTLALOS Method (Future Volume Alternative)

Intersection #9 Lone Tree Way/Deer Valley HS

Cycle (sec): 130 Critical Vol./Cap.(X): 0.552
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 42 Level Of Service: A

Street Name: Deer Valley HS Lone Tree Way
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Include Protected Protected
Rights: Permitted Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes: 1 0 0 1 0 1 0 1 0 1 0 1 0 2 0 1

Volume Module:
Base Vol: 149 0 58 21 1 29 116 761 130 91 1008 61
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Saturation Flow Module:
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Capacity Analysis Module:
Vol/Sat: 0.09 0.00 0.03 0.01 0.00 0.00 0.07 0.33 0.33 0.05 0.40 0.02
Crit Volume: 149 116 684
Crit Moves: \*\*\*\*

Antioch Walmart Expansion Near Term AM

Level Of Service Computation Report CCTLALOS Method (Future Volume Alternative)

Intersection #10 Lone Tree Way/Sagebrush Drive

Cycle (sec): 130 Critical Vol./Cap.(X): 0.462
Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 27 Level Of Service: A

Street Name: Sagebrush Drive Lone Tree Way
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Include Protected Protected
Rights: Permitted Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes: 1 0 0 1 0 0 0 0 0 0 2 0 1 1 0 2 0 0

Volume Module:
Base Vol: 104 0 78 0 0 0 0 681 219 198 916 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Saturation Flow Module:
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Capacity Analysis Module:
Vol/Sat: 0.06 0.00 0.00 0.00 0.00 0.00 0.00 0.28 0.07 0.12 0.39 0.00
Crit Volume: 104 461 198
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #11 Lone Tree Way/Williamson Ranch Plaza (OSH)  
\*\*\*\*\*  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.482  
Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 28 Level Of Service: A

Street Name: Williamson Ranch Plaza (OSH) Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Protected Permitted  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 0 0 0 0 1 0 0 0 1 1 0 2 0 0 2 0 1

Volume Module:  
Base Vol: 0 0 0 11 0 40 55 689 0 0 1029 20  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 0 0 0 11 0 40 55 689 0 0 1029 20  
Added Vol: 0 0 0 15 0 6 23 218 0 0 355 36  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 0 0 0 26 0 46 78 907 0 0 1384 56  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 0 0 0 26 0 46 78 907 0 0 1384 56  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 0 0 0 26 0 46 78 907 0 0 1384 56  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 0 0 0 26 0 46 78 907 0 0 1384 30  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 0 0 0 26 0 46 78 907 0 0 1384 30

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 0.00 0.00 0.00 1.00 0.00 1.00 1.00 2.00 0.00 0.00 2.00 1.00  
Final Sat.: 0 0 0 1650 0 1650 1650 3300 0 0 3300 1650

Capacity Analysis Module:  
Vol/Sat: 0.00 0.00 0.00 0.02 0.00 0.00 0.05 0.27 0.00 0.00 0.42 0.02  
Crit Volume: 0 26 78 692  
Crit Moves: \*\*\*\*\*

Antioch Walmart Expansion  
Near Term AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #12 Lone Tree Way/Indian Hill Dr/Williamson Ranch Plaza (Wal-Mart, OSH)  
\*\*\*\*\*  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.544  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 50 Level Of Service: A

Street Name: Indian Hill Dr/Williamson Ranch Pl Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 2 0 0 1 1 0 2 0 1 1 0 2 0 1

Volume Module:  
Base Vol: 9 15 58 20 1 21 45 574 5 25 1116 34  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 9 15 58 20 1 21 45 574 5 25 1116 34  
Added Vol: 0 0 4 1 0 0 0 0 233 0 2 391 7  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 9 15 62 21 1 21 45 807 5 27 1507 41  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 9 15 62 21 1 21 45 807 5 27 1507 41  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 9 15 62 21 1 21 45 807 5 27 1507 41  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 9 15 62 21 1 21 45 807 5 27 1507 29  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 9 15 62 21 1 21 45 807 0 27 1507 29

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.19 0.81 2.00 0.05 0.95 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 1650 321 1329 3000 75 1575 1650 3300 1650 1650 3300 1650

Capacity Analysis Module:  
Vol/Sat: 0.01 0.05 0.05 0.01 0.01 0.01 0.03 0.24 0.00 0.02 0.46 0.02  
Crit Volume: 77 22 45 754  
Crit Moves: \*\*\*\*\*



Antioch Walmart Expansion  
Near Term AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #15 Lone Tree Way/Vista Grande Drive  
\*\*\*\*\*  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.388  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx A  
Optimal Cycle: 30 Level Of Service: A  
\*\*\*\*\*

Street Name: Vista Grande Drive Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Permitted Permitted Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 0 1 0 2 1 0 1 0 2 1 0

Volume Module:  
Base Vol: 39 14 123 24 16 41 20 693 30 59 967 37  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 39 14 123 24 16 41 20 693 30 59 967 37  
Added Vol: 21 0 33 3 0 2 0 210 6 17 343 3  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 60 14 156 27 16 43 20 903 36 76 1310 40  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 60 14 156 27 16 43 20 903 36 76 1310 40  
Reduc Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 60 14 156 27 16 43 20 903 36 76 1310 40  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 60 14 156 27 16 43 20 903 36 76 1310 40  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 60 14 156 27 16 43 20 903 36 76 1310 40

Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.08 0.92 1.00 0.27 0.73 1.00 2.88 0.12 1.00 2.91 0.09  
Final Sat.: 1720 142 1578 1720 466 1254 1720 4962 198 1720 5007 153

Capacity Analysis Module:  
Vol/Sat: 0.03 0.10 0.10 0.02 0.03 0.03 0.01 0.18 0.18 0.04 0.26 0.26  
Crit Volume: 170 27 20 450  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #16 Lone Tree Way/Heidorn Ranch Road  
\*\*\*\*\*  
Cycle (sec): 120 Critical Vol./Cap.(X): 0.299  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx A  
Optimal Cycle: 33 Level Of Service: A  
\*\*\*\*\*

Street Name: Heidorn Ranch Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Split Phase Split Phase Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 2 0 1 0 1 1 0 0 1 0 2 1 0 1 0 2 1 0

Volume Module:  
Base Vol: 23 0 23 10 2 19 4 741 40 48 987 9  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 23 0 23 10 2 19 4 741 40 48 987 9  
Added Vol: 10 1 47 1 0 0 0 244 2 17 352 2  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 33 1 70 11 2 19 4 985 42 65 1339 11  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 33 1 70 11 2 19 4 985 42 65 1339 11  
Reduc Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 33 1 70 11 2 19 4 985 42 65 1339 11  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 33 1 5 11 2 19 4 985 42 65 1339 11  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 33 1 5 11 2 19 4 985 42 65 1339 11

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 2.00 1.00 1.00 1.00 1.00 1.00 1.00 2.88 0.12 1.00 2.98 0.02  
Final Sat.: 3000 1650 1650 1650 157 1493 1650 4748 202 1650 4910 40

Capacity Analysis Module:  
Vol/Sat: 0.01 0.00 0.00 0.01 0.01 0.01 0.00 0.21 0.21 0.04 0.27 0.27  
Crit Volume: 17 21 4 450  
Crit Moves: \*\*\*\*



Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #19 Lone Tree Way/NB SR-4 Bypass (Jeffrey Way)  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.362  
 Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 41 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: NB SR-4 Bypass (Jeffrey Way) Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Protected Permitted Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 1 1 0 0 1 0 0 0 0 0 3 0 1 2 0 3 0 1  
 \*\*\*\*\*

Volume Module:  
 Base Vol: 383 29 79 0 0 0 0 662 160 8 671 245  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 383 29 79 0 0 0 0 662 160 8 671 245  
 Added Vol: 81 0 60 0 0 0 0 232 192 0 306 53  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 464 29 139 0 0 0 0 894 352 8 977 298  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 464 29 139 0 0 0 0 894 352 8 977 298  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 464 29 139 0 0 0 0 894 352 8 977 298  
 RTOR Reduct: 0 0 4 0 0 0 0 0 255 0 0 0  
 RTOR Vol: 464 29 135 0 0 0 0 894 97 8 977 298  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 464 29 135 0 0 0 0 894 97 8 977 298  
 \*\*\*\*\*

Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.91 1.00 1.00  
 Lanes: 1.88 0.12 1.00 0.00 0.00 0.00 0.00 3.00 1.00 2.00 3.00 1.00  
 Final Sat.: 2823 194 1650 0 0 0 0 4950 1650 3000 4950 1650  
 \*\*\*\*\*  
 Capacity Analysis Module:  
 Vol/Sat: 0.16 0.15 0.08 0.00 0.00 0.00 0.00 0.18 0.06 0.00 0.20 0.18  
 Crit Volume: 246 0 298 326  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #20 Deer Valley Road/Marita Drive  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.392  
 Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 31 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Deer Valley Road Marita Drive  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Protected Protected Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 0 1 0  
 \*\*\*\*\*

Volume Module:  
 Base Vol: 58 638 23 137 633 24 29 8 21 1 1 6  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 58 638 23 137 633 24 29 8 21 1 1 6  
 Added Vol: 0 343 0 0 198 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 58 981 23 137 831 24 29 8 21 1 1 6  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 58 981 23 137 831 24 29 8 21 1 1 6  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 58 981 23 137 831 24 29 8 21 1 1 6  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
 RTOR Vol: 58 981 23 137 831 24 29 8 21 1 1 6  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 58 981 23 137 831 24 29 8 21 1 1 6  
 \*\*\*\*\*

Saturation Flow Module:  
 Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 1.95 0.05 1.00 1.94 0.06 1.00 0.28 0.72 1.00 0.14 0.86  
 Final Sat.: 1720 3361 79 1720 3343 97 1720 474 1246 1720 246 1474  
 \*\*\*\*\*  
 Capacity Analysis Module:  
 Vol/Sat: 0.03 0.29 0.29 0.08 0.25 0.25 0.02 0.02 0.02 0.00 0.00 0.00  
 Crit Volume: 502 137 29  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

Antioch Walmart Expansion  
Near Term AM

Level Of Service Computation Report  
CCTALIOS Method (Future Volume Alternative)

Intersection #21 Hillcrest Ave/Prewett Ranch Dr  
Cycle (sec): 100 Critical Vol./Cap.(X): 0.162  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 22 Level Of Service: A

Street Name: Hillcrest Ave Prewett Dr  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Protected Permitted Permitted  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0

Volume Module:  
Base Vol: 0 0 0 13 0 111 116 40 0 0 39 10  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 0 0 0 13 0 111 116 40 0 0 39 10  
Added Vol: 1 139 0 0 62 0 2 0 1 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 1 139 0 13 62 111 118 40 1 0 39 10  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 1 139 0 13 62 111 118 40 1 0 39 10  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 1 139 0 13 62 111 118 40 1 0 39 10  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 1 139 0 13 62 111 118 40 1 0 39 10  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 1 139 0 13 62 111 118 40 1 0 39 10

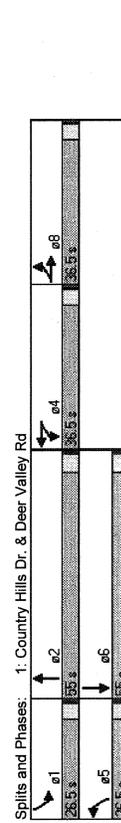
Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 2.00 0.00 1.00 1.00 1.00 1.00 0.98 0.02 1.00 0.80 0.20  
Final Sat.: 1720 3440 0 1720 1720 1720 1720 1678 42 1720 1369 351

Capacity Analysis Module:  
Vol/Sat: 0.00 0.04 0.00 0.01 0.04 0.06 0.07 0.02 0.02 0.00 0.03 0.03  
Crit Volume: 1 111 118 49  
Crit Moves: \*\*\*\*

1: Country Hills Dr. & Deer Valley Rd  
Antitoch Walmart Expansion

Near-Term Condition  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1822	0	1770	1724	0	1770	3400	0	1770	3384
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950
Fit Permitted	1765	1822	0	1770	1724	0	1749	3400	0	1733	3384
Satd. Flow (perm)	5	5	0	24	24	0	18	18	0	19	19
Satd. Flow (RTOR)	75	63	11	158	156	125	10	480	102	77	793
Volume (vph)	90	88	0	203	360	0	12	677	0	93	1175
Lane Group Flow (vph)	Split										
Turn Type	Split										
Protected Phases	Split										
Permitted Phases	Split										
Total Split (s)	36.5	36.5	0.0	36.5	36.5	0.0	26.5	55.0	0.0	26.5	55.0
Act Effct Green (s)	11.9	11.9	0.0	26.7	26.7	0.0	8.1	40.6	0.0	12.1	48.9
Actuated g/C Ratio	0.12	0.12	0.00	0.27	0.27	0.00	0.08	0.42	0.00	0.12	0.50
v/c Ratio	0.42	0.40	0.00	0.42	0.74	0.00	0.09	0.48	0.00	0.43	0.69
Control Delay	52.0	48.8	0.0	35.4	42.9	0.0	53.8	26.2	0.0	52.0	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	48.8	0.0	35.4	42.9	0.0	53.8	26.2	0.0	52.0	25.1
LOS	D										
Approach Delay	D										
Approach LOS	D										
Queue Length 50th (ft)	53	50	0	102	188	0	7	176	0	55	284
Queue Length 95th (ft)	110	105	0	178	300	0	29	270	0	113	460
Internal Link Dist (ft)	308										
Turn Bay Length (ft)	145	120	0	585	586	0	110	880	0	175	220
Base Capacity (vph)	500	519	0	359	586	0	359	1671	0	385	1785
Starvation Cap Reductn	0										
Spillback Cap Reductn	0										
Storage Cap Reductn	0										
Reduced v/c Ratio	0.18	0.17	0.00	0.35	0.61	0.00	0.03	0.41	0.00	0.24	0.66



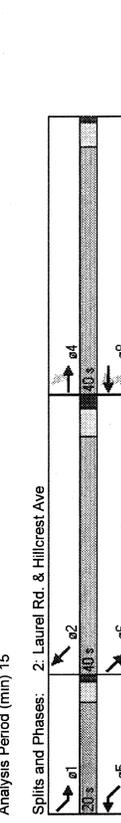
Splits and Phases: 1: Country Hills Dr. & Deer Valley Rd

Intersection Summary  
Cycle Length: 154.5  
Actuated Cycle Length: 97.8  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.74  
Intersection Signal Delay: 31.2  
Intersection Capacity Utilization 65.9%  
Analysis Period (min): 15  
Intersection LOS: C  
ICU Level of Service C

2: Laurel Rd. & Hillcrest Ave  
Antitoch Walmart Expansion

Near-Term Condition  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1638	0	1770	1863	1583	1770	3442	0	1770	3488
Satd. Flow (prot)	0.767	0.767	0	0.534	0.534	0.534	0.534	0.534	0	0.534	0.534
Fit Permitted	1312	1638	0	981	1663	1557	1767	3442	0	1750	3488
Satd. Flow (perm)	118	118	0	199	199	21	21	21	0	19	19
Satd. Flow (RTOR)	150	50	103	63	67	173	87	481	80	68	465
Volume (vph)	208	212	0	72	77	199	100	645	0	89	657
Lane Group Flow (vph)	Perm										
Turn Type	Perm										
Protected Phases	Perm										
Permitted Phases	Perm										
Total Split (s)	40.0	40.0	0.0	40.0	40.0	20.0	40.0	40.0	0.0	20.0	40.0
Act Effct Green (s)	22.3	22.3	0.0	22.3	22.3	11.7	22.3	22.3	0.0	11.7	22.3
Actuated g/C Ratio	0.22	0.22	0.00	0.22	0.22	0.12	0.22	0.12	0.00	0.11	0.59
v/c Ratio	0.71	0.46	0.00	0.33	0.19	0.40	0.48	0.31	0.00	0.45	0.52
Control Delay	48.3	17.0	0.0	34.3	30.0	6.4	48.3	12.5	0.0	48.0	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	17.0	0.0	34.3	30.0	6.4	48.3	12.5	0.0	48.0	13.2
LOS	D										
Approach Delay	D										
Approach LOS	D										
Queue Length 50th (ft)	125	50	0	39	41	0	60	98	0	54	104
Queue Length 95th (ft)	137	66	0	69	68	45	104	174	0	82	154
Internal Link Dist (ft)	468										
Turn Bay Length (ft)	75	175	0	175	155	155	155	155	0	150	2088
Base Capacity (vph)	485	660	0	363	689	701	301	2057	0	301	2088
Starvation Cap Reductn	0										
Spillback Cap Reductn	0										
Storage Cap Reductn	0										
Reduced v/c Ratio	0.43	0.31	0.00	0.20	0.11	0.28	0.33	0.31	0.00	0.30	0.32



Splits and Phases: 2: Laurel Rd. & Hillcrest Ave

Intersection Summary  
Cycle Length: 100  
Actuated Cycle Length: 100  
Offset: 26 (26%), Referenced to phase 2 NMT and 6 SET, Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.71  
Intersection Signal Delay: 20.1  
Intersection Capacity Utilization 58.4%  
Analysis Period (min): 15  
Intersection LOS: C  
ICU Level of Service B

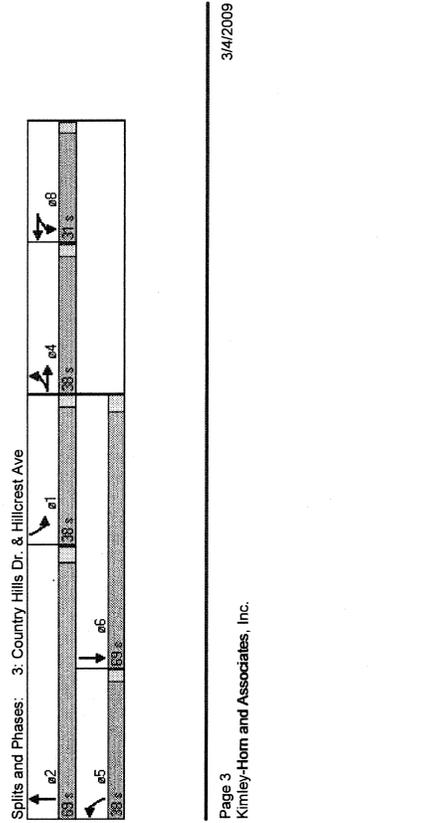
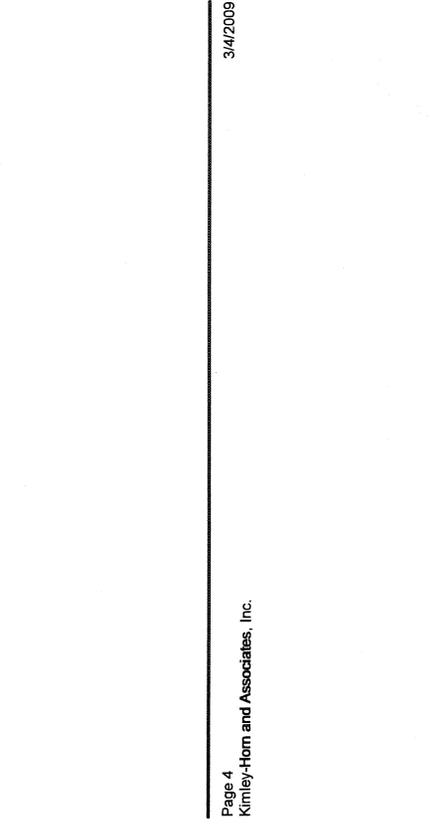
3: Country Hills Dr. & Hillcrest Ave  
Antitoch Walmart Expansion

4: Northeast Drive & Hillcrest Ave  
Antitoch Walmart Expansion

Near-Term Condition  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1635	0	1770	1662	0	1770	3486	0	1770	3510	0
Satd. Flow (prot)	0.953	0	0.950	0	0.950	0	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1770	1635	0	1770	1662	0	1770	3486	0	1770	3510	0
Satd. Flow (perm)	50	0	0	36	0	0	6	0	0	3	0	0
Satd. Flow (RTOR)	44	77	150	87	93	137	81	380	31	74	549	26
Volume (vph)	58	288	0	130	343	0	104	527	0	81	632	0
Lane Group Flow (vph)	Split		Split		Prot		Prot		Prot		Prot	
Turn Type	4	4	4	8	8	8	5	2	1	6	6	6
Protected Phases	Protected Phases											
Permitted Phases	Protected Phases											
Total Split (s)	38.0	38.0	0.0	31.0	31.0	0.0	38.0	69.0	0.0	38.0	69.0	0.0
Act Effct Green (s)	28.2	28.2	0.0	28.1	28.1	0.0	14.5	66.4	0.0	14.5	66.4	0.0
Actuated %C Ratio	0.19	0.19	0.0	0.19	0.19	0.0	0.19	0.45	0.0	0.19	0.45	0.0
%C Ratio	0.17	0.65	0.0	0.39	1.00	0.0	0.60	0.34	0.0	0.47	0.40	0.0
Control Delay	52.2	71.3	0.0	59.4	102.5	0.0	80.7	28.9	0.0	74.0	30.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	71.3	0.0	59.4	102.5	0.0	80.7	28.9	0.0	74.0	30.3	0.0
LOS	D	E	E	F	F	F	F	C	F	E	E	C
Approach Delay	Approach Delay											
Approach LOS	Approach LOS											
Queue Length 50th (ft)	48	239	0	114	324	0	100	175	0	77	220	0
Queue Length 95th (ft)	79	289	0	141	434	0	146	212	0	138	308	0
Internal Link Dist (ft)	120	286	0	90	283	0	155	1068	0	190	1140	0
Turn Bay Length (ft)	398	407	0	334	343	0	366	1554	0	366	1553	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced %C Ratio	0.15	0.73	0.0	0.39	1.00	0.0	0.28	0.34	0.0	0.22	0.40	0.0
Intersection Summary	Intersection Summary											
Cycle Length	176											
Actuated Cycle Length	149.2											
Control Type	Actuated-Uncoordinated											
Maximum %C Ratio	1.00											
Intersection Signal Delay	53.3											
Intersection Capacity Utilization	56.7%											
Analysis Period (min)	15											
Volume exceeds capacity, queue is theoretically infinite.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
Queue shown is maximum after two cycles.												

Movement	EBL	EBT	EBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Stop	Free	Free	Free	Free	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grade	0	10	0	0	0	0	0	0	0
Volume (veh/h)	0.63	0.63	0.84	0.84	0.87	0.87	0.87	0.87	0.87
Peak Hour Factor	0	16	0	0	0	0	0	0	0
Hourly Flow Rate (vph)	0	16	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0
Walking Speed (ft/s)	0	0	0	0	0	0	0	0	0
Percent Blockage	0	0	0	0	0	0	0	0	0
Right turn flare (veh)	None	None	None	None	None	None	None	None	None
Median type	None	None	None	None	None	None	None	None	None
Median storage (veh)	0	0	0	0	0	0	0	0	0
Upstream signal (ft)	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
p.k. platoon unblocked	1193	905	914	914	914	914	914	914	914
vc, conflicting volume	1236	883	895	895	895	895	895	895	895
vc1, stage 1 conf vol	6.8	6.9	4.1	4.1	4.1	4.1	4.1	4.1	4.1
vc2, stage 2 conf vol	3.5	3.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2
vc, unblocked vol	100	93	100	100	100	100	100	100	100
IC, single (s)	138	236	617	617	617	617	617	617	617
IC, 2 stage (s)	16	289	289	289	289	289	289	289	289
IF (s)	0	0	0	0	0	0	0	0	0
p0 queue free %	0	0	0	0	0	0	0	0	0
CM capacity (veh/h)	0	0	0	0	0	0	0	0	0
Volume Total	EB 1	NB 1	NB 2	SB 1	SB 2	9	9	9	9
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0	0
CSH	236	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.17	0.17	0.63	0.01	0.01	0.01	0.01	0.01
Queue Length 95th (ft)	5	0	0	0	0	0	0	0	0
Control Delay (s)	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	C	C	C	C	C	C	C	C
Approach LOS	Approach LOS								
Intersection Summary	Intersection Summary								
Average Delay	0.2								
Intersection Capacity Utilization	51.4%								
Analysis Period (min)	15								
ICU Level of Service	A								



5: Southeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

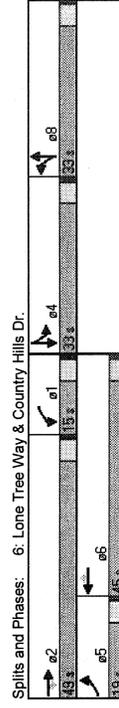
Near-Term Condition  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grade	0	0	60	0	0	6	0	493	27	0	697	90
Volume (veh/h)	0.88	0.88	0.88	0.63	0.63	0.63	0.82	0.82	0.82	0.89	0.89	0.89
Peak Hour Factor	0	0	68	0	0	10	0	601	33	0	783	101
Hourly flow rate (vph)	0	0	68	0	0	10	0	601	33	0	783	101
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (ft)									298			
px, platoon unblocked												
yc, conflicting volume	1144	1468	312	930	1485	301	884					634
vc1, stage 1 cont vol												
vc2, stage 2 cont vol												
vcu, unblocked vol	1144	1468	312	930	1485	301	884					634
tc, stage (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1					4.1
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	100	100	90	100	100	99	100					100
SM capacity (veh/h)	153	127	684	200	123	695	781					945
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	68	10	301	301	33	313	313	258				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	68	10	0	0	33	0	0	101				
GSH	684	695	1700	1700	1700	1700	1700	1700				
Volume to Capacity	0.10	0.01	0.18	0.18	0.02	0.18	0.18	0.15				
Queue Length 95th (ft)	8	1	0	0	0	0	0	0				
Control Delay (s)	10.8	10.2	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS	B	B	A	A	A	A	A	A				
Approach Delay (s)	10.8	10.2	0.0	0.0	0.0	0.0	0.0	0.0				
Approach LOS	B	B	A	A	A	A	A	A				
Intersection Summary												
Average Delay	0.5											
Intersection Capacity Utilization	25.9%											
Analysis Period (min)	15											
ICU Level of Service	A											

6: Lone Tree Way & Country Hills Dr.  
Antioch Walmart Expansion

Near-Term Condition  
AM Peak

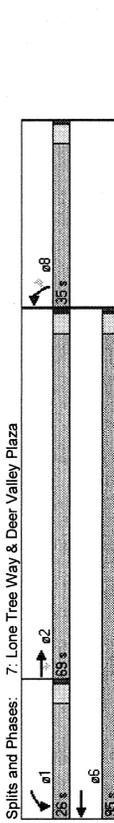
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1593	1770	3539	1583	1770	1686	0	1770	1651	0
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0
Flt Permitted	1759	3539	1125	1647	3539	1486	1770	1686	0	1770	1651	0
Satd. Flow (perm)	96	837	39	96	1298	98	125	81	141	37	64	149
Volume (vph)	112	973	45	103	1396	105	167	296	0	43	247	0
Lane Group Flow (vph)	112	973	45	103	1396	105	167	296	0	43	247	0
Turn Type	Prot	Perm	Prot	Perm	Prot	Perm	Split	Split		Split	Split	
Protected Phases	5	2	1	6	8	8	8	8		4	4	
Permitted Phases	6											
Total Split (s)	19.0	49.0	15.0	45.0	45.0	33.0	33.0	33.0	0.0	33.0	33.0	0.0
Act Effct Green (s)	14.6	61.1	61.1	12.0	58.5	58.5	24.6	24.6	20.3	20.3	20.3	0.0
Actuated g/C Ratio	0.11	0.47	0.47	0.08	0.48	0.48	0.19	0.19	0.16	0.16	0.16	0.0
v/c Ratio	0.57	0.59	0.08	0.63	0.88	0.15	0.50	0.80	0.16	0.16	0.16	0.0
Control Delay	65.7	29.3	18.5	61.2	32.1	14.1	51.3	55.0	45.7	47.9	47.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.7	29.3	18.5	61.2	32.1	14.1	51.3	55.0	45.7	47.9	47.9	0.0
LOS	E	C	B	E	C	B	D	D	D	D	D	D
Approach Delay	32.5											
Approach LOS	C											
Queue Length 50th (ft)	90	311	14	83	433	12	126	190	32	134	134	0
Queue Length 95th (ft)	146	436	43	156	884	21	153	215	60	197	197	0
Internal Link Dist (ft)	1420	1420	75	145	740	75	170	709	120	448	448	0
Turn Bay Length (ft)	145	1662	537	163	1592	661	411	440	408	448	448	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.59	0.08	0.63	0.88	0.15	0.41	0.67	0.11	0.55	0.55	0.0
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	74 (67%), Referenced to phase 2.EBT and 6.WBT. Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.88											
Intersection Signal Delay	36.7											
Intersection LOS	D											
Intersection Capacity Utilization	74.0%											
Analysis Period (min)	15											
ICU Level of Service	D											
# 95th percentile volume exceeds capacity, queue may be longer.	Queue shown is maximum after two cycles.											



7: Lone Tree Way & Deer Valley Plaza  
Antioch Walmart Expansion

Near-Term Condition  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	AA	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583	3539
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1333	1722	3539	1770	1583	3539
Satd. Flow (RTOR)	35	67	42	1334	75	35	38
Volume (vph)	1034	67	42	1334	75	35	38
Lane Group Flow (vph)	1136	74	48	1516	82	38	38
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	2	2	2	2	2	2	2
Permitted Phases	6	6	6	6	6	6	6
Total Split (s)	69.0	69.0	26.0	95.0	35.0	35.0	8
Act Effct Green (s)	103.0	103.0	10.5	114.4	12.4	12.4	12.4
Actuated g/C Ratio	0.79	0.79	0.08	0.88	0.10	0.10	0.10
v/c Ratio	0.41	0.07	0.34	0.49	0.49	0.21	0.21
Control Delay	1.0	0.2	60.7	1.8	64.8	18.1	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	0.2	60.7	1.8	64.8	18.1	18.1
LOS	A	A	E	A	E	B	B
Approach Delay	1.0	0.0	3.6	50.0	0.0	0.0	0.0
Approach LOS	A	A	A	D	D	D	D
Queue Length 50th (ft)	22	0	43	10	67	0	0
Queue Length 95th (ft)	25	m0	m0	46	117	34	34
Internal Link Dist (ft)	740	100	200	850	704	95	95
Turn Bay Length (ft)	2803	1063	313	3115	436	418	418
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.07	0.15	0.48	0.19	0.09	0.09
Intersection Summary							
Cycle Length: 130							
Actuated Cycle Length: 130							
Offset: 90 (69%): Referenced to phase 2:EBT and 6:WBT, Start of Yellow							
Control Type: Actuated-Coordinated							
Maximum v/c Ratio: 0.49							
Intersection Signal Delay: 4.4							
Intersection LOS: A							
Intersection Capacity Utilization: 47.7%							
Analysis Period (min): 15							
m Volume for 95th percentile queue is metered by upstream signal.							

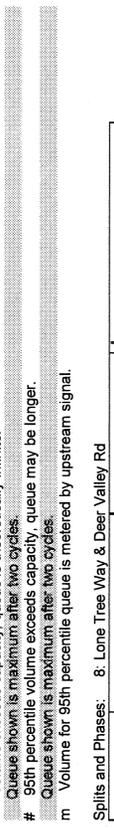


Splits and Phases: 7: Lone Tree Way & Deer Valley Plaza

8: Lone Tree Way & Deer Valley Rd  
Antioch Walmart Expansion

Near-Term Condition  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	AA	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3539
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1767	3539	1413	1735	3539	1537	3539
Satd. Flow (RTOR)	249	327	285	362	996	232	390
Volume (vph)	35	774	285	362	996	232	390
Lane Group Flow (vph)	43	956	327	389	1071	249	433
Turn Type	Prot						
Protected Phases	5	2	2	1	6	3	8
Permitted Phases	6	6	6	6	6	6	6
Total Split (s)	17.0	37.0	20.0	40.0	40.0	30.0	32.0
Act Effct Green (s)	10.1	34.0	24.0	49.9	49.9	22.5	26.0
Actuated g/C Ratio	0.08	0.26	0.26	0.18	0.38	0.17	0.20
v/c Ratio	0.31	1.03	0.54	1.19	0.79	0.34	0.85
Control Delay	71.7	87.2	16.8	146.0	29.9	5.1	58.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	87.2	16.8	146.0	29.9	5.1	58.2
LOS	E	F	B	F	C	A	E
Approach Delay	69.8	52.7	52.7	53.0	53.0	50.1	50.1
Approach LOS	E	D	D	D	D	D	D
Queue Length 50th (ft)	38	-341	40	-425	461	41	179
Queue Length 95th (ft)	71	#499	167	#619	#658	m79	228
Internal Link Dist (ft)	850	850	1680	1680	825	825	420
Turn Bay Length (ft)	195	400	500	400	180	180	495
Base Capacity (vph)	194	926	611	327	1358	743	836
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	1.03	0.54	1.19	0.79	0.34	0.61
Intersection Summary							
Cycle Length: 130							
Actuated Cycle Length: 130							
Offset: 64 (42%): Referenced to phase 2:EBT and 6:WBT, Start of Yellow							
Control Type: Actuated-Coordinated							
Maximum v/c Ratio: 1.19							
Intersection Signal Delay: 56.6							
Intersection LOS: E							
Intersection Capacity Utilization: 87.6%							
Analysis Period (min): 15							
m User Entered Value							
n Volume exceeds capacity, queue is theoretically infinite.							
o Queue shown is maximum after two cycles.							
# 95th percentile volume exceeds capacity, queue may be longer.							
Queue shown is maximum after five cycles.							
m Volume for 95th percentile queue is metered by upstream signal.							



Splits and Phases: 8: Lone Tree Way & Deer Valley Rd

9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

Near-Term Condition  
AM Peak

Near-Term Condition  
AM Peak

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3466	0	1770	3539	1583	1770	1863
Satd. Flow (prot)	0.950	0	0.950	0.372	0	0	0.688	0
Fit Permitted	1769	3466	0	1769	3539	1532	1769	1863
Satd. Flow (perm)	11	36	0	1600	1532	0	1237	1432
Satd. Flow (RTOR)	116	1094	130	91	1396	61	149	21
Volume (vph)	141	1493	0	101	1551	88	276	107
Lane Group Flow (vph)	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Turn Type	5	2	1	6	8	4	4	4
Protected Phases								
Permitted Phases								
Total Split (s)	20.0	47.0	0.0	42.0	68.0	68.0	35.0	35.0
Act Effect Green (s)	17.0	71.0	14.5	68.5	35.5	35.5	12.3	12.3
Actuated g/C Ratio	0.13	0.55	0.11	0.53	0.27	0.27	0.09	0.09
v/c Ratio	0.61	0.79	0.51	0.83	0.08	0.63	0.18	0.30
Control Delay	51.8	27.0	77.2	20.3	3.4	46.4	0.7	63.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	27.0	77.2	20.3	3.4	46.4	0.7	63.1
LOS	D	C	E	C	A	D	A	D
Approach Delay								
Approach LOS								
Queue Length 50th (ft)	103	638	89	406	1	185	0	33
Queue Length 95th (ft)	m109	m4697	m132	#942	m19	140	0	39
Internal Link Dist (ft)	1560	1560	605	605	809	809	819	819
Turn Bay Length (ft)	145	1898	205	1866	828	800	887	100
Base Capacity (vph)	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.79	0.49	0.83	0.08	0.34	0.12	0.13

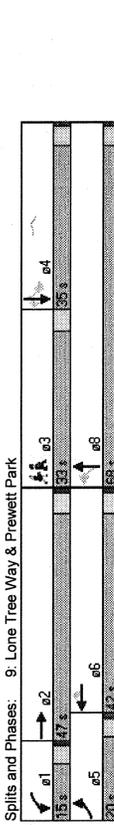
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3466	0	1770	3539	1583	1770	1863
Satd. Flow (prot)	0.950	0	0.950	0.372	0	0	0.688	0
Fit Permitted	1769	3466	0	1769	3539	1532	1769	1863
Satd. Flow (perm)	11	36	0	1600	1532	0	1237	1432
Satd. Flow (RTOR)	116	1094	130	91	1396	61	149	21
Volume (vph)	141	1493	0	101	1551	88	276	107
Lane Group Flow (vph)	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Turn Type	5	2	1	6	8	4	4	4
Protected Phases								
Permitted Phases								
Total Split (s)	20.0	47.0	0.0	42.0	68.0	68.0	35.0	35.0
Act Effect Green (s)	17.0	71.0	14.5	68.5	35.5	35.5	12.3	12.3
Actuated g/C Ratio	0.13	0.55	0.11	0.53	0.27	0.27	0.09	0.09
v/c Ratio	0.61	0.79	0.51	0.83	0.08	0.63	0.18	0.30
Control Delay	51.8	27.0	77.2	20.3	3.4	46.4	0.7	63.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	27.0	77.2	20.3	3.4	46.4	0.7	63.1
LOS	D	C	E	C	A	D	A	D
Approach Delay								
Approach LOS								
Queue Length 50th (ft)	103	638	89	406	1	185	0	33
Queue Length 95th (ft)	m109	m4697	m132	#942	m19	140	0	39
Internal Link Dist (ft)	1560	1560	605	605	809	809	819	819
Turn Bay Length (ft)	145	1898	205	1866	828	800	887	100
Base Capacity (vph)	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.79	0.49	0.83	0.08	0.34	0.12	0.13

Intersection Summary

Intersection Summary

Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 16 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 27.0  
 Intersection LOS: C  
 Intersection Capacity Utilization 99.9%  
 Analysis Period (min): 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 m Queue shown is maximum after two cycles.  
 n Volume for 95th percentile queue is metered by upstream signal.

Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 16 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 27.0  
 Intersection LOS: C  
 Intersection Capacity Utilization 99.9%  
 Analysis Period (min): 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 m Queue shown is maximum after two cycles.  
 n Volume for 95th percentile queue is metered by upstream signal.



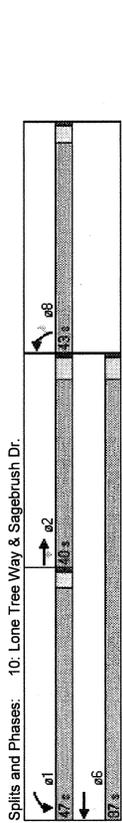
10: Lone Tree Way & Sagebrush Dr.  
Antioch Walmart Expansion

11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

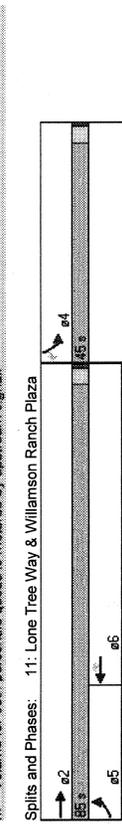
Near-Term Condition  
AM Peak

Near-Term Condition  
AM Peak

Lane Group	EBT	EBL	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1482	1764	3539	1715	1559
Satd. Flow (RTOR)	1014	219	198	1304	104	78
Volume (vph)	1252	270	230	1516	162	122
Lane Group Flow (vph)	1252	270	230	1516	162	122
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	2	1	6	8	8	8
Permitted Phases	40.0	40.0	47.0	87.0	43.0	43.0
Total Split (s)	80.3	80.3	23.9	107.3	16.7	16.7
Act Effct Green (s)	0.62	0.62	0.18	0.63	0.13	0.13
Actuated g/C Ratio	0.57	0.29	0.71	0.52	0.71	0.40
v/c Ratio	0.56	1.4	0.87	1.7	0.5	1.18
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	5.8	1.4	0.87	1.7	0.5	1.18
Total Delay	5.8	1.4	0.87	1.7	0.5	1.18
LOS	A	A	E	A	E	B
Approach Delay	5.0	10.1	10.5	45.3	10.1	9.0
Approach LOS	A	B	B	D	B	C
Queue Length 50th (ft)	37	0	154	13	134	0
Queue Length 95th (ft)	97	2	212	33	133	13
Internal Link Dist (ft)	605	605	1855	1855	492	492
Turn Bay Length (ft)	60	600	600	2920	545	564
Base Capacity (vph)	2186	941	599	2920	545	564
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.29	0.38	0.52	0.30	0.22
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 40 (31%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.71						
Intersection Signal Delay: 10.9						
Intersection Capacity Utilization 56.7%						
Analysis Period (min) 15						



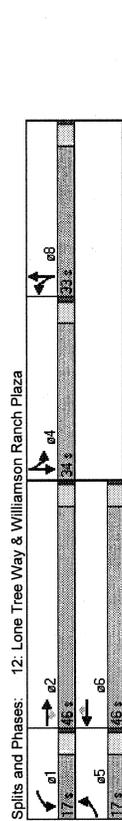
Lane Group	EBL	EBT	WBT	WBR	SBL	SBT
Lane Configurations	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1766	3539	3539	1504	1770	1550
Satd. Flow (RTOR)	78	999	1411	56	26	46
Volume (vph)	101	1297	1809	72	37	85
Lane Group Flow (vph)	101	1297	1809	72	37	85
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	6	4	4	4
Permitted Phases	25.0	85.0	60.0	60.0	45.0	45.0
Total Split (s)	11.7	115.3	99.9	99.9	11.3	11.3
Act Effct Green (s)	0.09	0.89	0.77	0.77	0.09	0.09
Actuated g/C Ratio	0.63	0.41	0.66	0.06	0.24	0.33
v/c Ratio	0.63	0.41	0.66	0.06	0.24	0.33
Control Delay	74.8	5.0	9.4	0.1	55.9	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	74.8	5.0	9.4	0.1	55.9	15.8
Total Delay	74.8	5.0	9.4	0.1	55.9	15.8
LOS	E	A	A	A	E	B
Approach Delay	10.1	10.1	9.0	30.2	10.1	9.0
Approach LOS	B	A	A	C	B	C
Queue Length 50th (ft)	75	122	7	0	31	0
Queue Length 95th (ft)	100	219	237	m0	45	22
Internal Link Dist (ft)	155	1855	820	115	406	406
Turn Bay Length (ft)	155	3138	2721	115	572	545
Base Capacity (vph)	360	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.41	0.66	0.06	0.06	0.12
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 115 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.66						
Intersection Signal Delay: 10.1						
Intersection Capacity Utilization 61.2%						
Analysis Period (min) 15						
m Volume for 95th percentile queue is metered by upstream signal.						



12: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

Near-Term Condition  
AM Peak

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1637	0	3433	1574	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1763	3539	1286	1713	3539	1455	1763	1637	0	3433	1574	0
Satd. Flow (RTOR)	45	899	5	27	1535	41	9	15	62	21	1	21
Volume (vph)	56	1124	6	34	1943	52	11	97	0	55	58	0
Lane Group Flow (vph)	Prot	Perm	Prot	Perm	Prot	Perm	Split	Split	Split	Split	Split	Split
Turn Type	5	2	2	1	6	8	8	8	8	4	4	4
Permitted Phases												
Prohibited Phases												
Total Split (s)	17.0	46.0	46.0	17.0	46.0	46.0	33.0	33.0	0.0	34.0	34.0	0.0
Act Effr Green (s)	11.3	77.8	77.8	11.0	74.8	74.8	21.0	21.0	0.0	13.1	13.1	0.0
Actuated g/C Ratio	0.09	0.60	0.60	0.08	0.58	0.58	0.16	0.16	0.0	0.16	0.16	0.0
v/c Ratio	0.37	0.53	0.01	0.23	0.95	0.06	0.04	0.29	0.0	0.16	0.28	0.0
Control Delay	72.5	13.6	4.4	69.2	32.6	7.4	39.8	14.7	51.3	16.0	16.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	13.6	4.4	69.2	32.6	7.4	39.8	14.7	51.3	16.0	16.0	0.0
LOS	E	B	A	E	C	A	D	B	D	D	B	B
Approach Delay	16.3			32.5			17.2			33.2		
Approach LOS	B			C			B			C		
Queue Length 50th (ft)	36	504	1	29	478	7	7	13	28	28	2	2
Queue Length 95th (ft)	64	522	m4	m44	#1176	m15	21	45	15	15	0	0
Internal Link Dist (ft)				430			355			440		
Turn Bay Length (ft)	170	80	135	80	200	80	200	200	200	200	417	417
Base Capacity (vph)	194	2117	770	191	2035	840	438	438	819	819	417	417
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.53	0.01	0.18	0.95	0.06	0.03	0.22	0.07	0.14	0.14	0.0
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset: 97 (75%) Referenced to phase 2 EBT and 6 WBT, Start of Yellow												
Control Type: Actuated-Coordinated												
Intersection LOS: C												
Maximum v/c Ratio: 0.95												
Intersection Signal Delay: 26.5												
(CU Level of Service) B												
Intersection Capacity Utilization 57.9%												
Analysis Period (min) 15												
Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
m Volume for 95th percentile queue is metered by upstream signal.												



13: Lone Tree Way & Wal-Mart Driveway  
Antioch Walmart Expansion

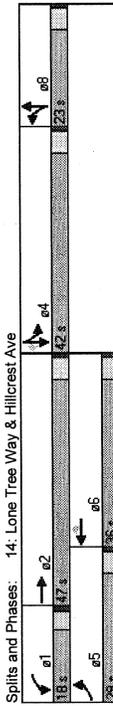
Near-Term Condition  
AM Peak

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	1023	1544	85	0	5						
Peak Hour Factor	0.82	0.82	0.85	0.85	0.42	0.42						
Hourly flow rate (vph)	0	1248	1816	76	0	12						
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)				510	500							
pX, platoon unblocked				0.78						0.88	0.78	
vC, conflicting volume				1893						2440	605	
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
vCU, unblocked vol				1582						1577	0	
IC, single (s)				4.1						6.8	6.9	
IC, 2 stage (s)				2.2						3.5	3.3	
IF (s)				100						100	99	
p0 queue free %				321						88	846	
dm capacity (veh/h)												
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	SB 1					
Volume Total	624	624	605	605	605	605	76	12				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	0	0	0				
CSH	1700	1700	1700	1700	1700	1700	1700	846				
Volume to Capacity	0.37	0.37	0.36	0.36	0.36	0.36	0.04	0.01				
Queue Length 95th (ft)	0	0	0	0	0	0	0	0				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	A	A	A	A	A	A	A				
Approach LOS	A											
Intersection Summary												
Average Delay										0.0		
Intersection Capacity Utilization										39.8%		
Analysis Period (min)										15		
ICU Level of Service										A		

14: Lone Tree Way & Hillcrest Ave  
Antioch Walmart Expansion

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	4953	0	1770	5085	1583	1770	3297	0	1900	3539	1583
Satd. Flow (prot)	0.950	0	0	0.950	0	0	0.950	0	0	0.950	0	0
Fit Permitted	1762	4953	0	1756	5085	1515	1760	3297	0	3396	3539	1554
Satd. Flow (perm)	218	694	107	47	1144	220	125	72	47	313	99	325
Satd. Flow (RTOR)	248	911	0	52	1257	220	158	149	0	391	124	408
Volume (vph)	218	694	107	47	1144	220	125	72	47	313	99	325
Lane Group Flow (vph)	248	911	0	52	1257	220	158	149	0	391	124	408
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	2	1	6	6	8	8	8	4	4	4
Permitted Phases	29.0	47.0	0.0	18.0	36.0	36.0	23.0	23.0	0.0	42.0	42.0	42.0
Total Split (s)	24.1	56.6	0.0	10.5	41.0	41.0	18.6	18.6	0.0	34.3	34.3	34.3
Act Effct Green (s)	0.19	0.44	0.08	0.32	0.32	0.14	0.14	0.14	0.0	0.26	0.26	0.26
Actuated g/C Ratio	0.76	0.42	0.36	0.78	0.35	0.62	0.29	0.29	0.0	0.78	0.13	0.58
v/c Ratio	86.2	25.3	64.5	37.2	8.3	63.3	30.7	30.7	0.0	55.3	35.5	7.9
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	86.2	25.3	64.5	37.2	8.3	63.3	30.7	30.7	0.0	55.3	35.5	7.9
Total Delay	86.2	25.3	64.5	37.2	8.3	63.3	30.7	30.7	0.0	55.3	35.5	7.9
LOS	F	C	C	E	D	A	E	C	C	E	D	A
Approach Delay	38.4	0.0	0.0	33.9	0.0	0.0	47.4	47.4	0.0	31.7	0.0	0.0
Approach LOS	D	C	C	C	D	D	D	D	D	C	C	C
Queue Length 50th (ft)	222	71	0	37	380	29	123	35	0	154	41	11
Queue Length 95th (ft)	304	284	0	m/75	#491	101	173	57	0	179	57	47
Internal Link Dist (ft)	420	0	0	690	0	0	2575	0	0	216	0	0
Turn Bay Length (ft)	620	210	0	210	730	195	0	0	0	400	0	290
Base Capacity (vph)	358	2171	204	1605	629	273	560	570	0	1082	738	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.42	0.25	0.78	0.35	0.57	0.27	0.27	0.0	0.69	0.12	0.55
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	76 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.78											
Intersection Signal Delay	35.8											
Intersection Capacity Utilization	63.2%											
Analysis Period (min)	15											
# User Entered Value												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
m Volume for 95th percentile queue is metered by upstream signal.												

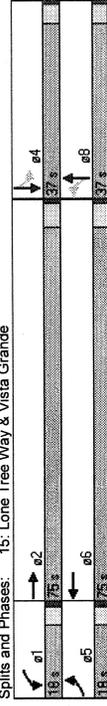


Splits and Phases: 14: Lone Tree Way & Hillcrest Ave

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

Near-Term Condition  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	5051	0	1770	5062	0	1770	1587	0	1770	1680	0
Satd. Flow (prot)	0.950	0	0	0.950	0	0	0.950	0	0	0.950	0	0
Fit Permitted	1770	5051	0	1770	5062	0	1770	1587	0	1770	1680	0
Satd. Flow (perm)	20	916	36	76	1310	40	60	14	156	27	16	43
Satd. Flow (RTOR)	23	1107	0	81	1437	0	76	215	0	57	125	0
Volume (vph)	20	916	36	76	1310	40	60	14	156	27	16	43
Lane Group Flow (vph)	23	1107	0	81	1437	0	76	215	0	57	125	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	2	1	6	6	8	8	8	4	4	4
Permitted Phases	18.0	75.0	0.0	18.0	75.0	0.0	37.0	37.0	0.0	37.0	37.0	0.0
Total Split (s)	9.7	94.1	0.0	13.9	102.8	0.0	15.5	15.5	0.0	15.5	15.5	0.0
Act Effct Green (s)	0.07	0.72	0.0	0.11	0.72	0.0	0.12	0.12	0.0	0.12	0.12	0.0
Actuated g/C Ratio	0.17	0.30	0.0	0.43	0.36	0.0	0.58	0.59	0.0	0.58	0.45	0.0
v/c Ratio	51.6	12.8	0.0	57.9	5.3	0.0	68.8	15.8	0.0	75.7	21.7	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	51.6	12.8	0.0	57.9	5.3	0.0	68.8	15.8	0.0	75.7	21.7	0.0
Total Delay	51.6	12.8	0.0	57.9	5.3	0.0	68.8	15.8	0.0	75.7	21.7	0.0
LOS	D	B	B	E	A	A	E	B	E	E	C	C
Approach Delay	13.4	0.0	0.0	8.1	0.0	0.0	29.9	0.0	0.0	39.6	0.0	0.0
Approach LOS	D	B	B	A	A	A	C	C	C	D	D	D
Queue Length 50th (ft)	16	234	0	70	101	0	62	14	0	46	26	0
Queue Length 95th (ft)	m/37	247	0	128	126	0	94	54	0	43	9	0
Internal Link Dist (ft)	200	668	0	200	1050	0	130	786	0	614	0	0
Turn Bay Length (ft)	200	3657	0	200	4005	0	288	561	0	501	0	0
Base Capacity (vph)	204	215	0	215	4005	0	288	561	0	214	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.30	0.0	0.38	0.36	0.0	0.26	0.38	0.0	0.27	0.25	0.0
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	55 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.59											
Intersection Signal Delay	13.8											
Intersection Capacity Utilization	58.6%											
Analysis Period (min)	15											
# User Entered Value												
# 95th percentile volume exceeds capacity, queue is metered by upstream signal.												



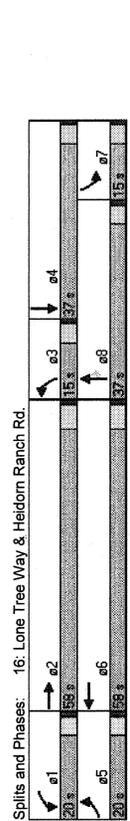
Splits and Phases: 15: Lone Tree Way & Vista Grande

16: Lone Tree Way & Heidorn Ranch Rd.  
Antioch Walmart Expansion

Near-Term Condition  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	5050	0	1770	5079	0	3433	1863	1583	1770	1615	0
Flt Permitted	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0
Satd. Flow (perm)	1769	5050	0	1769	5079	0	3433	1863	1561	1765	1615	0
Satd. Flow (RTOR)	6	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	4	998	43	65	1339	11	33	1	70	11	2	19
Lane Group Flow (vph)	4	1144	0	73	1516	0	77	2	163	14	27	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	5	2	1	6	3	6	8	7	4	7	4	4
Prohibited Phases												
Total Spill (s)	20.0	58.0	0.0	20.0	58.0	0.0	15.0	37.0	37.0	15.0	37.0	0.0
Act Erct Green (s)	8.4	86.2	13.2	99.6	10.5	16.7	16.7	9.0	12.8	9.0	12.8	0.0
Actuated g/C Ratio	0.06	0.68	0.10	0.77	0.08	0.13	0.13	0.07	0.10	0.07	0.10	0.0
v/c Ratio	0.03	0.33	0.41	0.39	0.28	0.01	0.48	0.11	0.15	0.11	0.15	0.0
Control Delay	75.0	13.3	75.0	1.7	58.3	43.0	11.1	58.2	19.8	58.2	19.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.0	13.3	75.0	1.7	58.3	43.0	11.1	58.2	19.8	58.2	19.8	0.0
LOS	E	B	E	A	E	A	E	D	B	E	B	B
Approach	B	B	A	A	A	A	A	A	A	A	A	A
Approach LOS	B	B	A	A	A	A	A	A	A	A	A	A
Queue Length 50th (ft)	4	88	66	25	31	1	0	11	0	11	2	0
Queue Length 95th (ft)	m11	409	107	52	26	4	0	29	21	29	21	0
Internal Link Dist (ft)	1050	900	900	900	972	200	50	316	200	50	316	0
Turn Bay Length (ft)	185	400	400	400	200	200	50	316	200	50	316	0
Base Capacity (vph)	231	3429	232	3892	317	487	529	163	440	163	440	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.33	0.31	0.39	0.24	0.00	0.31	0.09	0.06	0.31	0.09	0.06

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 65 (42%) Referenced to phase 2 EBT and 6 WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.48  
 Intersection Signal Delay: 10.4  
 Intersection Capacity Utilization: 46.3%  
 Analysis Period (min): 15  
 ICU Level of Service: A  
 m. Volume for 95th percentile queue is metered by upstream signal.



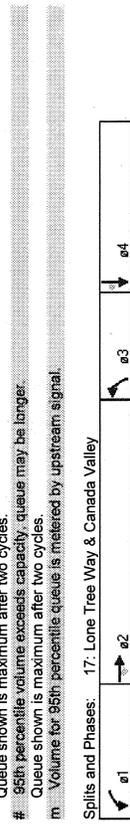
Splits and Phases: 16: Lone Tree Way & Heidorn Ranch Rd.

17: Lone Tree Way & Canada Valley  
Antioch Walmart Expansion

Near-Term Condition  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	1623	1504	1770	1863	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3432	5085	1557	3431	5085	1558	3433	1623	1482	1767	1863	1563
Satd. Flow (RTOR)	71	71	71	71	71	71	71	71	71	71	71	71
Volume (vph)	61	1003	67	178	1283	254	44	19	55	384	45	118
Lane Group Flow (vph)	65	1067	71	200	1442	285	59	53	47	486	57	149
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	5	2	1	6	3	6	8	7	4	7	4	4
Prohibited Phases												
Total Spill (s)	20.0	53.0	58.0	25.0	58.0	58.0	20.0	32.0	32.0	20.0	32.0	32.0
Act Erct Green (s)	14.8	80.0	80.0	12.5	79.6	79.6	7.6	10.1	10.1	17.0	19.6	19.6
Actuated g/C Ratio	0.17	0.62	0.62	0.10	0.61	0.61	0.08	0.08	0.08	0.13	0.16	0.15
v/c Ratio	0.11	0.34	0.07	0.60	0.46	0.27	0.29	0.35	0.30	0.20	0.20	0.41
Control Delay	36.8	5.0	0.3	73.0	8.2	0.6	62.0	36.5	18.2	538.9	48.4	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	5.0	0.3	73.0	8.2	0.6	62.0	36.5	18.2	538.9	48.4	10.1
LOS	D	A	A	E	A	A	E	D	B	F	D	B
Approach	D	A	A	E	A	A	E	D	B	F	D	B
Approach LOS	D	A	A	E	A	A	E	D	B	F	D	B
Queue Length 50th (ft)	28	24	0	86	108	0	25	22	0	~648	44	0
Queue Length 95th (ft)	41	43	0	m114	m199	m0	39	45	23	#734	66	35
Internal Link Dist (ft)	900	900	900	630	400	350	150	542	170	1064	170	1064
Turn Bay Length (ft)	320	449	3131	985	581	3112	1064	449	383	367	231	420
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.34	0.07	0.34	0.46	0.27	0.13	0.14	0.13	2.10	0.14	0.32

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 37 (28%) Referenced to phase 2 EBT and 6 WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 3.10  
 Intersection Signal Delay: 77.1  
 Intersection Capacity Utilization: 66.1%  
 Analysis Period (min): 15  
 ICU Level of Service: C  
 n. Volume exceeds capacity, queue is theoretically infinite  
 Queue shown is maximum after two cycles.  
 #. 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m. Volume for 95th percentile queue is metered by upstream signal.



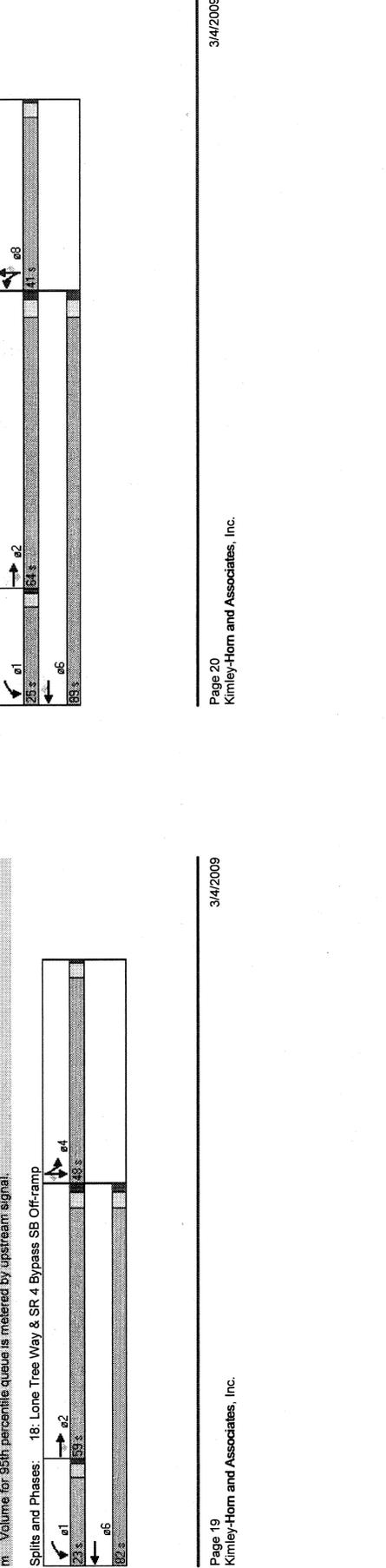
Splits and Phases: 17: Lone Tree Way & Canada Valley

18: Lone Tree Way & SR 4 Bypass SB Off-ramp  
Antioch Walmart Expansion

19: Lone Tree Way & SR 4 By-pass NB On-ramp  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Flt Permitted	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (perm)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (RTOR)	0	958	469	179	1280	0	0	0	335	6	449	0
Volume (vph)	0	1064	521	190	1362	0	0	0	197	204	528	0
Lane Group Flow (vph)	0	1064	521	190	1362	0	0	0	197	204	528	0
Turn Type	2	1	6	2	1	6	2	1	6	2	1	6
Permitted Phases	2	1	6	2	1	6	2	1	6	2	1	6
Permitted Phases	2	1	6	2	1	6	2	1	6	2	1	6
Total Split (s)	0.0	59.0	59.0	23.0	82.0	0.0	0.0	0.0	48.0	48.0	48.0	48.0
Act Effct Green (s)	0.0	65.2	65.2	12.9	81.1	0.0	0.0	0.0	42.9	42.9	42.9	42.9
Actuated g/C Ratio	0.50	0.50	0.50	0.10	0.62	0.33	0.33	0.33	0.33	0.33	0.33	0.33
v/c Ratio	0.42	0.50	0.56	0.43	0.43	0.35	0.37	0.35	0.35	0.37	0.35	0.35
Control Delay	26.8	7.1	62.1	12.3	64.8	34.5	34.5	64.8	34.5	34.5	64.8	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	7.1	62.1	12.3	64.8	34.5	34.5	64.8	34.5	34.5	64.8	34.5
LOS	C	A	E	B	C	C	C	C	C	C	C	E
Approach Delay	20.3				18.4				51.8			
Approach LOS	C				B				D			
Queue Length 50th (ft)	308	127	80	252	231	128	133	387	128	133	387	128
Queue Length 95th (ft)	m136	m83	m112	231	750	186	192	4540	186	192	4540	186
Internal Link Dist (ft)	775				536				536			
Turn Bay Length (ft)	315	310			280				280			
Base Capacity (vph)	2550	1044	528	3173	582	584	583	583	582	584	583	583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.50	0.36	0.43	0.43	0.34	0.35	0.91	0.34	0.35	0.91	0.34
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	72 (55%) Referenced to phase 2.EBT and 6.WBT. Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.95											
Intersection Signal Delay	26.8											
Intersection Capacity Utilization	59.2%											
Analysis Period (min)	15											
Intersection LOS	C											
ICU Level of Service	B											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Flt Permitted	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (perm)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (RTOR)	0	905	352	8	977	298	464	29	139	0	0	0
Volume (vph)	0	1017	396	9	1066	331	270	284	156	0	0	0
Lane Group Flow (vph)	0	1017	396	9	1066	331	270	284	156	0	0	0
Turn Type	2	1	6	2	1	6	2	1	6	2	1	6
Permitted Phases	2	1	6	2	1	6	2	1	6	2	1	6
Permitted Phases	2	1	6	2	1	6	2	1	6	2	1	6
Total Split (s)	0.0	64.0	64.0	25.0	89.0	89.0	41.0	41.0	41.0	0.0	0.0	0.0
Act Effct Green (s)	0.0	95.6	95.6	7.0	97.6	97.6	26.4	26.4	26.4	0.0	0.0	0.0
Actuated g/C Ratio	0.74	0.74	0.74	0.05	0.75	0.75	0.20	0.20	0.20	0.20	0.20	0.20
v/c Ratio	0.27	0.32	0.32	0.05	0.28	0.27	0.79	0.82	0.35	0.35	0.35	0.35
Control Delay	7.3	2.3	2.3	59.0	5.9	1.2	65.0	68.2	7.8	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	2.3	2.3	59.0	5.9	1.2	65.0	68.2	7.8	0.0	0.0	0.0
LOS	A	A	A	E	A	A	E	E	A	E	A	A
Approach Delay	6.9				5.2				53.7			
Approach LOS	A				A				D			
Queue Length 50th (ft)	76	25	3	91	0	230	244	0	0	0	0	0
Queue Length 95th (ft)	98	40	13	148	29	303	318	51	51	0	0	0
Internal Link Dist (ft)	750				640				935			
Turn Bay Length (ft)	240	280			250	1000			1156			
Base Capacity (vph)	3739	1264	581	3817	1242	491	485	573	573	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.32	0.02	0.28	0.27	0.55	0.57	0.27	0.27	0.55	0.57	0.27
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	88 (68%) Referenced to phase 2.EBT and 6.WBT. Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.82											
Intersection Signal Delay	15.2											
Intersection Capacity Utilization	45.9%											
Analysis Period (min)	15											
Intersection LOS	B											
ICU Level of Service	A											

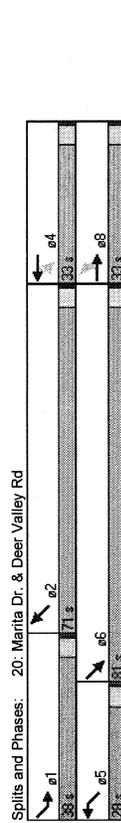


Splits and Phases: 18: Lone Tree Way & SR 4 Bypass SB Off-ramp  
Splits and Phases: 19: Lone Tree Way & SR 4 By-pass NB On-ramp

20: Marita Dr. & Deer Valley Rd  
Antioch Walmart Expansion

Near-Term Condition  
AM Peak

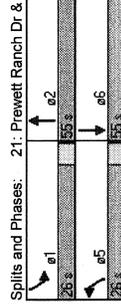
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (\$)	1770	1619	0	1770	1581	0	1770	3521	0	1770	3525	0
Satd. Flow (prot)	0.744			0.735			0.950			0.950		
Flt Permitted	1367	1619	0	1347	1581	0	1762	3521	0	1760	3525	0
Satd. Flow (perm)	25			18			3			2		
Satd. Flow (RTOR)	29	8	21	1	6	137	988	24	58	981	23	
Volume (vph)	34	34	0	3	21	0	149	1100	0	72	1239	0
Lane Group Flow (vph)	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	8	4	4	4	4	4	6	5	2			
Protected Phases	4	4	4	4	4	4	6	5	2			
Permitted Phases	33.0	33.0	0.0	33.0	33.0	0.0	38.0	81.0	0.0	28.0	71.0	0.0
Total Split (\$)	16.6	16.6		16.6	16.6		16.6	85.7		11.9	78.0	
Act Effct Green (s)	0.14	0.14		0.14	0.14		0.14	0.73		0.10	0.65	
Actuated g/C Ratio	0.18	0.14		0.02	0.09		0.60	0.43		0.41	0.53	
v/c Ratio	44.8	20.7		41.0	19.4		57.5	10.7		58.1	14.8	
Control Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Queue Delay	44.8	20.7		41.0	19.4		57.5	10.7		58.1	14.8	
Total Delay	D	C		D	B		E	B		E	B	
LOS	D	C		D	B		E	B		E	B	
Approach Delay	32.8			22.1			16.3			17.2		
Approach LOS	C			C			B			B		
Queue Length 50th (ft)	23	6		2	2		98	145		48	205	
Queue Length 95th (ft)	51	32		4	1		188	351		97	405	
Internal Link Dist (ft)	345			427			825			845		
Turn Bay Length (ft)	40			100			125			175		
Base Capacity (vph)	309	386		305	372		457	2560		335	2334	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.09		0.01	0.06		0.33	0.43		0.21	0.53	
Intersection LOS: B												
ICU Level of Service B												
Intersection Signal Delay: 17.2												
Intersection Capacity Utilization 56.4%												
Analysis Period (min): 15												



21: Prewett Ranch Dr. & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term Condition  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (\$)	1770	1857	0	1863	1805	0	1770	3539	0	1770	3291	0
Satd. Flow (prot)	0.698			0.950			0.950			0.950		
Flt Permitted	1300	1857	0	1863	1805	0	1770	3539	0	1770	3291	0
Satd. Flow (perm)	1			11			1			141		
Satd. Flow (RTOR)	118	40	1	0	39	10	1	139	0	13	127	111
Volume (vph)	139	48	0	0	72	0	1	154	0	16	302	0
Lane Group Flow (vph)	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	4	4	4	8	8	5	2	1	6			
Protected Phases	4	4	4	8	8	5	2	1	6			
Permitted Phases	33.0	33.0	0.0	33.0	33.0	0.0	26.0	55.0	0.0	26.0	55.0	0.0
Total Split (\$)	14.4	14.4		14.0			8.7	27.1		9.1	27.3	
Act Effct Green (s)	0.29	0.29		0.28			0.16	0.68		0.17	0.69	
Actuated g/C Ratio	0.38	0.09		0.14			0.00	0.07		0.05	0.15	
v/c Ratio	9.8	6.9		6.3			13.0	7.2		12.9	4.5	
Control Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Queue Delay	9.8	6.9		6.3			13.0	7.2		12.9	4.5	
Total Delay	9.8	6.9		6.3			13.0	7.2		12.9	4.5	
LOS	A	A		A	A		B	A		B	A	
Approach Delay	9.1			6.3			7.3			4.9		
Approach LOS	A			A			A			A		
Queue Length 50th (ft)	8	3		3			0	5		1	5	
Queue Length 95th (ft)	49	20		19			3	32		12	30	
Internal Link Dist (ft)	955			816			404			2375		
Turn Bay Length (ft)	100			950			85			115		
Base Capacity (vph)	680	972		950	691		2953			593	2775	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.20	0.05		0.08			0.00	0.05		0.02	0.11	
Intersection LOS: A												
ICU Level of Service A												
Intersection Signal Delay: 6.6												
Intersection Capacity Utilization 30.7%												
Analysis Period (min): 15												



Antioch Walmart Expansion  
Near Term PM

Scenario Report

Scenario: Near Term PM  
 Command: Near Term PM  
 Volume: Near Term PM  
 Geometry: Near Term  
 Impact Fee: Default Impact Fee  
 Trip Generation: Approved PM  
 Trip Distribution: Near Term  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

Antioch Walmart Expansion  
Near Term PM

Impact Analysis Report  
Level Of Service

Intersection	Base Del/ LOS Veh	V/ C	Future Del/ LOS Veh	Change in
# 1 Deer Valley Rd/ Country Hills	A xxxxx	0.376	A xxxxx 0.468	+ 0.091 V/C
# 2 Hillcrest Avenue/Laurel Road	A xxxxx	0.219	A xxxxx 0.267	+ 0.048 V/C
# 3 Hillcrest Avenue/Country Hills	A xxxxx	0.267	A xxxxx 0.306	+ 0.039 V/C
# 4 Hillcrest Avenue/Driveway	B 11.5	0.012	B 12.4 0.014	+ 0.888 D/V
# 5 Hillcrest Avenue/South Drivewa	B 10.2	0.152	B 10.5 0.160	+ 0.319 D/V
# 6 Lone Tree Way/Mokelumne Dr	A xxxxx	0.500	A xxxxx 0.582	+ 0.083 V/C
# 7 Lone Tree Way/Deer Valley Plaz	A xxxxx	0.419	A xxxxx 0.495	+ 0.075 V/C
# 8 Lone Tree Way/Deer Valley Rd	A xxxxx	0.543	D xxxxx 0.806	+ 0.264 V/C
# 9 Lone Tree Way/Deer Valley HS	A xxxxx	0.373	A xxxxx 0.488	+ 0.115 V/C
# 10 Lone Tree Way/Sagebrush Drive	A xxxxx	0.391	A xxxxx 0.511	+ 0.120 V/C
# 11 Lone Tree Way/Williamson Ranch	A xxxxx	0.352	A xxxxx 0.504	+ 0.152 V/C
# 12 Lone Tree Way/Indian Hill Dr/W	A xxxxx	0.385	A xxxxx 0.528	+ 0.143 V/C
# 13 Lone Tree Way/Driveway	A 9.9	0.048	B 11.0 0.058	+ 1.077 D/V
# 14 Lone Tree Way/Hillcrest Avenue	A xxxxx	0.400	A xxxxx 0.540	+ 0.139 V/C
# 15 Lone Tree Way/Vista Grande Dri	A xxxxx	0.424	A xxxxx 0.554	+ 0.130 V/C
# 16 Lone Tree Way/Heidorn Ranch Ro	A xxxxx	0.329	A xxxxx 0.454	+ 0.125 V/C
# 17 Lone Tree Way/Canada Valley Ro	A xxxxx	0.523	B xxxxx 0.688	+ 0.166 V/C
# 18 Lone Tree Way/SB SR-4 Bypass	A xxxxx	0.579	D xxxxx 0.841	+ 0.261 V/C
# 19 Lone Tree Way/NB SR-4 Bypass (	A xxxxx	0.451	A xxxxx 0.570	+ 0.119 V/C
# 20 Deer Valley Road/Marita Drive	A xxxxx	0.258	A xxxxx 0.394	+ 0.136 V/C
# 21 Hillcrest Ave/Prewett Ranch Dr	A xxxxx	0.159	A xxxxx 0.167	+ 0.009 V/C















Antioch Walmart Expansion  
Near Term PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #15 Lone Tree Way/Vista Grande Drive  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap.(X): 0.554  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 42 Level Of Service: A

Street Name: Vista Grande Drive Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Protected Protected Protected  
Rights: Include Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:  
Base Vol: 35 10 114 42 9 20 18 1282 44 121 931 24  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 35 10 114 42 9 20 18 1282 44 121 931 24  
Added Vol: 13 0 31 7 0 1 2 411 23 41 351 6  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 48 10 145 49 9 21 20 1693 67 162 1282 30  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 48 10 145 49 9 21 20 1693 67 162 1282 30  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 48 10 145 49 9 21 20 1693 67 162 1282 30  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 48 10 145 49 9 21 20 1693 67 162 1282 30  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 48 10 145 49 9 21 20 1693 67 162 1282 30

Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.06 0.94 1.00 0.30 0.70 1.00 2.89 0.11 1.00 2.93 0.07  
Final Sat.: 1720 111 1609 1720 516 1204 1720 4964 196 1720 5042 118

Capacity Analysis Module:  
Vol/Sat: 0.03 0.09 0.09 0.03 0.02 0.02 0.01 0.34 0.34 0.09 0.25 0.25  
Crit Volume: 155 49 587 162  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #16 Lone Tree Way/Heidorn Ranch Road  
\*\*\*\*\*

Cycle (sec): 120 Critical Vol./Cap.(X): 0.454  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 42 Level Of Service: A

Street Name: Heidorn Ranch Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Protected Protected Protected  
Rights: Include Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 2 0 1 0 1 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:  
Base Vol: 85 4 48 5 3 4 5 1319 74 24 1026 13  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 85 4 48 5 3 4 5 1319 74 24 1026 13  
Added Vol: 6 1 33 2 1 0 0 0 439 10 53 392 1  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 91 5 81 7 4 4 5 1758 84 77 1418 14  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 91 5 81 7 4 4 5 1758 84 77 1418 14  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 91 5 81 7 4 4 5 1758 84 77 1418 14  
RTOR Reduct: 0 0 77 0 0 0 0 0 0 0 0 0  
RTOR Vol: 91 5 4 7 4 4 5 1758 84 77 1418 14  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 91 5 4 7 4 4 5 1758 84 77 1418 14

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 2.00 1.00 1.00 1.00 0.50 0.50 1.00 2.86 0.14 1.00 2.97 0.03  
Final Sat.: 3000 1650 1650 1650 825 825 1650 4724 226 1650 4902 48

Capacity Analysis Module:  
Vol/Sat: 0.03 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.37 0.05 0.29 0.29  
Crit Volume: 46 8 614 77  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #17 Lone Tree Way/Canada Valley Road  
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.688  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 73 Level Of Service: B

Street Name: Canada Valley Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected Protected  
Rights: Include Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 2 0 0 1 1 1 0 1 0 1 2 0 3 0 1 2 0 3 0 1

Volume Module:

Base Vol: 84 55 173 175 56 22 54 1354 55 329 942 253  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 84 55 173 175 56 22 54 1354 55 329 942 253  
Added Vol: 20 16 13 133 10 57 101 360 12 8 369 270  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 104 71 186 308 66 79 155 1714 67 337 1311 523  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 104 71 186 308 66 79 155 1714 67 337 1311 523  
Reduce Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 104 71 186 308 66 79 155 1714 67 337 1311 523  
RTOR Reduce: 0 0 185 0 0 79 0 0 0 57 0 0 308  
RTOR Vol: 104 71 308 66 0 155 1714 10 337 1311 215  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 104 71 308 66 0 155 1714 10 337 1311 215

Saturation Flow Module:

Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 0.91 1.00 1.00 1.00 1.00 0.91 1.00 1.00 0.91 1.00 1.00  
Lanes: 2.00 1.00 1.00 1.00 1.00 1.00 1.00 2.00 3.00 1.00 2.00 3.00 1.00  
Final Sat.: 3000 1650 1500 1650 1650 1650 3000 4950 1650 3000 4950 1650

Capacity Analysis Module:

Vol/Sat: 0.03 0.04 0.00 0.19 0.04 0.00 0.05 0.35 0.01 0.11 0.26 0.13  
Crit Volume: 71 308 66 571 169  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #18 Lone Tree Way/SB SR-4 Bypass  
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.841  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 117 Level Of Service: D

Street Name: SB SR-4 Bypass Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Protected Permitted Protected  
Rights: Include Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 0 0 0 0 0 1 1 0 0 1 0 0 3 0 1 2 0 3 0 0

Volume Module:

Base Vol: 0 0 416 10 361 0 1169 541 98 1153 0  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 0 0 416 10 361 0 1169 541 98 1153 0  
Added Vol: 0 0 90 0 230 0 402 105 175 416 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 0 0 506 10 591 0 1571 646 273 1569 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 0 0 506 10 591 0 1571 646 273 1569 0  
Reduce Vol: 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 0 0 506 10 591 0 1571 646 273 1569 0  
RTOR Reduce: 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 0 0 506 10 591 0 1571 646 273 1569 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 0 0 506 10 591 0 1571 646 273 1569 0

Saturation Flow Module:

Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 0.00 0.00 0.00 1.96 0.04 1.00 0.00 3.00 1.00 2.00 3.00 0.00  
Final Sat.: 0 0 2942 64 1650 0 4950 1650 3000 4950 0

Capacity Analysis Module:

Vol/Sat: 0.00 0.00 0.00 0.17 0.16 0.36 0.00 0.32 0.39 0.09 0.32 0.00  
Crit Volume: 0 591 646 137  
Crit Moves: \*\*\*\*



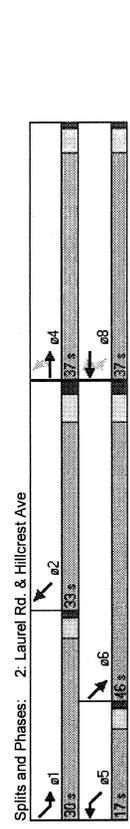


2: Laurel Rd. & Hillcrest Ave  
Antioch Walmart Expansion

1: Country Hills Dr. & Deer Valley Rd.  
Antioch Walmart Expansion

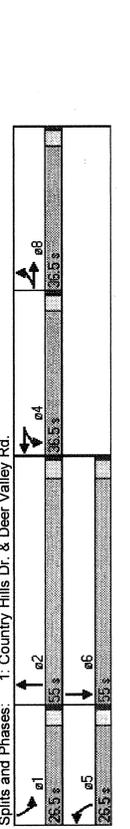
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1631	0	1770	1863	1583	1770	3433	0	1770	3398	0
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0
Flt Permitted	1396	1631	0	1350	1863	1563	1768	3497	0	1770	3467	0
Satd. Flow (perm)	36	36	0	201	201	201	11	11	0	15	15	0
Satd. Flow (RTOR)	17	7	23	46	9	159	187	586	50	29	433	58
Volume (vph)	27	47	0	58	11	201	191	649	0	32	545	0
Lane Group Flow (vph)	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	4	4	8	8	8	8	8	8	8	8	8	8
Protected Phases	4	4	8	8	8	8	8	8	8	8	8	8
Permitted Phases	37.0	37.0	0.0	37.0	37.0	37.0	30.0	46.0	0.0	17.0	33.0	0.0
Total Split (s)	13.9	13.9	0.0	13.9	13.9	13.9	16.5	72.8	0.0	8.2	60.7	0.0
Act Effect Green (s)	0.14	0.14	0.0	0.14	0.14	0.14	0.16	0.73	0.0	0.08	0.61	0.0
Activated g/C Ratio	0.14	0.18	0.0	0.31	0.04	0.52	0.66	0.25	0.0	0.22	0.26	0.0
v/c Ratio	35.5	15.8	0.0	40.0	32.4	38.8	48.4	6.8	0.0	45.8	11.5	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	35.5	15.8	0.0	40.0	32.4	38.8	48.4	6.8	0.0	45.8	11.5	0.0
Total Delay	D	B	D	D	C	A	D	A	D	D	B	D
LOS	D	B	D	D	C	A	D	A	D	D	B	D
Approach Delay	23.0	23.0	0.0	17.0	17.0	16.5	13.4	13.4	0.0	13.4	13.4	0.0
Approach LOS	C	C	C	B	B	B	B	B	C	B	B	C
Queue Length 50th (ft)	16	6	0	35	6	0	115	63	0	19	70	0
Queue Length 95th (ft)	24	18	0	52	16	32	175	159	0	48	167	0
Internal Link Dist (ft)	75	468	0	175	115	175	155	140	0	150	205	0
Turn Bay Length (ft)	475	578	0	469	633	664	478	2547	0	248	2109	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reducn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reducn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reducn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.08	0.0	0.13	0.02	0.30	0.40	0.25	0.0	0.13	0.26	0.0

Intersection Summary  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 21 (21%), Referenced to phase 2:NWT and 6:SET, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 15.8  
 Intersection Capacity Utilization: 50.8%  
 Analysis Period (min): 15  
 Intersection LOS: B  
 ICU Level of Service A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1851	0	1770	1704	0	1770	3433	0	1770	3398	0
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Flt Permitted	1766	1851	0	1770	1704	0	1759	3433	0	1744	3398	0
Satd. Flow (perm)	1	1	0	31	13	0	13	24	0	24	24	0
Satd. Flow (RTOR)	171	101	4	53	76	80	6	653	106	98	448	122
Volume (vph)	211	130	0	58	172	0	6	816	0	105	613	0
Lane Group Flow (vph)	Split	Split	Split	Split	Split	Split	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	8	8	4	4	4	4	5	2	1	6	6	6
Protected Phases	36.5	36.5	0.0	36.5	36.5	0.0	26.5	55.0	0.0	26.5	55.0	0.0
Permitted Phases	17.4	17.4	0.0	15.5	15.5	0.0	8.0	44.1	0.0	12.5	55.4	0.0
Total Split (s)	0.18	0.18	0.0	0.16	0.16	0.0	0.08	0.48	0.0	0.13	0.80	0.0
Act Effect Green (s)	0.65	0.38	0.0	0.20	0.56	0.0	0.04	0.50	0.0	0.44	0.30	0.0
Activated g/C Ratio	46.7	39.5	0.0	40.0	39.1	0.0	56.2	26.8	0.0	48.6	15.4	0.0
v/c Ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	46.7	39.5	0.0	40.0	39.1	0.0	56.2	26.8	0.0	48.6	15.4	0.0
Queue Delay	D	D	D	D	D	D	E	C	D	D	B	D
Total Delay	D	D	D	D	D	D	E	C	D	D	B	D
LOS	D	D	D	D	D	D	E	C	D	D	B	D
Approach Delay	44.0	44.0	0.0	39.3	39.3	0.0	27.0	20.4	0.0	20.4	20.4	0.0
Approach LOS	D	D	D	D	D	D	C	C	C	C	C	C
Queue Length 50th (ft)	100	58	0	26	67	0	3	184	0	50	97	0
Queue Length 95th (ft)	245	155	0	88	196	0	22	433	0	160	264	0
Internal Link Dist (ft)	145	308	0	120	274	0	110	880	0	175	220	0
Turn Bay Length (ft)	560	587	0	561	552	0	378	1837	0	418	2145	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reducn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reducn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reducn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.22	0.0	0.11	0.31	0.0	0.02	0.42	0.0	0.25	0.29	0.0

Intersection Summary  
 Cycle Length: 154.5  
 Actuated Cycle Length: 92.3  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 28.8  
 Intersection Capacity Utilization: 60.0%  
 Analysis Period (min): 15  
 Intersection LOS: C  
 ICU Level of Service B



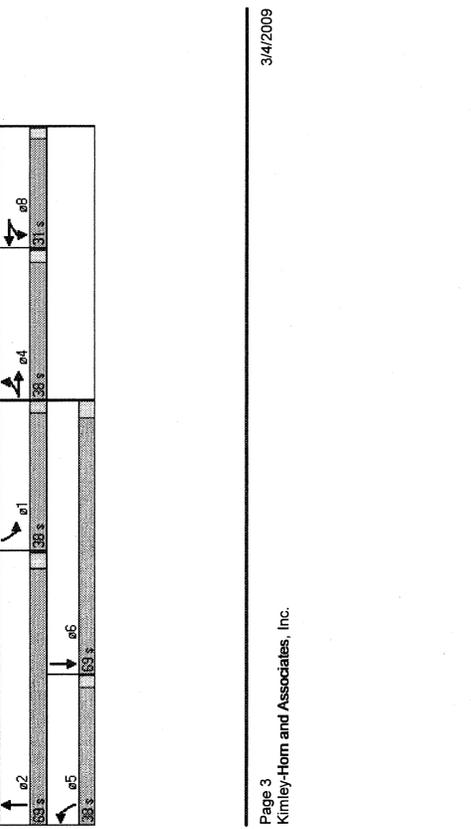
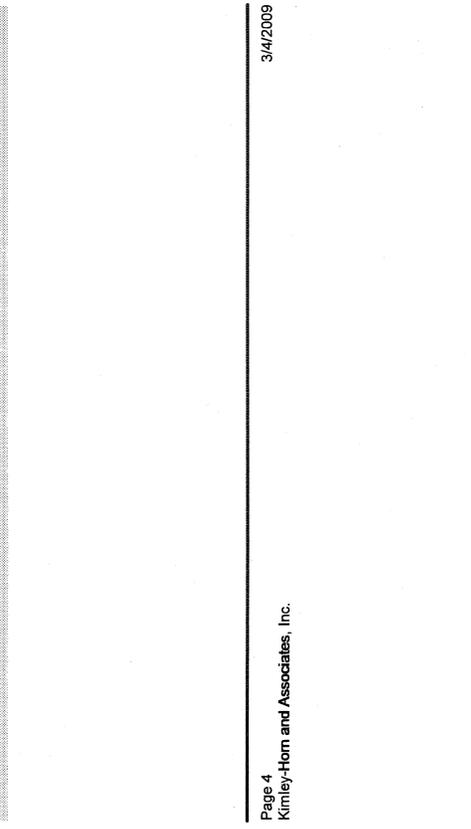
3: Country Hills Dr. & Hillcrest Ave  
Antioch Walmart Expansion

4: Northeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term Condition  
PM Peak

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBR	
Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBR	
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Total Lost Time (s)	1770	1656	0	1770	1691	0	1770	3483	0	
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	
Fit Permitted	1765	1656	0	1756	1691	0	1770	3483	0	
Satd. Flow (perm)	48	31	0	31	8	0	8	8	9	
Satd. Flow (RTOR)	42	51	97	36	50	63	83	415	49	
Volume (vph)	48	168	0	71	222	0	90	504	0	
Lane Group Flow (vph)	Split		Split		Prot		Prot		Prot	
Turn Type	4	4	8	8	5	2	1	6	6	
Protected Phases										
Permitted Phases										
Total Split (s)	38.0	38.0	0.0	31.0	31.0	0.0	38.0	69.0	0.0	
Act. Eff. Green (s)	15.6	15.6	0.0	19.9	19.9	0.0	12.3	67.2	0.0	
Actuated g/C Ratio	0.12	0.12	0.0	0.15	0.15	0.0	0.09	0.52	0.11	
v/c Ratio	0.22	0.69	0.0	0.26	0.77	0.0	0.54	0.28	0.61	
Control Delay	55.8	54.9	0.0	52.8	64.9	0.0	71.2	20.4	70.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	55.8	54.9	0.0	52.8	64.9	0.0	71.2	20.4	70.5	
LOS	E	D	D	E	E	C	E	C	B	
Approach Delay	55.1	55.1	0.0	62.0	62.0	0.0	28.1	27.6	0.0	
Approach LOS	E	E	E	E	E	C	E	C	C	
Queue Length 50th (ft)	37	97	0	52	154	0	72	118	95	
Queue Length 95th (ft)	81	186	0	61	132	0	148	223	182	
Internal Link Dist (ft)	288	288	0	283	283	0	1660	1660	1140	
Turn Bay Length (ft)	120	430	0	90	373	0	155	190	190	
Base Capacity (vph)	421	430	0	365	373	0	405	1816	417	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.11	0.39	0.0	0.19	0.60	0.0	0.22	0.28	0.28	
Intersection Summary										
Cycle Length	176									
Actuated Cycle Length	129.2									
Control Type	Actuated-Uncoordinated									
Maximum v/c Ratio	0.77									
Intersection Signal Delay	36.5									
Intersection Capacity Utilization	48.0%									
Analysis Period (min)	15									

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	Stop	Free	Free	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%	0%
Grade	0	7	0	563	648	5	5
Volume (veh/h)	0	0.58	0.88	0.88	0.90	0.90	0.90
Peak Hour Factor	0	12	0	628	718	6	6
Hourly flow rate (vph)							
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None						
Median storage (veh)							
Upstream signal (ft)	727 1032						
pX, platoon unblocked	0.86	0.86	0.86	0.86	0.86	0.86	0.86
vC, conflicting volume	1037	670	677	677	677	677	677
vC1, stage 1 conf vol	6.8	6.9	4.1	4.1	4.1	4.1	4.1
vC2, stage 2 conf vol	3.5	3.3	2.2	2.2	2.2	2.2	2.2
IC, 2 stage (s)	100	95	100	100	100	100	100
IF (s)	194	342	779	779	779	779	779
pl queue free %							
GM capacity (veh/h)							
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2		
Volume Total	12	314	314	718	6		
Volume Left	0	0	0	0	0		
Volume Right	12	0	0	0	0		
CSH	342	1700	1700	1700	1700		
Volume to Capacity	0.04	0.18	0.18	0.42	0.00		
Queue Length 95th (ft)	3	0	0	0	0		
Control Delay (s)	15.9	0.0	0.0	0.0	0.0		
Lane LOS	C	C	C	C	C		
Approach Delay (s)	15.9	0.0	0.0	0.0	0.0		
Approach LOS	C	C	C	C	C		
Intersection Summary							
Average Delay	0.1						
Intersection Capacity Utilization	44.0%						
Analysis Period (min)	15						
ICU Level of Service	A						



5: Southeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

6: Lone Tree Way & Country Hills Dr.  
Antioch Walmart Expansion

Near-Term Condition  
PM Peak

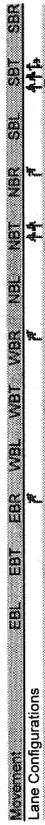
Near-Term Condition  
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Sign Control	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grade	0	0	0	0	0	0	0	0	0	0	0
Volume (veh/h)	0	125	0	0	42	0	523	63	0	568	79
Peak Hour Factor	0.78	0.78	0.78	0.62	0.62	0.89	0.89	0.89	0.96	0.96	0.96
Hourly flow rate (vph)	0	160	0	0	68	0	588	71	0	612	82
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type	None			None							
Median storage (veh)											
Upstream signal (ft)							347				
px platform unblocked											
vc, conflicting volume	1015	1312	245	952	1282	284	695			658	
vc1, stage 1 cont vol											
vc2, stage 2 cont vol											
vcu, unblocked vol	1015	1312	245	952	1282	284	695			658	
tc, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1	
tc, 2 stage (s)											
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2	
o queue free %	100	100	79	100	100	90	100			100	
CM capacity (veh/h)	174	157	755	169	164	703	897			925	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	160	68	294	284	71	245	245	205			
Volume Left	0	0	0	0	0	0	0	0			
Volume Right	160	68	294	284	71	245	245	205			
CSH	755	703	1700	1700	1700	1700	1700	1700			
Volume to Capacity	0.21	0.10	0.17	0.17	0.04	0.14	0.14	0.12			
Queue Length 95th (ft)	20	8	0	0	0	0	0	0			
Control Delay (s)	11.0	10.7	0.0	0.0	0.0	0.0	0.0	0.0			
Lane LOS	B	B	A	A	A	A	A	A			
Approach Delay (s)	11.0	10.7	0.0	0.0	0.0	0.0	0.0	0.0			
Approach LOS	B	B	A	A	A	A	A	A			
Intersection Summary											
Average Delay	1.6										
Intersection Capacity Utilization	27.5%										
Analysis Period (min)	15										
ICU Level of Service	A										

Splits and Phases: 6: Lone Tree Way & Country Hills Dr.

Splits and Phases: 6: Lone Tree Way & Country Hills Dr.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1770	1770	1702
Phi Permitted	0.950			0.950			0.950			0.950	
Satd. Flow (perm)	1764	3539	1386	1736	3539	1529	1757	1720	0	1768	1702
Volume (vph)	154	1159	111	109	881	39	115	84	75	48	91
Lane Group Flow (vph)	160	1207	116	120	968	43	162	224	0	56	216
Turn Type	5	2	2	1	6	8	8	8	8	4	4
Permitted Phases	6										
Total Split (s)	27.0	47.0	47.0	17.0	37.0	37.0	33.0	33.0	0.0	33.0	33.0
Act Effect Green (s)	18.5	61.3	61.3	14.0	56.8	56.8	21.7	21.7	0.0	21.0	21.0
Actuated g/C Ratio	0.14	0.47	0.47	0.11	0.44	0.44	0.17	0.17	0.0	0.16	0.16
v/c Ratio	0.63	0.72	0.72	0.63	0.63	0.63	0.55	0.55	0.0	0.20	0.20
Control Delay	63.4	32.8	32.8	68.4	32.2	32.2	55.7	55.9	46.3	54.2	54.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	32.8	32.8	68.4	32.2	32.2	55.7	55.9	46.3	54.2	54.2
LOS	E	C	C	B	E	C	C	C	E	D	D
Approach Delay	34.9										
Approach LOS	D										
Queue Length 50th (ft)	129	415	39	65	251	11	127	156	42	145	145
Queue Length 95th (ft)	195	698	99	176	617	m26	141	166	71	189	189
Internal Link Dist (ft)	145	1420	75	145	740	75	170	408	120	408	421
Turn Bay Length (ft)	0	0	0	0	0	0	0	0	0	0	0
Base Capacity (vph)	327	1669	670	191	1546	675	408	422	408	421	421
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.72	0.72	0.63	0.63	0.63	0.40	0.53	0.14	0.51	0.51
Intersection Summary											
Cycle Length	130										
Actuated Cycle Length	130										
Offset: 80 (62%), Referenced to phases 2,EBT and 6,WBT, Start of Yellow											
Control Type: Actuated-Coordinated											
Maximum v/c Ratio: 0.72											
Intersection Signal Delay: 39.0											
Intersection Capacity Utilization: 7.12%											
Analysis Period (min): 15											
# 95th percentile volume exceeds capacity, queue may be longer.											
Queue shown is maximum after two cycles.											
m Volume for 95th percentile queue is metered by upstream signal.											



7: Lone Tree Way & Deer Valley Plaza  
Antioch Walmart Expansion

8: Lone Tree Way & Deer Valley Rd.  
Antioch Walmart Expansion

Near-Term Condition  
PM Peak

Near-Term Condition  
PM Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	4A	4A	4A	4A	4A	4A
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1436	1752	3539	1770	1583
Satd. Flow (RTOR)	35					78
Volume (vph)	1323	93	86	890	113	61
Lane Group Flow (vph)	1407	99	95	978	145	78
Turn Type	Perm	Prot	1	6	8	8
Protected Phases	2					
Permitted Phases	65.0	65.0	25.0	90.0	40.0	40.0
Total Spill (s)	90.5	90.5	13.9	107.4	16.6	16.6
Act Effect Green (s)	0.70	0.70	0.11	0.83	0.13	0.13
Actuated g/C Ratio	0.57	0.10	0.50	0.33	0.64	0.29
v/c Ratio	4.1	0.5	50.0	7.5	66.2	12.8
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	4.1	0.5	50.0	7.5	66.2	12.8
Total Delay	4.1	0.5	50.0	7.5	66.2	12.8
LOS	A	A	D	A	E	B
Approach Delay	3.9			11.3	47.5	
Approach LOS	A			B	D	
Queue Length 50th (ft)	43	0	85	175	118	0
Queue Length 95th (ft)	85	m0	m127	m0	154	31
Internal Link Dist (ft)	740			850	704	95
Turn Bay Length (ft)	2483	1010	300	2993	504	506
Base Capacity (vph)	61	0	0	0	0	0
Starvation Cap Reducn	0	0	0	0	0	0
Spillback Cap Reducn	0	0	0	0	0	0
Storage Cap Reducn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.10	0.32	0.33	0.29	0.15

Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 94 (72%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.64  
Intersection Signal Delay: 10.2  
Intersection Capacity Utilization 57.6%  
Analysis Period (min) 15  
m: Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Lone Tree Way & Deer Valley Plaza



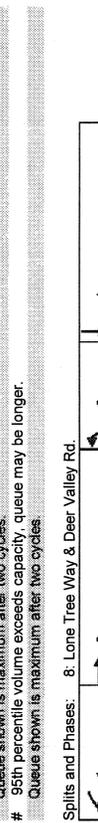
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Kimley-Horn and Associates, Inc.

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Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	4A						
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3267
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1768	3539	1523	1762	3539	1551	3428
Satd. Flow (RTOR)	218						185
Volume (vph)	87	957	307	367	635	207	344
Lane Group Flow (vph)	100	1100	353	386	668	218	400
Turn Type	Prot	Perm	Prot	Prot	Perm	Prot	Prot
Protected Phases	5	2	1	6	3	8	4
Permitted Phases	20.0	44.0	44.0	25.0	49.0	20.0	32.0
Total Spill (s)	13.6	41.0	41.0	22.0	49.4	17.0	31.8
Act Effect Green (s)	0.10	0.32	0.32	0.17	0.38	0.13	0.24
Actuated g/C Ratio	0.54	0.39	0.49	1.29	0.50	0.89	1.07
v/c Ratio	78.8	55.8	7.2	197.9	35.8	12.9	78.2
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	78.8	55.8	7.2	197.9	35.8	12.9	78.2
Total Delay	78.8	55.8	7.2	197.9	35.8	12.9	78.2
LOS	E	E	A	F	D	B	E
Approach Delay	46.2			81.1		85.3	
Approach LOS	D			F		F	
Queue Length 50th (ft)	60	308	0	~427	131	0	173
Queue Length 95th (ft)	140	#583	111	#633	0	176	#242
Internal Link Dist (ft)	850			1580			825
Turn Bay Length (ft)	195	400	500	400	400	180	495
Base Capacity (vph)	231	1116	722	300	1344	724	448
Starvation Cap Reducn	0	0	0	0	0	0	0
Spillback Cap Reducn	0	0	0	0	0	0	0
Storage Cap Reducn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.99	0.49	1.29	0.50	0.30	0.89

Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 60 (62%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 1.29  
Intersection Signal Delay: 66.8  
Intersection Capacity Utilization 91.8%  
Analysis Period (min) 15  
User Entered Value  
Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.  
95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Splits and Phases: 8: Lone Tree Way & Deer Valley Rd.



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3/4/2009

9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

Near-Term Condition  
PM Peak

Near-Term Condition  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3535	0	1770	3539	1583	1770	1561	0	1770	1863	1583
Satd. Flow (prot)	0.950	0	0.950	0.950	0.755	0.747	0.747	0.747	0	0.747	0.747	0.747
Flt Permitted	1770	3535	0	1768	3539	1545	1394	1561	0	1388	1863	1550
Satd. Flow (perm)	36	1606	7	26	1188	9	35	505	8	8	2	14
Satd. Flow (RTOR)	39	1754	0	30	1381	10	71	16	0	15	4	25
Volume (vph)	Prot	Prot	Prot	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Lane Group Flow (vph)	5	2	1	6	4	4	4	4	4	4	4	4
Turn Type	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases
Permitted Phases	20.0	57.0	0.0	20.0	57.0	20.0	20.0	20.0	0.0	20.0	20.0	20.0
Total Split (s)	9.7	89.7	9.1	86.9	86.9	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Act Effect Green (s)	0.07	0.69	0.07	0.67	0.67	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Activated g/C Ratio	0.29	0.72	0.24	0.58	0.01	0.51	0.03	0.11	0.02	0.14	0.02	0.14
v/c Ratio	60.6	13.3	74.6	6.7	2.7	67.4	0.1	53.0	50.5	19.7	0.0	0.0
Control Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	60.6	12.3	71.6	6.8	2.7	67.4	0.1	53.0	50.5	19.7	0.0	0.0
Total Delay	E	B	E	A	A	A	E	A	D	D	D	B
LOS	8.1	13.4	8.1	55.1	55.1	33.9	33.9	33.9	33.9	33.9	33.9	33.9
Approach Delay	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS
Queue Length 50th (ft)	32	275	0	73	0	58	0	12	3	3	0	0
Queue Length 95th (ft)	m37	m#893	m54	181	m1	56	0	20	9	9	0	0
Internal Link Dist (ft)	1580	1580	605	609	609	819	819	819	819	819	819	819
Turn Bay Length (ft)	145	2439	231	2365	1034	182	643	182	244	224	100	100
Base Capacity (vph)	0	0	0	126	0	0	0	0	0	0	0	0
Starvation Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.72	0.13	0.62	0.01	0.39	0.02	0.08	0.02	0.02	0.02	0.11

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3535	0	1770	3539	1583	1770	1561	0	1770	1863	1583
Satd. Flow (prot)	0.950	0	0.950	0.950	0.755	0.747	0.747	0.747	0	0.747	0.747	0.747
Flt Permitted	1770	3535	0	1768	3539	1545	1394	1561	0	1388	1863	1550
Satd. Flow (perm)	36	1606	7	26	1188	9	35	505	8	8	2	14
Satd. Flow (RTOR)	39	1754	0	30	1381	10	71	16	0	15	4	25
Volume (vph)	Prot	Prot	Prot	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Lane Group Flow (vph)	5	2	1	6	4	4	4	4	4	4	4	4
Turn Type	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases
Permitted Phases	20.0	57.0	0.0	20.0	57.0	20.0	20.0	20.0	0.0	20.0	20.0	20.0
Total Split (s)	9.7	89.7	9.1	86.9	86.9	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Act Effect Green (s)	0.07	0.69	0.07	0.67	0.67	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Activated g/C Ratio	0.29	0.72	0.24	0.58	0.01	0.51	0.03	0.11	0.02	0.14	0.02	0.14
v/c Ratio	60.6	13.3	74.6	6.7	2.7	67.4	0.1	53.0	50.5	19.7	0.0	0.0
Control Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	60.6	12.3	71.6	6.8	2.7	67.4	0.1	53.0	50.5	19.7	0.0	0.0
Total Delay	E	B	E	A	A	A	E	A	D	D	D	B
LOS	8.1	13.4	8.1	55.1	55.1	33.9	33.9	33.9	33.9	33.9	33.9	33.9
Approach Delay	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS	Approach LOS
Queue Length 50th (ft)	32	275	0	73	0	58	0	12	3	3	0	0
Queue Length 95th (ft)	m37	m#893	m54	181	m1	56	0	20	9	9	0	0
Internal Link Dist (ft)	1580	1580	605	609	609	819	819	819	819	819	819	819
Turn Bay Length (ft)	145	2439	231	2365	1034	182	643	182	244	224	100	100
Base Capacity (vph)	0	0	0	126	0	0	0	0	0	0	0	0
Starvation Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.72	0.13	0.62	0.01	0.39	0.02	0.08	0.02	0.02	0.02	0.11

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 113 (87%); Referenced to phase 2:EBT and 6:WBT; Start of Yellow

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 12.5

Intersection Capacity Utilization 60.0%

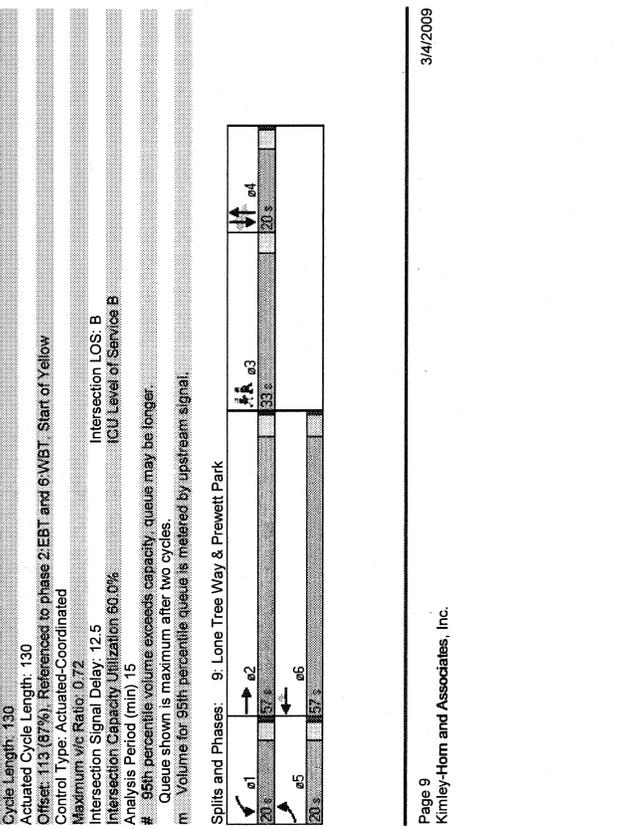
Analysis Period (min) 15

# 95th percentile volume exceeds capacity; queue may be longer.

m Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Lone Tree Way & Prewett Park

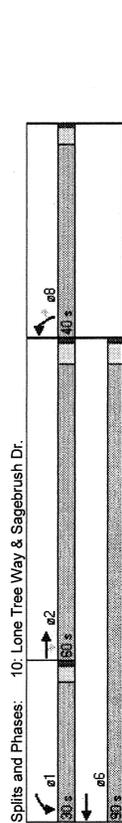


10: Lone Tree Way & Sagebrush Dr.  
Antioch Walmart Expansion

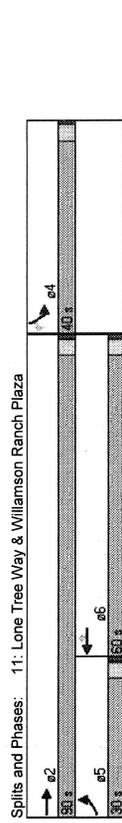
11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

Near-Term Condition  
PM Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	EB	EB	WB	WB	NB	NB
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Fit Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1511	1766	3539	1770	1583
Satd. Flow (RTOR)	38	146	40	1098	85	101
Volume (vph)	1486	146	40	1098	85	101
Lane Group Flow (vph)	1626	169	49	1356	139	168
Turn Type	Perm	Prot	Perm	Prot	Perm	Perm
Protected Phases	2	1	6	8		
Permitted Phases	2	2	30.0	30.0	40.0	40.0
Total Split (s)	101.2	101.2	9.1	109.3	14.7	14.7
Act Effect Green (s)	0.78	0.78	0.07	0.84	0.11	0.11
Actuated g/C Ratio	0.59	0.13	0.40	0.46	0.69	0.51
v/c Ratio	3.6	0.3	73.6	1.1	72.6	12.9
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	0.3	73.6	1.1	72.6	12.9
LOS	A	A	E	E	E	B
Approach Delay	3.3		3.6	40.1		
Approach LOS	A		A	D		
Queue Length 50th (ft)	18	1	38	10	115	0
Queue Length 95th (ft)	86	m1	73	13	116	3
Internal Link Dist (ft)	605		1855	497		
Turn Bay Length (ft)	80	600		115		
Base Capacity (vph)	2755	1185	368	2874	504	569
Starvation Cap Reductn	106	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.13	0.13	0.46	0.28	0.29
Intersection Summary						
Cycle Length	130					
Actuated Cycle Length	130					
Offset	122 (94%)					
Control Type	Actuated-Coordinated					
Maximum v/c Ratio	0.69					
Intersection Signal Delay	6.6					
Intersection LOS	A					
Intersection Capacity Utilization	54.3%					
ICU Level of Service	A					
Analysis Period (min)	15					
m	Volume for 95th percentile queue is metered by upstream signal.					



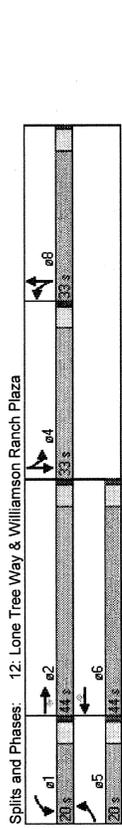
Lane Group	EBL	EBT	WBL	WBT	SBL	SBR
Lane Configurations	EB	EB	WB	WB	SB	SB
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Fit Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1748	3539	3539	1451	1770	1582
Satd. Flow (RTOR)	89	90	1527	1093	36	98
Volume (vph)	101	1716	1214	40	138	89
Lane Group Flow (vph)	101	1716	1214	40	138	89
Turn Type	Prot	Perm	Perm	Prot	Perm	Perm
Protected Phases	5	2	6	4		
Permitted Phases	5	2	6	4		
Total Split (s)	30.0	90.0	60.0	40.0	40.0	40.0
Act Effect Green (s)	12.1	108.2	83.1	93.1	15.8	15.8
Actuated g/C Ratio	0.69	0.83	0.72	0.72	0.12	0.12
v/c Ratio	0.61	0.58	0.48	0.04	0.64	0.33
Control Delay	76.5	6.0	2.9	0.1	66.8	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.5	6.0	2.9	0.1	66.8	12.5
LOS	E	A	A	A	E	B
Approach Delay	9.9	2.8			45.5	
Approach LOS	A	A			D	
Queue Length 50th (ft)	86	131	10	0	114	0
Queue Length 95th (ft)	121	709	82	m0	128	22
Internal Link Dist (ft)	155	1655	820		457	
Turn Bay Length (ft)	155	2945	2533	1044	504	508
Base Capacity (vph)	368	2945	2533	1044	504	508
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.56	0.48	0.04	0.27	0.18
Intersection Summary						
Cycle Length	130					
Actuated Cycle Length	130					
Offset	75 (58%)					
Control Type	Actuated-Coordinated					
Maximum v/c Ratio	0.64					
Intersection Signal Delay	9.6					
Intersection LOS	A					
Intersection Capacity Utilization	54.8%					
ICU Level of Service	A					
Analysis Period (min)	15					
m	Volume for 95th percentile queue is metered by upstream signal.					



12: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

13: Lone Tree Way & Wal-Mart Driveway  
Antioch Walmart Expansion

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1647	0	3433	1626
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1746	3539	1422	1758	3539	1419	1767	1647	0	3419	1626
Satd. Flow (RTOR)	87	1412	28	57	1051	39	7	18	44	95	16
Volume (vph)	104	1681	33	68	1251	46	10	86	0	122	98
Lane Group Flow (vph)	Prot	Perm	Prot	Perm	Prot	Perm	Split	Split	Split	Split	Split
Turn Type	5	2	2	1	6	8	8	8	4	4	4
Permitted Phases											
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	33.0	33.0	0.0	33.0	33.0
Act Effct Green (s)	14.3	81.4	81.4	13.3	78.0	78.0	13.1	13.1	0.0	14.8	14.8
Actuated g/C Ratio	0.11	0.63	0.63	0.10	0.60	0.60	0.10	0.10	0.0	0.11	0.11
w/C Ratio	0.54	0.76	0.76	0.38	0.59	0.59	0.06	0.06	0.39	0.31	0.39
Control Delay	70.2	18.0	18.0	7.7	60.9	60.9	15.4	15.4	23.4	53.1	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	18.0	18.0	7.7	60.9	60.9	15.4	15.4	23.4	53.1	19.4
LOS	E	B	A	E	B	B	D	C	D	D	B
Approach Delay											
Approach LOS											
Queue Length 50th (ft)	84	420	2	60	177	5	8	20	0	51	17
Queue Length 95th (ft)	122	#1071	m18	m84	#639	m22	18	40	60	60	46
Internal Link Dist (ft)											
Turn Bay Length (ft)	170	80	135	80	200	80	200	200	200	200	200
Base Capacity (vph)	231	2216	893	231	2122	856	408	427	792	792	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced w/C Ratio	0.45	0.76	0.04	0.29	0.59	0.05	0.02	0.20	0.15	0.23	0.23
Intersection Summary											
Cycle Length	130										
Actuated Cycle Length	130										
Offset	# 53 (41%) Referenced to phase 2 EBT and 6 WBT Start of Yellow										
Control Type	Actuated-Coordinated										
Intersection Signal Delay	22.4										
Maximum w/C Ratio	0.76										
Intersection LOS	C										
Intersection Capacity Utilization	62.2%										
Analysis Period (min)	15										
# 95th percentile volume exceeds capacity, queue may be longer.											
Queue shown is maximum after two cycles.											
m Volume for 95th percentile queue is metered by upstream signal.											



Splits and Phases: 12: Lone Tree Way & Williamson Ranch Plaza

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/ft)	0	1645	1118	93	0	37					
Peak Hour Factor	0.86	0.86	0.94	0.94	0.84	0.84					
Hourly flow rate (vph)	0	1913	1189	99	0	44					
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type											
Median storage (veh)											
Upstream signal (ft)		510	500								
pX, platoon unblocked		0.80								0.72	0.80
vC, conflicting volume		1288								2145	396
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCU, unblocked vol		872								1121	0
IC, single (s)		4.1								6.8	6.9
IC, 2 stage (s)											
IF (s)		2.2								3.5	3.3
p0 queue free %		100								100	95
dm capacity (veh/h)		619								145	872
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	SB 1				
Volume Total	956	956	396	396	396	396	99	44			
Volume Left	0	0	0	0	0	0	0	0			
Volume Right	0	0	0	0	0	0	0	0			
cSH	1700	1700	1700	1700	1700	1700	1700	872			
Volume to Capacity	0.56	0.56	0.23	0.23	0.23	0.23	0.06	0.06			
Queue Length 95th (ft)	0	0	0	0	0	0	0	0			
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Lane LOS	A	A	A	A	A	A	A	A			
Approach Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Approach LOS	A	A	A	A	A	A	A	A			
Intersection Summary											
Average Delay	0.1										
Intersection Capacity Utilization	48.8%										
Analysis Period (min)	15										
ICU Level of Service	A										



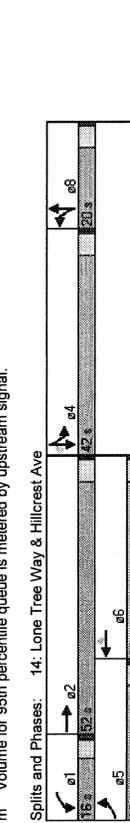
Splits and Phases: 12: Lone Tree Way & Wal-Mart Driveway

14: Lone Tree Way & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term Condition  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	5021	0	1770	5085	1583	1770	3319	0	2000	3539
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950
Fit Permitted	1762	5021	0	1764	5085	1517	1741	3319	0	3377	3539
Satd. Flow (perm)	10	392	0	83	1033	282	64	96	50	484	93
Satd. Flow (RTOR)	214	1280	90	83	1033	282	64	96	50	484	93
Volume (vph)	238	1522	0	98	1215	332	90	205	0	590	113
Lane Group Flow (vph)	238	1522	0	98	1215	332	90	205	0	590	113
Turn Type	Prot	Prot	Prot	Prot	Prot	Split	Split	Split	Split	Split	Perm
Protected Phases	5	2	1	6	6	8	8	8	4	4	4
Permitted Phases	30.0	52.0	0.0	16.0	38.0	38.0	20.0	20.0	0.0	42.0	42.0
Total Split (s)	23.6	51.8	0.0	12.3	40.4	40.4	15.0	15.0	0.0	39.0	39.0
Act Effct Green (s)	0.16	0.40	0.09	0.31	0.31	0.12	0.12	0.12	0.36	0.36	0.36
Actuated g/C Ratio	0.74	0.76	0.59	0.77	0.47	0.44	0.47	0.47	0.98	0.11	0.30
Control Delay	70.9	23.5	0.0	51.5	16.6	60.2	41.3	79.2	33.3	6.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.9	23.5	0.0	51.5	16.6	60.2	41.3	79.2	33.3	6.2	6.2
LOS	E	C	E	D	B	E	D	D	E	C	A
Approach Delay	29.9	45.1	0.0	45.1	47.1	47.1	47.1	47.1	58.0	58.0	58.0
Approach LOS	C	D	D	D	D	D	D	D	E	E	E
Queue Length 50th (ft)	157	301	84	394	86	71	60	60	254	36	0
Queue Length 95th (ft)	m285	275	138	290	144	97	72	72	#321	54	39
Internal Link Dist (ft)	620	420	210	690	730	195	2575	2575	400	1680	290
Turn Bay Length (ft)	368	2005	180	1851	700	231	485	485	600	1062	583
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.76	0.54	0.77	0.47	0.39	0.42	0.39	0.42	0.96	0.11

**Intersection Summary**  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 41.9  
 Intersection LOS: D  
 Intersection Capacity Utilization: 76.0%  
 ICU Level of Service: D  
 Analysis Period (min): 15  
 # User Entered Value  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



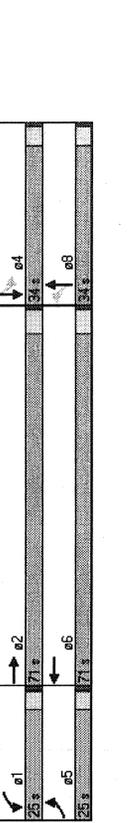
Splits and Phases: 14: Lone Tree Way & Hillcrest Ave

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

Near-Term Condition  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	5049	0	1770	5067	0	1770	1576	0	1770	1651
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950
Fit Permitted	1767	5049	0	1769	5067	0	1362	1576	0	843	1651
Satd. Flow (perm)	7	181	0	4	4	0	181	181	0	843	1651
Satd. Flow (RTOR)	20	1719	67	162	1282	30	48	10	145	49	9
Volume (vph)	21	1841	0	172	1398	0	60	193	0	66	40
Lane Group Flow (vph)	21	1841	0	172	1398	0	60	193	0	66	40
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	1	6	6	8	8	8	4	4	4
Permitted Phases	25.0	71.0	0.0	25.0	71.0	0.0	34.0	34.0	0.0	34.0	34.0
Total Split (s)	9.5	84.0	0.0	19.4	98.4	0.0	17.6	17.6	0.0	17.6	17.6
Act Effct Green (s)	0.07	0.85	0.15	0.76	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Actuated g/C Ratio	0.16	0.56	0.65	0.36	0.33	0.52	0.52	0.52	0.58	0.58	0.58
Control Delay	76.8	6.5	63.3	6.0	52.5	12.9	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.8	6.7	63.3	6.0	52.5	12.9	0.0	0.0	0.0	0.0	0.0
LOS	E	A	E	A	A	D	B	B	E	C	C
Approach Delay	7.5	12.3	0.0	12.3	22.3	22.3	22.3	22.3	51.8	51.8	51.8
Approach LOS	A	B	D	B	C	C	C	C	D	D	D
Queue Length 50th (ft)	19	34	144	53	47	9	9	9	54	9	9
Queue Length 95th (ft)	m22	m482	231	193	72	47	47	47	75	28	28
Internal Link Dist (ft)	200	650	200	1055	786	786	786	786	100	614	614
Turn Bay Length (ft)	200	3264	304	3837	325	514	514	514	201	415	415
Base Capacity (vph)	0	597	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.69	0.57	0.36	0.16	0.38	0.33	0.33	0.33	0.10	0.10

**Intersection Summary**  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 96 (75%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 11.7  
 Intersection LOS: B  
 Intersection Capacity Utilization: 71.5%  
 ICU Level of Service: C  
 Analysis Period (min): 15  
 m Volume for 95th percentile queue is metered by upstream signal.



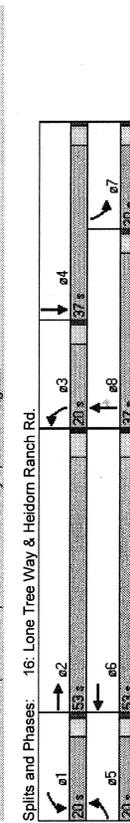
Splits and Phases: 15: Lone Tree Way & Vista Grande

16: Lone Tree Way & Heidorn Ranch Rd.  
Antioch Walmart Expansion

Near-Term Condition  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	5043	0	1770	5079	0	3433	1863	1583	1770	1723	0
Flt Permitted	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0
Satd. Flow (perm)	1768	5043	0	1769	5079	0	3433	1863	1561	1765	1723	0
Satd. Flow (RTOR)	5	1782	86	77	1418	14	91	5	81	7	4	4
Volume (vph)	5	1946	0	85	1573	0	120	7	107	12	14	4
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	2	1	6	3	8	8	8	8	8	4
Protected Phases												
Permitted Phases	20.0	53.0	0.0	20.0	53.0	0.0	20.0	37.0	37.0	20.0	37.0	0.0
Total Split (s)	8.5	86.4	14.1	101.0	14.2	15.4	15.4	8.9	8.9	11.8	11.8	0.0
Act Effect Green (s)	0.07	0.66	0.11	0.78	0.11	0.12	0.12	0.07	0.09	0.09	0.09	0.00
Actuated g/C Ratio	0.04	0.58	0.44	0.40	0.32	0.03	0.38	0.10	0.09	0.10	0.09	0.00
v/c Ratio	80.0	6.6	73.1	5.1	55.0	45.0	11.9	58.0	34.1	58.0	34.1	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.0	6.6	73.1	5.1	55.0	45.0	11.9	58.0	34.1	58.0	34.1	0.0
LOS	E	A	E	A	D	D	D	B	E	E	C	C
Approach Delay	6.8	8.6	8.6	35.0	35.0	35.0	35.0	45.1	45.1	45.1	45.1	0.0
Approach LOS	A	A	A	C	C	C	C	D	D	D	D	D
Queue Length 50th (ft)	4	42	76	30	60	5	0	10	6	10	6	0
Queue Length 95th (ft)	m0	631	89	488	67	15	28	20	14	20	14	0
Internal Link Dist (ft)	185	1055	400	905	200	972	200	50	316	200	50	0
Turn Bay Length (ft)	231	3353	234	3945	479	487	487	231	455	487	231	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reducin	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reducin	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reducin	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.58	0.36	0.40	0.25	0.01	0.22	0.05	0.03	0.05	0.03	0.00

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 114 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.58  
 Intersection Signal Delay: 9.5  
 Intersection Capacity Utilization 61.0%  
 Analysis Period (min): 15  
 Volume for 95th percentile queue is metered by upstream signal.



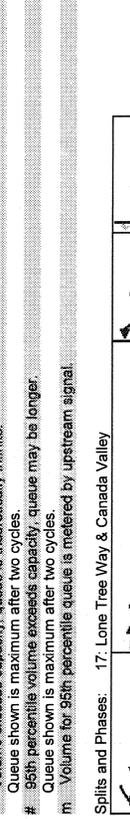
Splits and Phases: 16: Lone Tree Way & Heidorn Ranch Rd.

17: Lone Tree Way & Canada Valley  
Antioch Walmart Expansion

Near-Term Condition  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	1674	1504	1770	1863	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3430	5085	1584	3425	5085	1559	3428	1674	1481	1764	1863	1562
Satd. Flow (RTOR)	5	1737	69	337	1311	523	104	71	186	310	66	79
Volume (vph)	167	1868	74	374	1457	581	139	141	202	425	90	108
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	2	1	6	3	8	8	8	8	8	4
Protected Phases												
Permitted Phases	20.0	58.0	30.0	68.0	68.0	20.0	22.0	20.0	20.0	20.0	22.0	22.0
Total Split (s)	17.0	67.5	18.9	69.5	69.5	10.5	14.5	14.5	14.5	17.0	21.0	21.0
Act Effect Green (s)	0.13	0.52	0.15	0.53	0.53	0.08	0.11	0.11	0.11	0.13	0.16	0.16
Actuated g/C Ratio	0.37	0.71	0.09	0.75	0.54	0.53	0.50	0.70	0.59	1.84	0.30	0.31
v/c Ratio	45.4	17.6	4.7	69.2	15.3	2.1	63.2	67.0	13.9	425.8	56.4	10.8
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	17.9	4.7	69.2	15.3	2.1	63.2	67.0	13.9	425.8	56.4	10.8
LOS	D	B	A	E	B	A	E	E	B	F	D	B
Approach Delay	19.6	20.5	20.5	43.6	43.6	43.6	43.6	299.7	299.7	299.7	299.7	0.0
Approach LOS	B	B	B	C	C	C	C	D	D	F	F	F
Queue Length 50th (ft)	69	259	0	164	205	14	58	108	0	~541	87	0
Queue Length 95th (ft)	86	284	m25	m173	m234	m29	75	143	33	~568	95	27
Internal Link Dist (ft)	320	905	449	2841	832	713	2717	1104	449	288	388	231
Turn Bay Length (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reducin	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reducin	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reducin	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.71	0.09	0.52	0.54	0.53	0.31	0.55	0.52	1.84	0.30	0.31

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 87 (67%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.84  
 Intersection Signal Delay: 53.0  
 Intersection Capacity Utilization 82.0%  
 Analysis Period (min): 15  
 Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 17: Lone Tree Way & Canada Valley

18: Lone Tree Way & SR 4 By-pass SB Off-ramp  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	4	4	4	4	4	4	0	0	0	0	0	0		
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0		
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	0	1681	1688	1583		
Flt Permitted	0	0	0	0	0	0	0	0	0	0	0	0		
Satd. Flow (perm)	0	5085	1581	3432	5085	0	0	0	0	1681	1688	1583		
Satd. Flow (RTOR)	0	1595	646	273	1569	0	0	0	0	506	10	591		
Volume (vph)	0	1792	726	314	1803	0	0	0	0	285	295	664		
Lane Group Flow (vph)	0	1792	726	314	1803	0	0	0	0	285	295	664		
Turn Type		Perm	Prot		Perm	Split				Split		Perm		
Protected Phases	2	1	6									4		
Permitted Phases	0.0	53.0	53.0	27.0	80.0	0.0	0.0	0.0	0.0	50.0	50.0	50.0		
Total Split (s)	0.0	57.0	57.0	17.0	77.0	0.0	0.0	0.0	0.0	47.0	47.0	47.0		
Act Effct Green (s)	0.44	0.44	0.13	0.59	0.60	0.36	0.36	0.36	0.36	0.47	0.48	1.14		
v/c Ratio	0.80	0.68	0.70	0.60	0.60	0.47	0.48	0.48	0.48	0.47	0.48	1.14		
Control Delay	24.8	4.7	67.3	10.7	119.3	35.1	35.4	35.4	35.4	35.4	35.4	119.3		
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	24.8	5.7	67.3	10.7	119.3	35.1	35.4	35.4	35.4	35.4	35.4	119.3		
LOS	C	A	E	B	B	D	D	D	D	D	D	F		
Approach Delay	19.3			19.1								80.1		
Approach LOS	B			B								F		
Queue Length 50th (ft)	191	30	125	206						193	201	644		
Queue Length 95th (ft)	m336	m119	m156	207						280	290	#967		
Internal Link Dist (ft)	760			760			671					528		
Turn Bay Length (ft)		315	175							280				
Base Capacity (vph)	2229	1064	634	3012						608	610	583		
Starvation Cap Reductn	0	134	0	0						0	0	0		
Spillback Cap Reductn	0	0	0	0						0	0	0		
Storage Cap Reductn	0	0	0	0						0	0	0		
Reduced v/c Ratio	0.80	0.78	0.60	0.60						0.47	0.48	1.14		
Intersection Summary														
Cycle Length	130													
Actuated Cycle Length	130													
Offset	100 (77%), Referenced to phase 2, EBT and 6, WBT, Start of Yellow													
Control Type	Actuated-Coordinated													
Maximum v/c Ratio	1.14													
Intersection Signal Delay	32.1													
Intersection Capacity Utilization	73.6%													
Analysis Period (min)	15													
ICU Level of Service	D													
Volume exceeds capacity, queue is theoretically infinite.														
Queue shown is maximum after two cycles.														
# 95th percentile volume exceeds capacity, queue may be longer.														
Queue shown is maximum after two cycles.														
m Volume for 95th percentile queue is metered by upstream signal.														
Splits and Phases:	18: Lone Tree Way & SR 4 By-pass SB Off-ramp													
	e1	e2	e3	e4									e5	e6
	27 s	59 s		50 s										

19: Lone Tree Way & SR 4 By-pass NB On-ramp  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	0	0	0	0	0	0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Satd. Flow (prot)	0	5085	1583	3433	5085	1583	1681	1695	1583	0	0	0
Flt Permitted	0	0	0	0	0	0	0	0	0	0	0	0
Satd. Flow (perm)	0	5085	1581	3432	5085	1545	1681	1695	1563	0	0	0
Satd. Flow (RTOR)	0	1766	418	21	1270	440	590	43	340	0	0	0
Volume (vph)	0	1879	445	24	1427	484	380	401	420	0	0	0
Lane Group Flow (vph)	0	1879	445	24	1427	484	380	401	420	0	0	0
Turn Type		Perm	Prot		Perm	Split			Perm			Perm
Protected Phases	2	1	6									6
Permitted Phases	0.0	64.0	64.0	25.0	89.0	86.0	41.0	41.0	41.0	0.0	0.0	0.0
Total Split (s)	0.0	83.5	83.5	7.1	89.6	89.6	34.4	34.4	34.4	0.0	0.0	0.0
Act Effct Green (s)	0.64	0.64	0.05	0.69	0.69	0.26	0.26	0.26	0.26	0.0	0.0	0.0
v/c Ratio	0.58	0.40	0.13	0.41	0.41	0.85	0.90	0.90	0.67	0.0	0.0	0.0
Control Delay	4.0	1.1	60.0	9.6	17	63.7	68.7	68.7	17.5	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	1.1	60.0	9.6	17	63.7	68.7	68.7	17.5	0.0	0.0	0.0
LOS	A	A	E	A	A	E	E	E	B			
Approach Delay	3.5			8.2					49.2			
Approach LOS	A			A					D			
Queue Length 50th (ft)	269	21	10	191	0	308	330	87				
Queue Length 95th (ft)	63	m0	25	217	33	381	403	148				
Internal Link Dist (ft)	760			820				935				1168
Turn Bay Length (ft)		215	280			170	210					
Base Capacity (vph)	3265	1116	581	3504	1218	491	495	664				
Starvation Cap Reductn	0	0	0	0				0				
Spillback Cap Reductn	0	0	0	0				0				
Storage Cap Reductn	0	0	0	0				0				
Reduced v/c Ratio	0.58	0.40	0.04	0.41	0.41	0.77	0.81	0.81	0.63			
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	10 (8%), Referenced to phase 2, EBT and 6, WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.90											
Intersection Signal Delay	15.2											
Intersection Capacity Utilization	62.3%											
Analysis Period (min)	15											
ICU Level of Service	B											
Volume for 95th percentile queue is metered by upstream signal.												
Splits and Phases:	19: Lone Tree Way & SR 4 By-pass NB On-ramp											
	e1	e2	e3	e4	e5	e6	e7	e8				
	26 s	64 s		41 s								

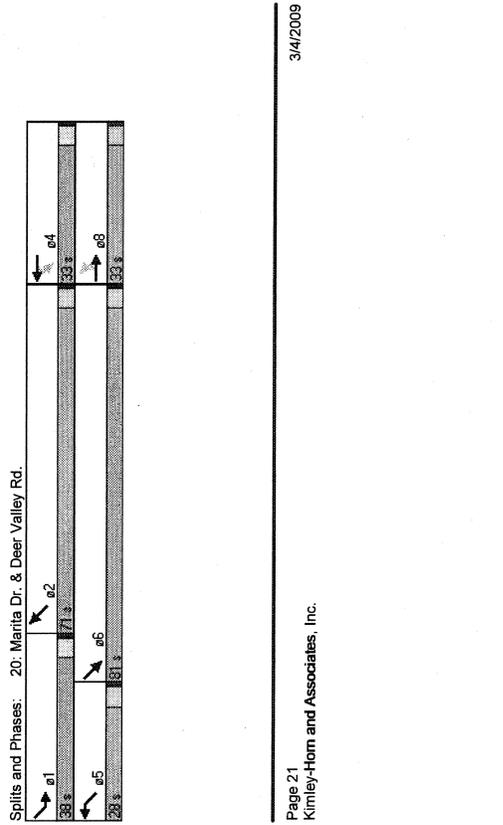
20: Marita Dr. & Deer Valley Rd.  
Antioch Walmart Expansion

21: Prewett Ranch Dr. & Hillcrest Ave  
Antioch Walmart Expansion

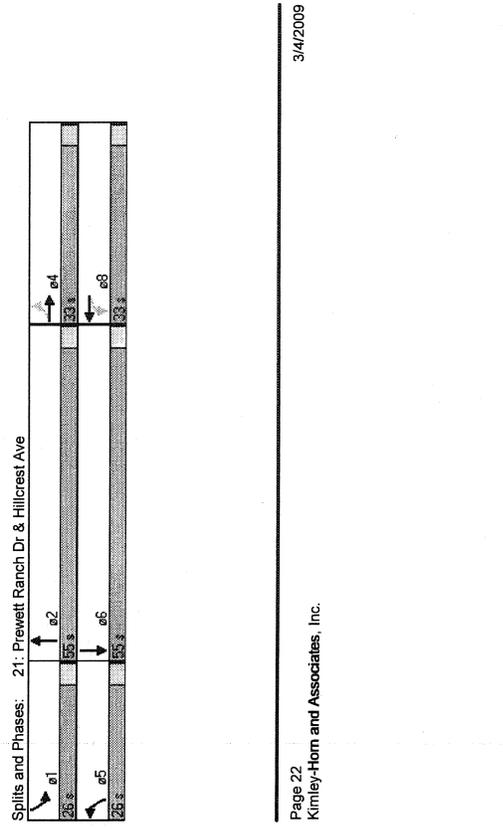
Near-Term Condition  
PM Peak

Near-Term Condition  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1583	0	1770	1598	0	1770	3514	0	1770	3539	0
Satd. Flow (prot)	0.569	0.765	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Flt Permitted	1060	1583	0	1405	1598	0	1765	3514	0	1754	3539	0
Satd. Flow (perm)	318	4	0	23	4	0	26	869	29	15	1109	3
Satd. Flow (RTOR)	13	4	0	33	119	0	33	1151	0	16	1208	0
Volume (vph)	Perm	Perm	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot
Lane Group Flow (vph)	8	4	4	4	4	4	1	6	5	2	2	2
Protected Phases	8	4	4	4	4	4	1	6	5	2	2	2
Permitted Phases	8	4	4	4	4	4	1	6	5	2	2	2
Total Split (s)	33.0	33.0	0.0	33.0	33.0	0.0	38.0	81.0	0.0	28.0	71.0	0.0
Act Effect Green (s)	10.2	10.2	0.0	10.2	10.2	0.0	9.6	85.7	0.0	8.6	82.4	0.0
Actuated g/C Ratio	0.10	0.10	0.00	0.10	0.10	0.00	0.09	0.80	0.00	0.08	0.77	0.00
v/c Ratio	0.19	0.01	0.00	0.25	0.47	0.00	0.22	0.41	0.00	0.12	0.44	0.00
Control Delay	47.5	6.0	0.0	47.7	15.9	0.0	47.6	4.6	0.0	48.0	5.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	6.0	0.0	47.7	15.9	0.0	47.6	4.6	0.0	48.0	5.9	0.0
LOS	D	A	D	D	B	D	D	A	D	D	A	A
Approach Delay	36.2	22.8	0.0	22.8	5.8	0.0	5.8	6.5	0.0	6.5	6.5	0.0
Approach LOS	D	C	D	C	A	D	A	A	D	A	A	A
Queue Length 50th (ft)	11	0	0	19	3	0	19	60	9	146	9	146
Queue Length 95th (ft)	26	0	0	40	27	0	46	166	32	237	32	237
Internal Link Dist. (ft)	345	0	0	427	0	0	825	0	0	845	0	0
Turn Bay Length (ft)	40	100	0	100	175	0	175	125	0	125	0	0
Base Capacity (vph)	252	619	0	334	466	0	466	2820	342	2799	342	2799
Starvation Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.01	0.00	0.10	0.26	0.00	0.07	0.41	0.00	0.05	0.44	0.00
Intersection Summary												
Cycle Length	142											
Actuated Cycle Length	106.9											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.47											
Intersection Signal Delay	7.4											
Intersection LOS	A											
Intersection Capacity Utilization	45.4%											
ICU Level of Service	A											
Analysis Period (min)	15											



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1863	0	1863	1801	0	1863	3539	0	1770	3256	0
Satd. Flow (prot)	0.734	0.960	0	0.960	0.960	0	0.960	0.960	0	0.960	0.960	0
Flt Permitted	1367	1863	0	1863	1801	0	1863	3539	0	1770	3256	0
Satd. Flow (perm)	135	23	0	0	11	3	0	83	0	12	123	139
Satd. Flow (RTOR)	161	27	0	0	38	0	0	92	0	14	309	0
Volume (vph)	Perm	Perm	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot
Lane Group Flow (vph)	4	8	8	8	5	2	1	6	1	6	1	6
Protected Phases	4	8	8	8	5	2	1	6	1	6	1	6
Permitted Phases	4	8	8	8	5	2	1	6	1	6	1	6
Total Split (s)	33.0	33.0	0.0	33.0	33.0	0.0	26.0	55.0	0.0	26.0	55.0	0.0
Act Effect Green (s)	14.1	14.1	0.0	13.6	13.6	0.0	13.6	26.2	0.0	13.6	26.2	0.0
Actuated g/C Ratio	0.29	0.29	0.00	0.28	0.28	0.00	0.28	0.58	0.00	0.16	0.64	0.00
v/c Ratio	0.41	0.05	0.00	0.07	0.07	0.00	0.04	0.04	0.00	0.05	0.14	0.00
Control Delay	9.7	6.5	0.0	5.8	5.8	0.0	7.9	7.9	0.0	12.7	3.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	6.5	0.0	5.8	5.8	0.0	7.9	7.9	0.0	12.7	3.8	0.0
LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Delay	9.3	5.8	0.0	5.8	5.8	0.0	5.8	7.9	0.0	3.2	3.2	0.0
Approach LOS	A	A	A	A	A	A	A	A	A	B	A	A
Queue Length 50th (ft)	11	2	2	2	2	2	3	3	1	1	5	5
Queue Length 95th (ft)	52	13	13	6	6	6	22	22	12	12	20	20
Internal Link Dist. (ft)	624	0	0	636	0	0	221	0	0	0	2575	0
Turn Bay Length (ft)	100	968	0	968	0	0	2946	0	0	115	0	0
Base Capacity (vph)	710	968	0	968	0	0	2946	0	0	684	2794	0
Starvation Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.03	0.00	0.04	0.04	0.00	0.03	0.03	0.00	0.02	0.11	0.00
Intersection Summary												
Cycle Length	114											
Actuated Cycle Length	44.9											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.41											
Intersection Signal Delay	5.8											
Intersection LOS	A											
Intersection Capacity Utilization	28.7%											
ICU Level of Service	A											
Analysis Period (min)	15											



**EXISTING + APPROVED + PROJECT  
TRAFFIC CONDITIONS  
(TRAFFIX & SYNCRHO)**



Antioch Walmart Expansion  
Near Term + Project AM

Scenario Report  
Near Term + Project AM

Command: Near Term + Project AM  
 Volume: Near-Term+Proj AM  
 Geometry: Near-Term  
 Impact Fee: Default Impact Fee  
 Trip Generation: App+Proj AM  
 Trip Distribution: Near-Term  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

Antioch Walmart Expansion  
Near Term + Project AM

Impact Analysis Report  
Level Of Service

Intersection	Base Del/V/	Future Del/V/	Change in
	LOS Veh C	LOS Veh C	
# 1 Deer Valley Rd/ Country Hills	A xxxxx 0.435	A xxxxx 0.469	+ 0.034 V/C
# 2 Hillcrest Avenue/Laurel Road	A xxxxx 0.311	A xxxxx 0.335	+ 0.024 V/C
# 3 Hillcrest Avenue/Country Hills	A xxxxx 0.353	A xxxxx 0.394	+ 0.041 V/C
# 4 Hillcrest Avenue/Driveway	B 13.0 0.022	C 15.7 0.025	+ 2.667 D/V
# 5 Hillcrest Avenue/South Driveva	B 10.1 0.078	B 10.4 0.083	+ 0.317 D/V
# 6 Lone Tree Way/Mokelumne Dr	B xxxxx 0.627	C xxxxx 0.718	+ 0.091 V/C
# 7 Lone Tree Way/Deer Valley Plaz	A xxxxx 0.367	A xxxxx 0.453	+ 0.086 V/C
# 8 Lone Tree Way/Deer Valley Rd	A xxxxx 0.544	C xxxxx 0.725	+ 0.181 V/C
# 9 Lone Tree Way/Deer Valley HS	A xxxxx 0.448	A xxxxx 0.561	+ 0.113 V/C
# 10 Lone Tree Way/Sagebrush Drive	A xxxxx 0.389	A xxxxx 0.466	+ 0.077 V/C
# 11 Lone Tree Way/Williamson Ranch	A xxxxx 0.352	A xxxxx 0.492	+ 0.140 V/C
# 12 Lone Tree Way/Indian Hill Dr/W	A xxxxx 0.423	A xxxxx 0.571	+ 0.148 V/C
# 13 Lone Tree Way/Driveway	B 10.8 0.008	B 12.1 0.010	+ 1.321 D/V
# 14 Lone Tree Way/Hillcrest Avenue	A xxxxx 0.394	A xxxxx 0.517	+ 0.122 V/C
# 15 Lone Tree Way/Vista Grande Dri	A xxxxx 0.300	A xxxxx 0.392	+ 0.092 V/C
# 16 Lone Tree Way/Heidorn Ranch Ro	A xxxxx 0.224	A xxxxx 0.302	+ 0.078 V/C
# 17 Lone Tree Way/Canada Valley Ro	A xxxxx 0.336	A xxxxx 0.526	+ 0.190 V/C
# 18 Lone Tree Way/SB SR-4 Bypass	A xxxxx 0.416	A xxxxx 0.533	+ 0.117 V/C
# 19 Lone Tree Way/NB SR-4 Bypass (	A xxxxx 0.273	A xxxxx 0.364	+ 0.091 V/C
# 20 Deer Valley Road/Marita Drive	A xxxxx 0.293	A xxxxx 0.394	+ 0.101 V/C
# 21 Hillcrest Ave/Prewett Ranch Dr	A xxxxx 0.153	A xxxxx 0.165	+ 0.012 V/C







Antioch Walmart Expansion  
Near Term + Project AM

Level of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #7 Lone Tree Way/Deer Valley Plaza  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap.(X): 0.453  
Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 26 Level Of Service: A  
\*\*\*\*\*  
Street Name: Deer Valley Plaza Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Permitted Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 0 1 0 0 0 0 0 2 0 1 1 0 2 0 0  
\*\*\*\*\*

Volume Module:  
Base Vol: 75 0 35 0 0 0 796 67 42 1060 0  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 75 0 35 0 0 0 796 67 42 1060 0  
Added Vol: 0 0 0 0 0 0 111 0 0 285 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 75 0 35 0 0 0 907 67 42 1345 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 75 0 35 0 0 0 907 67 42 1345 0  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 75 0 35 0 0 0 907 67 42 1345 0  
RTOR Reduct: 0 0 35 0 0 0 0 0 0 0 0  
RTOR Vol: 75 0 0 0 0 0 0 907 0 42 1345 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 75 0 0 0 0 0 907 0 42 1345 0  
\*\*\*\*\*

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 2.00 1.00 1.00 2.00 0.00  
Final Sat.: 1650 0 1650 0 0 0 0 3300 1650 1650 3300 0  
\*\*\*\*\*  
Capacity Analysis Module:  
Vol/Sat: 0.05 0.00 0.00 0.00 0.00 0.00 0.00 0.27 0.00 0.03 0.41 0.00  
Crit Volume: 75 0 0 0 0 0 0 673  
Crit Moves: \*\*\*\*  
\*\*\*\*\*

Antioch Walmart Expansion  
Near Term + Project AM

Level of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #8 Lone Tree Way/Deer Valley Rd  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap.(X): 0.725  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 83 Level Of Service: C  
\*\*\*\*\*  
Street Name: Deer Valley Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Protected Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 2 0 1 0 2 0 1 0 1 0 2 0 1 1 0 2 0 1  
\*\*\*\*\*

Volume Module:  
Base Vol: 279 245 111 353 457 17 35 644 157 185 833 185  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 279 245 111 353 457 17 35 644 157 185 833 185  
Added Vol: 111 72 164 17 7 0 0 69 42 155 174 60  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 390 317 275 370 464 17 35 713 199 340 1007 245  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 390 317 275 370 464 17 35 713 199 340 1007 245  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 390 317 275 370 464 17 35 713 199 340 1007 245  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 199 0 204  
RTOR Vol: 390 317 275 370 464 17 35 713 0 340 1007 42  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 390 317 275 370 464 17 35 713 0 340 1007 42  
\*\*\*\*\*

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 2.00 1.07 0.93 2.00 1.93 0.07 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 3000 1767 1533 3000 3183 117 1650 3300 1650 1650 3300 1650  
\*\*\*\*\*  
Capacity Analysis Module:  
Vol/Sat: 0.13 0.18 0.18 0.12 0.15 0.15 0.02 0.22 0.00 0.21 0.31 0.03  
Crit Volume: 296 185 357 340  
Crit Moves: \*\*\*\*  
\*\*\*\*\*

Antioch Walmart Expansion  
Near Term + Project AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #9 Lone Tree Way/Deer Valley HS  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap.(X): 0.561  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 42 Level Of Service: A

Street Name: Deer Valley HS Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 1 0 1 1 0 1 0 1 0 2 0 1

Volume Module:  
Base Vol: 149 0 58 21 1 29 116 761 130 91 1008 61  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 149 0 58 21 1 29 116 761 130 91 1008 61  
Added Vol: 0 0 0 0 0 0 0 250 0 0 390 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 149 0 58 21 1 29 116 1011 130 91 1398 61  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 149 0 58 21 1 29 116 1011 130 91 1398 61  
Reduced Vol: 0 0 0 0 0 0 0 0  
Reduced Vol: 149 0 58 21 1 29 116 1011 130 91 1398 61  
RTOR Reduct: 0 0 0 0 0 0 0 0  
RTOR Vol: 149 0 58 21 1 0 116 1011 130 91 1398 40  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 149 0 58 21 1 0 116 1011 130 91 1398 40

Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.00 1.00 1.00 1.00 1.00 1.77 0.23  
Final Sat.: 1720 0 1720 1720 1720 1720 3048 392 1720 3440 1720

Capacity Analysis Module:  
Vol/Sat: 0.09 0.00 0.03 0.01 0.00 0.00 0.07 0.33 0.33 0.05 0.41 0.02  
Crit Volume: 149 1 116 699  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term + Project AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #10 Lone Tree Way/Sagebrush Drive  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap.(X): 0.466  
Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 27 Level Of Service: A

Street Name: Sagebrush Drive Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Permitted Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 0 0 0 0 0 2 0 1 1 0 2 0 0

Volume Module:  
Base Vol: 104 0 78 0 0 0 0 681 219 198 916 0  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 104 0 78 0 0 0 0 681 219 198 916 0  
Added Vol: 0 0 1 0 0 0 0 250 0 0 390 0  
PasserByVol: 0 0 0 0 0 0 0 0  
Initial Fut: 104 0 79 0 0 0 0 931 219 200 1306 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 104 0 79 0 0 0 0 931 219 200 1306 0  
Reduced Vol: 0 0 0 0 0 0 0 0  
Reduced Vol: 104 0 79 0 0 0 0 931 219 200 1306 0  
RTOR Reduct: 0 0 0 0 0 0 0 0  
RTOR Vol: 104 0 0 0 0 0 0 931 115 200 1306 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 104 0 0 0 0 0 0 931 115 200 1306 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 2.00 1.00  
Final Sat.: 1650 0 1650 0 0 0 0 3300 1650 1650 3300 0

Capacity Analysis Module:  
Vol/Sat: 0.06 0.00 0.00 0.00 0.00 0.00 0.00 0.28 0.07 0.12 0.40 0.00  
Crit Volume: 104 0 466 200  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term + Project AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #11 Lone Tree Way/Williamson Ranch Plaza (OSH)  
\*\*\*\*\*  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.492  
Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 28 Level Of Service: A

Street Name: Williamson Ranch Plaza (OSH) Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Permitted Protected Protected Permitted  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 0 0 0 0 1 0 0 0 1 0 2 0 0 0 2 0 1

Volume Module:  
Base Vol: 0 0 0 11 0 40 55 689 0 0 1029 20  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 0 0 0 11 0 40 55 689 0 0 1029 20  
Added Vol: 0 0 0 15 0 6 23 228 0 0 386 36  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 0 0 0 26 0 46 78 917 0 0 1415 56  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 0 0 0 26 0 46 78 917 0 0 1415 56  
Reduc Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 0 0 0 26 0 46 78 917 0 0 1415 56  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 0 0 0 26 0 46 78 917 0 0 1415 30  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 0 0 0 26 0 46 78 917 0 0 1415 30

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 0.00 0.00 0.00 1.00 0.00 1.00 1.00 2.00 0.00 0.00 2.00 1.00  
Final Sat.: 0 0 0 1650 0 1650 1650 3300 0 0 3300 1650

Capacity Analysis Module:  
Vol/Sat: 0.00 0.00 0.00 0.02 0.00 0.00 0.05 0.28 0.00 0.00 0.43 0.02  
Crit Volume: 26  
Crit Moves: \*\*\*\*\*  
\*\*\*\*\*

Antioch Walmart Expansion  
Near Term + Project AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #12 Lone Tree Way/Indian Hill Dr/Williamson Ranch Plaza (Wal-Mart, OSH)  
\*\*\*\*\*  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.571  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 53 Level Of Service: A

Street Name: Indian Hill Dr/Williamson Ranch Pl Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Split Phase Split Phase Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 2 0 0 1 0 2 0 1 1 0 2 0 1

Volume Module:  
Base Vol: 9 15 58 20 1 21 45 574 5 25 1116 34  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 9 15 58 20 1 21 45 574 5 25 1116 34  
Added Vol: 0 2 4 45 2 31 10 233 0 2 391 14  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 9 17 62 65 3 52 55 807 5 27 1507 48  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 9 17 62 65 3 52 55 807 5 27 1507 48  
Reduc Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 9 17 62 65 3 52 55 807 5 27 1507 48  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 9 17 62 65 3 52 55 807 5 27 1507 12  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 9 17 62 65 3 52 55 807 5 27 1507 12

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.22 0.78 2.00 0.05 0.95 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 1650 355 1295 3000 90 1560 1650 3300 1650 1650 3300 1650

Capacity Analysis Module:  
Vol/Sat: 0.01 0.05 0.05 0.02 0.03 0.03 0.03 0.24 0.00 0.02 0.46 0.01  
Crit Volume: 79  
Crit Moves: \*\*\*\*\*  
\*\*\*\*\*





Antioch Walmart Expansion  
Near Term + Project AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #17 Lone Tree Way/Canada Valley Road  
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.526  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 48 Level Of Service: A

Street Name: Canada Valley Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected Protected  
Rights: Include Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 2 0 0 1 1 0 1 0 1 2 0 3 0 1 2 0 3 0 1

Volume Module:  
Base Vol: 36 14 51 190 31 34 29 746 52 166 1005 168  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 36 14 51 190 31 34 29 746 52 166 1005 168  
Added Vol: 8 5 4 193 14 86 34 263 12 12 290 86  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 44 19 55 383 45 120 63 1009 64 178 1295 254  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 44 19 55 383 45 120 63 1009 64 178 1295 254  
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 44 19 55 383 45 120 63 1009 64 178 1295 254  
RTOR Reduct: 0 0 55 0 0 35 0 0 24 0 0 254  
RTOR Vol: 44 19 0 383 45 85 63 1009 40 178 1295 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 44 19 0 383 45 85 63 1009 40 178 1295 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 0.91 1.00 1.00  
Lanes: 2.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.00 3.00 1.00  
Final Sat.: 3000 1650 1500 1650 1650 1650 3000 4950 1650 3000 4950 1650

Capacity Analysis Module:  
Vol/Sat: 0.01 0.01 0.00 0.23 0.03 0.05 0.02 0.20 0.02 0.06 0.26 0.00  
Crit Volume: 19 383 32 432  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term + Project AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #18 Lone Tree Way/SB SR-4 Bypass  
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.533  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 68 Level Of Service: A

Street Name: SB SR-4 Bypass Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Protected Permitted Protected  
Rights: Include Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 0 0 0 0 1 1 0 0 1 0 0 3 0 1 2 0 3 0 0

Volume Module:  
Base Vol: 0 0 0 287 6 353 0 571 401 72 1000 0  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 0 0 0 287 6 353 0 571 401 72 1000 0  
Added Vol: 0 0 0 48 0 96 0 391 68 107 292 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 0 0 0 335 6 449 0 962 469 179 1292 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 0 0 0 335 6 449 0 962 469 179 1292 0  
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 0 0 0 335 6 449 0 962 469 179 1292 0  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 0 0 0 335 6 449 0 962 469 179 1292 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 0 0 0 335 6 449 0 962 469 179 1292 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 0.91 1.00 1.00  
Lanes: 0.00 0.00 0.00 1.96 0.04 1.00 0.00 3.00 1.00 2.00 3.00 0.00  
Final Sat.: 0 0 0 2947 58 1650 0 4950 1650 3000 4950 0

Capacity Analysis Module:  
Vol/Sat: 0.00 0.00 0.00 0.11 0.10 0.27 0.00 0.19 0.28 0.06 0.26 0.00  
Crit Volume: 0 449 321 431  
Crit Moves: \*\*\*\*



Antioch Walmart Expansion  
Near Term + Project AM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #21 Hillcrest Ave/Prewett Ranch Dr

Cycle (sec): 100 Critical Vol./Cap.(X): 0.165  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 22 Level Of Service: A

Street Name: Hillcrest Ave Prewett Dr  
Approach: North Bound South Bound East Bound West Bound

Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected											
Rights:	Include											
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	1	0	1	0	1	0	1	0

Volume Module:	0	0	13	0	111	116	40	0	0	39	10
Base Vol:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Adj:	0	0	13	0	111	116	40	0	0	39	10
Initial Bse:	1	139	0	0	62	3	4	0	1	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	1	139	0	13	62	114	120	40	1	0	39
Initial Fut:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1	139	0	13	62	114	120	40	1	0	39
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	1	139	0	13	62	114	120	40	1	0	39
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduct:	1	139	0	13	62	114	120	40	1	0	39
RTOR Vol:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	1	139	0	13	62	114	120	40	1	0	39

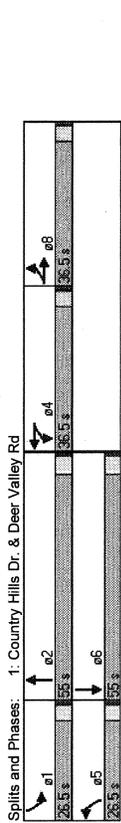
Saturation Flow Module:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Sat/Lane:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adjustment:	1.00	2.00	0.00	1.00	1.00	1.00	1.00	0.98	0.02	1.00	0.80
Lanes:	1720	3440	0	1720	1720	1720	1678	42	1720	1369	351

Capacity Analysis Module:  
Vol/Sat: 0.00 0.04 0.00 0.01 0.04 0.07 0.07 0.02 0.02 0.00 0.03 0.03  
Crit Volume: 1 114 120 49  
Crit Moves: \*\*\*\*

1: Country Hills Dr. & Deer Valley Rd  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

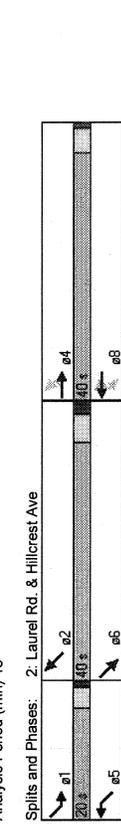
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1822	0	1770	1724	0	1770	3400	0	1770	3384
Satd. Flow (prot)	0.980	0.980	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950
Flt Permitted	1765	1822	0	1770	1724	0	1749	3400	0	1734	3384
Satd. Flow (perm)	5	5	0	24	24	0	18	18	0	19	19
Satd. Flow (RTOR)	75	63	11	160	156	125	10	490	105	77	801
Volume (vph)	90	83	0	205	380	0	12	892	0	93	1185
Lane Group Flow (vph)	Split		Split		Split		Split		Prot		Prot
Turn Type	8		4		4		5		2		1
Protected Phases	8		4		4		5		2		1
Permitted Phases	36.5		36.5		36.5		0.0		26.5		55.0
Total Split (s)	12.0		12.0		12.0		26.9		8.0		41.8
Act Effct Green (s)	0.12		0.12		0.27		0.27		0.08		0.42
Actuated g/C Ratio	0.43		0.40		0.43		0.74		0.09		0.48
v/c Ratio	52.4		48.0		36.8		43.5		54.0		26.3
Control Delay	0.0		0.0		0.0		0.0		0.0		0.0
Queue Delay	0.0		0.0		0.0		0.0		0.0		0.0
Total Delay	52.4		49.0		36.8		43.5		54.0		26.3
LOS	D		D		D		D		C		D
Approach Delay	50.7		40.7		40.7		26.7		27.1		27.1
Approach LOS	D		D		D		C		C		C
Queue Length 50th (ft)	54		50		105		190		7		163
Queue Length 95th (ft)	110		105		179		300		29		278
Internal Link Dist (ft)	308		274		274		880		113		466
Turn Bay Length (ft)	145		511		575		576		110		175
Base Capacity (vph)	492		511		575		576		353		1665
Starvation Cap Reductn	0		0		0		0		0		0
Spillback Cap Reductn	0		0		0		0		0		0
Storage Cap Reductn	0		0		0		0		0		0
Reduced v/c Ratio	0.18		0.17		0.36		0.63		0.03		0.42
Intersection Summary											
Cycle Length	154.5										
Actuated Cycle Length	99.3										
Control Type	Actuated-Uncoordinated										
Maximum v/c Ratio	0.74										
Intersection Signal Delay	31.4										
Intersection Capacity Utilization	66.1%										
Analysis Period (min)	15										
Intersection LOS	C										
ICU Level of Service	C										



2: Laurel Rd. & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1636	0	1770	1863	1583	1770	3442	0	1770	3490
Satd. Flow (prot)	0.767	0.767	0	0.530	0.530	0.530	0.530	0.530	0	0.530	0.530
Flt Permitted	1312	1636	0	973	1863	1557	1767	3442	0	1750	3490
Satd. Flow (perm)	121	121	0	199	199	199	21	21	0	10	10
Satd. Flow (RTOR)	150	50	105	68	67	173	87	488	80	70	474
Volume (vph)	208	215	0	78	77	193	100	653	0	92	677
Lane Group Flow (vph)	Split		Split		Split		Split		Prot		Prot
Turn Type	4		8		8		6		1		5
Protected Phases	4		8		8		6		1		5
Permitted Phases	40.0		40.0		40.0		20.0		40.0		20.0
Total Split (s)	22.3		22.3		22.3		11.7		59.4		11.3
Act Effct Green (s)	0.22		0.22		0.22		0.12		0.55		0.11
Actuated g/C Ratio	0.71		0.47		0.36		0.19		0.40		0.46
v/c Ratio	48.3		16.9		35.2		30.0		6.4		48.3
Control Delay	0.0		0.0		0.0		0.0		0.0		0.0
Queue Delay	0.0		0.0		0.0		0.0		0.0		0.0
Total Delay	48.3		16.9		35.2		30.0		6.4		48.3
LOS	D		B		D		C		A		D
Approach Delay	32.3		17.9		17.9		17.4		17.4		17.4
Approach LOS	C		B		B		B		B		B
Queue Length 50th (ft)	125		50		43		41		0		60
Queue Length 95th (ft)	137		66		74		68		45		104
Internal Link Dist (ft)	468		468		115		115		175		155
Turn Bay Length (ft)	75		468		175		175		155		150
Base Capacity (vph)	465		682		360		689		701		301
Starvation Cap Reductn	0		0		0		0		0		0
Spillback Cap Reductn	0		0		0		0		0		0
Storage Cap Reductn	0		0		0		0		0		0
Reduced v/c Ratio	0.43		0.32		0.22		0.11		0.28		0.33
Intersection Summary											
Cycle Length	100										
Actuated Cycle Length	100										
Offset	26 (26%), Referenced to Phase 2.NM/T and 6.SET. Start of Yellow										
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	0.71										
Intersection Signal Delay	20.2										
Intersection Capacity Utilization	58.8%										
Analysis Period (min)	15										
Intersection LOS	C										
ICU Level of Service	B										

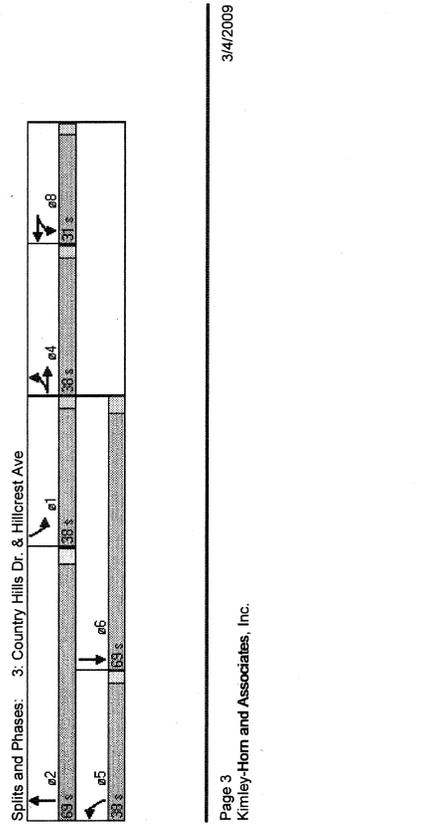


3: Country Hills Dr. & Hillcrest Ave  
Antioch Walmart Expansion

4: Northeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Total Lost Time (s)	1770	1633	0	1770	1662	0	1770	3486	0	1770	3510	
Satd. Flow (prot)	0.950	0	0.950	0	0.950	0	0.950	0	0.950	0	0.950	
Fit Permitted	1770	1633	0	1770	1662	0	1770	3486	0	1770	3510	
Satd. Flow (perm)	51	51	0	36	36	0	6	6	0	6	6	
Satd. Flow (RTOR)	44	77	152	89	93	137	83	398	33	74	564	
Volume (vph)	58	301	0	133	343	0	106	552	0	81	649	
Lane Group Flow (vph)	Split		Split		Prot		Prot		Prot		Prot	
Turn Type	4		4		8		8		5		2	
Protected Phases	4		4		8		8		5		2	
Permitted Phases	E		E		F		F		C		C	
Total Split (s)	38.0	38.0	0.0	31.0	31.0	0.0	38.0	69.0	0.0	38.0	69.0	
Act Effort Green (s)	28.4	28.4	0.0	28.2	28.2	0.0	14.7	66.4	0.0	14.7	66.4	
Actuated v/c Ratio	0.19	0.19	0.00	0.19	0.18	0.00	0.10	0.44	0.00	0.10	0.44	
v/c Ratio	0.17	0.86	0.00	0.40	1.00	0.00	0.61	0.36	0.00	0.47	0.42	
Control Delay	52.2	71.6	0.00	58.8	103.0	0.00	81.0	29.4	0.00	73.8	30.7	
Queue Delay	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.0	
Total Delay	52.2	71.6	0.00	58.8	103.0	0.00	81.0	29.4	0.00	73.8	30.7	
LOS	D		E		E		F		C		C	
Approach Delay	68.4		91.0		37.7		35.4		D		D	
Approach LOS	E		F		D		D		D		D	
Queue Length 50th (ft)	48	242	0	117	326	0	102	187	0	77	229	
Queue Length 95th (ft)	79	293	0	145	435	0	148	223	0	138	318	
Internal Link Dist (ft)	266		283		1668		1140		190		1558	
Turn Bay Length (ft)	120	406	0	90	342	0	155	1550	0	366	1558	
Base Capacity (vph)	0	0	0	333	342	0	366	1550	0	366	1558	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.74	0.00	0.40	1.00	0.00	0.29	0.36	0.00	0.22	0.42	
Intersection Summary												
Cycle Length	176											
Actuated Cycle Length	149.6											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	1.00											
Intersection Signal Delay	53.3											
Intersection LOS	D											
Intersection Capacity Utilization	56.9%											
Analysis Period (min)	15											
ICU Level of Service	B											
ICU Level of Service	B											
Volume exceeds capacity, queue is theoretically infinite.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
Queue shown is maximum after two cycles.												



Near-Term + Project  
AM Peak

Movement	EBL	EBR	NBL	NBR	SBL	SBR
Lane Configurations	Stop	Free	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%
Grade	4	10	0	503	802	12
Volume (veh/h)	0.63	0.63	0.84	0.84	0.87	0.87
Peak Hour Factor	6	16	0	599	922	14
Hourly flow rate (vph)						
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	592					
pX, platoon unblocked	0.81	0.81	0.81	0.81	0.81	0.81
v/c, conflicting volume	1221	922	936			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	1272	904	921			
IC, 1 stage (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
P0 queue free %	95	93	100			
ch capacity (veh/h)	129	227	599			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	16	299	299	922	14	
Volume Left	0	0	0	0	0	
Volume Right	16	0	0	0	14	
CSH	227	1700	1700	1700	1700	
Volume to Capacity	0.07	0.18	0.18	0.54	0.01	
Queue Length 95th (ft)	6	0	0	0	0	
Control Delay (s)	22.0	0.0	0.0	0.0	0.0	
Lane LOS	C					
Approach Delay (s)	Err 0.0					
Approach LOS	F					
Intersection Summary						
Average Delay	Err					
Intersection Capacity Utilization	Err%					
Analysis Period (min)	15					
ICU Level of Service	H					

5: Southeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

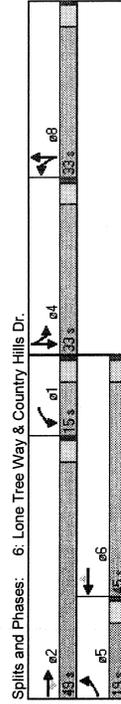
Near-Term + Project  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations											
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	60	0	0	0	6	0	511	27	0	887
Peak Hour Factor	0.88	0.88	0.88	0.63	0.63	0.82	0.82	0.82	0.82	0.89	0.89
Hourly flow rate (vph)	0	68	0	0	0	10	0	623	33	0	783
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type	None	None	None	None	None	None	None	None	None	None	None
Median storage (veh)											
Upstream signal (ft)											
pX platoon unblocked											
vC1, conflicting volume	1163	1498	319	952	1523	312	900				656
vC2, stage 1 cont vol											
vCu, unblocked vol	1163	1498	319	952	1523	312	900				656
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1				4.1
tC, 2 stage (s)											
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2
p0 queue free %	100	100	90	100	100	99	100				100
GM capacity (veh/h)	148	121	678	192	117	684	751				927
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	68	10	312	312	33	313	313	273			
Volume Left	0	0	0	0	0	0	0	0			
Volume Right	68	10	0	0	33	0	6	117			
CSH	676	684	1700	1700	1700	1700	1700	1700			
Volume to Capacity	0.10	0.01	0.18	0.18	0.02	0.18	0.18	0.16			
Queue Length 95th (ft)	8	1	0	0	0	0	0	0			
Control Delay (s)	10.9	10.3	0.0	0.0	0.0	0.0	0.0	0.0			
Lane LOS	B	B	A	A	A	A	A	A			
Approach Delay (s)	10.9	10.3	0.0	0.0	0.0	0.0	0.0	0.0			
Approach LOS	B	B	A	A	A	A	A	A			
Intersection Summary											
Average Delay	0.5										
Intersection Capacity Utilization	26.2%										
Analysis Period (min)	15										
ICU Level of Service	A										

6: Lone Tree Way & Country Hills Dr.  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1684	0	1770	1651
Flt. Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0	0.950	0
Satd. Flow (perm)	1759	3539	1125	1648	3539	1486	1770	1684	0	1770	1651
Volume (vph)	96	844	39	99	1307	98	125	81	143	37	64
Lane Group Flow (vph)	112	981	45	106	1405	105	167	299	0	43	247
Turn Type	Prot	Perm	Prot	Prot	Perm	Prot	Split	Split	Split	Split	Split
Protected Phases	5	2	1	6	6	6	6	6	6	4	4
Permitted Phases	6										
Total Split (s)	19.0	49.0	15.0	45.0	45.0	33.0	33.0	33.0	0.0	33.0	33.0
Act Effect Green (s)	14.6	60.9	12.0	58.3	58.3	24.8	24.8	24.8	0.0	20.3	20.3
Actuated v/c Ratio	0.11	0.47	0.07	0.69	0.48	0.45	0.18	0.19	0.16	0.16	0.16
v/c Ratio	0.57	0.59	0.08	0.65	0.88	0.15	0.49	0.50	0.16	0.16	0.16
Control Delay	65.7	29.6	18.5	61.9	32.3	14.1	51.0	55.0	45.7	47.9	47.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.7	29.6	18.5	61.9	32.3	14.1	51.0	55.0	45.7	47.9	47.9
LOS	E	C	B	E	C	B	D	D	D	D	D
Approach Delay	32.7										
Approach LOS	C										
Queue Length 50th (ft)	90	316	14	86	356	12	126	192	32	134	134
Queue Length 95th (ft)	146	441	43	161	693	20	153	217	60	197	197
Internal Link Dist. (ft)	145	1420	75	145	740	75	170	709	120	577	577
Turn Bay Length (ft)	223	1858	535	163	1588	680	411	440	408	446	446
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.59	0.08	0.65	0.88	0.15	0.41	0.68	0.11	0.55	0.55
Intersection Summary											
Cycle Length	130										
Actuated Cycle Length	130										
Offset	74 (57%), Referenced to phase 2 EBT and 6 WBT, Start of Yellow										
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	0.88										
Intersection Signal Delay	36.9										
Intersection Capacity Utilization	74.2%										
Analysis Period (min)	15										
ICU Level of Service	D										
# 95th percentile volume exceeds capacity, queue may be longer.											
Queue shown is maximum after two cycles.											



Splits and Phases: 6: Lone Tree Way & Country Hills Dr.

7: Lone Tree Way & Deer Valley Plaza  
Antioch Walmart Expansion

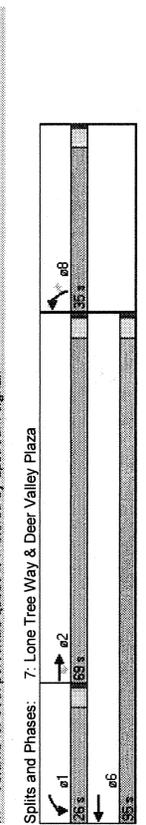
8: Lone Tree Way & Deer Valley Rd  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

Near-Term + Project  
AM Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1333	1723	3539	1770	1583
Volume (vph)	1043	67	42	1346	75	35
Lane Group Flow (vph)	1146	74	48	1530	82	38
Turn Type	Perm	Prot	Perm	Prot	Perm	Prot
Protected Phases	2	1	6	8	8	8
Permitted Phases	2	2	6	6	6	6
Total Split (s)	69.0	26.0	95.0	35.0	35.0	35.0
Act Effct Green (s)	103.0	103.0	105.0	114.4	12.4	12.4
Actuated g/C Ratio	0.79	0.79	0.88	0.88	0.10	0.10
v/c Ratio	0.41	0.07	0.34	0.49	0.49	0.21
Control Delay	1.0	0.2	66.5	2.0	64.8	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	0.2	66.5	2.0	64.8	18.1
LOS	A	A	E	A	E	B
Approach Delay	0.9	0.9	3.8	50.0	50.0	50.0
Approach LOS	A	A	A	D	D	D
Queue Length 50th (ft)	22	0	43	10	67	0
Queue Length 95th (ft)	24	m0	m0	53	117	34
Internal Link Dist (ft)	740	100	200	850	704	95
Turn Bay Length (ft)	2803	1063	313	3115	436	418
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.07	0.15	0.49	0.19	0.09

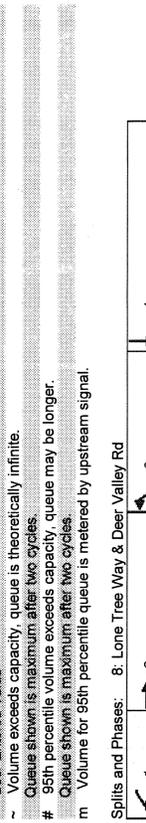
Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 90 (69%); Referenced to phase 2:EBT and 6:WBT. Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.49  
Intersection Signal Delay: 4.5  
Intersection Capacity Utilization: 48.0%  
Analysis Period (min): 15  
m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 7: Lone Tree Way & Deer Valley Plaza

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3211	0	2000	3516	0
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0
Satd. Flow (perm)	1767	3539	1413	1736	3539	1537	3352	3211	0	3387	3516	0
Volume (vph)	35	783	265	367	1008	245	390	317	275	407	528	17
Lane Group Flow (vph)	43	967	327	395	1054	293	433	659	0	457	612	0
Turn Type	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Prot
Protected Phases	5	2	1	6	3	8	3	8	7	4	4	4
Permitted Phases	5	2	2	6	6	6	6	6	6	6	6	6
Total Split (s)	17.0	37.0	37.0	20.0	40.0	40.0	30.0	32.0	0.0	41.0	43.0	0.0
Act Effct Green (s)	10.1	34.0	34.0	23.4	49.3	49.3	22.5	26.1	0.0	34.6	38.2	0.0
Actuated g/C Ratio	0.68	0.26	0.26	0.18	0.38	0.38	0.17	0.20	0.0	0.27	0.29	0.0
v/c Ratio	0.31	1.04	1.04	0.54	1.24	1.24	0.35	0.73	0.66	0.86	0.69	0.0
Control Delay	71.2	90.4	90.4	185.3	36.4	36.4	58.2	49.5	0.0	61.7	41.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.2	90.4	90.4	185.3	30.4	30.4	58.2	49.5	0.0	61.7	41.3	0.0
LOS	E	F	F	B	C	C	A	E	D	E	D	D
Approach Delay	72.3	72.3	72.3	57.2	57.2	57.2	53.0	53.0	0.0	50.0	50.0	0.0
Approach LOS	E	E	E	E	E	E	D	D	D	D	D	D
Queue Length 50th (ft)	37	~442	43	~451	481	481	179	218	0.0	185	222	0.0
Queue Length 95th (ft)	71	#509	167	#614	#672	#672	228	288	0.0	245	283	0.0
Internal Link Dist (ft)	850	850	850	1680	1680	1680	825	825	0.0	420	420	0.0
Turn Bay Length (ft)	195	400	400	500	500	500	180	180	0.0	495	495	0.0
Base Capacity (vph)	181	926	926	318	1342	1342	746	713	858	585	1104	0.0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	1.04	1.04	0.54	1.24	1.24	0.35	0.61	0.79	0.78	0.65	0.0

Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 54 (42%); Referenced to phase 2:EBT and 6:WBT. Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 1.24  
Intersection Signal Delay: 58.7  
Intersection Capacity Utilization: 88.2%  
Analysis Period (min): 15  
User Entered Value  
m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 8: Lone Tree Way & Deer Valley Rd



11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

10: Lone Tree Way & Sagebrush Dr.  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

Lane Group	EBL	WBL	WBR	SBL	EBL	WBL	WBR	SBL
Lane Configurations	EB	WB	WB	SB	EB	WB	WB	SB
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	3539	1583	1770	3539	3539	1583
Flt Permitted	0.950				0.950			
Satd. Flow (perm)	1766	3539	3539	1504	1770	3539	3539	1550
Satd. Flow (RTOR)	65				65			
Volume (vph)	78	1023	1442	56	26	46		
Lane Group Flow (vph)	101	1329	1849	72	37	65		
Turn Type	Prot				Perm			
Protected Phases	2	6	6	4				
Permitted Phases					6	4		
Total Split (s)	25.0	85.0	60.0	60.0	45.0	45.0		
Act Erct Green (s)	11.7	115.3	100.0	100.0	11.3	11.3		
Actuated g/C Ratio	0.09	0.89	0.77	0.77	0.09	0.09		
v/c Ratio	0.64	0.42	0.68	0.06	0.24	0.33		
Control Delay	76.0	5.0	11.0	0.1	55.9	15.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	76.0	5.0	11.0	0.1	55.9	15.6		
LOS	E	A	B	A	E	B		
Approach Delay	10.0	10.6		30.2				
Approach LOS	B	B		C				
Queue Length 50th (ft)	76	127	50	0	31	0		
Queue Length 95th (ft)	101	196	239	m1	45	22		
Internal Link Dist (ft)		1855	620		406			
Turn Bay Length (ft)	155			115				
Base Capacity (vph)	300	3138	2721	1161	572	645		
Starvation Cap Reductn	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.34	0.42	0.68	0.06	0.06	0.12		

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 115 (88%), Referenced to phase 2, EBT and 6, WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.68  
 Intersection Signal Delay: 11.0  
 Intersection Capacity Utilization: 62.1%  
 Analysis Period (min): 15  
 ICU Level of Service: B

Volume for 95th percentile queue is metered by upstream signal

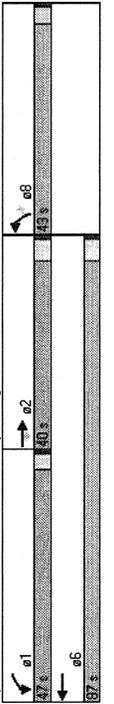


Splits and Phases: 11: Lone Tree Way & Williamson Ranch Plaza

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	EB	EB	WB	WB	NB	NB
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3539	1482	1764	3539	1715	1559
Satd. Flow (RTOR)	65				123	
Volume (vph)	1038	219	200	1333	104	79
Lane Group Flow (vph)	1281	270	233	1550	162	123
Turn Type	Perm	Prot			Perm	
Protected Phases	2	1	6	8		
Permitted Phases					8	
Total Split (s)	40.0	40.0	47.0	87.0	43.0	43.0
Act Erct Green (s)	79.9	79.9	24.3	107.3	16.7	16.7
Actuated g/C Ratio	0.61	0.61	0.19	0.83	0.13	0.13
v/c Ratio	0.59	0.29	0.70	0.53	0.71	0.40
Control Delay	6.3	1.5	68.6	2.2	70.5	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	1.5	68.6	2.2	70.5	11.7
LOS	A	A	E	A	E	B
Approach Delay	5.5		10.8	45.1		
Approach LOS	A		B	D		
Queue Length 50th (ft)	37	0	188	32	134	0
Queue Length 95th (ft)	135	2	206	28	133	12
Internal Link Dist (ft)	605		1855	497		
Turn Bay Length (ft)	80	600		115		
Base Capacity (vph)	2176	936	599	2920	545	565
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.29	0.39	0.53	0.30	0.22

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 40 (31%), Referenced to phase 2, EBT and 6, WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 11.2  
 Intersection Capacity Utilization: 56.5%  
 Analysis Period (min): 15  
 ICU Level of Service: B

Volume for 95th percentile queue is metered by upstream signal



Splits and Phases: 10: Lone Tree Way & Sagebrush Dr.

12: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

13: Lone Tree Way & Wal-Mart Driveway  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Volume (veh/h)	1763	3539	1286	1713	3539	1455	1764	1645	0	3433	1574
Hourly Flow Rate (vph)	70	899	5	27	1535	48	9	17	62	65	3
Peak Hour Factor	0.82	0.82	0.85	0.85	0.85	0.42	0.42	0.85	0.85	0.42	0.42
Pedestrians	0	1301	1826	92	0	12					
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type											
Median storage (veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume											
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCU, unblocked vol											
IC, single (s)											
IC, 2 stage (s)											
IF (s)											
P0 queue free %											
ch capacity (veh/h)											
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	SB 1	SB 2	SB 3	SB 4	SB 5
Volume Total	651	651	609	609	609	609	92	12			
Volume Left	0	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0	0	0	0
CSH	1700	1700	1700	1700	1700	1700	1700	839			
Volume to Capacity	0.38	0.38	0.36	0.36	0.36	0.36	0.05	0.01			
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A	A	A	A	A	A	A	A	A	A
Approach LOS											
Intersection Summary											
Average Delay	0.0										
Intersection Capacity Utilization	40.0%										
Analysis Period (min)	15										
ICU Level of Service	A										

Near-Term + Project  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Volume (veh/h)	1770	3539	1583	1770	3539	1583	1770	1645	0	3433	1574
Hourly Flow Rate (vph)	70	899	5	27	1535	48	9	17	62	65	3
Peak Hour Factor	0.82	0.82	0.85	0.85	0.85	0.42	0.42	0.85	0.85	0.42	0.42
Pedestrians	0	1301	1826	92	0	12					
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type											
Median storage (veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume											
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCU, unblocked vol											
IC, single (s)											
IC, 2 stage (s)											
IF (s)											
P0 queue free %											
ch capacity (veh/h)											
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	SB 1	SB 2	SB 3	SB 4	SB 5
Volume Total	651	651	609	609	609	609	92	12			
Volume Left	0	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0	0	0	0
CSH	1700	1700	1700	1700	1700	1700	1700	839			
Volume to Capacity	0.38	0.38	0.36	0.36	0.36	0.36	0.05	0.01			
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A	A	A	A	A	A	A	A	A	A
Approach LOS											
Intersection Summary											
Average Delay	0.0										
Intersection Capacity Utilization	40.0%										
Analysis Period (min)	15										
ICU Level of Service	A										

Near-Term + Project  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Volume (veh/h)	1770	3539	1583	1770	3539	1583	1770	1645	0	3433	1574
Hourly Flow Rate (vph)	70	899	5	27	1535	48	9	17	62	65	3
Peak Hour Factor	0.82	0.82	0.85	0.85	0.85	0.42	0.42	0.85	0.85	0.42	0.42
Pedestrians	0	1301	1826	92	0	12					
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type											
Median storage (veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume											
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCU, unblocked vol											
IC, single (s)											
IC, 2 stage (s)											
IF (s)											
P0 queue free %											
ch capacity (veh/h)											
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	SB 1	SB 2	SB 3	SB 4	SB 5
Volume Total	651	651	609	609	609	609	92	12			
Volume Left	0	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0	0	0	0
CSH	1700	1700	1700	1700	1700	1700	1700	839			
Volume to Capacity	0.38	0.38	0.36	0.36	0.36	0.36	0.05	0.01			
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A	A	A	A	A	A	A	A	A	A
Approach LOS											
Intersection Summary											
Average Delay	0.0										
Intersection Capacity Utilization	40.0%										
Analysis Period (min)	15										
ICU Level of Service	A										

Near-Term + Project  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Volume (veh/h)	1770	3539	1583	1770	3539	1583	1770	1645	0	3433	1574
Hourly Flow Rate (vph)	70	899	5	27	1535	48	9	17	62	65	3
Peak Hour Factor	0.82	0.82	0.85	0.85	0.85	0.42	0.42	0.85	0.85	0.42	0.42
Pedestrians	0	1301	1826	92	0	12					
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type											
Median storage (veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume											
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCU, unblocked vol											
IC, single (s)											
IC, 2 stage (s)											
IF (s)											
P0 queue free %											
ch capacity (veh/h)											
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	SB 1	SB 2	SB 3	SB 4	SB 5
Volume Total	651	651	609	609	609	609	92	12			
Volume Left	0	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0	0	0	0
CSH	1700	1700	1700	1700	1700	1700	1700	839			
Volume to Capacity	0.38	0.38	0.36	0.36	0.36	0.36	0.05	0.01			
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A	A	A	A	A	A	A	A	A	A
Approach LOS											
Intersection Summary											
Average Delay	0.0										
Intersection Capacity Utilization	40.0%										
Analysis Period (min)	15										
ICU Level of Service	A										

Near-Term + Project  
AM Peak

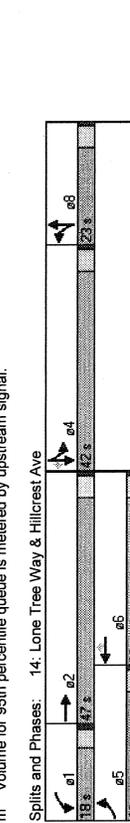
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Volume (veh/h)	1770	3539	1583	1770	3539	1583	1770	1645	0	3433	1574
Hourly Flow Rate (vph)	70	899	5	27	1535	48	9	17	62	65	3
Peak Hour Factor	0.82	0.82	0.85	0.85	0.85	0.42	0.42				

14: Lone Tree Way & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	4953	0	1770	5085	1583	1770	3297	0	1800	3539	1583
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0.950
Fit Permitted	1762	4953	0	1757	5085	1515	1760	3297	0	3396	3539	1554
Satd. Flow (perm)	24	24	0	220	220	59	59	59	0	313	313	386
Satd. Flow (RTOR)	237	717	110	47	1163	200	127	72	47	313	99	325
Volume (vph)	269	940	0	52	1278	220	159	149	0	391	124	408
Lane Group Flow (vph)	Prot	Prot	Prot	Perm	Split	Split	Split	Split	Split	Split	Split	Perm
Turn Type	5	2	2	1	6	8	8	8	8	4	4	4
Protected Phases												
Permitted Phases												
Total Split (s)	29.0	47.0	0.0	18.0	36.0	36.0	23.0	23.0	0.0	42.0	42.0	42.0
Act Effct Green (s)	24.9	56.4	0.0	10.6	40.1	40.1	18.7	18.7	0.0	34.3	34.3	34.3
Actuated g/C Ratio	0.18	0.43	0.08	0.31	0.31	0.31	0.14	0.14	0.08	0.28	0.28	0.28
v/c Ratio	0.79	0.43	0.36	0.81	0.35	0.63	0.28	0.28	0.14	0.78	0.78	0.59
Control Delay	83.0	28.5	83.8	38.6	8.5	63.5	30.7	30.7	55.3	35.5	35.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	28.5	83.8	38.6	8.5	63.5	30.7	30.7	55.3	35.5	35.5	8.0
LOS	F	C	C	E	D	A	E	C	C	E	D	A
Approach Delay	41.4	35.1	41.4	35.1	35.1	41.4	35.1	35.1	41.4	35.1	35.1	41.4
Approach LOS	D	D	D	D	D	D	D	D	D	D	D	D
Queue Length 50th (ft)	242	119	37	397	29	125	34	34	154	41	41	12
Queue Length 95th (ft)	#334	278	m75	#505	101	176	57	57	179	57	57	49
Internal Link Dist (ft)	620	420	210	890	730	195	2875	2875	400	218	218	290
Turn Bay Length (ft)	359	2164	204	1669	620	274	561	561	570	1082	1082	736
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.43	0.26	0.81	0.35	0.68	0.27	0.27	0.69	0.12	0.12	0.55

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 37.2  
 Intersection LOS: D  
 Intersection Capacity Utilization 64.2%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



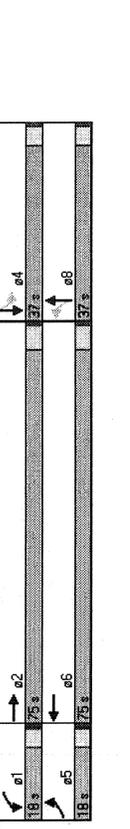
Splits and Phases: 14: Lone Tree Way & Hillcrest Ave

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	5050	0	1770	5062	0	1770	1587	0	1770	1656	0
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1770	5050	0	1770	5062	0	1090	1587	0	820	1656	0
Satd. Flow (perm)	8	8	0	5	5	0	197	197	0	98	98	0
Satd. Flow (RTOR)	23	934	39	76	1324	40	61	14	156	27	16	45
Volume (vph)	27	1131	0	81	1452	0	77	215	0	57	130	0
Lane Group Flow (vph)	Prot	Prot	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Turn Type	5	2	2	1	6	8	8	8	8	4	4	4
Protected Phases												
Permitted Phases												
Total Split (s)	18.0	75.0	0.0	18.0	75.0	0.0	37.0	37.0	0.0	37.0	37.0	0.0
Act Effct Green (s)	9.9	94.0	0.0	13.9	100.0	0.0	15.6	15.6	0.0	15.6	15.6	0.0
Actuated g/C Ratio	0.08	0.72	0.11	0.37	0.37	0.12	0.12	0.12	0.12	0.12	0.12	0.12
v/c Ratio	0.20	0.31	0.43	0.37	0.37	0.59	0.59	0.59	0.58	0.58	0.46	0.46
Control Delay	52.0	11.0	57.9	6.0	70.8	45.7	75.3	75.3	21.3	75.3	21.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	11.0	57.9	6.0	70.8	45.7	75.3	75.3	21.3	75.3	21.3	0.0
LOS	D	B	B	E	A	A	E	B	E	B	E	C
Approach Delay	11.9	8.7	11.9	8.7	8.7	11.9	8.7	8.7	11.9	8.7	8.7	11.9
Approach LOS	D	B	B	D	A	A	C	C	D	B	D	D
Queue Length 50th (ft)	20	190	71	105	63	14	46	46	26	46	26	9
Queue Length 95th (ft)	m43	257	128	127	96	54	43	43	9	43	9	9
Internal Link Dist (ft)	200	665	200	1050	786	200	100	100	614	100	100	504
Turn Bay Length (ft)	204	3653	204	215	3696	285	561	561	214	504	504	285
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.31	0.38	0.37	0.27	0.38	0.27	0.38	0.27	0.26	0.26	0.26

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 55 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.59  
 Intersection Signal Delay: 13.6  
 Intersection LOS: B  
 Intersection Capacity Utilization 58.8%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

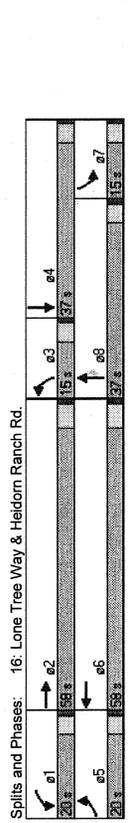


Splits and Phases: 15: Lone Tree Way & Vista Grande

16: Lone Tree Way & Heidorn Ranch Rd.  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

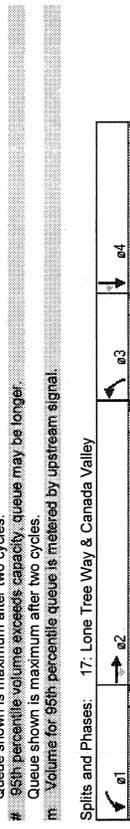
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	5050	0	1770	5079	0	3433	1863	1583	1770	1615	0
Flt Permitted	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0
Satd. Flow (perm)	1769	5050	0	1769	5079	0	3433	1863	1561	1765	1615	0
Satd. Flow (RTOR)	6	1	1	6	1	1	6	1	1	6	1	1
Volume (vph)	4	1015	43	65	1353	11	33	1	70	11	2	19
Lane Group Flow (vph)	4	1162	0	73	1532	0	77	2	163	14	27	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	1	6	1	3	8	7	4	7	4	4
Permitted Phases	20.0	58.0	0.0	20.0	58.0	0.0	15.0	37.0	37.0	15.0	37.0	0.0
Total Split (s)	8.4	88.2	0.0	13.3	99.6	0.0	10.5	16.7	16.7	9.0	12.8	0.0
Act Effct Green (s)	0.06	0.68	0.00	0.10	0.77	0.00	0.08	0.13	0.13	0.07	0.10	0.00
Actuated g/C Ratio	0.03	0.34	0.00	0.40	0.39	0.00	0.28	0.01	0.48	0.11	0.15	0.00
v/c Ratio	72.5	14.5	0.00	74.9	1.7	0.00	58.3	43.0	11.1	58.2	19.8	0.00
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	72.5	14.5	0.0	74.9	1.7	0.0	58.3	43.0	11.1	58.2	19.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	72.5	14.5	0.0	74.9	1.7	0.0	58.3	43.0	11.1	58.2	19.8	0.0
LOS	E	B	E	E	A	E	E	D	B	E	E	B
Approach Delay	14.7	5.0	0.0	26.4	0.0	0.0	26.4	0.0	0.0	32.9	0.0	0.0
Approach LOS	B	A	B	C	A	B	C	A	B	C	A	B
Queue Length 50th (ft)	4	117	0	66	25	0	31	1	0	11	2	0
Queue Length 95th (ft)	m10	416	0	107	53	0	26	4	0	29	21	0
Internal Link Dist (ft)	1080	0	0	900	0	0	972	0	0	29	316	0
Turn Bay Length (ft)	185	3428	0	400	3892	0	200	200	200	50	440	0
Base Capacity (veh)	231	3428	0	233	3892	0	317	487	529	163	440	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.34	0.00	0.31	0.39	0.00	0.24	0.00	0.31	0.09	0.06	0.00
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	55 (42%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.48											
Intersection Signal Delay	10.8											
Intersection Capacity Utilization	48.6%											
Analysis Period (min)	15											
Volume for 95th percentile queue is metered by upstream signal.												



17: Lone Tree Way & Canada Valley  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

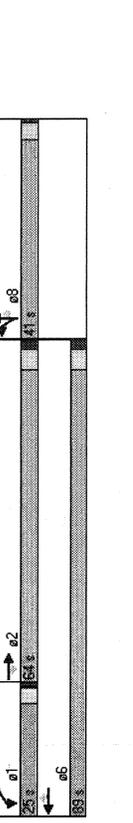
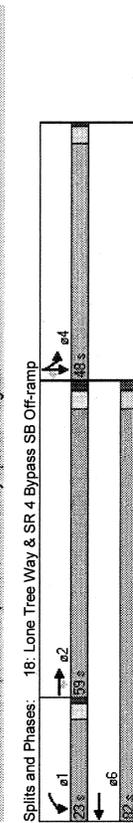
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	1623	1504	1770	1863	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3432	5085	1557	3431	5085	1558	3433	1623	1482	1767	1863	1563
Satd. Flow (RTOR)	71	277	71	71	277	71	277	47	47	277	47	152
Volume (vph)	63	1018	67	178	1295	254	44	19	55	384	45	120
Lane Group Flow (vph)	67	1063	71	200	1455	285	59	53	47	486	57	152
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	1	6	1	3	8	7	4	7	4	4
Permitted Phases	20.0	53.0	0.0	25.0	58.0	0.0	20.0	32.0	32.0	20.0	32.0	0.0
Total Split (s)	14.8	80.1	0.0	12.5	79.6	0.0	7.6	10.1	10.1	17.0	19.6	0.0
Act Effct Green (s)	0.11	0.62	0.00	0.10	0.61	0.00	0.08	0.08	0.08	0.13	0.15	0.00
Actuated g/C Ratio	0.17	0.35	0.00	0.17	0.27	0.00	0.29	0.35	0.30	0.21	0.20	0.00
v/c Ratio	37.3	5.1	0.00	73.0	8.3	0.00	62.0	36.5	18.2	538.9	48.4	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	37.3	5.1	0.0	73.0	8.3	0.0	62.0	36.5	18.2	538.9	48.4	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	37.3	5.1	0.0	73.0	8.3	0.0	62.0	36.5	18.2	538.9	48.4	10.1
LOS	D	A	A	E	A	A	E	D	B	F	D	B
Approach Delay	6.5	13.9	0.0	13.9	0.0	0.0	40.6	0.0	0.0	383.0	0.0	0.0
Approach LOS	A	B	A	B	A	B	D	A	D	F	A	F
Queue Length 50th (ft)	29	24	0	86	110	0	25	22	0	~648	44	0
Queue Length 95th (ft)	41	43	0	m114	m204	m0	39	45	23	#734	66	36
Internal Link Dist (ft)	900	0	0	775	0	0	542	0	0	1084	0	0
Turn Bay Length (ft)	320	630	0	275	245	0	150	150	150	160	231	420
Base Capacity (veh)	449	3132	985	581	3112	1061	449	383	367	231	420	470
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.35	0.07	0.34	0.47	0.27	0.13	0.14	0.13	2.10	0.14	0.32
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	37 (28%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	2.10											
Intersection Signal Delay	76.6											
Intersection Capacity Utilization	66.3%											
Analysis Period (min)	15											
Volume for 95th percentile queue is metered by upstream signal.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
m Volume for 95th percentile queue is metered by upstream signal.												



18: Lone Tree Way & SR 4 Bypass SB Off-ramp  
Antioch Walmart Expansion

19: Lone Tree Way & SR 4 By-pass NB On-ramp  
Antioch Walmart Expansion

Lane Group	EBL	EBS	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583
Flt Permitted	0	5085	1583	3433	5085	0	0	0	1681	1688	1583
Satd. Flow (perm)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583
Satd. Flow (RTOR)	0	973	469	179	1292	0	0	0	335	6	449
Volume (vph)	0	1081	521	190	1374	0	0	0	197	204	528
Lane Group Flow (vph)	0	1081	521	190	1374	0	0	0	197	204	528
Turn Type	2	1	6	2	1	6	2	1	6	2	1
Protected Phases	2	1	6	2	1	6	2	1	6	2	1
Permitted Phases	0.0	59.0	59.0	23.0	82.0	0.0	0.0	0.0	48.0	48.0	48.0
Total Split (s)	65.1	65.1	13.0	81.0	81.0	0.0	0.0	0.0	43.0	43.0	43.0
Act Erct Green (s)	0.90	0.90	0.10	0.62	0.43	0.33	0.33	0.33	0.35	0.37	0.95
Actuated g/C Ratio	0.42	0.50	0.56	0.43	0.43	0.35	0.37	0.95	0.35	0.37	0.95
v/c Ratio	26.8	7.0	62.2	12.4	12.4	34.5	34.8	65.0	0.0	0.0	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	26.8	7.0	62.2	12.4	12.4	34.5	34.8	65.0	0.0	0.0	0.0
Total Delay	26.8	7.0	62.2	12.4	12.4	34.5	34.8	65.0	0.0	0.0	0.0
LOS	C	A	E	B	B	C	C	C	C	C	E
Approach Delay	20.3	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4
Approach LOS	C	B	B	B	B	C	C	C	C	C	D
Queue Length 50th (ft)	315	113	80	251	232	128	133	389	128	133	389
Queue Length 95th (ft)	m136	m82	m112	232	760	186	192	#543	186	192	#543
Internal Link Dist (ft)	776	776	776	776	776	536	536	536	536	536	536
Turn Bay Length (ft)	315	315	175	315	315	280	280	582	280	280	582
Base Capacity (veh)	2546	1043	528	3170	3170	582	582	582	582	582	582
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.50	0.36	0.43	0.43	0.34	0.35	0.91	0.34	0.35	0.91
Intersection Summary											
Cycle Length	130										
Actuated Cycle Length	130										
Offset	72 (55%), Referenced to phase 2:EBS and 6:WBT, Start of Yellow										
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	0.95										
Intersection Signal Delay	26.8										
Intersection Capacity Utilization	59.4%										
Analysis Period (min)	15										
# 95th percentile volume exceeds capacity, queue may be longer.											
Queue shown is maximum after two cycles.											
m Volume for 95th percentile queue is metered by upstream signal.											



Splits and Phases: 18: Lone Tree Way & SR 4 Bypass SB Off-ramp

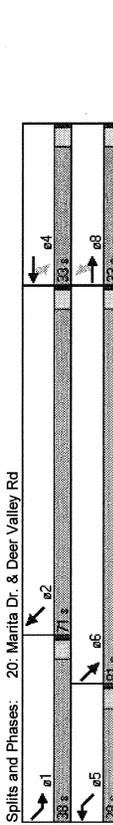
Splits and Phases: 19: Lone Tree Way & SR 4 By-pass NB On-ramp

20: Marita Dr. & Deer Valley Rd  
Antioch Walmart Expansion

21: Prewett Ranch Dr. & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term + Project  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1619	0	1770	1581	0	1770	3521	0	1770	3525	0
Satd. Flow (prot)	0.744			0.785			0.950			0.950		
Flt Permitted	1567	1519	0	1347	1561	0	1763	3521	0	1760	3525	0
Satd. Flow (perm)	29	8	21	1	1	6	137	993	24	58	985	23
Satd. Flow (RTOR)	34	34	0	3	21	0	149	1105	0	72	1244	0
Volume (vph)	Perm	8	4	Perm	4	1	6	5	2	Perm	8	4
Lane Group Flow (vph)	33.0	33.0	0.0	33.0	33.0	0.0	38.0	81.0	0.0	28.0	71.0	0.0
Protected Phases	4	4	0	4	4	0	4	4	0	4	4	0
Permitted Phases	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Total Split (s)	14.5	14.5	0.0	14.1	14.1	0.0	14.1	14.1	0.0	14.1	14.1	0.0
Act Effect Green (s)	0.29	0.29	0.0	0.28	0.28	0.0	0.28	0.28	0.0	0.28	0.28	0.0
Actuated g/C Ratio	0.38	0.09	0.0	0.14	0.14	0.0	0.14	0.14	0.0	0.14	0.14	0.0
v/c Ratio	9.8	6.8	0.0	6.3	6.3	0.0	6.3	6.3	0.0	6.3	6.3	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	9.8	6.8	0.0	6.3	6.3	0.0	6.3	6.3	0.0	6.3	6.3	0.0
Total Delay	9.8	6.8	0.0	6.3	6.3	0.0	6.3	6.3	0.0	6.3	6.3	0.0
LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Delay	9.0	9.0	0.0	6.3	6.3	0.0	6.3	6.3	0.0	6.3	6.3	0.0
Approach LOS	A	A	A	A	A	A	A	A	A	A	A	A
Queue Length 50th (ft)	8	3	0	3	3	0	3	3	0	3	3	0
Queue Length 95th (ft)	50	20	0	20	20	0	20	20	0	20	20	0
Internal Link Dist (ft)	956			816			816			816		
Turn Bay Length (ft)	100			85			85			85		
Base Capacity (vph)	661	973	0	951	951	0	951	2950	0	951	2950	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.05	0.0	0.08	0.08	0.0	0.08	0.08	0.0	0.08	0.08	0.0
Intersection Summary												
Cycle Length	114											
Actuated Cycle Length	46.4											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.38											
Intersection Signal Delay	6.6											
Intersection LOS	A											
Intersection Capacity Utilization	30.6%											
Analysis Period (min)	15											



Splits and Phases: 20: Marita Dr. & Deer Valley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1857	0	1863	1805	0	1770	3539	0	1770	3288	0
Satd. Flow (prot)	0.686			0.950			0.950			0.950		
Flt Permitted	1300	1857	0	1863	1805	0	1770	3539	0	1770	3288	0
Satd. Flow (perm)	1	1	0	11			1	139	0	13	127	114
Satd. Flow (RTOR)	120	40	1	0	39	10	1	154	0	16	305	0
Volume (vph)	Perm	4	8	Perm	8	5	2	1	6	Perm	8	4
Lane Group Flow (vph)	33.0	33.0	0.0	33.0	33.0	0.0	26.0	55.0	0.0	26.0	55.0	0.0
Protected Phases	4	4	0	4	4	0	4	4	0	4	4	0
Permitted Phases	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Total Split (s)	14.5	14.5	0.0	14.1	14.1	0.0	14.1	14.1	0.0	14.1	14.1	0.0
Act Effect Green (s)	0.29	0.29	0.0	0.28	0.28	0.0	0.28	0.28	0.0	0.28	0.28	0.0
Actuated g/C Ratio	0.38	0.09	0.0	0.14	0.14	0.0	0.14	0.14	0.0	0.14	0.14	0.0
v/c Ratio	9.8	6.8	0.0	6.3	6.3	0.0	6.3	6.3	0.0	6.3	6.3	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	9.8	6.8	0.0	6.3	6.3	0.0	6.3	6.3	0.0	6.3	6.3	0.0
Total Delay	9.8	6.8	0.0	6.3	6.3	0.0	6.3	6.3	0.0	6.3	6.3	0.0
LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Delay	9.0	9.0	0.0	6.3	6.3	0.0	6.3	6.3	0.0	6.3	6.3	0.0
Approach LOS	A	A	A	A	A	A	A	A	A	A	A	A
Queue Length 50th (ft)	8	3	0	3	3	0	3	3	0	3	3	0
Queue Length 95th (ft)	50	20	0	20	20	0	20	20	0	20	20	0
Internal Link Dist (ft)	956			816			816			816		
Turn Bay Length (ft)	100			85			85			85		
Base Capacity (vph)	661	973	0	951	951	0	951	2950	0	951	2950	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.05	0.0	0.08	0.08	0.0	0.08	0.08	0.0	0.08	0.08	0.0
Intersection Summary												
Cycle Length	114											
Actuated Cycle Length	46.4											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.38											
Intersection Signal Delay	6.6											
Intersection LOS	A											
Intersection Capacity Utilization	30.6%											
Analysis Period (min)	15											



Splits and Phases: 21: Prewett Ranch Dr. & Hillcrest Ave

Scenario Report  
 Scenario: Near Term + Project PM  
 Command: Near Term + Project PM  
 Volume: Near-Term+Proj PM  
 Geometry: Near-Term  
 Impact Fee: Default Impact Fee  
 Trip Generation: App+Proj PM  
 Trip Distribution: Near-Term  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

Impact Analysis Report  
 Level Of Service

Intersection	Base Del/V/ LOS Veh	Future Del/V/ LOS Veh	Change in
# 1 Deer Valley Rd/ Country Hills	A xxxxx 0.376	A xxxxx 0.469	+ 0.092 V/C
# 2 Hillcrest Avenue/Laurel Road	A xxxxx 0.219	A xxxxx 0.268	+ 0.049 V/C
# 3 Hillcrest Avenue/Country Hills	A xxxxx 0.267	A xxxxx 0.299	+ 0.032 V/C
# 4 Hillcrest Avenue/Driveway	B 11.5 0.012	B 12.9 0.051	+ 1.385 D/V
# 5 Hillcrest Avenue/South Drivewa	B 10.2 0.152	B 10.7 0.184	+ 0.509 D/V
# 6 Lone Tree Way/Mokelumne Dr	A xxxxx 0.500	A xxxxx 0.583	+ 0.083 V/C
# 7 Lone Tree Way/Deer Valley Plaz	A xxxxx 0.419	A xxxxx 0.495	+ 0.075 V/C
# 8 Lone Tree Way/Deer Valley Rd	A xxxxx 0.543	D xxxxx 0.808	+ 0.265 V/C
# 9 Lone Tree Way/Deer Valley HS	A xxxxx 0.373	A xxxxx 0.489	+ 0.116 V/C
# 10 Lone Tree Way/Sagebrush Drive	A xxxxx 0.391	A xxxxx 0.512	+ 0.121 V/C
# 11 Lone Tree Way/Williamson Ranch	A xxxxx 0.352	A xxxxx 0.505	+ 0.153 V/C
# 12 Lone Tree Way/Indian Hill Dr/W	A xxxxx 0.385	A xxxxx 0.534	+ 0.149 V/C
# 13 Lone Tree Way/Driveway	A 9.9 0.048	B 11.1 0.069	+ 1.129 D/V
# 14 Lone Tree Way/Hillcrest Avenue	A xxxxx 0.400	A xxxxx 0.542	+ 0.142 V/C
# 15 Lone Tree Way/Vista Grande Dri	A xxxxx 0.424	A xxxxx 0.555	+ 0.131 V/C
# 16 Lone Tree Way/Heidorn Ranch Ro	A xxxxx 0.329	A xxxxx 0.455	+ 0.126 V/C
# 17 Lone Tree Way/Canada Valley Ro	A xxxxx 0.523	B xxxxx 0.689	+ 0.167 V/C
# 18 Lone Tree Way/SB SR-4 Bypass	A xxxxx 0.579	D xxxxx 0.841	+ 0.261 V/C
# 19 Lone Tree Way/NB SR-4 Bypass (	A xxxxx 0.451	A xxxxx 0.571	+ 0.120 V/C
# 20 Deer Valley Road/Marita Drive	A xxxxx 0.258	A xxxxx 0.394	+ 0.136 V/C
# 21 Hillcrest Ave/Prewett Ranch Dr	A xxxxx 0.159	A xxxxx 0.169	+ 0.010 V/C

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #1 Deer Valley Rd/ Country Hills Dr

Cycle (sec): 100 Critical Vol./Cap.(X): 0.469  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 35 Level Of Service: A

Street Name: Deer Valley Road Country Hills Drive  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Permitted Permitted  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0

Volume Module:

Base Vol: 6 520 93 98 314 92 88 100 4 30 75 80  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 6 520 93 98 314 92 88 100 4 30 75 80  
Added Vol: 0 135 14 0 37 24 83 1 0 23 1 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 6 655 107 98 351 116 171 101 4 53 76 80  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 6 655 107 98 351 116 171 101 4 53 76 80  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 6 655 107 98 351 116 171 101 4 53 76 80  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 6 655 107 98 351 116 171 101 4 53 76 80  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 6 655 107 98 351 116 171 101 4 53 76 80

Saturation Flow Module:

Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 1.72 0.28 1.00 1.50 0.50 1.00 0.96 0.04 1.00 0.49 0.51  
Final Sat.: 1720 2957 483 1720 2386 854 1720 1654 66 1720 838 882

Capacity Analysis Module:

Vol/Sat: 0.00 0.22 0.22 0.06 0.14 0.14 0.10 0.06 0.06 0.03 0.09 0.09  
Crit Volume: 381 98 171  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #2 Hillcrest Avenue/Laurel Road

Cycle (sec): 100 Critical Vol./Cap.(X): 0.268  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 25 Level Of Service: A

Street Name: Hillcrest Avenue Laurel Road  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Permitted Permitted  
Rights: Ignore Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 1 1 1 0 1 1 0 1 0 1 0 1 0 1 0 1 0 1

Volume Module:

Base Vol: 27 302 39 162 459 50 17 7 22 35 9 133  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 27 302 39 162 459 50 17 7 22 35 9 133  
Added Vol: 3 132 18 6 79 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
PasserByVol: 0  
Initial Fut: 30 434 57 168 538 50 17 7 23 46 9 159  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 30 434 57 168 538 50 17 7 23 46 9 159  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 30 434 57 168 538 50 17 7 23 46 9 159  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 30 434 57 168 538 50 17 7 23 46 9 159  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 30 434 57 168 538 50 17 7 23 46 9 159

Saturation Flow Module:

Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 2.00 1.00 1.00 1.83 0.17 1.00 0.23 0.77 1.00 1.00 1.00  
Final Sat.: 1720 3440 1563 1720 3147 293 1720 401 1319 1720 1720 1720

Capacity Analysis Module:

Vol/Sat: 0.02 0.13 0.04 0.10 0.17 0.17 0.01 0.02 0.02 0.03 0.01 0.00  
Crit Volume: 217 168  
Crit Moves: \*\*\*\*





Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #7 Lone Tree Way/Deer Valley Plaza  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap.(X): 0.495  
Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 28 Level Of Service: A

Street Name: Deer Valley Plaza Lone Tree Way

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Permitted Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 0 1 0 0 0 0 0 2 0 1 1 0 2 0 0

Volume Module: Base Vol: 113 0 61 0 0 0 0 985 93 86 600 0

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 113 0 61 0 0 0 0 985 93 86 600 0

Added Vol: 0 0 0 0 0 0 0 249 0 0 290 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 113 0 61 0 0 0 0 1234 93 86 890 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 113 0 61 0 0 0 0 1234 93 86 890 0

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 113 0 61 0 0 0 0 1234 93 86 890 0

RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0

RTOR Vol: 113 0 61 0 0 0 0 1234 93 86 890 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 113 0 0 0 0 0 0 1234 0 86 890 0

Saturation Flow Module: Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 2.00 1.00 1.00 2.00 0.00

Final Sat.: 1650 0 1650 0 0 0 0 3300 1650 1650 3300 0

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #8 Lone Tree Way/Deer Valley Rd  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap.(X): 0.808  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 119 Level Of Service: D

Street Name: Deer Valley Road Lone Tree Way

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 2 0 1 0 2 0 1 0 1 0 2 0 1 1 0 2 0 1

Volume Module: Base Vol: 192 356 168 168 191 14 87 780 147 151 497 154

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 192 356 168 168 191 14 87 780 147 151 497 154

Added Vol: 152 94 222 35 25 0 0 142 108 189 137 56

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 344 450 390 203 216 14 87 922 255 340 634 210

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 344 450 390 203 216 14 87 922 255 340 634 210

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 344 450 390 203 216 14 87 922 255 340 634 210

RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0

RTOR Vol: 344 450 390 203 216 14 87 922 255 340 634 210

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 344 450 390 203 216 14 87 922 255 340 634 210

Saturation Flow Module: Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650

Adjustment: 0.91 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 2.00 1.07 0.93 2.00 1.88 0.12 1.00 2.00 1.00 1.00 2.00 1.00

Final Sat.: 3000 1768 1532 3000 3099 201 1650 3300 1650 1650 3300 1650

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #9 Lone Tree Way/Deer Valley HS  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap.(X): 0.489  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 36 Level Of Service: A

Street Name: Deer Valley HS Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 1 0 1 0 1 0 1 0 1 0 2 0 1

Volume Module:  
Base Vol: 35 0 8 8 2 14 36 1150 7 26 781 9  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 35 0 8 8 2 14 36 1150 7 26 781 9  
Added Vol: 0 0 0 0 0 0 0 398 0 0 382 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 35 0 8 8 2 14 36 1548 7 26 1163 9  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 35 0 8 8 2 14 36 1548 7 26 1163 9  
Reduce Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 35 0 8 8 2 14 36 1548 7 26 1163 9  
RTOR Reduce: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 35 0 8 8 2 0 36 1548 7 26 1163 1  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 35 0 8 8 2 0 36 1548 7 26 1163 1

Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.99 0.01 1.00 2.00 1.00  
Final Sat.: 1720 0 1720 1720 1720 1720 3425 15 1720 3440 1720

Capacity Analysis Module:  
Vol/Sat: 0.02 0.00 0.00 0.00 0.00 0.00 0.02 0.45 0.45 0.02 0.34 0.00  
Crit Volume: 35  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #10 Lone Tree Way/Sagebrush Drive  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap.(X): 0.512  
Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 29 Level Of Service: A

Street Name: Sagebrush Drive Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 0 0 0 0 0 2 0 1 1 0 2 0

Volume Module:  
Base Vol: 85 0 101 0 0 0 0 1040 146 40 691 0  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 85 0 101 0 0 0 0 1040 146 40 691 0  
Added Vol: 0 0 0 0 0 0 0 398 0 0 382 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 85 0 101 0 0 0 0 1438 146 40 1073 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 85 0 101 0 0 0 0 1438 146 40 1073 0  
Reduce Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 85 0 101 0 0 0 0 1438 146 40 1073 0  
RTOR Reduce: 0 0 0 0 0 0 0 0 0 0 85 0  
RTOR Vol: 85 0 61 0 0 0 0 1438 61 40 1073 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 85 0 61 0 0 0 0 1438 61 40 1073 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 2.00 1.00 1.00 2.00 0.00  
Final Sat.: 1650 0 1650 0 0 0 0 3300 1650 1650 3300 0

Capacity Analysis Module:  
Vol/Sat: 0.05 0.00 0.04 0.00 0.00 0.00 0.00 0.44 0.04 0.02 0.33 0.00  
Crit Volume: 85  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #11 Lone Tree Way/Williamson Ranch Plaza (OSH)  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap. (X): 0.505  
Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 84 Level Of Service: A

Street Name: Williamson Ranch Plaza (OSH) Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Permitted Protected Protected Permitted  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 0 0 0 0 1 0 0 0 1 0 2 0 0 0 2 0 1

Volume Module:  
Base Vol: 0 0 0 0 39 80 1081 0 0 711 20  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 0 0 0 0 39 80 1081 0 0 711 20  
Added Vol: 0 0 0 0 58 0 24 10 389 0 0 358 16  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 0 0 0 0 98 0 63 90 1470 0 0 1069 36  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 0 0 0 0 98 0 63 90 1470 0 0 1069 36  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 0 0 0 0 98 0 63 90 1470 0 0 1069 36  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 0 0 0 0 98 0 90 1470 0 0 1069 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 0 0 0 0 98 0 90 1470 0 0 1069 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 0.00 0.00 0.00 1.00 0.00 0.00 1.00 2.00 0.00 0.00 2.00 1.00  
Final Sat.: 0 0 0 1650 0 1650 1650 3300 0 0 3300 1650

Capacity Analysis Module:  
Vol/Sat: 0.00 0.00 0.00 0.06 0.00 0.00 0.05 0.45 0.00 0.00 0.32 0.00  
Crit Volume: 0 98 735 535  
Crit Moves: \*\*\*\*\*

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #12 Lone Tree Way/Indian Hill Dr/Williamson Ranch Plaza (Wal-Mart, OSH)  
\*\*\*\*\*

Cycle (sec): 130 Critical Vol./Cap. (X): 0.534  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 49 Level Of Service: A

Street Name: Indian Hill Dr/Williamson Ranch Pl Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Split Phase Split Phase Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 2 0 0 1 0 2 0 1 1 0 2 0 1

Volume Module:  
Base Vol: 7 18 38 89 16 60 87 908 28 49 653 38  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 7 18 38 89 16 60 87 908 28 49 653 38  
Added Vol: 0 0 6 16 1 7 1 445 0 0 8 367 2  
PasserByVol: 0 0 0 21 0 11 19 -19 0 0 -8 8  
Initial Fut: 7 18 44 126 17 78 107 1334 28 57 1012 48  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 7 18 44 126 17 78 107 1334 28 57 1012 48  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 7 18 44 126 17 78 107 1334 28 57 1012 48  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 7 18 44 126 17 78 107 1334 21 57 1012 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 7 18 44 126 17 78 107 1334 21 57 1012 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.29 0.71 2.00 0.18 0.82 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 1650 479 1171 3000 295 1355 1650 3300 1650 1650 3300 1650

Capacity Analysis Module:  
Vol/Sat: 0.00 0.04 0.04 0.04 0.06 0.06 0.06 0.40 0.01 0.03 0.31 0.00  
Crit Volume: 62 95 667 57  
Crit Moves: \*\*\*\*\*



Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #15 Lone Tree Way/Vista Grande Drive  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.555  
 Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 42 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Vista Grande Drive Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Permitted Permitted Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 1 0 0 1 0 0 1 0 2 1 0 1 0 2 1 0  
 \*\*\*\*\*

Volume Module: 35 10 114 42 9 20 18 1282 44 121 931 24  
 Base Vol: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 35 10 114 42 9 20 18 1282 44 121 931 24  
 Added Vol: 13 0 31 7 0 0 1 3 415 23 41 352 6  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 48 10 145 49 9 21 21 1697 67 162 1283 30  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 48 10 145 49 9 21 21 1697 67 162 1283 30  
 Reduce Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 48 10 145 49 9 21 21 1697 67 162 1283 30  
 RTOR Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 48 10 145 49 9 21 21 1697 67 162 1283 30  
 \*\*\*\*\*

Saturation Flow Module:  
 Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 0.06 0.94 1.00 0.30 0.70 1.00 2.89 0.11 1.00 2.93 0.07  
 Final Sat.: 1720 111 1609 1720 516 1204 1720 4964 196 1720 5042 118  
 \*\*\*\*\*  
 Capacity Analysis Module:  
 Vol/Sat: 0.03 0.09 0.09 0.03 0.02 0.02 0.01 0.34 0.34 0.09 0.25 0.25  
 Crit Volume: 155 49 588 162  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #16 Lone Tree Way/Heidorn Ranch Road  
 Cycle (sec): 120 Critical Vol./Cap.(X): 0.455  
 Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 42 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Heidorn Ranch Road Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Split Phase Split Phase Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 2 0 1 0 1 1 0 0 1 0 2 1 0 1 0 2 1 0  
 \*\*\*\*\*

Volume Module: 85 4 48 5 3 4 5 1319 74 24 1026 13  
 Base Vol: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 85 4 48 5 3 4 5 1319 74 24 1026 13  
 Added Vol: 6 1 33 2 1 0 0 442 10 53 394 1  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 91 5 81 7 4 4 5 1761 84 77 1420 14  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 91 5 81 7 4 4 5 1761 84 77 1420 14  
 Reduce Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 91 5 81 7 4 4 5 1761 84 77 1420 14  
 RTOR Vol: 0 0 77 0 0 0 0 0 0 0 0 0  
 RTOR Reduct: 0 0 77 0 0 0 0 0 0 0 0 0  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 91 5 4 7 4 4 5 1761 84 77 1420 14  
 \*\*\*\*\*

Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 2.00 1.00 1.00 1.00 0.50 0.50 1.00 2.86 0.14 1.00 2.97 0.03  
 Final Sat.: 3000 1650 1650 1650 825 1650 4725 225 1650 4902 48  
 \*\*\*\*\*  
 Capacity Analysis Module:  
 Vol/Sat: 0.03 0.00 0.00 0.00 0.00 0.00 0.00 0.37 0.37 0.05 0.29 0.29  
 Crit Volume: 46 8 615 77  
 Crit Moves: \*\*\*\*  
 \*\*\*\*\*

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #17 Lone Tree Way/Canada Valley Road  
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.689  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 73 Level Of Service: B

Street Name: Canada Valley Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Protected Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 2 0 0 1 1 0 1 0 1 2 0 3 0 1

Volume Module:  
Base Vol: 84 55 173 175 56 22 54 1354 55 329 942 253  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 84 55 173 175 56 22 54 1354 55 329 942 253  
Added Vol: 20 16 13 133 10 57 102 364 12 8 370 270  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 104 71 186 308 66 79 156 1718 67 337 1312 523  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 104 71 186 308 66 79 156 1718 67 337 1312 523  
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 104 71 186 308 66 79 156 1718 67 337 1312 523  
RTOR Vol: 104 71 1 308 66 0 156 1718 10 337 1312 215  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 104 71 1 308 66 0 156 1718 10 337 1312 215

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 2.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Final Sat.: 3000 1650 1500 1650 1650 1650 3000 4950 1650 3000 4950 1650  
Capacity Analysis Module:  
Vol/Sat: 0.03 0.04 0.00 0.19 0.04 0.00 0.05 0.35 0.01 0.11 0.27 0.13  
Crit Volume: 71 308 169  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #18 Lone Tree Way/SB SR-4 Bypass  
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.841  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 117 Level Of Service: D

Street Name: SB SR-4 Bypass Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Permitted Protected Permitted Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 0 0 0 0 1 1 0 0 1 0 0 3 0 1 2 0 3 0 0

Volume Module:  
Base Vol: 0 0 0 416 10 361 0 1169 541 98 1153 0  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 0 0 0 416 10 361 0 1169 541 98 1153 0  
Added Vol: 0 0 0 90 0 230 0 405 105 175 418 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 0 0 0 506 10 591 0 1574 646 273 1571 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 0 0 0 506 10 591 0 1574 646 273 1571 0  
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 0 0 0 506 10 591 0 1574 646 273 1571 0  
RTOR Vol: 0 0 0 506 10 591 0 1574 646 273 1571 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 0 0 0 506 10 591 0 1574 646 273 1571 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 0.00 0.00 0.00 1.96 0.04 1.00 0.00 3.00 1.00 2.00 3.00 0.00  
Final Sat.: 0 0 0 2942 64 1650 0 4950 1650 3000 4950 0  
Capacity Analysis Module:  
Vol/Sat: 0.00 0.00 0.00 0.17 0.16 0.36 0.00 0.32 0.39 0.09 0.32 0.00  
Crit Volume: 0 591 646 137  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #19 Lone Tree Way/NB SR-4 Bypass (Jeffrey Way)  
\*\*\*\*\*  
Cycle (sec): 100 Critical Vol./Cap. (X): 0.571  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 43 Level Of Service: A  
\*\*\*\*\*  
Street Name: NB SR-4 Bypass (Jeffrey Way) Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Permitted Include Protected Permitted Include  
Rights: 0  
Min. Green: 4.0  
Y+R: 1 0 0 1 0 0 0 0 0 0 0 0 3 0 1 2 0 3 0 1  
Lanes: 1 0 0 1 0 0 0 0 0 0 0 0 3 0 1 2 0 3 0 1  
\*\*\*\*\*

Volume Module:  
Base Vol: 437 43 137 0 0 0 1404 264 21 831 357  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 437 43 137 0 0 0 1404 264 21 831 357  
Added Vol: 153 0 203 0 0 0 341 154 0 440 83  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 590 43 340 0 0 0 1745 418 21 1271 440  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 590 43 340 0 0 0 1745 418 21 1271 440  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 590 43 340 0 0 0 1745 418 21 1271 440  
RTOR Reduct: 0 0 12 0 0 0 0 0 0 325 0  
RTOR Vol: 590 43 328 0 0 0 1745 94 21 1271 440  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 590 43 328 0 0 0 1745 94 21 1271 440  
\*\*\*\*\*

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.86 0.14 1.00 0.00 0.00 0.00 0.00 3.00 1.00 2.00  
Final Sat.: 2796 224 1650 0 0 0 4950 1650 3000 4950  
Capacity Analysis Module:  
Vol/Sat: 0.21 0.19 0.20 0.00 0.00 0.00 0.35 0.06 0.01 0.26 0.27  
Crit Volume: 316 0 582 11  
Crit Moves: \*\*\*\*  
\*\*\*\*\*

Antioch Walmart Expansion  
Near Term + Project PM

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #20 Deer Valley Road/Marita Drive  
\*\*\*\*\*  
Cycle (sec): 100 Critical Vol./Cap. (X): 0.394  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 31 Level Of Service: A  
\*\*\*\*\*  
Street Name: Deer Valley Road Marita Drive  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Permitted Include Protected Permitted Include  
Rights: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Min. Green: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Y+R: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0  
Lanes: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0  
\*\*\*\*\*

Volume Module:  
Base Vol: 15 642 3 26 392 29 13 0 3 23 4 79  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 15 642 3 26 392 29 13 0 3 23 4 79  
Added Vol: 0 467 0 0 323 0 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 15 1109 3 26 715 29 13 0 3 23 4 79  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 15 1109 3 26 715 29 13 0 3 23 4 79  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 15 1109 3 26 715 29 13 0 3 23 4 79  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 15 1109 3 26 715 29 13 0 3 23 4 79  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 15 1109 3 26 715 29 13 0 3 23 4 79  
\*\*\*\*\*

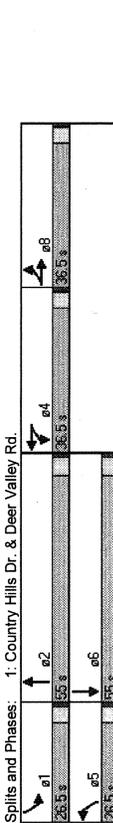
Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 1.99 0.01 1.00 1.92 0.08 1.00 0.00 1.00 1.00 0.05 0.95  
Final Sat.: 1720 3431 9 1720 3306 134 1720 0 1720 1720 83 1637  
Capacity Analysis Module:  
Vol/Sat: 0.01 0.32 0.32 0.02 0.22 0.22 0.01 0.00 0.00 0.01 0.05 0.05  
Crit Volume: 556 26 13  
Crit Moves: \*\*\*\*  
\*\*\*\*\*



1: Country Hills Dr. & Deer Valley Rd.  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1851	0	1770	1704	0	1770	3432	0	1770	3398
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950
Flt Permitted	1766	1851	0	1770	1704	0	1759	3432	0	1744	3398
Satd. Flow (perm)	171	101	4	53	76	80	6	655	107	98	449
Volume (vph)	211	130	0	58	172	0	6	819	0	105	614
Lane Group Flow (vph)	Split	Split	Split	Split	Split	Split	Prot	Prot	Prot	Prot	Prot
Turn Type	8	8	8	4	4	4	5	2	1	6	6
Permitted Phases	36.5	36.5	0.0	36.5	36.5	0.0	26.5	55.0	0.0	26.5	55.0
Total Split (s)	17.4	17.4	0.0	15.5	15.5	0.0	8.0	44.2	0.0	12.6	55.5
Act Effect Green (s)	0.18	0.18	0.0	0.16	0.16	0.0	0.08	0.48	0.0	0.13	0.60
Actuated g/C Ratio	0.65	0.38	0.0	0.20	0.56	0.0	0.04	0.50	0.0	0.44	0.30
v/c Ratio	46.7	39.6	0.0	40.1	39.1	0.0	58.2	26.8	0.0	48.6	15.3
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	46.7	39.6	0.0	40.1	39.1	0.0	58.2	26.8	0.0	48.6	15.3
Total Delay	D	D	D	D	D	D	E	C	D	D	B
LOS	D	D	D	D	D	D	E	C	D	D	B
Approach Delay	44.0	39.3	0.0	39.3	39.3	0.0	27.0	20.3	0.0	20.3	20.3
Approach LOS	D	D	D	D	D	D	C	C	C	C	C
Queue Length 50th (ft)	100	58	0	26	67	0	3	185	50	67	67
Queue Length 95th (ft)	245	155	0	88	196	0	22	435	160	264	264
Internal Link Dist (ft)	145	308	0	120	274	0	110	880	175	220	220
Turn Bay Length (ft)	560	586	0	551	552	0	378	1937	418	2145	2145
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.22	0.11	0.31	0.31	0.02	0.02	0.42	0.25	0.29	0.29
Intersection Summary											
Cycle Length	154.5										
Actuated Cycle Length	92.4										
Control Type	Actuated-Uncoordinated										
Maximum v/c Ratio	0.65										
Intersection Signal Delay	28.8										
Intersection Capacity Utilization	60.1%										
Analysis Period (min)	15										
Intersection LOS: C											
ICU Level of Service B											

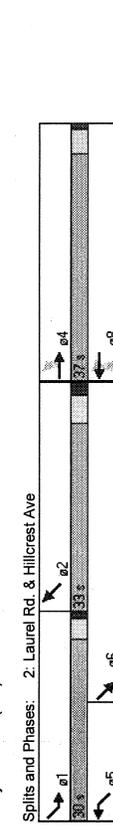


Splits and Phases: 1: Country Hills Dr. & Deer Valley Rd.

2: Laurel Rd. & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1631	0	1770	1863	1583	1770	3497	0	1770	3468
Satd. Flow (prot)	0.750	0.750	0	0.726	0.726	0.950	0.950	0.950	0	0.950	0.950
Flt Permitted	1396	1631	0	1350	1863	1563	1768	3497	0	1770	3468
Satd. Flow (perm)	17	7	23	46	9	159	187	587	50	30	435
Volume (vph)	17	47	0	58	11	201	191	850	0	33	548
Lane Group Flow (vph)	Perm	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	4	4	4	8	8	1	6	5	2	5	2
Permitted Phases	37.0	37.0	0.0	37.0	37.0	30.0	46.0	0.0	17.0	33.0	0.0
Total Split (s)	13.9	13.9	0.0	13.9	13.9	16.5	72.7	0.0	8.3	60.7	0.0
Act Effect Green (s)	0.14	0.14	0.0	0.14	0.14	0.16	0.73	0.0	0.08	0.81	0.0
Actuated g/C Ratio	0.14	0.18	0.0	0.31	0.04	0.52	0.66	0.26	0.22	0.26	0.0
v/c Ratio	35.5	15.8	0.0	40.0	32.4	9.6	49.4	6.8	45.9	11.5	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	35.5	15.8	0.0	40.0	32.4	9.6	49.4	6.8	45.9	11.5	0.0
Total Delay	D	B	D	D	C	A	D	A	D	D	B
LOS	D	B	D	D	C	A	D	A	D	D	B
Approach Delay	23.0	17.0	0.0	17.0	16.5	0.0	13.4	0.0	13.4	13.4	0.0
Approach LOS	C	B	C	B	B	B	B	B	B	B	B
Queue Length 50th (ft)	16	6	0	35	6	0	115	63	20	70	0
Queue Length 95th (ft)	24	18	0	52	16	32	175	160	49	169	0
Internal Link Dist (ft)	75	468	0	115	115	140	140	140	150	205	0
Turn Bay Length (ft)	475	578	0	468	633	664	478	2547	248	2108	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.08	0.13	0.02	0.30	0.40	0.26	0.13	0.13	0.26	0.26
Intersection Summary											
Cycle Length	100										
Actuated Cycle Length	100										
Control Type	Referenced to phase 2: NMT and 6: SET, Start of Yellow										
Maximum v/c Ratio	0.66										
Intersection Signal Delay	15.8										
Intersection Capacity Utilization	50.8%										
Analysis Period (min)	15										
Intersection LOS: B											
ICU Level of Service A											



Splits and Phases: 2: Laurel Rd. & Hillcrest Ave

3: Country Hills Dr. & Hillcrest Ave  
Antioch Walmart Expansion

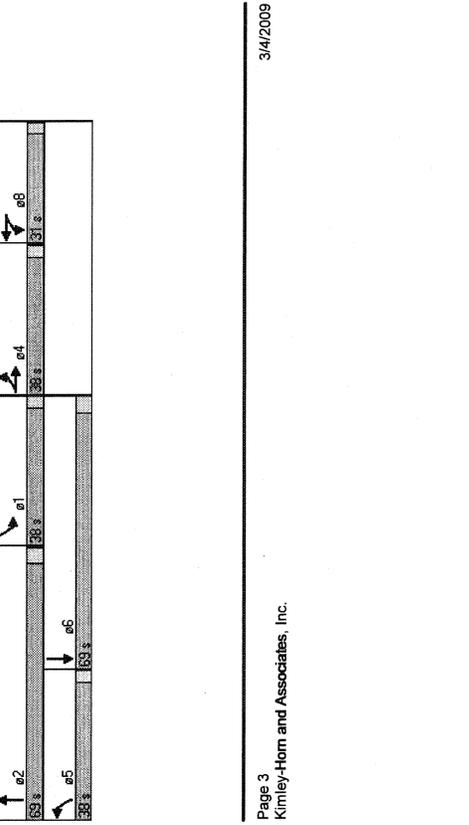
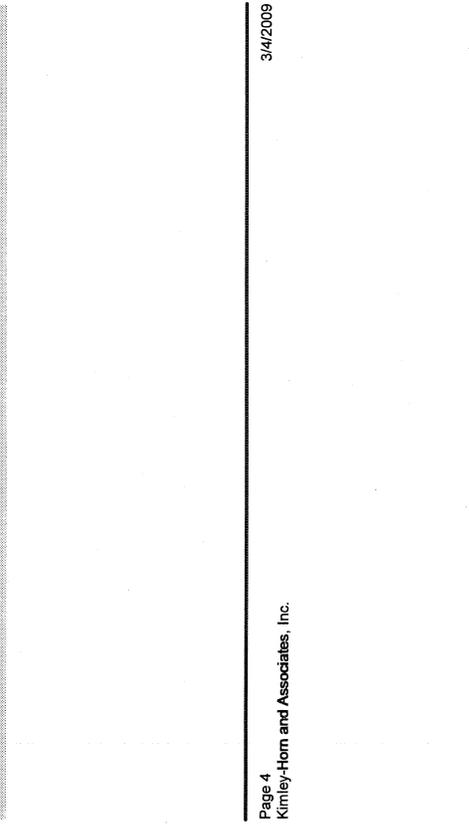
4: Northeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

Near-Term + Project  
PM Peak

Movement	EBL	EBR	NBL	NBR	SBT	SBR
Lane Configurations	Stop	Free	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/ft)	1	25	0	557	848	5
Peak Hour Factor	0.58	0.58	0.88	0.88	0.90	0.90
Hourly flow rates (vph)	2	43	0	533	720	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				727	1032	
pX: platoon unblocked	0.85	0.85	0.85	0.85	0.85	0.85
vC: conflicting volume	1036	720	726			
vC1: stage 1 conf vol						
vC2: stage 2 conf vol						
IC: single (s)	1043	673	679			
IC: 2 stage (s)	6.8	6.9	4.1			
IF (s)	3.5	3.3	2.2			
pl queue free %	99	87	100			
ch capacity (veh/h)	182	340	777			
Direction: Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	43	316	316	720	6	
Volume Left	0	0	0	0	0	
Volume Right	43	0	0	0	6	
csh	340	1700	1700	1700	1700	
Volume to Capacity	0.13	0.19	0.19	0.42	0.00	
Queue Length 95th (ft)	11	0	0	0	0	
Control Delay (s)	17.1	0.0	0.0	0.0	0.0	
Lane LOS	C					
Approach Delay (s)	E	0.0	0.0	0.0	0.0	
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay						Err
Intersection Capacity Utilization						Err%
Analysis Period (min)						15
						ICU Level of Service
						H

Lane Group	EBL	EBR	WBL	WBR	NBL	NBR	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1656	0	1770	1691	0	1770	3479
Satd. Flow (prot)	0.960	0.960	0	0.960	0.960	0	0.960	0
Flt Permitted	1765	1656	0	1756	1691	0	1770	3479
Satd. Flow (perm)	46	51	97	36	50	63	84	419
Satd. Flow (RTOR)	48	188	0	71	222	0	91	509
Volume (vph)	Split	Split	Split	Split	Split	Split	Split	Split
Volume Group Flow (vph)	4	4	8	8	5	2	1	6
Turn Type	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases
Permitted Phases	38.0	38.0	0.0	31.0	0.0	38.0	69.0	0.0
Total Split (s)	15.6	15.6	19.9	19.9	12.4	67.2	14.3	71.6
Act Effect Green (s)	0.12	0.12	0.15	0.15	0.09	0.52	0.11	0.65
Activated g/C Ratio	0.22	0.69	0.26	0.77	0.54	0.28	0.61	0.31
v/c Ratio	55.8	54.9	52.8	64.9	71.2	20.5	70.5	19.3
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	55.8	54.9	52.8	64.9	71.2	20.5	70.5	19.3
Total Delay	E	D	D	E	E	C	E	B
LOS	E	D	D	E	E	C	E	B
Approach Delay	55.1	55.1	62.0	62.0	28.1	28.1	27.6	27.6
Approach LOS	E	E	E	E	C	C	C	C
Queue Length 50th (ft)	37	97	52	154	73	120	95	143
Queue Length 95th (ft)	81	186	61	132	149	226	182	264
Internal Link Dist (ft)	266	266	283	283	1660	1660	190	1140
Turn Bay Length (ft)	120	430	90	365	155	406	417	1932
Base Capacity (vph)	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.39	0.19	0.60	0.22	0.28	0.28	0.31
<b>Intersection Summary</b>								
Cycle Length: 176								
Actuated Cycle Length: 125.2								
Control Type: Actuated-Uncoordinated								
Maximum v/c Ratio: 0.77								
Intersection Signal Delay: 36.5								
Intersection LOS: D								
Intersection Capacity Utilization 48.1%								
Analysis Period (min): 15								
<b>Splits and Phases: 3: Country Hills Dr. &amp; Hillcrest Ave</b>								
	e2	e1	e4	e6				
	89 s	133 s	38 s	131 s				
	e5	e6						
	38 s	163 s						



5: Southeast Driveway & Hillcrest Ave  
Antioch Wal-Mart Expansion

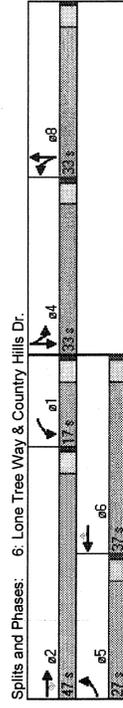
Near-Term + Project  
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Sign Control	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grade	0	0	0	0	0	0	0	0	0	0	0	0
Volume (veh/h)	0	0	143	0	0	42	0	527	63	0	570	98
Peak Hour Factor	0.78	0.78	0.78	0.62	0.62	0.62	0.89	0.89	0.69	0.96	0.96	0.96
Hourly flow rate (vph)	0	0	163	0	0	68	0	552	71	0	584	102
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
px, platoon unblocked												
vc, conflicting volume	1009	1308	249	973	1288	296	696					663
vc1, stage 1 cont vol												
vc2, stage 2 cont vol												
vcu, unblocked vol												
tc, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1					4.1
tc, 2 stage (s)												
IF (\$)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
no queue free %	100	100	76	100	100	90	100					100
SM capacity (veh/h)	176	168	751	166	163	700	886					922
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	183	68	296	296	71	238	236	221				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	183	68	296	296	71	238	236	221				
CSH	751	700	1700	1700	1700	1700	1700	1700				
Volume to Capacity	0.24	0.10	0.17	0.17	0.04	0.14	0.14	0.13				
Queue Length 95th (ft)	24	8	0	0	0	0	0	0				
Control Delay (s)	11.3	10.7	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS	B	B	A	A	A	A	A	A				
Approach Delay (s)	11.3	10.7	0.0	0.0	0.0	0.0	0.0	0.0				
Approach LOS	B	B	A	A	A	A	A	A				
<b>Intersection Summary</b>												
Average Delay	1.7											
Intersection Capacity Utilization	28.7%											
Analysis Period (min)	15											
ICU Level of Service	A											

6: Lone Tree Way & Country Hills Dr.  
Antioch Wal-Mart Expansion

Near-Term + Project  
PM Peak

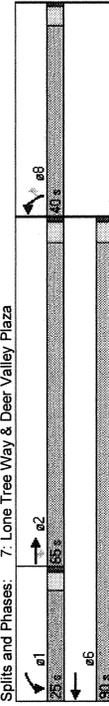
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1720	1720	0	1770	1702
Flt Permitted	0.960			0.960			0.960			0	0.960	
Satd. Flow (perm)	1764	3539	1386	1738	3539	1529	1757	1720	1720	0	1768	1702
Satd. Flow (RTOR)			31					32				37
Volume (vph)	154	1160	111	109	883	39	115	84	75	48	91	93
Lane Group Flow (vph)	160	1208	116	120	970	43	162	224	0	58	216	0
Turn Type	Prot	Perm	Prot	Prot	Perm	Prot	Split	Split	Split	Split	Split	Split
Protected Phases	5	2	1	6	6	8	8	4	4			
Permitted Phases	27.0	47.0	17.0	37.0	37.0	33.0	33.0	0.0	33.0	33.0	0.0	0.0
Act Effct Green (s)	18.5	61.3	61.3	14.0	56.8	56.8	21.7	21.7	21.0	21.0	0.0	0.0
Actuated g/C Ratio	0.14	0.47	0.47	0.11	0.44	0.44	0.17	0.17	0.16	0.16	0.0	0.0
v/c Ratio	0.63	0.72	0.17	0.63	0.63	0.06	0.55	0.72	0.20	0.20	0.0	0.0
Control Delay	63.4	32.8	18.4	66.3	32.2	20.7	55.7	55.9	46.3	46.3	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	32.8	18.4	66.3	32.2	20.7	55.7	55.9	46.3	46.3	0.0	0.0
LOS	E	C	B	E	C	C	E	E	D	D	D	D
Approach Delay	35.0			35.4			55.8					52.6
Approach LOS	C			D			E					D
Queue Length 50th (ft)	129	416	99	95	251	11	127	156	42	145		
Queue Length 95th (ft)	195	#699	99	m#176	#621	m26	141	166	71	199		
Internal Link Dist (ft)	145	1420	75	145	740	75	170	675	120	577		
Turn Bay Length (ft)	145	1669	670	191	1546	675	408	422	408	421		
Base capacity (vph)	0	0	0	0	0	0	0	0	0	0		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.49	0.72	0.17	0.63	0.63	0.06	0.40	0.53	0.14	0.51		
<b>Intersection Summary</b>												
Cycle Length	130											
Actuated Cycle Length	130											
Offset: 60 (62%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.72												
Intersection Signal Delay: 39.0												
Intersection LOS: D												
ICU Level of Service C												
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
m Volume for 95th percentile queue is metered by upstream signal.												



7: Lone Tree Way & Deer Valley Plaza  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

Lane Group	EBL	EBR	WBL	WBR	NBL	NBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	3539	1583	1770	3539	1770	1583
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950
Flt Permitted	3539	1436	1752	3539	1770	1583
Satd. Flow (perm)	35	35	35	35	35	35
Satd. Flow (RTOR)	1323	93	86	892	113	61
Volume (vph)	1407	99	95	980	145	78
Lane Group Flow (vph)	Perm	Prot	Perm	Prot	Perm	Prot
Turn Type	2	2	1	6	8	8
Protected Phases						
Permitted Phases	65.0	65.0	25.0	90.0	40.0	40.0
Total Split (s)	43	0	85	175	118	0
Act Effct Green (s)	90.5	90.5	13.9	107.4	16.6	16.6
Actuated g/C Ratio	0.70	0.70	0.11	0.83	0.13	0.13
v/c Ratio	0.57	0.10	0.50	0.34	0.64	0.29
Conflict Delay	4.1	0.5	50.0	7.5	66.2	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.1	0.5	50.0	7.5	66.2	12.8
LOS	A	A	D	A	E	B
Approach Delay	3.9			11.3	47.5	
Approach LOS	A			B	D	
Queue Length 50th (ft)	43	0	85	175	118	0
Queue Length 95th (ft)	85	m0	m126	m0	154	31
Internal Link Dist (ft)	740			850	704	
Turn Bay Length (ft)	100	200				
Base Capacity (vph)	2463	1070	300	2923	504	95
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.10	0.32	0.34	0.29	0.15
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 94 (72%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.64						
Intersection Signal Delay: 10.2						
Intersection LOS: B						
Intersection Capacity Utilization: 57.6%						
Analysis Period (min): 15						
m - Volume for 95th percentile queue is metered by upstream signal.						

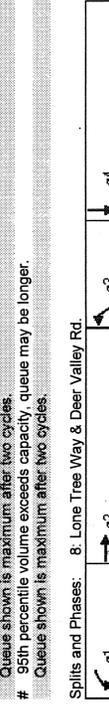


Splits and Phases: 7: Lone Tree Way & Deer Valley Plaza

8: Lone Tree Way & Deer Valley Rd.  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

Lane Group	EBL	EBR	WBL	WBR	NBL	NBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	3539	3287
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950
Flt Permitted	1768	3539	1523	1762	3539	3287
Satd. Flow (perm)	221	221	221	221	221	221
Satd. Flow (RTOR)	87	958	307	368	637	210
Volume (vph)	100	1101	353	387	671	221
Lane Group Flow (vph)	Perm	Prot	Perm	Prot	Perm	Prot
Turn Type	5	2	1	6	3	8
Protected Phases						
Permitted Phases	20.0	44.0	25.0	49.0	20.0	32.0
Total Split (s)	13.6	41.0	22.0	49.4	17.0	31.8
Act Effct Green (s)	0.10	0.32	0.32	0.17	0.38	0.13
Actuated g/C Ratio	0.54	0.99	0.49	1.29	0.50	0.89
v/c Ratio	78.8	56.0	7.2	199.1	35.9	12.8
Conflict Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	78.8	56.0	7.2	199.1	35.9	12.8
Total Delay	78.8	56.0	7.2	199.1	35.9	12.8
LOS	E	E	A	F	D	B
Approach Delay	46.4			81.3	85.3	
Approach LOS	D			F	F	
Queue Length 50th (ft)	80	308	0	429	132	0
Queue Length 95th (ft)	140	#584	111	#635	0	178
Internal Link Dist (ft)	350			1560	400	180
Turn Bay Length (ft)	195	1116	722	300	1344	726
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.99	0.49	1.29	0.50	0.30
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 80 (62%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.29						
Intersection Signal Delay: 67.0						
Intersection LOS: E						
Intersection Capacity Utilization: 91.8%						
Analysis Period (min): 15						
* - User Entered Value						
~ Volume exceeds capacity, queue is theoretically infinite.						
# Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						



Splits and Phases: 8: Lone Tree Way & Deer Valley Rd.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3535	0	1770	3539	1583	1770	1561	0	1770	1863
Satd. Flow (prot)	0.950			0.150			0.155			0.147	
Flt Permitted	1770	3535	0	1768	3539	1545	1394	1561	0	1388	1863
Satd. Flow (perm)	36	1609	7	26	1194	9	35	505	8	8	2
Satd. Flow (RTOR)	39	1757	0	30	1368	10	71	16	0	15	4
Volume (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Lane Group Flow (vph)	5	2	1	6	4	4	4	4	4	4	4
Turn Type	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases
Permitted Phases	Total Split (s)										
Act Effct Green (s)	9.7	89.7	9.1	86.9	86.9	13.0	13.0	13.0	13.0	13.0	13.0
Actuated g/C Ratio	0.07	0.68	0.07	0.67	0.67	0.10	0.10	0.10	0.10	0.10	0.10
v/c Ratio	0.24	0.59	0.01	0.51	0.51	0.03	0.03	0.03	0.03	0.03	0.03
Control Delay	60.6	12.3	71.0	6.4	2.7	67.4	0.1	53.0	50.5	19.7	0.0
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	12.3	71.0	6.4	2.7	67.4	0.1	53.0	50.5	19.7	0.0
LOS	E	B	E	A	A	E	A	A	A	D	B
Approach Delay	13.4		7.8		55.1					33.9	
Approach LOS	B	B	A	A	E	E	E	E	E	C	C
Queue Length 50th (ft)	32	275	0	73	0	58	0	12	3	3	0
Queue Length 95th (ft)	m37	m485	m53	184	m1	56	0	20	9	9	0
Internal Link Dist (ft)	145	1590	605	609	609	609	609	609	609	609	609
Turn Bay Length (ft)	231	2439	231	2365	1054	182	643	182	244	224	100
Base Capacity (vph)	0	0	0	122	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.72	0.13	0.62	0.01	0.39	0.02	0.05	0.02	0.02	0.11

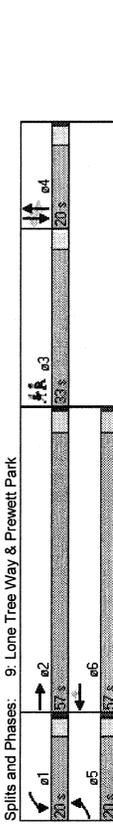
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3535	0	1770	3539	1583	1770	1561	0	1770	1863
Satd. Flow (prot)	0.950			0.150			0.155			0.147	
Flt Permitted	1770	3535	0	1768	3539	1545	1394	1561	0	1388	1863
Satd. Flow (perm)	36	1609	7	26	1194	9	35	505	8	8	2
Satd. Flow (RTOR)	39	1757	0	30	1368	10	71	16	0	15	4
Volume (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Lane Group Flow (vph)	5	2	1	6	4	4	4	4	4	4	4
Turn Type	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases
Permitted Phases	Total Split (s)										
Act Effct Green (s)	9.7	89.7	9.1	86.9	86.9	13.0	13.0	13.0	13.0	13.0	13.0
Actuated g/C Ratio	0.07	0.68	0.07	0.67	0.67	0.10	0.10	0.10	0.10	0.10	0.10
v/c Ratio	0.24	0.59	0.01	0.51	0.51	0.03	0.03	0.03	0.03	0.03	0.03
Control Delay	60.6	12.3	71.0	6.4	2.7	67.4	0.1	53.0	50.5	19.7	0.0
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	12.3	71.0	6.4	2.7	67.4	0.1	53.0	50.5	19.7	0.0
LOS	E	B	E	A	A	E	A	A	A	D	B
Approach Delay	13.4		7.8		55.1					33.9	
Approach LOS	B	B	A	A	E	E	E	E	E	C	C
Queue Length 50th (ft)	32	275	0	73	0	58	0	12	3	3	0
Queue Length 95th (ft)	m37	m485	m53	184	m1	56	0	20	9	9	0
Internal Link Dist (ft)	145	1590	605	609	609	609	609	609	609	609	609
Turn Bay Length (ft)	231	2439	231	2365	1054	182	643	182	244	224	100
Base Capacity (vph)	0	0	0	122	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.72	0.13	0.62	0.01	0.39	0.02	0.05	0.02	0.02	0.11

Intersection Summary

Intersection Summary

Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 113 (87%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection LOS: B  
 Intersection Capacity Utilization 60.1%  
 Analysis Period (min): 15  
 # 35th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 113 (87%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection LOS: B  
 Intersection Capacity Utilization 60.1%  
 Analysis Period (min): 15  
 # 35th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 9: Lone Tree Way & Prewett Park

Splits and Phases: 9: Lone Tree Way & Prewett Park

11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

10: Lone Tree Way & Sagebrush Dr.  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

Near-Term + Project  
PM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBR
Lane Configurations	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1511	1766	3539	1770	1583
Satd. Flow (RTOR)	36	149	46	1104	85	101
Volume (vph)	1629	159	49	1383	139	166
Lane Group Flow (vph)	1629	159	49	1383	139	166
Turn Type	Perm	Prot	Perm	Prot	Perm	Prot
Protected Phases	2	1	6	8	8	8
Permitted Phases	2	1	6	8	8	8
Total Spilt (s)	60.0	60.0	30.0	90.0	40.0	40.0
Act Effect Green (s)	101.1	101.1	9.2	109.3	14.7	14.7
Actuated g/C Ratio	0.78	0.78	0.07	0.84	0.11	0.11
v/c Ratio	0.59	0.13	0.39	0.46	0.69	0.51
Control Delay	3.6	0.3	76.0	1.0	72.6	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Length	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	0.3	76.0	1.0	72.6	12.9
LOS	A	A	E	A	E	B
Approach Delay	3.3	0.0	3.6	40.1	0.0	0.0
Approach LOS	A	A	A	D	A	D
Queue Length 50th (ft)	17	1	41	10	115	0
Queue Length 95th (ft)	87	m1	73	12	116	3
Internal Link Dist (ft)	605	605	600	1855	497	115
Turn Bay Length (ft)	2753	1184	368	2974	504	569
Base Capacity (vph)	105	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.13	0.13	0.46	0.28	0.29

**Intersection Summary**  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 122 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.69  
 Intersection Signal Delay: 6.6  
 Intersection Capacity Utilization: 54.4%  
 Analysis Period (min): 15  
 Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Lone Tree Way & Sagebrush Dr.



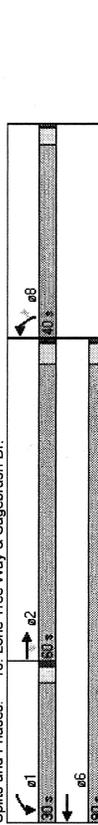
11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

Lane Group	EBL	EBT	WBL	WBT	SBL	SBR
Lane Configurations	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1583	1770
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1511	1766	3539	1451	1770
Satd. Flow (RTOR)	36	149	46	1104	85	101
Volume (vph)	1629	159	49	1383	139	166
Lane Group Flow (vph)	1629	159	49	1383	139	166
Turn Type	Perm	Prot	Perm	Prot	Perm	Prot
Protected Phases	5	2	6	6	4	4
Permitted Phases	5	2	6	6	4	4
Total Spilt (s)	30.0	90.0	60.0	60.0	40.0	40.0
Act Effect Green (s)	12.1	108.2	93.1	93.1	15.8	15.8
Actuated g/C Ratio	0.09	0.83	0.72	0.72	0.12	0.12
v/c Ratio	0.61	0.58	0.48	0.04	0.64	0.33
Control Delay	78.3	6.0	2.9	0.1	86.8	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Length	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.3	6.0	2.9	0.1	86.8	12.8
LOS	E	A	A	A	E	B
Approach Delay	9.9	2.8	45.5	0.0	0.0	0.0
Approach LOS	A	A	D	A	A	D
Queue Length 50th (ft)	86	131	13	0	114	0
Queue Length 95th (ft)	122	711	76	m0	128	22
Internal Link Dist (ft)	1655	820	1655	820	457	115
Turn Bay Length (ft)	155	155	2945	2533	1044	504
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.58	0.48	0.04	0.27	0.18

**Intersection Summary**  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 75 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 9.6  
 Intersection Capacity Utilization: 54.9%  
 Analysis Period (min): 15  
 Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Lone Tree Way & Williamson Ranch Plaza

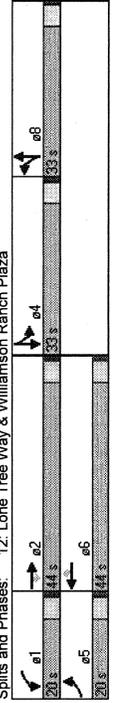


12: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

13: Lone Tree Way & Wal-Mart Driveway  
Antioch Walmart Expansion

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	EBL	EBT	WBT	WBR	SBL	SBR
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	1655	1112	161	0	44
Peak Hour Factor	0.86	0.86	0.94	0.84	0.84	0.84
Hourly flow rate (vph)	0	1924	1183	107	0	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)		510	500			
pX, platoon unblocked		0.80			0.73	0.80
vC, conflicting volume		1280			2145	384
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vC, unblocked vol		873			1122	0
IC, single (s)		4.1			6.8	6.9
IC, 2 stage (s)						
IF (s)		2.2			3.5	3.3
PO queue free %		100			100	94
EBL capacity (veh/h)		618			145	872
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4
Volume Total	962	962	394	394	107	52
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	1700	1700	1700	1700	1700	872
Volume to Capacity	0.57	0.57	0.23	0.23	0.23	0.06
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.4
Lane LOS						A
Approach LOS						A
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	49.1%					
Analysis Period (min)	15					
ICU Level of Service	A					

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	1647	1647	0	3433	1616	0
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0
Satd. Flow (perm)	1745	3539	1422	1757	1568	1568	0	3419	1616	0
Satd. Flow (RTOR)	109	1393	28	57	1043	48	7	18	44	126
Volume (vph)	130	1658	33	68	1242	57	10	86	0	162
Lane Group Flow (vph)	Prot	Perm	Prot	Perm	Split	Split	Split	Split	Split	0
Turn Type	5	2	1	6	6	8	4	4	4	4
Protected Phases										
Permitted Phases	20.0	44.0	20.0	44.0	33.0	33.0	0.0	33.0	33.0	0.0
Total Split (s)	15.7	80.3	13.3	75.4	13.1	13.1	15.8	15.8	15.8	0.0
Act Effct Green (s)	0.12	0.82	0.82	0.10	0.58	0.58	0.10	0.12	0.12	0.12
Actuated g/C Ratio	0.61	0.76	0.04	0.38	0.60	0.07	0.06	0.39	0.39	0.43
v/c Ratio	72.4	18.5	7.9	61.3	20.6	15.1	47.7	23.4	53.7	17.7
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	72.4	18.5	7.9	61.3	20.6	15.1	47.7	23.4	53.7	17.7
Total Delay	E	B	A	E	C	B	D	C	D	B
LOS	22.1	22.4	25.9	38.3						
Approach LOS										
Queue Length 50th (ft)	108	489	3	60	195	6	8	20	67	17
Queue Length 95th (ft)	150	#1047	m18	m85	#651	m26	18	40	75	48
Internal Link Dist (ft)	170	820	80	135	430	80	200	200	440	440
Turn Bay Length (ft)	237	2187	881	231	2054	800	408	427	792	480
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.76	0.04	0.28	0.60	0.07	0.02	0.20	0.20	0.27
Intersection Summary										
Cycle Length	130									
Actuated Cycle Length	130									
Offset	#3 (41%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow									
Control Type	Actuated-Coordinated									
Maximum v/c Ratio	0.76									
Intersection Signal Delay	23.6									
Intersection LOS	C									
Intersection Capacity Utilization	62.5%									
Analysis Period (min)	15									
# 95th percentile volume exceeds capacity, queue may be longer.	m									
Queue shown is maximum after two cycles.										
m Volume for 95th percentile queue is metered by upstream signal.										



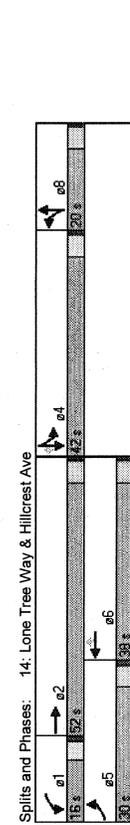
Splits and Phases: 12: Lone Tree Way & Williamson Ranch Plaza

14: Lone Tree Way & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	5021	0	1770	5085	1583	1770	3319	0	*2000	3539	1583
Flt Permitted	0.960	0.960	0	0.960	0.960	0.960	0.960	0.960	0	0.960	0.960	0.960
Satd. Flow (perm)	1767	5021	0	1764	5085	1517	1741	3319	0	3377	3539	1534
Satd. Flow (RTDR)	10	332	0	332	282	282	64	96	50	484	93	144
Volume (vph)	218	1286	91	83	1035	282	64	96	50	484	93	144
Lane Group Flow (vph)	242	1530	0	98	1218	332	90	205	0	590	113	178
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Split	Split	Split	Split	Split	Perm
Protected Phases	5	2	1	6	6	8	8	8	4	4	4	4
Permitted Phases												
Total Split (s)	30.0	52.0	0.0	16.0	38.0	20.0	20.0	20.0	0.0	42.0	42.0	42.0
Act Effct Green (s)	23.8	51.7	12.3	40.3	40.3	15.0	15.0	15.0	0.0	39.0	39.0	39.0
Actuated g/C Ratio	0.18	0.40	0.05	0.31	0.31	0.12	0.12	0.12	0.00	0.30	0.30	0.30
v/c Ratio	0.75	0.78	0.59	0.77	0.47	0.44	0.47	0.47	0.98	0.98	0.11	0.30
Control Delay	71.5	24.3	62.6	51.7	16.6	60.2	41.3	78.2	33.3	6.2	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.5	24.3	62.6	51.7	16.6	60.2	41.3	78.2	33.3	6.2	0.0	0.0
LOS	E	C	E	D	B	E	D	E	D	E	C	A
Approach Delay	30.8	45.3	47.1	47.1	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0
Approach LOS	C	D	D	D	E	E	E	E	E	E	E	E
Queue Length 50th (ft)	159	288	85	395	85	71	60	254	36	0	0	0
Queue Length 95th (ft)	m291	284	138	287	143	97	72	#321	54	39	0	0
Internal Link Dist (ft)	620	420	210	690	730	195	2575	400	1660	290	0	0
Turn Bay Length (ft)	368	2004	180	1575	699	231	465	600	1062	583	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.76	0.54	0.77	0.47	0.39	0.42	0.98	0.11	0.30	0.00	0.00

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 50 (38%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 42.2  
 Intersection LOS: D  
 Intersection Capacity Utilization: 76.2%  
 Analysis Period (min): 15  
 ICU Level of Service D  
 \* User Entered Value  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



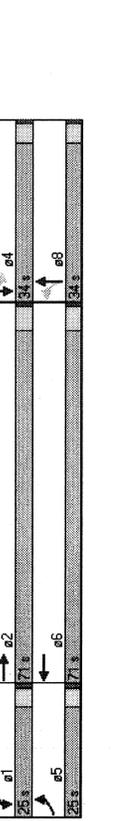
Splits and Phases: 14: Lone Tree Way & Hillcrest Ave

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	5049	0	1770	5067	0	1770	1576	0	1770	1651	0
Flt Permitted	0.960	0.960	0	0.960	0.960	0.960	0.960	0.960	0	0.960	0.960	0.960
Satd. Flow (perm)	1767	5049	0	1769	5067	0	1362	1576	0	843	1651	0
Satd. Flow (RTDR)	7	181	0	4	4	0	181	181	0	28	28	0
Volume (vph)	21	1723	67	162	1283	30	48	10	145	49	9	21
Lane Group Flow (vph)	22	1845	0	172	1397	0	60	193	0	66	40	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	1	6	6	8	8	8	4	4	4	4
Permitted Phases												
Total Split (s)	25.0	71.0	0.0	25.0	71.0	0.0	34.0	34.0	0.0	34.0	34.0	0.0
Act Effct Green (s)	9.6	84.0	19.4	98.4	98.4	17.6	17.6	17.6	0.0	17.6	17.6	0.0
Actuated g/C Ratio	0.07	0.65	0.15	0.76	0.76	0.14	0.14	0.14	0.00	0.14	0.14	0.00
v/c Ratio	0.17	0.57	0.65	0.36	0.36	0.33	0.32	0.52	0.58	0.16	0.16	0.00
Control Delay	76.2	6.5	63.2	6.0	6.0	52.5	12.9	70.0	21.8	0.0	0.0	0.0
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.2	6.7	63.2	6.0	6.0	52.5	12.9	70.0	21.8	0.0	0.0	0.0
LOS	E	A	E	A	A	D	B	E	C	E	C	C
Approach Delay	7.5	12.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3
Approach LOS	A	B	C	C	C	C	C	C	C	C	C	C
Queue Length 50th (ft)	19	34	144	53	47	9	9	54	9	0	0	0
Queue Length 95th (ft)	m23	m484	231	194	72	47	75	75	28	0	0	0
Internal Link Dist (ft)	650	650	200	1655	786	200	130	100	614	0	0	0
Turn Bay Length (ft)	200	3264	304	3835	325	514	201	415	0	0	0	0
Base Capacity (vph)	0	598	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.69	0.57	0.36	0.18	0.38	0.33	0.10	0.10	0.00	0.00	0.00

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 96 (75%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 11.7  
 Intersection LOS: B  
 Intersection Capacity Utilization: 71.6%  
 Analysis Period (min): 15  
 ICU Level of Service C  
 m Volume for 95th percentile queue is metered by upstream signal.



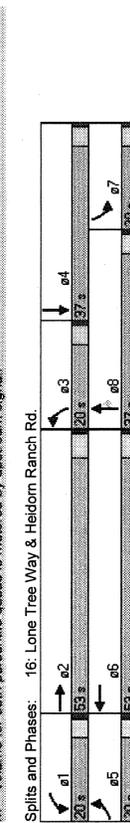
Splits and Phases: 15: Lone Tree Way & Vista Grande

16: Lone Tree Way & Heidorn Ranch Rd.  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBT	SBR
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1770	5043	0	1770	5079	0	3433	1863	1770
0.950	0.950	0	0.950	0.950	0	0.950	0.950	0.950
1768	5043	0	1769	5079	0	3433	1863	1765
5	1786	86	77	1420	14	91	5	81
5	1950	0	85	1575	0	120	7	107
5	2	1	6	3	8	6	7	4
20.0	53.0	0.0	20.0	53.0	0.0	20.0	37.0	20.0
8.5	86.4	14.1	101.0	14.2	15.4	15.4	8.9	11.8
0.07	0.68	0.11	0.78	0.11	0.12	0.12	0.07	0.09
0.04	0.58	0.44	0.40	0.32	0.03	0.38	0.10	0.09
80.2	6.6	73.1	5.1	55.0	45.0	119.9	58.0	34.1
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.2	6.6	73.1	5.1	55.0	45.0	119.9	58.0	34.1
F	A	E	A	D	D	B	E	C
6.8	8.6	8.6	35.0	45.1	45.1	45.1	45.1	45.1
4	43	76	30	50	5	0	10	6
m0	633	89	489	67	15	28	20	14
185	1065	400	905	200	972	200	50	316
231	3354	234	3945	479	487	487	231	456
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0.02	0.58	0.36	0.40	0.25	0.01	0.22	0.05	0.03

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 114 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.58  
 Intersection Signal Delay: 9.5  
 Intersection LOS: A  
 Intersection Capacity Utilization 61.1%  
 Analysis Period (min): 15  
 # Volume for 95th percentile queue is metered by upstream signal.



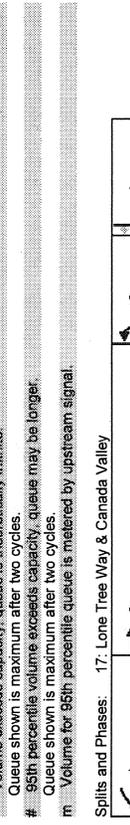
Splits and Phases: 16: Lone Tree Way & Heidorn Ranch Rd.

17: Lone Tree Way & Canada Valley  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBT	SBR
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
3433	5085	1583	3433	5085	1583	3433	1674	1504
0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
3430	5085	1583	3433	5085	1583	3433	1674	1504
156	1740	69	337	1312	104	71	186	310
168	1871	74	374	1458	581	139	141	202
5	2	1	6	3	8	6	7	4
20.0	58.0	30.0	68.0	20.0	22.0	20.0	20.0	22.0
17.0	67.5	18.9	69.5	10.5	14.5	14.5	17.0	21.0
0.13	0.52	0.62	0.15	0.53	0.63	0.08	0.11	0.13
0.37	0.71	0.09	0.75	0.54	0.50	0.70	0.59	1.84
45.3	17.8	4.7	68.1	15.3	2.1	63.2	67.0	13.9
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45.3	17.8	4.7	68.1	15.3	2.1	63.2	67.0	13.9
D	B	A	E	B	A	E	E	B
19.6	20.5	20.5	43.6	43.6	43.6	43.6	29.7	29.7
70	257	0	164	205	14	58	108	0
86	285	m25	m173	m234	m29	75	143	33
320	905	630	285	245	150	542	160	1064
448	2841	832	713	2717	1104	448	288	388
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0.37	0.71	0.09	0.52	0.54	0.53	0.31	0.52	1.84

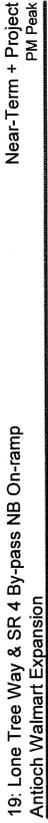
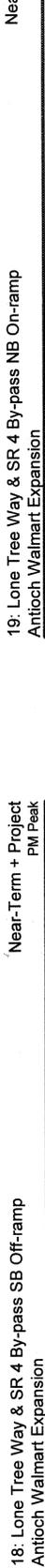
Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 87 (67%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.84  
 Intersection Signal Delay: 53.0  
 Intersection LOS: D  
 Intersection Capacity Utilization 82.1%  
 Analysis Period (min): 15  
 # Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 17: Lone Tree Way & Canada Valley

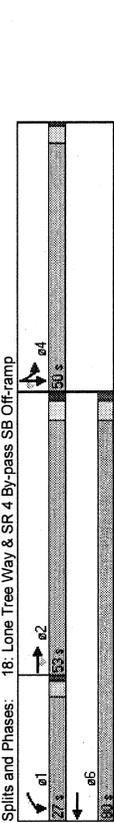
18: Lone Tree Way & SR 4 By-pass SB Off-ramp  
Antioch Walmart Expansion

19: Lone Tree Way & SR 4 By-pass NB On-ramp  
Antioch Walmart Expansion



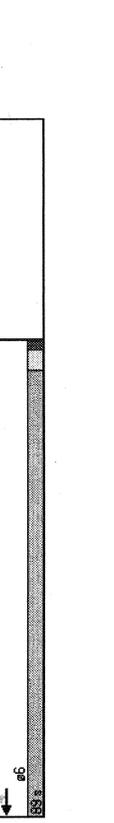
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	0	5085	1583	3433	5085	0	0	0	0	1681	1688	1583
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	0	1681	1688	1583
Fit Permitted	0	5085	1583	3433	5085	0	0	0	0	1681	1688	1583
Satd. Flow (perm)	0	5085	1583	3432	5085	0	0	0	0	1681	1688	1583
Satd. Flow (RTOR)	0	1599	646	273	1571	0	0	0	0	506	10	591
Volume (vph)	0	1797	726	314	1806	0	0	0	0	285	295	864
Lane Group Flow (vph)	0	1797	726	314	1806	0	0	0	0	285	295	864
Turn Type	2	Perm	Prot	1	6	4				Split	Perm	Perm
Protected Phases	2	2	2	1	6	4				4	4	4
Permitted Phases	0.0	59.0	53.0	27.0	80.0	0.0	0.0	0.0	0.0	50.0	50.0	50.0
Total Split (s)	0.0	57.0	57.0	17.0	77.0	0.0	0.0	0.0	0.0	47.0	47.0	47.0
Act Effct Green (s)	0.44	0.44	0.44	0.13	0.99	0.36	0.36	0.36	0.36	0.47	0.48	0.36
Actuated g/C Ratio	0.81	0.68	0.70	0.60	0.60	0.47	0.48	0.48	0.48	0.35	0.35	0.35
v/c Ratio	24.9	4.8	67.4	10.7	119.3	35.1	35.4	119.3	119.3	35.1	35.4	119.3
Control Delay	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.9	5.7	67.4	10.7	119.3	35.1	35.4	119.3	119.3	35.1	35.4	119.3
LOS	C	A	E	B	B	D	D	D	D	D	D	F
Approach Delay	19.4	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1
Approach LOS	B	B	B	B	B	D	D	D	D	D	D	F
Queue Length 50th (ft)	182	31	125	208	208	193	201	644	644	193	201	644
Queue Length 95th (ft)	m337	m119	m156	207	207	280	290	#667	#667	280	290	#667
Internal Link Dist (ft)	760			760	760	871				871		
Turn Bay Length (ft)	315	175	175	175	175	280	280	528	528	280	280	528
Base Capacity (vph)	2229	1063	634	3012	3012	608	610	583	583	608	610	583
Starvation Cap Reductn	0	134	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.78	0.50	0.60	0.60	0.47	0.48	1.14	1.14	0.47	0.48	1.14

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 100 (77%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.14  
 Intersection LOS: C  
 ICU Level of Service: D  
 Analysis Period (min): 15  
 # Volume exceeds capacity, queue is theoretically infinite.  
 # Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 # Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	0	5085	1583	3433	5085	0	0	0	0	1681	1685	1583
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	0	1681	1685	1583
Fit Permitted	0	5085	1583	3433	5085	0	0	0	0	1681	1685	1583
Satd. Flow (perm)	0	5085	1583	3432	5085	0	0	0	0	1681	1685	1583
Satd. Flow (RTOR)	0	1770	418	21	1271	440	590	43	340	401	420	0
Volume (vph)	0	1883	445	24	1428	494	380	401	420	0	0	0
Lane Group Flow (vph)	0	1883	445	24	1428	494	380	401	420	0	0	0
Turn Type	2	Perm	Prot	1	6	8				Split	Perm	Perm
Protected Phases	2	2	2	1	6	8				8	8	8
Permitted Phases	0.0	64.0	64.0	25.0	89.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	0.0	63.5	63.5	7.1	89.6	34.4	34.4	34.4	34.4	34.4	34.4	34.4
Act Effct Green (s)	0.84	0.64	0.64	0.68	0.69	0.89	0.26	0.26	0.26	0.26	0.26	0.26
Actuated g/C Ratio	0.58	0.40	0.41	0.41	0.41	0.85	0.26	0.26	0.26	0.26	0.26	0.26
v/c Ratio	4.0	1.1	60.0	9.8	17	63.7	68.7	17.5	17.5	63.7	68.7	17.5
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	1.1	60.0	9.8	17	63.7	68.7	17.5	17.5	63.7	68.7	17.5
LOS	A	A	A	E	A	A	E	E	E	E	E	B
Approach Delay	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Approach LOS	A	A	A	A	A	D	D	D	D	D	D	D
Queue Length 50th (ft)	269	21	10	191	0	308	330	87	87	308	330	87
Queue Length 95th (ft)	63	m0	25	218	33	381	403	148	148	381	403	148
Internal Link Dist (ft)	760			820	820	895				895		
Turn Bay Length (ft)	3265	215	280	581	3504	1218	491	485	684	1166	1166	684
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.40	0.04	0.41	0.41	0.77	0.81	0.63	0.63	0.77	0.81	0.63

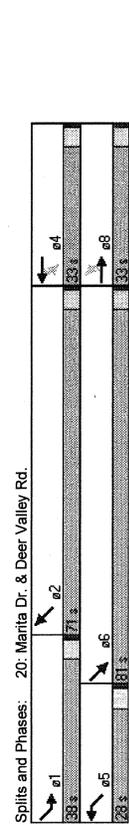
Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 10 (6%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 15.2  
 Intersection LOS: B  
 ICU Level of Service: B  
 Analysis Period (min): 15  
 m Volume for 95th percentile queue is metered by upstream signal.



20: Marita Dr. & Deer Valley Rd.  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

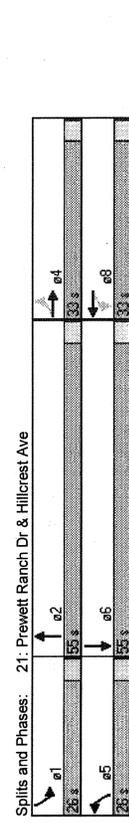
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1583	0	1770	1598	0	1770	3514	0	1770	3539	0
Satd. Flow (prot)	0.569	0.569	0	0.766	0.766	0	0.950	0.950	0	0.950	0.950	0
Flt Permitted	1060	1583	0	1406	1598	0	1765	3514	0	1754	3539	0
Satd. Flow (perm)	318	318	0	113	113	0	4	4	0	15	1109	3
Satd. Flow (RTOR)	13	0	3	23	4	79	26	870	29	15	1109	3
Volume (vph)	19	4	0	33	119	0	33	1152	0	16	1208	0
Lane Group Flow (vph)	Perm	Perm	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	8	8	4	4	4	4	1	6	5	2		
Permitted Phases	8	33.0	0.0	33.0	33.0	0.0	38.0	81.0	0.0	28.0	71.0	0.0
Total Split (s)	10.2	10.2	0.0	10.2	10.2	0.0	9.6	85.7	0.0	8.6	82.4	0.0
Act Effect Green (s)	0.10	0.10	0.00	0.10	0.10	0.00	0.09	0.80	0.00	0.08	0.77	0.00
Actuated g/C Ratio	0.19	0.01	0.00	0.25	0.47	0.00	0.22	0.41	0.12	0.44	0.12	0.44
v/c Ratio	47.5	0.0	0.0	47.7	15.9	0.0	47.6	4.6	48.0	5.9	48.0	5.9
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	47.5	0.0	0.0	47.7	15.9	0.0	47.6	4.6	48.0	5.9	48.0	5.9
Total Delay	D	A	D	D	B	D	D	A	D	D	A	A
LOS	D	A	D	D	B	D	D	A	D	D	A	A
Approach Delay	39.2	0.0	0.0	22.8	0.0	0.0	5.8	0.0	0.0	6.5	0.0	0.0
Approach LOS	D	D	D	C	C	C	A	A	A	A	A	A
Queue Length 50th (ft)	11	0	0	19	3	0	19	60	9	146	0	0
Queue Length 95th (ft)	26	0	0	40	27	0	46	166	32	237	0	0
Internal Link Dist (ft)	345	0	0	427	0	0	825	0	0	845	0	0
Turn Bay Length (ft)	40	100	100	100	100	175	125	125	125	125	125	125
Base Capacity (vph)	252	619	334	466	466	2820	342	2729	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.01	0.10	0.26	0.07	0.41	0.05	0.44	0.05	0.44	0.05	0.44
Intersection Summary												
Cycle Length	142											
Actuated Cycle Length	106.9											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.47											
Intersection Signal Delay	7.4											
Intersection LOS	A											
ICU Level of Service A												
Intersection Capacity Utilization	45.4%											
Analysis Period (min)	15											



21: Prewett Ranch Dr. & Hillcrest Ave  
Antioch Walmart Expansion

Near-Term + Project  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1863	0	1863	1801	0	1863	3539	0	1770	3256	0
Satd. Flow (prot)	0.784	0.784	0	0.960	0.960	0	0.950	0.950	0	0.950	0.950	0
Flt Permitted	1367	1863	0	1863	1801	0	1863	3539	0	1770	3256	0
Satd. Flow (perm)	318	318	0	113	113	0	83	123	0	185	185	0
Satd. Flow (RTOR)	136	23	0	0	0	11	3	0	83	0	12	140
Volume (vph)	182	27	0	36	0	92	0	14	310	0	14	310
Lane Group Flow (vph)	Perm	Perm	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	8	8	8	5	2	1	6			
Permitted Phases	4	33.0	0.0	33.0	33.0	0.0	26.0	55.0	0.0	26.0	55.0	0.0
Total Split (s)	14.1	14.1	0.0	13.6	13.6	0.0	26.2	26.2	0.0	26.2	26.2	0.0
Act Effect Green (s)	0.29	0.29	0.00	0.28	0.28	0.00	0.04	0.04	0.00	0.05	0.15	0.00
Actuated g/C Ratio	0.41	0.05	0.00	0.07	0.07	0.00	0.04	0.04	0.00	0.05	0.15	0.00
v/c Ratio	9.8	6.5	0.0	5.8	5.8	0.0	7.9	12.8	0.0	7.9	12.8	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	9.8	6.5	0.0	5.8	5.8	0.0	7.9	12.8	0.0	7.9	12.8	0.0
Total Delay	A	A	A	A	A	A	A	B	A	A	B	A
LOS	A	A	A	A	A	A	A	B	A	A	B	A
Approach Delay	9.3	0.0	0.0	5.8	5.8	0.0	7.9	3.2	0.0	7.9	3.2	0.0
Approach LOS	A	A	A	A	A	A	A	A	A	A	A	A
Queue Length 50th (ft)	11	2	0	2	2	0	3	1	0	3	1	0
Queue Length 95th (ft)	52	13	0	6	6	0	22	12	0	22	12	0
Internal Link Dist (ft)	624	0	0	536	536	0	221	0	0	221	0	0
Turn Bay Length (ft)	100	100	968	940	940	2945	664	2793	0	664	2793	0
Base Capacity (vph)	710	968	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.03	0.04	0.04	0.04	0.03	0.02	0.11	0.03	0.02	0.11	0.03
Intersection Summary												
Cycle Length	114											
Actuated Cycle Length	44.8											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.41											
Intersection Signal Delay	5.8											
Intersection LOS	A											
ICU Level of Service A												
Intersection Capacity Utilization	28.6%											
Analysis Period (min)	15											



**LONG-TERM TRAFFIC CONDITIONS  
(TRAFFIX & SYNCRHO)**



Antioch Walmart Expansion

Scenario Report

Command: Cumulative AM  
 Volume: None  
 Geometry: Cumulative AM  
 Impact Fee: Default Impact Fee  
 Trip Generation: Cumulative AM  
 Trip Distribution: Near-Term  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

Antioch Walmart Expansion

Impact Analysis Report

Level Of Service

Intersection	Base Del/V/LOS Veh C	Future Del/V/LOS Veh C	Change in
# 1 Deer Valley Rd/ Country Hills	A xxxxx 0.572	A xxxxx 0.572	+ 0.001 V/C
# 2 Hillcrest Avenue/Laurel Road	A xxxxx 0.599	B xxxxx 0.645	+ 0.046 V/C
# 3 Hillcrest Avenue/Country Hills	A xxxxx 0.471	A xxxxx 0.479	+ 0.008 V/C
# 4 Hillcrest Avenue/Driveway	C 16.5 0.031	C 16.9 0.032	+ 0.420 D/V
# 5 Hillcrest Avenue/South Drivewa	B 11.1 0.099	B 11.1 0.100	-0.066 D/V
# 6 Lone Tree Way/Mokelumne Dr	E xxxxx 0.959	E xxxxx 0.962	+ 0.004 V/C
# 7 Lone Tree Way/Deer Valley Plaz	A xxxxx 0.551	A xxxxx 0.554	+ 0.004 V/C
# 8 Lone Tree Way/Deer Valley Rd	D xxxxx 0.815	D xxxxx 0.834	+ 0.019 V/C
# 9 Lone Tree Way/Deer Valley HS	B xxxxx 0.609	B xxxxx 0.625	+ 0.016 V/C
# 10 Lone Tree Way/Sagebrush Drive	A xxxxx 0.579	A xxxxx 0.595	+ 0.016 V/C
# 11 Lone Tree Way/Williamson Ranch	A xxxxx 0.540	A xxxxx 0.542	+ 0.002 V/C
# 12 Lone Tree Way/Indian Hill Dr/W	B xxxxx 0.627	A xxxxx 0.577	-0.050 V/C
# 13 Lone Tree Way/Driveway	B 12.7 0.011	B 12.8 0.011	+ 0.031 D/V
# 14 Lone Tree Way/Hillcrest Avenue	B xxxxx 0.642	C xxxxx 0.713	+ 0.071 V/C
# 15 Lone Tree Way/Vista Grande Dri	A xxxxx 0.410	A xxxxx 0.460	+ 0.050 V/C
# 16 Lone Tree Way/Heidorn Ranch Ro	A xxxxx 0.421	A xxxxx 0.567	+ 0.146 V/C
# 17 Lone Tree Way/Canada Valley Ro	A xxxxx 0.542	B xxxxx 0.672	+ 0.129 V/C
# 18 Lone Tree Way/SB SR-4 Bypass	B xxxxx 0.668	C xxxxx 0.712	+ 0.044 V/C
# 19 Lone Tree Way/NB SR-4 Bypass (	A xxxxx 0.427	B xxxxx 0.699	+ 0.272 V/C
# 20 Deer Valley Road/Marita Drive	A xxxxx 0.457	A xxxxx 0.450	-0.006 V/C
# 21 Hillcrest Ave/Prewett Ranch Dr	A xxxxx 0.422	A xxxxx 0.428	+ 0.006 V/C

Antioch Walmart Expansion

Level Of Service Computation Report
CTALOS Method (Future Volume Alternative)

Intersection #1 Deer Valley Rd/ Country Hills Dr

Cycle (sec): 100
Loss Time (sec): 9
Optimal Cycle: 43

Street Name: Deer Valley Road
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0

Volume Module:
Base Vol: 13 551 97 77 816 214 172 130 31 160 156 127
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Saturation Flow Module:
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Capacity Analysis Module:
Vol/Sat: 0.01 0.19 0.19 0.04 0.30 0.30 0.10 0.09 0.09 0.09 0.16 0.16
Crit Volume: 13 517 172 283

Antioch Walmart Expansion

Level Of Service Computation Report
CTALOS Method (Future Volume Alternative)

Intersection #2 Hillcrest Avenue/Laurel Road

Cycle (sec): 100
Loss Time (sec): 9
Optimal Cycle: 52

Street Name: Hillcrest Avenue
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Ignore Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes: 1 0 1 1 1 0 1 0 1 0 1 0 1 0 1 0 1 0

Volume Module:
Base Vol: 67 512 463 191 493 80 150 89 100 325 118 188
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Saturation Flow Module:
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720
Adjustment: 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Capacity Analysis Module:
Vol/Sat: 0.04 0.16 0.18 0.21 0.19 0.19 0.09 0.11 0.11 0.17 0.07 0.00
Crit Volume: 280 353 353 189 287

Antioch Walmart Expansion

Level Of Service Computation Report
CTALOS Method (Future Volume Alternative)
\*\*\*\*\*
Intersection #3 Hillcrest Avenue/Country Hills Drive

Cycle (sec): 100
Loss Time (sec): 9
Optimal Cycle: 36
Level Of Service: A
Street Name: Hillcrest Avenue
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Permitted Permitted
Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0

Volume Module:
Base Vol: 104 672 38 86 714 39 64 77 155 87 93 173
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Saturation Flow Module:
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720
Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Capacity Analysis Module:
Vol/Sat: 0.06 0.17 0.17 0.05 0.23 0.23 0.04 0.04 0.03 0.05 0.15 0.15
Crit Volume: 104 390 64 266
Crit Moves: \*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
\*\*\*\*\*
Intersection #4 Hillcrest Avenue/Driveaway

Average Delay (sec/veh): 0.1
Worst Case Level Of Service: C [16.9]
Street Name: Hillcrest Avenue
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Uncontrolled Uncontrolled Stop Sign Stop Sign
Rights: Include Include Include Include

Lanes: 0 0 2 0 0 0 1 0 1 0 0 0 0 1 0 0 0 0 0 0
Volume Module:
Base Vol: 0 812 0 0 934 8 0 0 10 0 0 0 0 0 0 0 0 0 0

Critical Gap Module:
Critical Gp: xxxxx xxxxx
FollowUpTm: xxxxx xxxxx

Capacity Module:
Conflict Vol: xxxxx xxxxx
Potential Cap: xxxxx xxxxx

Level Of Service Module:
2Way95thQ: xxxxx xxxxx
Control Del: xxxxx xxxxx







Antioch Walmart Expansion

Level Of Service Computation Report  
 CATALOS Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #11 Lone Tree Way/Williamson Ranch Plaza (OSH)  
 \*\*\*\*\*  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.542  
 Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 31 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Williamson Ranch Plaza (OSH) Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Include Permitted  
 Rights: Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 0 0 0 0 1 0 0 0 1 0 2 0 0 0 2 0 1

Volume Module:  
 Base Vol: 0 0 0 25 0 46 82 1376 0 0 1567 50  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 25 0 46 82 1376 0 0 1567 50  
 Added Vol: 0 0 0 0 0 0 0 55 0 0 8 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 25 0 46 82 1431 0 0 1575 50  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 0 0 0 25 0 46 82 1431 0 0 1575 50  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 0 0 0 25 0 46 82 1431 0 0 1575 50  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 25  
 RTOR Vol: 0 0 0 25 0 46 82 1431 0 0 1575 25  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 0 0 0 25 0 82 1431 0 0 1575 25

Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 0.00 0.00 0.00 1.00 0.00 1.00 1.00 2.00 0.00 0.00 2.00 1.00  
 Final Sat.: 0 0 0 1650 0 1650 1650 3300 0 0 3300 1650  
 Capacity Analysis Module:  
 Vol/Sat: 0.00 0.00 0.00 0.02 0.00 0.00 0.05 0.43 0.00 0.00 0.48 0.02  
 Crit Volume: 0 25 82 788  
 Crit Moves: \*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report  
 CATALOS Method (Future Volume Alternative)  
 \*\*\*\*\*  
 Intersection #12 Lone Tree Way/Indian Hill Dr/Williamson Ranch Plaza (Wal-Mart, OSH)  
 \*\*\*\*\*  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.577  
 Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 54 Level Of Service: A  
 \*\*\*\*\*  
 Street Name: Indian Hill Dr/Williamson Ranch Pl Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 1 0 0 1 0 2 0 0 1 0 1 0 2 0 1 1 0 2 0 1

Volume Module:  
 Base Vol: 12 15 69 43 1 21 86 1275 6 26 1681 45  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 12 15 69 43 1 21 86 1275 6 26 1681 45  
 Added Vol: 0 0 0 0 0 0 0 -86 141 0 0 8 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 12 15 69 43 1 21 0 1416 6 26 1689 45  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 12 15 69 43 1 21 0 1416 6 26 1689 45  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 12 15 69 43 1 21 0 1416 6 26 1689 45  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 24  
 RTOR Vol: 12 15 69 43 1 21 0 1416 0 26 1689 21  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 12 15 69 43 1 21 0 1416 0 26 1689 21

Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 0.18 0.82 2.00 0.05 0.95 1.00 2.00 1.00 1.00 2.00 1.00  
 Final Sat.: 1650 295 1355 3000 75 1575 1650 3300 1650 1650 3300 1650  
 Capacity Analysis Module:  
 Vol/Sat: 0.01 0.05 0.05 0.01 0.01 0.01 0.00 0.43 0.00 0.02 0.51 0.01  
 Crit Volume: 84 22 0 845  
 Crit Moves: \*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
Intersection #13 Lone Tree Way/Driveway

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B [ 12.8]
Street Name: Driveway Lone Tree Way
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Uncontrolled Uncontrolled
Rights: Include Include Include Include
Lanes: 0 0 0 0 0 0 0 0 1 0 0 2 0 0 0 0 3 0 1

Volume Module:
Base Vol: 0 0 0 0 0 0 5 0 1395 0 0 1686 65
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Critical Gap Module:
Critical Gap: xxxxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
FollowUpTIm: xxxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx

Capacity Module:
Conflict Vol: xxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
Potential Cap.: xxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx

Level Of Service Module:
2Way95thQ: xxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
Control Del: xxxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx

Note: Queue reported is the distance per lane in feet.
\*\*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report
CTALOS Method (Future Volume Alternative)
Intersection #14 Lone Tree Way/Hillcrest Avenue

Cycle (sec): 130 Critical Vol./Cap.(X): 0.713
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 80 Level Of Service: C
Street Name: Hillcrest Avenue Lone Tree Way
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected Protected Protected
Rights: Include Include Include Include Include Include
Lanes: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Volume Module:
Base Vol: 351 421 134 351 248 324 233 771 413 72 1069 199
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Critical Gap Module:
Critical Gap: xxxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
FollowUpTIm: xxxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx

Capacity Module:
Conflict Vol: xxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
Potential Cap.: xxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx

Level Of Service Module:
2Way95thQ: xxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
Control Del: xxxxx xxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx

Note: Queue reported is the distance per lane in feet.
\*\*\*\*\*



Antioch Walmart Expansion

Level Of Service Computation Report
CTALOS Method (Future Volume Alternative)

Intersection #17 Lone Tree Way/Canada Valley Road

Cycle (sec): 100
Loss Time (sec): 12
Optimal Cycle: 69

Street Name: Canada Valley Road
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Include Include Include Include

Min. Green: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Y+R: 2.0 0.0 1.0 1.0 1.0 1.0 2.0 3.0 1.0 2.0 3.0 0.0 1.0

Lanes: 2 0 0 1 1 1 0 1 0 1 2 0 3 0 1

Volume Module:

Base Vol: 66 36 93 336 81 97 56 1069 107 302 1244 287
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 66 36 93 336 81 97 56 1069 107 302 1244 287

Saturation Flow Module:

Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment: 0.91 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Antioch Walmart Expansion

Level Of Service Computation Report
CTALOS Method (Future Volume Alternative)

Intersection #18 Lone Tree Way/SB SR-4 Bypass

Cycle (sec): 100
Loss Time (sec): 9
Optimal Cycle: 65

Street Name: SB SR-4 Bypass
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Permitted Protected Permitted Protected
Rights: Include Include Include Include

Min. Green: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Y+R: 0.0 0.0 0.0 1.0 1.0 0.0 1.0 0.0 3.0 1.0 2.0 3.0 0.0

Lanes: 0 0 0 0 1 1 0 0 1 0 0 3 0 1

Volume Module:

Base Vol: 0 0 0 545 7 531 0 993 474 176 1304 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 0 0 0 545 7 531 0 993 474 176 1304 0

Saturation Flow Module:

Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00



Antioch Walmart Expansion

Level Of Service Computation Report  
 CATALOS Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #21 Hillcrest Ave/Prewett Ranch Dr  
 Cycle (sec): 100  
 Loss Time (sec): 9  
 Optimal Cycle: 33  
 Critical Vol./Cap.(X): 0.428  
 Average Delay (sec/veh): xxxxxx  
 Level Of Service: A

Street Name: Hillcrest Ave Prewett Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Protected	Include	Protected	Include	Protected	Include	Protected	Include
Rights:								
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0
Lanes:	1 0 1 1 0	1 0 1 1 0	1 0 1 1 0	1 0 1 1 0	1 0 1 1 0	1 0 1 1 0	1 0 1 1 0	1 0 1 1 0

Volume Module:

Base Vol:	138 776	0 13 613	112 118 133	93 93	0 48 10
Growth Adj:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00 1.00
Initial Bse:	138 776	0 13 613	112 118 133	93 93	0 48 10
Added Vol:	0 144	0 21	0 0 0	0 0 0	0 0 0
PasserByVol:	0 0	0 0	0 0 0	0 0 0	0 0 0
Initial Fut:	138 920	0 13 634	112 118 133	93 93	0 48 10
User Adj:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00 1.00
PHF Adj:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00 1.00
PHF Volume:	138 920	0 13 634	112 118 133	93 93	0 48 10
Reduc Vol:	0 0	0 0	0 0 0	0 0 0	0 0 0
Reduced Vol:	138 920	0 13 634	112 118 133	93 93	0 48 10
RTOR Reduct:	0 0	0 0	0 0 0	0 0 0	0 0 0
RTOR Vol:	138 920	0 13 634	112 118 133	93 93	0 48 10
PCE Adj:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00 1.00
MLF Adj:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00 1.00
FinalVolume:	138 920	0 13 634	112 118 133	93 93	0 48 10

Saturation Flow Module:

Sat/Lane:	1720 1720	1720 1720	1720 1720	1720 1720	1720 1720
Adjustment:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00
Lanes:	1.00 2.00	0.00 1.00	1.70 0.30	1.00 0.59	0.41 1.00
Final Sat.:	1720 3440	0 1720 2924	516 1720 1012	708 1720 1423	297

Capacity Analysis Module:

Vol/Sat:	0.08 0.27	0.00 0.01	0.22 0.22	0.07 0.13	0.13 0.00
Crit Volume:	138	373	226	0	0
Crit Moves:	****	****	****	****	****

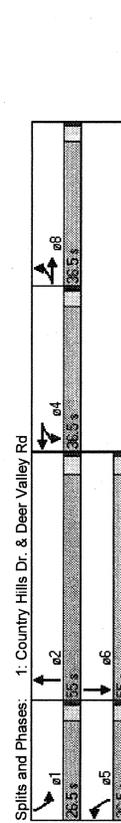
1: Country Hills Dr. & Deer Valley Rd  
Antioch Walmart Expansion

2: Laurel Rd. & Hillcrest Ave  
Antioch Walmart Expansion

Long-Term Conditions  
AM Peak

Long-Term Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1809	0	1770	1724	0	1770	3421	0	1770	3367	0
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1785	1809	0	1770	1724	0	1751	3421	0	1737	3367	0
Satd. Flow (perm)	7	7	0	24	24	0	14	14	0	23	23	0
Satd. Flow (RTOR)	172	130	31	160	156	127	13	553	97	77	819	214
Volume (vph)	207	194	0	205	363	0	15	756	0	93	1245	0
Lane Group Flow (vph)	Split	Split	Split	Split	Split	Split	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	8	8	8	4	4	4	5	2	1	6	6	6
Protected Phases												
Permitted Phases												
Total Split (s)	36.5	36.5	0.0	36.5	36.5	0.0	26.5	55.0	0.0	26.5	55.0	0.0
Act Effect Green (s)	20.2	20.2	29.3	29.3	29.3	8.2	45.2	12.9	54.3	12.9	54.3	0.0
Actuated g/C Ratio	0.17	0.17	0.25	0.25	0.25	0.07	0.39	0.11	0.48	0.11	0.48	0.0
v/c Ratio	0.68	0.61	0.46	0.81	0.81	0.13	0.57	0.48	0.79	0.48	0.79	0.0
Control Delay	58.8	53.3	43.5	55.1	55.1	62.0	33.3	61.2	33.7	61.2	33.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	53.3	43.5	55.1	55.1	62.0	33.3	61.2	33.7	61.2	33.7	0.0
LOS	E	D	D	E	E	E	C	E	E	E	C	C
Approach Delay	56.1	56.1	50.9	50.9	50.9	33.8	35.6	35.6	35.6	35.6	35.6	0.0
Approach LOS	E	E	D	D	D	C	D	D	D	D	D	D
Queue Length 50th (ft)	142	126	120	222	222	10	245	64	388	64	388	0
Queue Length 95th (ft)	238	216	214	362	362	36	362	129	592	129	592	0
Internal Link Dist (ft)	308	308	274	274	274	110	860	175	220	175	220	0
Turn Bay Length (ft)	145	145	120	495	498	303	1488	324	1571	324	1571	0
Base Capacity (vph)	460	475	495	498	498	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.41	0.41	0.73	0.73	0.05	0.51	0.29	0.79	0.29	0.79	0.0
Intersection Summary												
Cycle Length	154.5											
Actuated Cycle Length	117.2											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.81											
Intersection Signal Delay	40.7											
Intersection Capacity Utilization	73.1%											
Analysis Period (min)	15											



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1686	0	1770	1863	1583	1770	3452	0	1770	3311	0
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1171	1686	0	866	1663	1557	1768	3452	0	1752	3311	0
Satd. Flow (perm)	64	64	0	241	241	18	18	138	0	138	138	0
Satd. Flow (RTOR)	150	89	100	287	118	210	353	557	80	67	528	313
Volume (vph)	208	263	0	330	136	241	406	732	0	88	1107	0
Lane Group Flow (vph)	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	4	4	4	8	8	8	1	6	5	2	2	2
Protected Phases												
Permitted Phases												
Total Split (s)	40.0	40.0	0.0	40.0	40.0	20.0	40.0	0.0	20.0	40.0	0.0	0.0
Act Effect Green (s)	37.0	37.0	37.0	37.0	37.0	17.0	44.9	11.1	37.0	11.1	37.0	0.0
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.37	0.17	0.48	0.11	0.37	0.11	0.37	0.0
v/c Ratio	0.48	0.40	1.03	0.20	0.33	1.35	0.47	0.45	0.84	0.45	0.84	0.0
Control Delay	28.7	19.4	91.9	22.4	4.2	212.0	21.1	48.1	32.3	48.1	32.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.7	19.4	91.9	22.4	4.2	212.0	21.1	48.1	32.3	48.1	32.3	0.0
LOS	C	B	B	F	C	A	F	C	D	D	C	C
Approach Delay	23.5	23.5	48.6	48.6	89.2	89.2	89.2	89.2	89.2	89.2	89.2	0.0
Approach LOS	C	C	D	D	F	F	F	F	F	F	F	F
Queue Length 50th (ft)	100	90	-227	58	0	-341	168	53	288	53	288	0
Queue Length 95th (ft)	127	113	#377	98	43	#501	227	82	291	82	291	0
Internal Link Dist (ft)	468	468	175	115	115	600	140	150	220	150	220	0
Turn Bay Length (ft)	75	75	175	600	600	301	1560	301	1312	301	1312	0
Base Capacity (vph)	433	664	320	669	728	301	1560	301	1312	301	1312	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.40	1.03	0.20	0.33	1.35	0.47	0.29	0.84	0.29	0.84	0.0
Intersection Summary												
Cycle Length	100											
Actuated Cycle Length	100											
Offset: 26 (26%)	Referenced to phase 2: NMT and 6: SET. Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	1.35											
Intersection Signal Delay	53.3											
Intersection Capacity Utilization	90.3%											
Analysis Period (min)	15											



Splits and Phases: 2: Laurel Rd. & Hillcrest Ave

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

3: Country Hills Dr. & Hillcrest Ave  
Antioch Walmart Expansion

4: Northeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1863	1583	1770	1644	0	1770	3491	0	1770	3506	0
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Flt. Permitted	1770	1863	1522	1770	1644	0	1770	3491	0	1770	3506	0
Satd. Flow (perm)	64	77	204	45	87	93	173	104	538	38	86	740
Satd. Flow (RTOR)	84	101	204	130	397	0	133	739	0	95	866	0
Volume (vph)	Split	Perm	Split	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Volume Group Flow (vph)	4	4	8	8	5	2	1	6				
Turn Type	Permitted Phases											
Permitted Phases	38.0	38.0	31.0	31.0	0.0	0.0	38.0	69.0	0.0	38.0	69.0	0.0
Total Split (s)	16.8	16.8	16.8	28.2	28.2	0.0	16.1	66.6	16.1	66.6	66.6	0.0
Act Effct Green (s)	0.12	0.12	0.12	0.20	0.20	0.0	0.12	0.48	0.12	0.48	0.48	0.0
Actualized g/C Ratio	0.39	0.45	0.56	0.36	1.08	0.0	0.65	0.44	0.47	0.51	0.51	0.0
v/c Ratio	62.2	63.6	13.1	54.5	115.5	0.0	75.5	27.0	66.7	28.5	28.5	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	E	E	B	D	F	F	E	C	E	C	C	C
Total Delay	36.8	36.8	100.5	34.4	34.4	0.0	32.3	32.3	32.3	32.3	32.3	0.0
Approach LOS	D	D	F	F	F	F	C	C	C	C	C	C
Approach LOS	71	86	0	98	347	0	113	214	79	260	260	0
Queue Length 50th (ft)	110	127	32	137	4399	0	172	291	150	420	420	0
Queue Length 95th (ft)	266	266	90	283	1225	0	155	190	190	1140	1140	0
Internal Link Dist (ft)	394	415	497	357	368	0	392	1665	392	1671	1671	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0.21	0.24	0.41	0.36	1.08	0.0	0.34	0.44	0.24	0.51	0.51	0.0
Reduced v/c Ratio												
Intersection Summary												
Cycle Length	176											
Actuated Cycle Length	139.8											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	1.08											
Intersection Signal Delay	46.7											
Intersection Capacity Utilization	62.7%											
Analysis Period (min)	15											
Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Movement	EBL	EBR	NBL	NBR	SBT	SBR
Lane Configurations	Stop	Free	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%
Grade	0	10	0	678	590	8
Volumes (veh/h)	0.63	0.63	0.84	0.84	0.87	0.87
Peak Hour Factor	0	16	0	807	1103	9
Floury flow rate (vph)						
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				482	1305	
pX, platoon unblocked	0.79	0.73	0.73			
v/c, conflicting volume	1507	1103	1113			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol	1270	1142	1154			
vCU, unblocked vol	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	89	100			
GM capacity (veh/h)	126	142	438			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volumes Total	16	404	404	1103	9	
Volume Left	0	0	0	0	0	
Volume Right	16	0	0	0	9	
vSH	142	1700	1700	1700	1700	
Volume to Capacity	0.11	0.24	0.24	0.68	0.01	
Queue Length 95th (ft)	9	0	0	0	0	
Control Delay (s)	33.6	0.0	0.0	0.0	0.0	
Lane LOS	D	D	D	D	D	
Approach Delay (s)	33.6	0.0	0.0	0.0	0.0	
Approach LOS	D	D	D	D	D	
Intersection Summary						
Average Delay				0.3		
Intersection Capacity Utilization				60.5%		
Analysis Period (min)				15		
ICU Level of Service				B		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1863	1583	1770	1644	0	1770	3491	0	1770	3506	0
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Flt. Permitted	1770	1863	1522	1770	1644	0	1770	3491	0	1770	3506	0
Satd. Flow (perm)	64	77	204	45	87	93	173	104	538	38	86	740
Satd. Flow (RTOR)	84	101	204	130	397	0	133	739	0	95	866	0
Volume (vph)	Split	Perm	Split	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Volume Group Flow (vph)	4	4	8	8	5	2	1	6				
Turn Type	Permitted Phases											
Permitted Phases	38.0	38.0	31.0	31.0	0.0	0.0	38.0	69.0	0.0	38.0	69.0	0.0
Total Split (s)	16.8	16.8	16.8	28.2	28.2	0.0	16.1	66.6	16.1	66.6	66.6	0.0
Act Effct Green (s)	0.12	0.12	0.12	0.20	0.20	0.0	0.12	0.48	0.12	0.48	0.48	0.0
Actualized g/C Ratio	0.39	0.45	0.56	0.36	1.08	0.0	0.65	0.44	0.47	0.51	0.51	0.0
v/c Ratio	62.2	63.6	13.1	54.5	115.5	0.0	75.5	27.0	66.7	28.5	28.5	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	E	E	B	D	F	F	E	C	E	C	C	C
Total Delay	36.8	36.8	100.5	34.4	34.4	0.0	32.3	32.3	32.3	32.3	32.3	0.0
Approach LOS	D	D	F	F	F	F	C	C	C	C	C	C
Approach LOS	71	86	0	98	347	0	113	214	79	260	260	0
Queue Length 50th (ft)	110	127	32	137	4399	0	172	291	150	420	420	0
Queue Length 95th (ft)	266	266	90	283	1225	0	155	190	190	1140	1140	0
Internal Link Dist (ft)	394	415	497	357	368	0	392	1665	392	1671	1671	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0.21	0.24	0.41	0.36	1.08	0.0	0.34	0.44	0.24	0.51	0.51	0.0
Reduced v/c Ratio												
Intersection Summary												
Cycle Length	176											
Actuated Cycle Length	139.8											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	1.08											
Intersection Signal Delay	46.7											
Intersection Capacity Utilization	62.7%											
Analysis Period (min)	15											
Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												



5: Southeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

Long-Term Conditions  
AM Peak

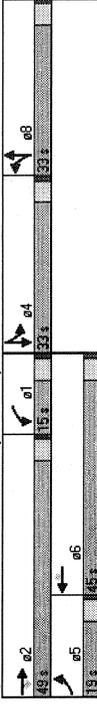
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	Step	0%	0%	Stop	0%	0%	Free	0%	Free	Free	Free
Sign Control	0	0	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0	0	0
Volume (veh/h)	0	0	66	0	0	11	0	769	26	0	879
Peak Hour Factor	0.88	0.88	0.88	0.63	0.63	0.63	0.82	0.82	0.82	0.89	0.89
Hourly flow rate (vph)	0	0	75	0	0	17	0	926	32	0	988
Pedestrians											
Lane Width (ft)											
Percapit Packages											
Right turn flare (veh)											
Median type	None			None							
Upstream signal (ft)								252			
pX, platoon unblocked	0.86	0.86	0.86	0.86	0.86	0.86				0.86	
vC, conflicting volume	1518	1996	380	1330	2014	463	1088			957	
vC1, stage 1 cont vol											
vC2, stage 2 cont vol											
vCu, unblocked vol	1437	1995	380	1217	2017	203	1089			781	
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1	
IC, 2 stage (s)											
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2	
p0 queue free %	100	100	88	100	100	97	100			100	
SM capacity (veh/h)	78	51	618	103	49	688	837			712	
Direction_Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	75	17	463	463	32	395	385	299			
Volume Left	0	0	0	0	0	0	0	0			
Volume Right	75	17	0	0	32	0	0	101			
cSH	618	688	1700	1700	1700	1700	1700	1700			
Volume to Capacity	0.12	0.03	0.27	0.27	0.02	0.23	0.23	0.18			
Queue Length 95th (ft)	10	2	0	0	0	0	0	0			
Control Delay (s)	11.5	10.4	0.0	0.0	0.0	0.0	0.0	0.0			
Lane LOS	B	B	B	B	B	B	B	B			
Approach LOS	B	B	B	B	B	B	B	B			
Intersection Summary											
Average Delay	0.5										
Intersection Capacity Utilization	31.0%										
Analysis Period (min)	15										
ICU Level of Service	A										

6: Lone Tree Way & Country Hills Dr.  
Antioch Walmart Expansion

Long-Term Conditions  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1751	0	1770	1699
Flt Permitted	0.950			0.950			0.950			0.950	
Satd. Flow (perm)	1762	3539	1125	1690	3539	1486	1770	1751	0	1770	1699
Satd. Flow (RTOR)	92	1103	44	80	1542	101	196	275	182	39	123
Volume (vph)	107	1283	51	88	1658	109	261	610	0	45	312
Lane Group Flow (vph)	Prot	5	2	1	6	8	8	8	8	4	4
Protected Phases											
Permitted Phases											
Total Split (s)	19.0	48.0	48.0	15.0	45.0	45.0	33.0	33.0	0.0	33.0	33.0
Act Ert Green (s)	14.0	46.0	46.0	12.0	44.0	44.0	33.9	33.9		26.1	26.1
Actuated g/C Ratio	0.11	0.35	0.35	0.09	0.34	0.34	0.26	0.26		0.20	0.20
v/c Ratio	0.56	1.02	1.03	0.53	1.38	1.38	0.21	0.57	1.29	0.13	0.83
Control Delay	66.2	73.3	23.2	53.8	206.3	17.5	48.6	182.0		41.6	61.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	66.2	73.3	23.2	53.8	206.3	17.5	48.6	182.0		41.6	61.3
LOS	E	E	C	D	F	B	D	F		D	E
Approach Delay	71.0			188.1			142.0			56.8	
Approach LOS	E			F			F			E	
Queue Length 50th (ft)	85	-605	21	63	-97.4	11	195	-662		31	218
Queue Length 95th (ft)	140	#685	49	m110	#133	m53	237	#701		61	302
Internal Link Dist (ft)	1420			740			709			577	
Turn Bay Length (ft)	145		75	145		75	170			408	455
Base Capacity (vph)	218	1252	406	163	1198	516	461	474		0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.49	1.02	0.13	0.53	1.38	0.21	0.57	1.29		0.11	0.73
Intersection Summary											
Cycle Length	130										
Actuated Cycle Length	130										
Offset: 74 (57%)	Referenced to phase 2.EBT and 6.WBT, Start of Yellow										
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	1.38										
Intersection Signal Delay	131.7										
Intersection Capacity Utilization	90.0%										
Analysis Period (min)	15										
ICU Level of Service	F										
Volume exceeds capacity, queue is theoretically infinite											
Queue shown is maximum after two cycles.											
# 95th percentile volume exceeds capacity, queue may be longer.											
Queue shown is maximum after two cycles.											
m Volume for 95th percentile queue is metered by upstream signal.											

Splits and Phases: 6: Lone Tree Way & Country Hills Dr.



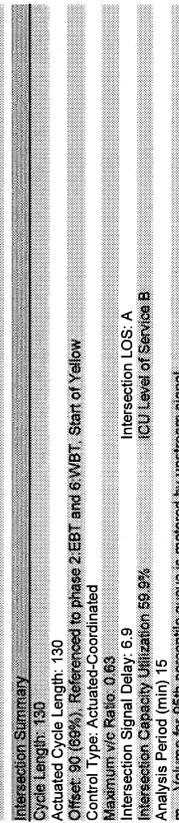
7: Lone Tree Way & Deer Valley Rd  
Antioch Walmart Expansion

8: Lone Tree Way & Deer Valley Rd  
Antioch Walmart Expansion

Long-Term Conditions AM Peak

Long-Term Conditions AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	3539	1583	1770	1587	0	1770	1863	1583
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Fit Permitted	1770	3539	1333	1738	3539	1583	1410	1587	0	1289	1863	1583
Satd. Flow (perm)	46	1283	85	42	1565	28	46	1	63	22	2	7
Satd. Flow (RTOR)	51	1421	93	48	1778	32	50	69	0	24	2	8
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	2	1	6	6	8	8	8	4	4	4
Permitted Phases	26.0	69.0	69.0	26.0	69.0	69.0	35.0	35.0	0.0	35.0	35.0	35.0
Total Split (s)	10.2	104.0	104.0	10.5	104.2	104.2	11.1	11.1	0.0	11.0	11.0	11.0
Act. Eff. Green (s)	0.06	0.80	0.80	0.06	0.80	0.80	0.09	0.09	0.00	0.08	0.08	0.08
Actuated G/C Ratio	0.37	0.50	0.09	0.34	0.63	0.03	0.41	0.35	0.22	0.01	0.06	0.06
v/c Ratio	54.0	1.0	0.1	57.3	6.5	0.9	65.7	17.3	58.7	52.0	28.1	28.1
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	54.0	1.1	0.1	57.3	6.5	0.9	65.7	17.3	58.7	52.0	28.1	28.1
Total Delay	D	A	A	E	A	A	E	B	E	D	C	C
LOS	2.7	A	A	E	A	A	E	B	E	D	C	C
Approach Delay	7.7	A	A	7.7	A	A	37.7	37.7	51.1	51.1	51.1	51.1
Approach LOS	A	A	A	A	A	A	D	D	D	D	D	D
Queue Length 50th (ft)	45	17	0	43	41	0	41	1	19	2	2	0
Queue Length 95th (ft)	m45	m18	m1	m50	234	m1	81	46	47	10	16	16
Internal Link Dist. (ft)	740	740	100	200	850	100	95	704	346	346	346	346
Turn Bay Length (ft)	100	100	100	200	200	100	95	704	346	346	346	346
Base Capacity (vph)	313	2832	1074	313	2838	1271	347	442	317	459	396	396
Starvation Cap Reductn	0	186	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.54	0.09	0.15	0.63	0.03	0.14	0.16	0.08	0.00	0.00	0.02
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	90 (69%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	0.63											
Intersection Signal Delay	6.9											
Intersection Capacity Utilization	59.9%											
Analysis Period (min)	15											
m	Volume for 95th percentile queue is metered by upstream signal.											

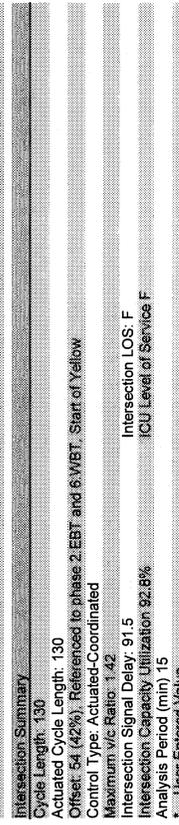


Splits and Phases: 7: Lone Tree Way & Deer Valley Rd

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3/4/2009

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	3539	1583	3433	3539	1583	2000	3516	0
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Fit Permitted	1770	3539	1413	1749	3539	1537	3351	3539	1500	3339	3516	0
Satd. Flow (perm)	38	1068	233	328	1183	259	448	364	377	429	516	19
Satd. Flow (RTOR)	47	1319	288	353	1272	278	498	404	419	482	601	0
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	2	1	6	6	3	8	8	7	4	4
Permitted Phases	17.0	37.0	37.0	20.0	40.0	40.0	30.0	32.0	32.0	41.0	43.0	0.0
Total Split (s)	10.3	34.0	34.0	24.0	49.6	49.6	24.3	24.5	24.5	35.5	35.8	0.0
Act. Eff. Green (s)	0.08	0.26	0.26	0.18	0.38	0.38	0.19	0.19	0.19	0.27	0.28	0.0
Actuated G/C Ratio	0.33	1.42	0.51	1.08	0.94	0.37	0.78	0.61	0.89	0.88	0.82	0.0
v/c Ratio	63.1	244.6	28.8	104.9	37.2	5.1	59.1	51.7	44.5	63.4	43.4	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	63.1	244.6	28.8	104.9	37.2	5.1	59.1	51.7	44.5	63.4	43.4	0.0
Total Delay	E	F	C	F	D	A	E	D	D	E	D	D
LOS	2.7	A	A	E	A	A	E	B	E	D	C	C
Approach Delay	7.7	A	A	7.7	A	A	37.7	37.7	51.1	51.1	51.1	51.1
Approach LOS	A	A	A	A	A	A	D	D	D	D	D	D
Queue Length 50th (ft)	41	807	112	383	650	49	206	160	163	195	220	0
Queue Length 95th (ft)	75	m811	154	m469	m798	m76	263	211	#328	#275	278	0
Internal Link Dist. (ft)	950	950	100	200	850	100	95	704	346	346	346	346
Turn Bay Length (ft)	195	400	500	500	500	400	180	180	375	495	420	420
Base Capacity (vph)	191	926	565	326	1351	755	713	789	513	585	1087	1087
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	1.42	0.51	1.08	0.94	0.37	0.70	0.51	0.82	0.82	0.55	0.0
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	54 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	1.42											
Intersection Signal Delay	91.5											
Intersection Capacity Utilization	92.8%											
Analysis Period (min)	15											
n	User Entered Value											
m	Volume exceeds capacity, queue is theoretically infinite.											
	Queue shown is maximum after two cycles.											
#	95th percentile volume exceeds capacity, queue may be longer.											
	Queue shown is maximum after two cycles.											
m	Volume for 95th percentile queue is metered by upstream signal.											



Splits and Phases: 8: Lone Tree Way & Deer Valley Rd

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9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

Long-Term Conditions  
AM Peak

Long-Term Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3479	0	1770	3539	1583	1770	1532	0	1770	1863
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950
Fit Permitted	1769	3479	0	1769	3539	1539	1769	1532	0	1769	1863
Satd. Flow (perm)	120	1523	145	91	1560	61	149	0	64	26	1
Satd. Flow (RTOR)	146	2034	0	101	1733	88	278	119	0	51	2
Volume (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Lane Group Flow (vph)	5	2	2	1	6	8	8	8	8	4	4
Turn Type	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases
Protected Phases	20.0	47.0	0.0	15.0	42.0	42.0	68.0	68.0	0.0	35.0	35.0
Permitted Phases	17.4	70.2	14.6	67.4	67.4	36.3	36.3	36.3	0.0	13.1	13.1
Total Split (s)	0.13	0.54	0.11	0.52	0.52	0.28	0.28	0.28	0.28	0.10	0.10
Act Effct Green (s)	0.62	1.08	0.51	0.94	0.08	0.62	0.20	0.41	0.01	0.01	0.32
Actuated v/c Ratio	46.5	69.8	74.0	29.8	4.0	45.1	0.7	64.5	51.0	16.3	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	46.5	69.8	74.0	29.8	4.0	45.1	0.7	64.5	51.0	16.3	16.3
Queue Delay	D	E	E	C	A	D	A	A	D	E	D
Total Delay	68.3	31.2	31.2	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
LOS	E	E	E	C	A	D	A	A	D	E	D
Approach Delay	E	E	E	C	A	D	A	A	D	E	D
Approach LOS	E	E	E	C	A	D	A	A	D	E	D
Queue Length 50th (ft)	106	-1137	80	-848	7	184	0	42	2	2	0
Queue Length 95th (ft)	m93	m1899	m132	#1136	m18	137	0	45	5	5	3
Internal Link Dist (ft)	145	1580	260	1580	606	609	609	609	609	609	609
Turn Bay Length (ft)	145	1580	260	1580	606	609	609	609	609	609	609
Base Capacity (vph)	260	1881	206	1834	813	800	886	886	886	302	459
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	1.06	0.49	0.94	0.08	0.34	0.13	0.17	0.00	0.00	0.16

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3479	0	1770	3539	1583	1770	1532	0	1770	1863
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950
Fit Permitted	1769	3479	0	1769	3539	1539	1769	1532	0	1769	1863
Satd. Flow (perm)	120	1523	145	91	1560	61	149	0	64	26	1
Satd. Flow (RTOR)	146	2034	0	101	1733	88	278	119	0	51	2
Volume (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Lane Group Flow (vph)	5	2	2	1	6	8	8	8	8	4	4
Turn Type	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases
Protected Phases	20.0	47.0	0.0	15.0	42.0	42.0	68.0	68.0	0.0	35.0	35.0
Permitted Phases	17.4	70.2	14.6	67.4	67.4	36.3	36.3	36.3	0.0	13.1	13.1
Total Split (s)	0.13	0.54	0.11	0.52	0.52	0.28	0.28	0.28	0.28	0.10	0.10
Act Effct Green (s)	0.62	1.08	0.51	0.94	0.08	0.62	0.20	0.41	0.01	0.01	0.32
Actuated v/c Ratio	46.5	69.8	74.0	29.8	4.0	45.1	0.7	64.5	51.0	16.3	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	46.5	69.8	74.0	29.8	4.0	45.1	0.7	64.5	51.0	16.3	16.3
Queue Delay	D	E	E	C	A	D	A	A	D	E	D
Total Delay	68.3	31.2	31.2	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
LOS	E	E	E	C	A	D	A	A	D	E	D
Approach Delay	E	E	E	C	A	D	A	A	D	E	D
Approach LOS	E	E	E	C	A	D	A	A	D	E	D
Queue Length 50th (ft)	106	-1137	80	-848	7	184	0	42	2	2	0
Queue Length 95th (ft)	m93	m1899	m132	#1136	m18	137	0	45	5	5	3
Internal Link Dist (ft)	145	1580	260	1580	606	609	609	609	609	609	609
Turn Bay Length (ft)	145	1580	260	1580	606	609	609	609	609	609	609
Base Capacity (vph)	260	1881	206	1834	813	800	886	886	886	302	459
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	1.06	0.49	0.94	0.08	0.34	0.13	0.17	0.00	0.00	0.16

Intersection Summary

Intersection Summary

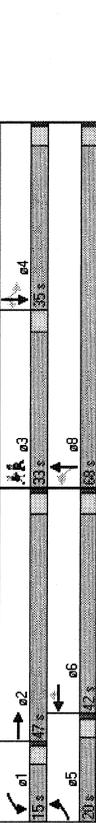
Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 16 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.08  
 Intersection Signal Delay: 49.0  
 Intersection Capacity Utilization: 76.7%  
 Analysis Period (min): 15  
 \* User Entered Value  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 # Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Intersection Summary

Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 16 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.08  
 Intersection Signal Delay: 49.0  
 Intersection Capacity Utilization: 76.7%  
 Analysis Period (min): 15  
 \* User Entered Value  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 # Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Lone Tree Way & Prewett Park

Splits and Phases: 9: Lone Tree Way & Prewett Park

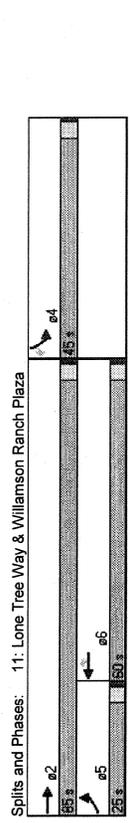
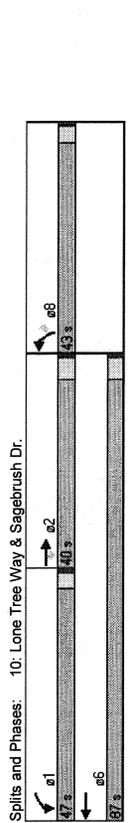


10: Lone Tree Way & Sagebrush Dr.  
Antioch Walmart Expansion

11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

Long-Term Conditions AM Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	EBT	EBR	WBL	WBT	NBL	NBR
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1462	1767	3539	1715	1559
Satd. Flow (RTOR)	50					136
Volume (vph)	1443	234	198	1471	104	87
Lane Group Flow (vph)	1781	288	230	1710	182	136
Turn Type	Prot	Perm	Prot	Perm	Perm	Perm
Protected Phases	2	1	6	8		
Permitted Phases	2	1	6	8		
Total Split (s)	40.0	47.0	87.0	43.0	43.0	8
Act Effct Green (s)	80.6	80.6	23.7	107.3	16.7	16.7
Actuated g/C Ratio	0.82	0.82	0.16	0.83	0.13	0.13
v/c Ratio	0.81	0.31	0.71	0.59	0.71	0.43
Control Delay	9.2	9.9	59.7	3.1	70.5	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Length	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	9.9	59.7	3.1	70.5	11.6
LOS	A	A	E	A	E	B
Approach Delay	8.1		9.8	43.6		
Approach LOS	A		A	D		
Queue Length 50th (ft)	45	0	164	14	134	0
Queue Length 95th (ft)	m782	m2	m201	3	133	11
Internal Link Dist (ft)	605		1855	487		
Turn Bay Length (ft)	80	600	598	2920	545	574
Base Capacity (vph)	2193	937	598	2920	545	574
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.31	0.38	0.59	0.30	0.24
Intersection Summary						
Cycle Length	130					
Actuated Cycle Length	130					
Offset	40 (31%), Referenced to phase 2:EBT and 6:WBT. Start of Yellow					
Control Type	Actuated-Coordinated					
Maximum v/c Ratio	0.81					
Intersection Signal Delay	11.3					
Intersection Capacity Utilization	67.5%					
Analysis Period (min)	15					
m	Volume for 95th percentile queue is metered by upstream signal.					



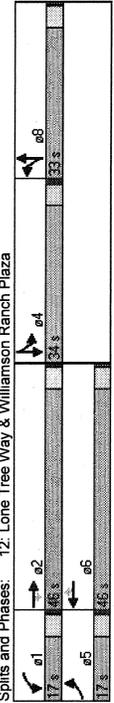
12: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

13: Lone Tree Way & Wai-Mart Driveway  
Antioch Walmart Expansion

Long-Term Conditions  
AM Peak

Movement	EBL	EBT	WBL	WBT	WBR	SBL	SBR
Lane Configurations	EBL	EBT	WBL	WBT	WBR	SBL	SBR
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	1536	1894	85	0	0	5
Peak Hour Factor	0.82	0.82	0.85	0.85	0.42	0.42	0.42
Hourly flow rate (vph)	0	1873	1993	76	0	0	12
Pedestrians							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median storage (veh)							
Upstream signal (ft)	0.78	510	500			0.67	0.78
pX, platoon unblocked	2089					2930	654
vC, conflicting volume							
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCU, unblocked vol	1801					2053	0
IC, single (s)	4.1					6.8	6.9
IC, 2 stage (s)							
IF (s)	2.2					3.5	3.3
p0 queue free %	100					100	99
EBL capacity (veh/h)	263					32	842
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	937	937	664	664	664	664	76
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
gSH	1700	1700	1700	1700	1700	1700	842
Volume to Capacity	0.55	0.55	0.39	0.39	0.39	0.39	0.04
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.3
Lane LOS	A	A	A	A	A	A	A
Approach Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.3
Approach LOS	A	A	A	A	A	A	A
Intersection Summary							
Average Delay	0.0						
Intersection Capacity Utilization	45.8%						
Analysis Period (min)	15						
ICU Level of Service	A						

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1634	0	3433
RT Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1863	3539	1286	1746	3539	1455	1763	1634	0	3433
Satd. Flow (RTOR)	0	1416	6	26	1689	45	12	15	69	43
Volume (vph)	0	1770	8	33	2136	57	15	106	0	113
Lane Group Flow (vph)	Prot	Perm	Prot	Perm	Prot	Perm	Split	Split	Split	Split
Turn Type	5	2	1	6	8	8	8	4	4	4
Protected Phases										
Permitted Phases	17.0	46.0	46.0	17.0	46.0	33.0	33.0	0.0	34.0	34.0
Total Split (s)	76.4	76.4	10.9	85.4	21.0	21.0	21.0	14.5	14.5	14.5
Act Effl Green (s)	0.89	0.89	0.08	0.86	0.16	0.16	0.16	0.11	0.11	0.11
Actuated v/c Ratio	0.85	0.01	0.22	0.92	0.06	0.05	0.31	0.29	0.26	0.26
v/c Ratio	22.9	9.3	62.7	23.4	5.3	40.3	14.1	53.0	15.2	15.2
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	22.9	9.3	62.7	23.4	5.3	40.3	14.1	53.0	15.2	15.2
Total Delay	C	A	E	C	A	D	B	D	B	B
LOS	C	A	E	C	A	D	B	D	B	B
Approach Delay	22.8		23.5		17.4			40.2		
Approach LOS	C		C		B			D		
Queue Length 50th (ft)	836	1	25	523	5	10	13	46	2	2
Queue Length 95th (ft)	#1009	m4	m36	m#988	m18	26	46	26	0	0
Internal Link Dist (ft)	820		430		356			440		
Turn Bay Length (ft)	2079	756	191	2325	959	408	444	200	619	417
Base Capacity (veh/h)	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.01	0.17	0.92	0.06	0.04	0.24	0.14	0.14	0.14
Intersection Summary										
Cycle Length	130									
Actuated Cycle Length	130									
Offset	97 (75%), Referenced to phase 2 EBT and 6 WBT, Start of Yellow									
Control Type	Actuated-Coordinated									
Maximum v/c Ratio	0.92									
Intersection Signal Delay	23.7									
Intersection LOS	C									
Analysis Period (min)	15									
ICU Level of Service	B									
# 95th percentile volume exceeds capacity, queue may be longer.										
Queue shown is maximum after two cycles.										
m Volume for 95th percentile queue is metered by upstream signal.										



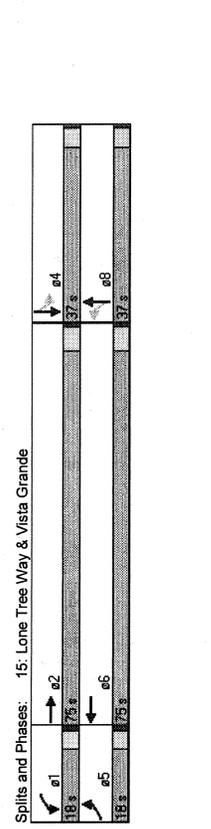
Splits and Phases: 12: Lone Tree Way & Williamson Ranch Plaza

14: Lone Tree Way & Hillcrest Ave  
Antioch Walmart Expansion

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	4777	0	1770	5085	1583	1770	3240	0	1900	3539
Flt Permitted	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950
Satd. Flow (perm)	1762	4777	0	1764	5085	1515	1762	3240	0	3419	3539
Satd. Flow (RTOR)	95	236	0	95	236	157	95	236	0	317	317
Volume (vph)	233	912	413	109	1099	215	351	357	342	415	232
Lane Group Flow (vph)	265	1505	0	120	1208	236	439	874	0	519	290
Turn Type	5	2	1	6	8	8	8	8	8	4	4
Permitted Phases	E D D D D D D D D D D D										
Total Split (s)	29.0	47.0	0.0	18.0	36.0	36.0	23.0	23.0	0.0	42.0	42.0
Act Effct Green (s)	24.6	45.3	0.0	13.7	34.4	34.4	20.5	20.5	0.0	38.5	38.5
Actuated g/C Ratio	0.19	0.35	0.0	0.11	0.26	0.26	0.16	0.16	0.0	0.30	0.30
v/c Ratio	0.79	0.87	0.0	0.64	0.90	0.41	1.57	1.36	0.0	0.92	0.28
Control Delay	75.8	42.0	0.0	71.6	47.6	10.8	310.2	205.3	0.0	67.6	35.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.8	42.0	0.0	71.6	47.6	10.8	310.2	205.3	0.0	67.6	35.8
LOS	E	D	D	E	D	B	F	F	F	E	D
Approach Delay	47.0	43.9	0.0	43.9	240.4	240.4	41.6	41.6	0.0	41.6	41.6
Approach LOS	D	D	D	D	F	F	D	D	D	D	D
Queue Length 50th (ft)	239	256	0	90	371	44	~580	~454	0	217	98
Queue Length 95th (ft)	m284	406	0	157	#460	127	#630	#483	0	#251	120
Internal Link Dist (ft)	420	420	0	690	690	2875	2875	2875	0	172	172
Turn Bay Length (ft)	620	210	0	210	730	195	195	195	0	400	290
Base Capacity (vph)	354	1726	204	1347	575	279	643	570	1062	698	698
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.87	0.0	0.69	0.90	0.41	1.57	1.36	0.0	0.91	0.27

Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 78 (60%), Referenced to phase 2 EBT and 6 WBT, Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 1.57  
Intersection Signal Delay: 88.6  
Intersection Capacity Utilization: 84.4%  
Analysis Period (min): 15  
User Entered Value  
~ Volume exceeds capacity, queue is theoretically infinite.  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 14: Lone Tree Way & Hillcrest Ave

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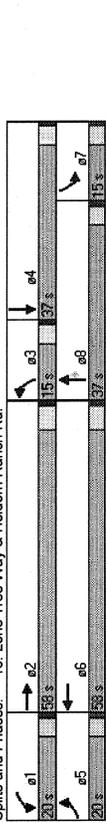
3/4/2009

16: Lone Tree Way & Heidorn Ranch Rd.  
Antioch Walmart Expansion

Long-Term Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	4979	0	1770	5088	0	3433	1863	1563	1770	1628
Flt Permitted	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1769	4979	0	1769	5088	0	3433	1863	1561	1765	1628
Satd. Flow (RTOR)	24	24	0	24	24	0	24	24	24	24	24
Volume (vph)	26	1528	211	141	1366	25	162	0	288	12	9
Lane Group Flow (vph)	29	1911	0	158	1563	0	377	0	683	15	75
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	2	1	6	3	3	8	7	7	4
Permitted Phases											
Total Split (s)	20.0	58.0	0.0	20.0	58.0	0.0	15.0	37.0	37.0	15.0	37.0
Act Effct Green (s)	10.1	64.3	17.4	76.1	76.1	16.4	16.4	34.0	34.0	9.1	22.0
Actuated g/C Ratio	0.08	0.49	0.13	0.59	0.13	0.28	0.07	0.17	0.17	0.07	0.17
v/c Ratio	0.21	0.77	0.67	0.53	0.87	0.87	1.05	0.12	0.23	0.12	0.23
Control Delay	82.0	28.7	77.8	6.1	77.1	74.5	58.3	13.9	13.9	82.0	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	28.7	77.8	6.1	77.1	74.5	58.3	13.9	13.9	82.0	28.7
LOS	F	C	C	E	A	E	E	E	E	E	B
Approach Delay	26.5	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Approach LOS	C	B	B	B	B	B	B	B	B	B	B
Queue Length 50th (ft)	26	527	120	40	197	197	197	414	12	9	9
Queue Length 95th (ft)	m52	671	191	172	100	972	38	31	35	35	35
Internal Link Dist (ft)	185	1050	400	900	200	200	200	50	50	50	50
Base Capacity (vph)	231	2475	248	2868	433	657	163	472	472	472	472
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.77	0.64	0.53	0.87	0.87	1.05	0.09	0.16	0.09	0.16

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 55 (42%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.05  
 Intersection Signal Delay: 32.3  
 Intersection LOS: C  
 Intersection Capacity Utilization: 66.8%  
 Analysis Period (min): 15  
 # Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



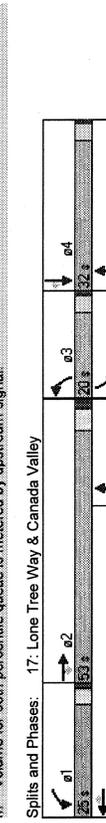
Splits and Phases: 16: Lone Tree Way & Heidorn Ranch Rd.  
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 Kimley-Horn and Associates, Inc.  
 3/4/2009

17: Lone Tree Way & Canada Valley  
Antioch Walmart Expansion

Long-Term Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3433	5085	1563	3433	5085	1563	3433	1563	1504	1770	1863
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3432	5085	1557	3432	5085	1558	3433	1638	1482	1767	1863
Satd. Flow (RTOR)	114	114	114	114	114	114	114	114	114	114	114
Volume (vph)	56	1704	107	302	1363	288	66	36	93	338	81
Lane Group Flow (vph)	60	1813	114	339	1531	324	89	90	85	428	103
Turn Type	Prot										
Protected Phases	5	2	2	1	6	3	3	8	7	7	4
Permitted Phases											
Total Split (s)	20.0	53.0	53.0	25.0	58.0	58.0	20.0	32.0	32.0	20.0	32.0
Act Effct Green (s)	14.7	71.5	71.5	17.9	76.4	76.4	8.7	11.6	11.6	17.0	20.0
Actuated g/C Ratio	0.11	0.55	0.55	0.14	0.59	0.59	0.07	0.09	0.09	0.13	0.15
v/c Ratio	0.15	0.65	0.13	0.72	0.51	0.31	0.39	0.52	0.40	1.85	0.36
Control Delay	38.4	13.9	3.0	69.6	13.3	1.6	62.7	46.7	15.6	431.4	51.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	13.9	3.0	69.6	13.3	1.6	62.7	46.7	15.6	431.4	51.8
LOS	D	B	A	E	B	A	E	D	B	F	D
Approach Delay	14.1	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2
Approach LOS	B	C	C	C	C	C	C	C	C	C	C
Queue Length 50th (ft)	21	138	0	146	175	0	37	51	0	~547	80
Queue Length 95th (ft)	m24	m293	m6	m172	m258	m13	53	75	28	#638	108
Internal Link Dist (ft)	320	900	630	400	350	150	150	170	170	170	170
Base Capacity (vph)	448	2797	908	588	2887	1048	449	389	397	231	416
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.65	0.13	0.58	0.51	0.31	0.20	0.23	0.21	1.85	0.25

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 37 (28%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.85  
 Intersection Signal Delay: 53.9  
 Intersection LOS: D  
 Intersection Capacity Utilization: 76.8%  
 Analysis Period (min): 15  
 # Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 17: Lone Tree Way & Canada Valley  
 Page 18  
 Kimley-Horn and Associates, Inc.  
 3/4/2009



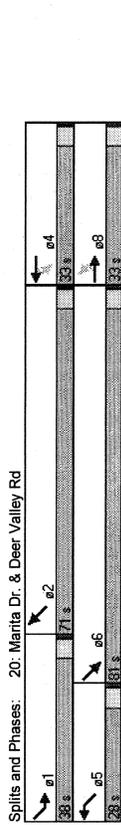
20: Marita Dr. & Deer Valley Rd  
Antioch Walmart Expansion

21: Prewett Ranch Dr & Hillcrest Ave  
Antioch Walmart Expansion

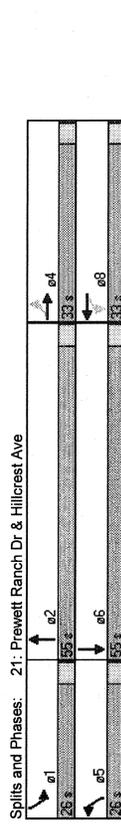
Long-Term Conditions  
AM Peak

Long-Term Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1619	0	1770	1577	0	1770	3521	0	1770	3525	0
Satd. Flow (prot)	0.742	0.735	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Flt Permitted	1364	1619	0	1347	1577	0	1765	3521	0	1758	3525	0
Satd. Flow (perm)	21	8	21	1	1	7	137	900	24	61	1188	27
Satd. Flow (RTOR)	25	34	0	3	24	0	149	1004	0	75	1500	0
Volume (vph)	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Lane Group Flow (vph)	8	4	1	6	5	2						
Turn Type	4	4	4	4	4	4						
Protected Phases	8	4	4	4	4	4						
Permitted Phases	33.0	33.0	0.0	33.0	33.0	0.0	38.0	81.0	0.0	28.0	71.0	0.0
Total Split (s)	16.3	16.3	0.0	16.3	16.3	0.0	16.5	85.6	0.0	12.1	78.2	0.0
Act Effct Green (s)	0.14	0.14	0.0	0.14	0.14	0.0	0.14	0.73	0.0	0.10	0.66	0.0
Actuated g/C Ratio	0.14	0.14	0.0	0.14	0.14	0.0	0.14	0.39	0.0	0.42	0.64	0.0
v/c Ratio	44.0	20.9	0.0	41.0	18.8	0.0	57.6	10.2	0.0	58.2	17.1	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	44.0	20.9	0.0	41.0	18.8	0.0	57.6	10.2	0.0	58.2	17.1	0.0
Total Delay	D	C	D	B	B	D	E	B	B	E	B	B
LOS	30.7	21.2	16.3	19.0								
Approach Delay	C	C	C	B	B	B						
Approach LOS	16	6	2	2	2	2	97	124	49	273		
Queue Length 50th (ft)	41	32	4	1	188	312	100	537		100	537	
Queue Length 95th (ft)	345	345	4	4	427	825	175	845		335	2342	
Internal Link Dist (ft)	40	100	373	457	2563							
Turn Bay Length (ft)	308	386	0	0	0	0	0	0	0	0	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.09	0.01	0.06	0.33	0.39	0.22	0.64				
Intersection Summary												
Cycle Length	142											
Actuated Cycle Length	117.7											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.64											
Intersection Signal Delay	18.2											
Intersection Capacity Utilization	63.9%											
Analysis Period (min)	15											



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1747	0	1863	1814	0	1770	3539	0	1770	3458	0
Satd. Flow (prot)	0.673	0.673	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Flt Permitted	1254	1747	0	1863	1814	0	1770	3539	0	1770	3458	0
Satd. Flow (perm)	30	30	30	9	9	9	23	23	23	23	23	23
Satd. Flow (RTOR)	118	133	93	0	48	10	138	920	0	13	634	112
Volume (vph)	139	265	0	0	86	0	153	1022	0	16	945	0
Lane Group Flow (vph)	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	4	4	4	8	8	8	5	2	1	6		
Protected Phases	4	4	4	8	8	8	5	2	1	6		
Permitted Phases	33.0	33.0	0.0	33.0	33.0	0.0	26.0	55.0	0.0	26.0	55.0	0.0
Total Split (s)	14.8	14.8	0.0	14.6	14.6	0.0	11.8	43.4	0.0	7.5	32.6	0.0
Act Effct Green (s)	0.23	0.23	0.0	0.23	0.23	0.0	0.16	0.69	0.0	0.11	0.52	0.0
Actuated g/C Ratio	0.48	0.62	0.0	0.21	0.47	0.42	0.09	0.52	0.0	0.09	0.52	0.0
v/c Ratio	28.7	26.9	0.0	21.1	30.6	7.8	37.0	15.9	0.0	0.0	0.0	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	28.7	26.9	0.0	21.1	30.6	7.8	37.0	15.9	0.0	0.0	0.0	0.0
Total Delay	C	C	C	C	C	C	A	D	D	B		
LOS	27.5	21.1	10.8	16.3								
Approach Delay	C	C	C	B	B	B						
Approach LOS	40	89	20	45	72	5	128					
Queue Length 50th (ft)	117	185	53	143	262	26	245					
Queue Length 95th (ft)	956	956	816	404	404	115	2576					
Internal Link Dist (ft)	100	956	707	557	2621	487	2287					
Turn Bay Length (ft)	485	694	0	0	0	0	0	0	0	0	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.38	0.12	0.27	0.39	0.03	0.41					
Intersection Summary												
Cycle Length	114											
Actuated Cycle Length	62.5											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.63											
Intersection Signal Delay	15.7											
Intersection Capacity Utilization	52.0%											
Analysis Period (min)	15											



Antioch Walmart Expansion

Scenario Report  
Cumulative PM

Command: None  
 Volume: Cumulative PM  
 Geometry: Cumulative  
 Impact Fee: Default Impact Fee  
 Trip Generation: Cumulative PM  
 Trip Distribution: Near-Term  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

Antioch Walmart Expansion

Impact Analysis Report  
Level Of Service

Intersection	Base Del/V LOS	Veh C	Future Del/V LOS Veh C	Change in
# 1 Deer Valley Rd/ Country Hills	A	xxxxx 0.520	A xxxxx 0.523	+ 0.002 V/C
# 2 Hillcrest Avenue/Laurel Road	B	xxxxx 0.672	B xxxxx 0.625	-0.048 V/C
# 3 Hillcrest Avenue/Country Hills	A	xxxxx 0.476	A xxxxx 0.465	-0.011 V/C
# 4 Hillcrest Avenue/Driveway	C	19.9 0.028	C 19.2 0.027	-0.765 D/V
# 5 Hillcrest Avenue/South Drivewa	B	13.4 0.206	B 12.2 0.202	-1.151 D/V
# 6 Lone Tree Way/Mokelumne Dr	D	xxxxx 0.874	D xxxxx 0.882	+ 0.008 V/C
# 7 Lone Tree Way/Deer Valley Plaz	A	xxxxx 0.598	B xxxxx 0.606	+ 0.008 V/C
# 8 Lone Tree Way/Deer Valley Rd	D	xxxxx 0.889	D xxxxx 0.889	-0.001 V/C
# 9 Lone Tree Way/Deer Valley HS	A	xxxxx 0.565	A xxxxx 0.570	+ 0.005 V/C
# 10 Lone Tree Way/Sagebrush Drive	A	xxxxx 0.561	A xxxxx 0.566	+ 0.005 V/C
# 11 Lone Tree Way/Williamson Ranch	A	xxxxx 0.571	A xxxxx 0.576	+ 0.005 V/C
# 12 Lone Tree Way/Indian Hill Dr/W	B	xxxxx 0.601	B xxxxx 0.628	+ 0.027 V/C
# 13 Lone Tree Way/Driveway	B	11.9 0.068	B 12.1 0.070	+ 0.271 D/V
# 14 Lone Tree Way/Hillcrest Avenue	C	xxxxx 0.734	E xxxxx 0.911	+ 0.177 V/C
# 15 Lone Tree Way/Vista Grande Dri	A	xxxxx 0.590	B xxxxx 0.640	+ 0.050 V/C
# 16 Lone Tree Way/Heidorn Ranch Ro	A	xxxxx 0.572	C xxxxx 0.738	+ 0.165 V/C
# 17 Lone Tree Way/Canada Valley Ro	C	xxxxx 0.775	D xxxxx 0.838	+ 0.064 V/C
# 18 Lone Tree Way/SB SR-4 Bypass	D	xxxxx 0.872	E xxxxx 0.982	+ 0.110 V/C
# 19 Lone Tree Way/NB SR-4 Bypass (	B	xxxxx 0.655	C xxxxx 0.752	+ 0.097 V/C
# 20 Deer Valley Road/Marita Drive	A	xxxxx 0.425	A xxxxx 0.420	-0.005 V/C
# 21 Hillcrest Ave/Prewett Ranch Dr	A	xxxxx 0.535	A xxxxx 0.576	+ 0.040 V/C





Antioch Walmart Expansion

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 Hillcrest Avenue/South Driveway

Average Delay (sec/veh): 1.0 Worst Case Level Of Service: B [ 12.2]

Street Name: Hillcrest Avenue South Driveway

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Stop Sign Stop Sign

Rights: Include Include Include Include

Lanes: 0 0 2 0 1 0 1 1 1 0 0 0 0 0 1 0 0 1 0 0

Volume Module: Base Vol: 0 717 68 9 1044 79 2 0 126 1 0 40

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 0 717 68 9 1044 79 2 0 126 1 0 40

Added Vol: 0 -15 0 0 -38 0 0 -71 0 0 0 0 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 0 702 68 9 1006 79 -69 0 126 1 0 40

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 0 702 68 9 1006 79 0 0 126 1 0 40

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0

FinalVolume: 0 702 68 9 1006 79 0 0 126 1 0 40

Critical Gap Module: Critical Gp:xxxxx xxxx xxxxx 4.1 xxxx xxxxx xxxxx xxxxx 6.9 7.5 6.5 6.9

FollowUpTim:xxxxx xxxx xxxxx 2.2 xxxx xxxxx xxxxx xxxxx 3.3 3.5 4.0 3.3

Capacity Module: Conflict Vol: xxxx xxxx xxxxx 770 xxxx xxxxx xxxx xxxxx 375 1055 1805 351

Potent Cap.: xxxx xxxx xxxxx 840 xxxx xxxxx xxxx xxxxx 623 180 78 645

Move Cap.: xxxx xxxx xxxxx 840 xxxx xxxxx xxxx xxxxx 623 142 78 645

Volume/Cap: xxxx xxxx xxxxx 0.01 xxxx xxxxx xxxx xxxxx 0.20 0.01 0.00 0.06

Level Of Service Module: 2Way95thQ: xxxx xxxx xxxxx 0.8 xxxx xxxxx xxxx xxxxx 18.8 xxxx xxxx xxxxx

Control Del:xxxxx xxxx xxxxx 9.3 xxxx xxxxx xxxxx xxxxx 12.2 xxxxx xxxx xxxxx

IOS by Move: LT - LTR - RT LT - LTR - RT LT - LTR - RT

Movement: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx 594 xxxxx

Shared Cap.: xxxx xxxx xxxxx 0.0 xxxx xxxxx xxxxx xxxxx xxxxx 0.2 xxxxx

SharedQueue:xxxxx xxxx xxxxx 9.3 xxxx xxxxx xxxxx xxxxx xxxxx 11.5 xxxxx

Shrd ConDel:xxxxx xxxx xxxxx A \* \* \* \* \* B \* \* \* \* \*

Antioch Walmart Expansion

Level Of Service Computation Report
CTALOS Method (Future Volume Alternative)

Intersection #6 Lone Tree Way/Mokelumme Dr

Cycle (sec): 130 Critical Vol./Cap.(X): 0.882

Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 180 Level Of Service: D

Street Name: Mokelumme Drive Lone Tree Way

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Split Phase Split Phase

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 0 1 1 0 2 0 1

Volume Module: Base Vol: 152 171 97 56 261 88 146 1376 182 137 1003 46

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 152 171 97 56 261 88 146 1376 182 137 1003 46

Added Vol: 0 0 0 0 0 0 0 0 26 0 0 77 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 152 171 97 56 261 88 146 1402 182 137 1080 46

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 152 171 97 56 261 88 146 1402 182 137 1080 46

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0

FinalVolume: 152 171 97 56 261 88 146 1402 182 137 1080 46

RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0 0

RTOR Vol: 152 171 97 56 261 88 146 1402 30 137 1080 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 152 171 97 56 261 88 146 1402 30 137 1080 0

Saturation Flow Module: Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.64 0.36 1.00 0.75 0.25 1.00 2.00 1.00 1.00 2.00 1.00

Final Sat.: 1650 1053 597 1650 1234 416 1650 3300 1650 1650 3300 1650

Antioch Walmart Expansion

Level Of Service Computation Report
CTALOS Method (Future Volume Alternative)

Intersection #6 Lone Tree Way/Mokelumme Dr

Cycle (sec): 130 Critical Vol./Cap.(X): 0.882

Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 180 Level Of Service: D

Street Name: Mokelumme Drive Lone Tree Way

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Split Phase Split Phase

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 0 1 1 0 2 0 1

Volume Module: Base Vol: 152 171 97 56 261 88 146 1376 182 137 1003 46

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 152 171 97 56 261 88 146 1376 182 137 1003 46

Added Vol: 0 0 0 0 0 0 0 0 26 0 0 77 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 152 171 97 56 261 88 146 1402 182 137 1080 46

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 152 171 97 56 261 88 146 1402 182 137 1080 46

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0

FinalVolume: 152 171 97 56 261 88 146 1402 182 137 1080 46

RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0 0

RTOR Vol: 152 171 97 56 261 88 146 1402 30 137 1080 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 152 171 97 56 261 88 146 1402 30 137 1080 0

Saturation Flow Module: Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.64 0.36 1.00 0.75 0.25 1.00 2.00 1.00 1.00 2.00 1.00

Final Sat.: 1650 1053 597 1650 1234 416 1650 3300 1650 1650 3300 1650

Antioch Walmart Expansion

Level Of Service Computation Report
CTALOS Method (Future Volume Alternative)

Intersection #6 Lone Tree Way/Mokelumme Dr

Cycle (sec): 130 Critical Vol./Cap.(X): 0.882

Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 180 Level Of Service: D

Street Name: Mokelumme Drive Lone Tree Way

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Split Phase Split Phase

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 0 1 1 0 2 0 1

Volume Module: Base Vol: 152 171 97 56 261 88 146 1376 182 137 1003 46

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 152 171 97 56 261 88 146 1376 182 137 1003 46

Added Vol: 0 0 0 0 0 0 0 0 26 0 0 77 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 152 171 97 56 261 88 146 1402 182 137 1080 46

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 152 171 97 56 261 88 146 1402 182 137 1080 46

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0

FinalVolume: 152 171 97 56 261 88 146 1402 182 137 1080 46

RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0 0

RTOR Vol: 152 171 97 56 261 88 146 1402 30 137 1080 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 152 171 97 56 261 88 146 1402 30 137 1080 0

Saturation Flow Module: Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.64 0.36 1.00 0.75 0.25 1.00 2.00 1.00 1.00 2.00 1.00

Final Sat.: 1650 1053 597 1650 1234 416 1650 3300 1650 1650 3300 1650

Antioch Walmart Expansion

Level Of Service Computation Report
CTALOS Method (Future Volume Alternative)

Intersection #6 Lone Tree Way/Mokelumme Dr

Cycle (sec): 130 Critical Vol./Cap.(X): 0.882

Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 180 Level Of Service: D

Street Name: Mokelumme Drive Lone Tree Way

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Split Phase Split Phase

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0

Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 2 0 1 1 0 2 0 1

Volume Module: Base Vol: 152 171 97 56 261 88 146 1376 182 137 1003 46

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 152 171 97 56 261 88 146 1376 182 137 1003 46

Added Vol: 0 0 0 0 0 0 0 0 26 0 0 77 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 152 171 97 56 261 88 146 1402 182 137 1080 46

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 152 171 97 56 261 88 146 1402 182 137 1080 46

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0

FinalVolume: 152 171 97 56 261 88 146 1402 182 137 1080 46

RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0 0

RTOR Vol: 152 171 97 56 261 88 146 1402 30 137 1080 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

FinalVolume: 152 171 97 56 261 88 146

Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #7 Lone Tree Way/Deer Valley Plaza  
Cycle (sec): 130  
Loss Time (sec): 9  
Optimal Cycle: 47  
Critical Vol./Cap.(X): 0.606  
Average Delay (sec/veh): xxxxxx  
Level Of Service: B

Street Name: Deer Valley Plaza Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Protected Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 1 0 1 1 0 2 0 1 1 0 2 0 1

Volume Module:  
Base Vol: 121 0 62 40 3 40 29 1531 101 90 1007 25  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 121 0 62 40 3 40 29 1531 101 90 1007 25  
Added Vol: 0 0 0 0 0 0 0 26 0 0 77 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 121 0 62 40 3 40 29 1557 101 90 1084 25  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 121 0 62 40 3 40 29 1557 101 90 1084 25  
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 121 0 62 40 3 40 29 1557 101 90 1084 25  
RTOR Reduct: 0 0 0 0 0 29 0 0 101 0 0 25  
RTOR Vol: 121 0 62 40 3 11 29 1557 0 90 1084 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 121 0 62 40 3 11 29 1557 0 90 1084 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.00 1.00 1.00 1.00 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 1650 0 1650 1650 1650 1650 3300 1650 1650 3300 1650  
Capacity Analysis Module:  
Vol/Sat: 0.07 0.00 0.04 0.02 0.00 0.01 0.02 0.47 0.00 0.05 0.33 0.00  
Crit Volume: 121 11 779 90  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #8 Lone Tree Way/Deer Valley Rd  
Cycle (sec): 130  
Loss Time (sec): 12  
Optimal Cycle: 180  
Critical Vol./Cap.(X): 0.889  
Average Delay (sec/veh): xxxxxx  
Level Of Service: D

Street Name: Deer Valley Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Protected Protected Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 2 0 2 0 1 2 0 1 0 1 0 2 0 1 1 0 2 0 1

Volume Module:  
Base Vol: 377 466 436 235 390 22 98 1110 389 499 730 208  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 377 466 436 235 390 22 98 1110 389 499 730 208  
Added Vol: 0 0 -17 8 0 0 0 26 0 -14 77 8  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 377 466 419 243 390 22 98 1136 389 485 807 216  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 377 466 419 243 390 22 98 1136 389 485 807 216  
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 377 466 419 243 390 22 98 1136 389 485 807 216  
RTOR Reduct: 0 0 419 0 0 0 0 0 207 0 0 134  
RTOR Vol: 377 466 0 243 390 22 98 1136 182 485 807 82  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 377 466 0 243 390 22 98 1136 182 485 807 82

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 2.00 2.00 1.00 2.00 1.89 0.11 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 3000 3300 1650 3000 3124 176 1650 3300 1650 1650 3300 1650  
Capacity Analysis Module:  
Vol/Sat: 0.13 0.14 0.00 0.08 0.12 0.12 0.06 0.34 0.11 0.29 0.24 0.05  
Crit Volume: 189 206 568 485  
Crit Moves: \*\*\*\*



Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #11 Lone Tree Way/Williamson Ranch Plaza (OSH)  
\*\*\*\*\*  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.576  
Loss Time (sec): 16 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 180 Level Of Service: A

Street Name: Williamson Ranch Plaza (OSH) Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Permitted Protected Protected Permitted  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 0 0 0 0 1 0 0 0 1 0 2 0 0 2 0 1

Volume Module:  
Base Vol: 0 0 0 90 0 67 94 1703 0 0 1309 36  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 0 0 0 90 0 67 94 1703 0 0 1309 36  
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 0 0 0 90 0 67 94 1720 0 0 1381 36  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 0 0 0 90 0 67 94 1720 0 0 1381 36  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 0 0 0 90 0 67 94 1720 0 0 1381 36  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 0 0 0 90 0 67 94 1720 0 0 1381 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 0 0 0 90 0 67 94 1720 0 0 1381 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 0.00 0.00 0.00 1.00 0.00 1.00 1.00 2.00 0.00 0.00 2.00 1.00  
Final Sat.: 0 0 0 1650 0 1650 1650 3300 0 0 3300 1650  
Capacity Analysis Module:  
Vol/Sat: 0.00 0.00 0.00 0.05 0.00 0.00 0.06 0.52 0.00 0.00 0.42 0.00  
Crit Volume: 0 90 90 860 860 691  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #12 Lone Tree Way/Indian Hill Dr/Williamson Ranch Plaza (Wal-Mart, OSH)  
\*\*\*\*\*  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.628  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 61 Level Of Service: B

Street Name: Indian Hill Dr/Williamson Ranch Pl Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
Control: Split Phase Split Phase Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 2 0 0 1 0 2 0 1 1 0 2 0 1

Volume Module:  
Base Vol: 8 18 47 157 18 60 119 1571 32 55 1265 52  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 8 18 47 157 18 60 119 1571 32 55 1265 52  
Added Vol: 0 0 0 0 0 0 0 -71 88 0 0 72 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 8 18 47 157 18 60 48 1659 32 55 1337 52  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 8 18 47 157 18 60 48 1659 32 55 1337 52  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 8 18 47 157 18 60 48 1659 32 55 1337 52  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 8 18 47 157 18 60 48 1659 24 55 1337 0  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 8 18 47 157 18 60 48 1659 24 55 1337 0

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.28 0.72 2.00 0.23 0.77 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 1650 457 1193 3000 381 1269 1650 3300 1650 1650 3300 1650  
Capacity Analysis Module:  
Vol/Sat: 0.00 0.04 0.04 0.05 0.05 0.05 0.03 0.50 0.01 0.03 0.41 0.00  
Crit Volume: 65 79 829 55  
Crit Moves: \*\*\*\*

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)
Intersection #13 Lone Tree Way/Driveaway

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B [ 12.1]
Level Of Service: E
Street Name: Driveaway Lone Tree Way

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Uncontrolled Uncontrolled
Rights: Include Include Include Include

Lanes: 0 0 0 0 0 0 0 0 1 0 0 2 0 0 0 0 3 0 1
Volume Module:

Base Vol: 0 0 0 0 0 0 0 0 1801 0 0 1330 93
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 0 0 0 0 0 0 38 0 1801 0 0 1330 93

Added Vol: 0 0 0 0 0 0 0 0 88 0 0 72 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 0 0 0 0 0 0 38 0 1889 0 0 1402 93

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 0 0 0 0 0 0 38 0 1889 0 0 1402 93

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0
FinalVolume: 0 0 0 0 0 0 38 0 1889 0 0 1402 93
Critical Gap Module:

Critical Gp:xxxxx xxxx xxxxx xxxxx 6.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx 3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx

Capacity Module:
Conflict Vol: xxx xxxx xxxxx xxxx xxxx 467 xxxx xxxx xxxxx xxxx xxxx xxxxx
Potential Cap.: xxx xxxx xxxxx xxxx xxxx 542 xxxx xxxx xxxxx xxxx xxxx xxxxx

Level Of Service Computation Report

CATALOS Method (Future Volume Alternative)
Intersection #14 Lone Tree Way/Hillcrest Avenue

Average Delay (sec/veh): 130 Critical Vol./Cap.(X): 0.911
Level Of Service: E
Street Name: Hillcrest Avenue Lone Tree Way

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected
Rights: Include Include Include Include

Lanes: 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0
Volume Module:

Base Vol: 238 276 205 489 482 198 229 1290 249 189 1099 279
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 238 276 205 489 482 198 229 1290 249 189 1099 279

Added Vol: 0 -54 91 54 -39 -53 0 88 0 177 125 39
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 238 222 296 543 443 145 229 1378 249 366 1224 318

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 238 222 296 543 443 145 229 1378 249 366 1224 318

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 238 222 296 543 443 145 229 1378 249 366 1224 318
RTOR Reduct: 0 0 0 0 0 0 145 0 0 0 0 0

Capacity Module:
Conflict Vol: 238 222 296 543 443 0 229 1378 249 366 1224 19
Potential Cap.: xxx xxxx xxxxx xxxx xxxx 542 xxxx xxxx xxxxx xxxx xxxx xxxxx

Level Of Service Module:
2Way95thQ: xxx xxxx xxxxx xxxx xxxx 5.6 xxxx xxxx xxxxx xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx 12.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx



Antioch Walmart Expansion

Level Of Service Computation Report
CCTALOS Method (Future Volume Alternative)

Intersection #17 Lone Tree Way/Canada Valley Road

Cycle (sec): 100
Loss Time (sec): 12
Optimal Cycle: 141

Street Name: Canada Valley Road
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Include Include Include Include

Min. Green: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Y+R: 2 0 0 1 1 0 1 0 1 2 0 3 0 1 2 0 3 0 1

Lanes: 2 0 0 1 1 0 1 0 1 2 0 3 0 1 2 0 3 0 1

Volume Module:

Base Vol: 213 71 371 344 126 63 128 1739 80 450 1394 467
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Saturation Flow Module:

Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment: 0.91 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Vol/Sat: 0.07 0.06 0.06 0.21 0.08 0.00 0.04 0.41 0.00 0.15 0.40 0.07

Crit Volume: 97 349 680 225

Crit Moves: \*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report
CCTALOS Method (Future Volume Alternative)

Intersection #18 Lone Tree Way/SB SR-4 Bypass

Cycle (sec): 100
Loss Time (sec): 9
Optimal Cycle: 180

Street Name: SB SR-4 Bypass
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Include Include Include Include

Min. Green: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Y+R: 0 0 0 0 0 1 1 0 0 1 0 0 3 0 1 2 0 3 0 0

Lanes: 0 0 0 0 0 1 1 0 0 1 0 0 3 0 1 2 0 3 0 0

Volume Module:

Base Vol: 0 0 0 817 13 595 0 1859 605 408 1527 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Saturation Flow Module:

Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Vol/Sat: 0.00 0.00 0.00 0.26 0.24 0.34 0.00 0.44 0.37 0.21 0.43 0.00

Crit Volume: 556 722 312

Crit Moves: \*\*\*\*





2: Laurel Rd. & Hillcrest Ave  
Antioch Wal-Mart Expansion

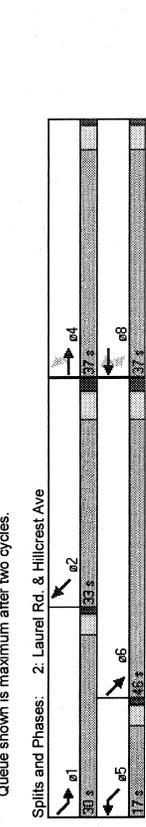
1: Country Hills Dr. & Deer Valley Rd.  
Antioch Wal-Mart Expansion

Long-Term Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1635	0	1770	1663	1583	1770	3500	0	1770	3350	0
Satd. Flow (prot)	0.741	0.702	0	0.702	0.650	0.650	0.950	0	0.950	0	0.950	0
Fit Permitted	1379	1635	0	1305	1663	1583	1768	3500	0	1770	3350	0
Satd. Flow (perm)	61	583	0	583	10	75	10	75	0	75	0	0
Satd. Flow (RTOR)	17	13	39	549	20	461	241	647	50	27	456	206
Volume (vph)	17	81	0	696	25	584	246	711	0	30	736	0
Lane Group Flow (vph)	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	4	8	8	8	8	8	8	8	8	8	8	8
Protected Phases	4	8	8	8	8	8	8	8	8	8	8	8
Permitted Phases	4	8	8	8	8	8	8	8	8	8	8	8
Total Split (s)	37.0	37.0	0.0	37.0	37.0	30.0	46.0	46.0	0.0	17.0	33.0	0.0
Act Effct Green (s)	34.0	34.0	0.0	34.0	34.0	19.6	52.8	52.8	0.0	8.1	37.4	0.0
Actuated g/C Ratio	0.34	0.34	0.04	0.34	0.34	0.20	0.53	0.53	0.08	0.08	0.37	0.00
v/c Ratio	0.06	0.14	0.00	0.06	0.06	0.71	0.38	0.38	0.21	0.57	0.00	0.00
Control Delay	22.8	9.3	292.5	22.4	6.9	48.5	15.5	15.5	45.7	25.1	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	9.3	292.5	22.4	6.9	48.5	15.5	15.5	45.7	25.1	0.0	0.0
LOS	C	A	F	C	A	D	B	D	D	D	C	C
Approach Delay	12.7	159.4	0	12.7	159.4	24.0	24.0	24.0	0	0	26.0	0
Approach LOS	B	F	F	B	F	C	C	C	C	C	C	C
Queue Length 50th (ft)	12	11	13	148	144	18	173	173	0	0	0	0
Queue Length 95th (ft)	22	21	43	213	198	46	261	261	0	0	0	0
Internal Link Dist (ft)	75	468	175	115	140	150	150	150	0	0	0	0
Turn Bay Length (ft)	469	596	444	833	896	478	1851	1851	0	0	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.14	1.57	0.04	0.65	0.51	0.38	0.38	0.12	0.57	0.00	0.00

Intersection Summary  
Cycle Length: 100  
Actuated Cycle Length: 100  
Offset: 21 (21%); Referenced to phase 2: NMT and 6: SET... Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 1.57  
Intersection Signal Delay: 60.4  
Intersection Capacity Utilization: 81.3%  
Analysis Period (min): 15  
Intersection LOS: F  
ICU Level of Service D

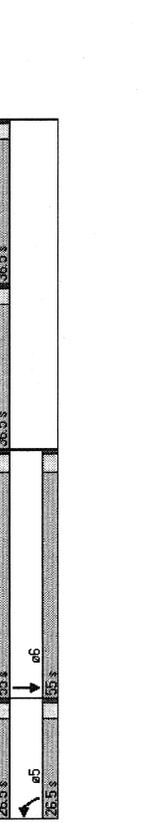
Volume exceeds capacity, queue is theoretically infinite  
Queue shown is maximum after two cycles.  
95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1846	0	1770	1704	0	1770	3433	0	1770	3311	0
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1766	1846	0	1770	1704	0	1762	3433	0	1745	3311	0
Satd. Flow (perm)	31	31	0	31	13	0	13	13	0	67	67	0
Satd. Flow (RTOR)	246	100	6	54	76	80	8	682	110	101	530	280
Volume (vph)	304	130	0	59	172	0	8	851	0	109	871	0
Lane Group Flow (vph)	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	8	8	8	8	4	4	5	2	1	6	6	6
Protected Phases	8	8	8	8	4	4	5	2	1	6	6	6
Permitted Phases	8	8	8	8	4	4	5	2	1	6	6	6
Total Split (s)	36.5	36.5	0.0	36.5	36.5	0.0	26.5	55.0	0.0	26.5	55.0	0.0
Act Effct Green (s)	23.4	23.4	0.0	16.5	16.5	0.0	8.9	38.0	0.0	13.7	49.1	0.0
Actuated g/C Ratio	0.24	0.24	0.00	0.17	0.17	0.00	0.08	0.39	0.00	0.14	0.51	0.00
v/c Ratio	0.71	0.29	0.00	0.20	0.56	0.00	0.06	0.63	0.00	0.45	0.51	0.00
Control Delay	50.1	39.8	44.6	43.7	62.8	32.2	54.9	19.6	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	39.8	44.6	43.7	62.8	32.2	54.9	19.6	0.0	0.0	0.0	0.0
LOS	D	D	D	D	D	D	E	C	D	D	B	B
Approach Delay	47.0	43.9	0	43.9	32.5	0	32.5	23.5	0	23.5	0	0
Approach LOS	D	D	D	D	C	D	C	C	D	C	C	C
Queue Length 50th (ft)	173	65	33	82	5	236	64	166	0	64	166	0
Queue Length 95th (ft)	354	154	90	199	29	465	166	397	0	166	397	0
Internal Link Dist (ft)	145	308	120	274	880	175	220	220	0	175	220	0
Turn Bay Length (ft)	807	635	549	550	386	1698	419	1884	0	419	1884	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.20	0.11	0.31	0.02	0.50	0.26	0.46	0.00	0.26	0.46	0.00

Intersection Summary  
Cycle Length: 154.5  
Actuated Cycle Length: 97.2  
Control Type: Actuated-Uncoordinated  
Maximum v/c Ratio: 0.71  
Intersection Signal Delay: 32.6  
Intersection Capacity Utilization: 65.2%  
Analysis Period (min): 15  
Intersection LOS: C  
ICU Level of Service C

Volume exceeds capacity, queue is theoretically infinite  
Queue shown is maximum after two cycles.  
95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.



3: Country Hills Dr. & Hillcrest Ave  
Antioch Walmart Expansion

4: Northeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

Long-Term Conditions  
PM Peak

Long-Term Conditions  
PM Peak

Movement	EBL	EBR	NBL	NBR	SBT	SBR
Lane Configurations	Stop	Stop	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%
Grade	0	7	0	672	1092	5
Volume (veh/h)	0.58	0.58	0.88	0.88	0.90	0.90
Peak Hour Factor	0	12	0	754	1213	6
Hourly flow rate (vph)						
Pedestrians						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)				727	1032	
Upstream signal (ft)						
p.k. platoon unblocked	0.64	0.64	0.64			
v/c, conflicting volume	1595	1213	1219			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCU, unblocked vol	1932	1334	1343			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
P0 queue free %	100	87	100			
CM capacity (veh/h)	37	92	325			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	382	382	1213	6	
Volume Left	0	0	0	0	0	
Volume Right	12	0	0	0	6	
CSH	92	1700	1700	1700	1700	
Volume to Capacity	0.13	0.22	0.22	0.71	0.00	
Queue Length 95th (ft)	11	0	0	0	0	
Control Delay (s)	F	50.0	0.0	0.0	0.0	
Lane LOS	F					
Approach Delay (s)	F	50.0	0.0	0.0	0.0	
Approach LOS	F					
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	67.5%					
ICU Level of Service	C					
Analysis Period (min)	15					

Movement	EBL	EBR	NBL	NBR	SBT	SBR
Lane Configurations	Stop	Stop	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%
Grade	0	7	0	672	1092	5
Volume (veh/h)	0.58	0.58	0.88	0.88	0.90	0.90
Peak Hour Factor	0	12	0	754	1213	6
Hourly flow rate (vph)						
Pedestrians						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)				727	1032	
Upstream signal (ft)						
p.k. platoon unblocked	0.64	0.64	0.64			
v/c, conflicting volume	1595	1213	1219			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCU, unblocked vol	1932	1334	1343			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
P0 queue free %	100	87	100			
CM capacity (veh/h)	37	92	325			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	382	382	1213	6	
Volume Left	0	0	0	0	0	
Volume Right	12	0	0	0	6	
CSH	92	1700	1700	1700	1700	
Volume to Capacity	0.13	0.22	0.22	0.71	0.00	
Queue Length 95th (ft)	11	0	0	0	0	
Control Delay (s)	F	50.0	0.0	0.0	0.0	
Lane LOS	F					
Approach Delay (s)	F	50.0	0.0	0.0	0.0	
Approach LOS	F					
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	67.5%					
ICU Level of Service	C					
Analysis Period (min)	15					

Movement	EBL	EBR	NBL	NBR	SBT	SBR
Lane Configurations	Stop	Stop	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%
Grade	0	7	0	672	1092	5
Volume (veh/h)	0.58	0.58	0.88	0.88	0.90	0.90
Peak Hour Factor	0	12	0	754	1213	6
Hourly flow rate (vph)						
Pedestrians						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)				727	1032	
Upstream signal (ft)						
p.k. platoon unblocked	0.64	0.64	0.64			
v/c, conflicting volume	1595	1213	1219			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCU, unblocked vol	1932	1334	1343			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
P0 queue free %	100	87	100			
CM capacity (veh/h)	37	92	325			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	382	382	1213	6	
Volume Left	0	0	0	0	0	
Volume Right	12	0	0	0	6	
CSH	92	1700	1700	1700	1700	
Volume to Capacity	0.13	0.22	0.22	0.71	0.00	
Queue Length 95th (ft)	11	0	0	0	0	
Control Delay (s)	F	50.0	0.0	0.0	0.0	
Lane LOS	F					
Approach Delay (s)	F	50.0	0.0	0.0	0.0	
Approach LOS	F					
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	67.5%					
ICU Level of Service	C					
Analysis Period (min)	15					

Movement	EBL	EBR	NBL	NBR	SBT	SBR
Lane Configurations	Stop	Stop	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%
Grade	0	7	0	672	1092	5
Volume (veh/h)	0.58	0.58	0.88	0.88	0.90	0.90
Peak Hour Factor	0	12	0	754	1213	6
Hourly flow rate (vph)						
Pedestrians						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)				727	1032	
Upstream signal (ft)						
p.k. platoon unblocked	0.64	0.64	0.64			
v/c, conflicting volume	1595	1213	1219			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCU, unblocked vol	1932	1334	1343			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
P0 queue free %	100	87	100			
CM capacity (veh/h)	37	92	325			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	382	382	1213	6	
Volume Left	0	0	0	0	0	
Volume Right	12	0	0	0	6	
CSH	92	1700	1700	1700	1700	
Volume to Capacity	0.13	0.22	0.22	0.71	0.00	
Queue Length 95th (ft)	11	0	0	0	0	
Control Delay (s)	F	50.0	0.0	0.0	0.0	
Lane LOS	F					
Approach Delay (s)	F	50.0	0.0	0.0	0.0	
Approach LOS	F					
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	67.5%					
ICU Level of Service	C					
Analysis Period (min)	15					



5: Southeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

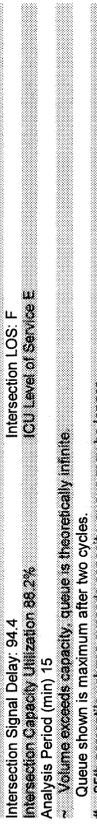
6: Lone Tree Way & Country Hills Dr.  
Antioch Walmart Expansion

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Stop	0%	0%	Step	0%	0%	Free	0%	Free	0%	Free	0%
Sign Control	0	0	128	1	0	40	0	702	88	9	1005	79
Grade	0.78	0.78	0.78	0.62	0.62	0.62	0.89	0.89	0.89	0.96	0.96	0.96
Volume (veh/h)	0	0	162	2	0	65	0	789	76	9	1048	82
Peak Hour Factor												
Hourly flow rate (vph)												
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blackage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)									347			
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97	0.97				0.97		
vC, conflicting volume	1567	1973	390	1316	1938	394	1130			865		
vC1, stage 1 cont vol												
vC2, stage 2 cont vol												
vCu, unblocked vol	1552	1972	390	1295	1936	339	1130			826		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF, (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	73	98	100	90	100			99		
GM capacity (veh/h)	86	59	608	84	62	635	614			774		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	162	66	394	394	76	271	524	344				
Volume Left	0	2	0	0	0	9	0	0				
Volume Right	162	65	0	0	76	0	82	0				
cSH	608	547	1700	1700	774	1700	1700					
Volume to Capacity	0.27	0.12	0.23	0.23	0.04	0.01	0.31	0.20				
Queue Length 95th (ft)	27	10	0	0	0	1	0	0				
Control Delay (s)	13.0	12.5	0.0	0.0	0.0	0.5	0.0	0.0				
Lane LOS	B	B	A	A	A	A	A	A				
Approach Delay (s)	13.0	12.5	0.0	0.1								
Approach LOS	B	B										

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	3539	1583	1770	1754	0	1770	1762	0
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Fit Permitted	1766	3539	1386	1747	3539	1529	1760	1754	0	1768	1782	0
Satd. Flow (perm)	146	1402	182	137	1080	46	152	171	97	56	261	88
Satd. Flow (RTOR)	152	1460	190	151	1187	51	214	378	0	66	411	0
Volume (vph)	146	1402	182	137	1080	46	152	171	97	56	261	88
Lane Group Flow (vph)	152	1460	190	151	1187	51	214	378	0	66	411	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Split	Split	Split	Split	Split	Split
Protected Phases	5	2	1	6	8	8	8	8	8	8	4	4
Permitted Phases	27.0	47.0	47.0	37.0	37.0	33.0	33.0	33.0	0.0	33.0	33.0	0.0
Total Split (s)	18.1	44.8	44.8	14.0	40.7	29.2	29.2	29.2	0.0	30.0	30.0	0.0
Act Effect Green (s)	0.14	0.34	0.34	0.11	0.31	0.22	0.22	0.22	0.23	0.23	0.23	0.23
Actuated g/C Ratio	0.62	1.20	0.38	0.79	1.07	0.54	0.54	0.54	0.16	0.16	0.98	0.98
v/c Ratio	63.0	135.0	27.7	74.1	84.6	19.3	49.9	75.5	41.3	87.2	87.2	87.2
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	63.0	135.0	27.7	74.1	84.6	19.3	49.9	75.5	41.3	87.2	87.2	87.2
Total Delay	E	F	C	E	F	B	D	E	D	F	F	F
LOS	E	F	C	E	F	B	D	E	D	F	F	F
Approach Delay	117.6			81.0			66.3			80.8		
Approach LOS	F			F			F			F		
Queue Length 50th (ft)	122	-793	94	125	-593	13	159	297	45	338		
Queue Length 95th (ft)	186	4933	162	m#230	#794	m29	183	307	81	#498		
Internal Link Dist (ft)	145	1420	75	145	740	75	170	675	120	577		
Turn Bay Length (ft)	327	1219	504	191	1108	487	408	420	408	420		
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.46	1.20	0.38	0.79	1.07	0.10	0.52	0.90	0.16	0.98		

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 80 (62%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.20  
 Intersection Signal Delay: 94.4  
 Intersection Capacity Utilization: 88.2%  
 Analysis Period (min): 15  
 ICU Level of Service: E

~ Volume exceeds capacity, queue is theoretically infinite.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 6. Lone Tree Way & Country Hills Dr.

5: Southeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Stop	0%	0%	Step	0%	0%	Free	0%	Free	0%	Free	0%
Sign Control	0	0	128	1	0	40	0	702	88	9	1005	79
Volume (veh/h)	0.78	0.78	0.78	0.62	0.62	0.62	0.89	0.89	0.89	0.96	0.96	0.96
Peak Hour Factor												
Hourly flow rate (vph)	0	0	162	2	0	65	0	789	76	9	1048	82
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blackage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)									347			
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97	0.97				0.97		
vC, conflicting volume	1567	1973	390	1316	1938	394	1130			865		
vC1, stage 1 cont vol												
vC2, stage 2 cont vol												
vCu, unblocked vol	1552	1972	390	1295	1936	339	1130			826		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF, (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	73	98	100	90	100			99		
GM capacity (veh/h)	86	59	608	84	62	635	614			774		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	162	66	394	394	76	271	524	344				
Volume Left	0	2	0	0	0	9	0	0				
Volume Right	162	65	0	0	76	0	82	0				
cSH	608	547	1700	1700	774	1700	1700					
Volume to Capacity	0.27	0.12	0.23	0.23	0.04	0.01	0.31	0.20				
Queue Length 95th (ft)	27	10	0	0	0	1	0	0				
Control Delay (s)	13.0	12.5	0.0	0.0	0.0	0.5	0.0	0.0				
Lane LOS	B	B	A	A	A	A	A	A				
Approach Delay (s)	13.0	12.5	0.0	0.1								
Approach LOS	B	B										

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 80 (62%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.20  
 Intersection Signal Delay: 94.4  
 Intersection Capacity Utilization: 88.2%  
 Analysis Period (min): 15  
 ICU Level of Service: E

~ Volume exceeds capacity, queue is theoretically infinite.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

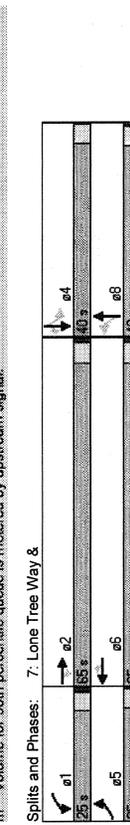


Splits and Phases: 6. Lone Tree Way & Country Hills Dr.

7: Lone Tree Way & Antioch Walmart Expansion  
Long-Term Conditions  
PM Peak

Lane Group	EBL	EBR	WBL	WBR	NBL	NBR	SBT	SBR
Lane Configurations	AA	AA	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	1583	0	1770	1863
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1770	3539	1436	1757	1583	0	1289	1863
Satd. Flow (RTOR)	29	1656	107	99	1191	27	155	79
Volume (vph)	31	1656	107	99	1191	27	155	79
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	1	6	1	6	8	4
Protected Phases								
Permitted Phases	25.0	65.0	65.0	65.0	40.0	40.0	40.0	40.0
Total Split (s)	8.8	86.6	86.6	14.2	96.0	20.2	20.2	20.2
Act Effect Green (s)	0.07	0.67	0.67	0.11	0.74	0.16	0.16	0.16
Actuated g/C Ratio	0.26	0.70	0.11	0.51	0.46	0.02	0.71	0.16
v/c Ratio	57.2	10.8	0.4	54.3	11.4	9.0	66.8	0.7
Control Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	57.2	10.9	0.4	54.3	11.4	9.0	66.8	0.7
Total Delay	E	B	A	D	B	A	E	A
LOS	E	B	A	D	B	A	E	A
Approach Delay	11.0			14.6			45.8	31.2
Approach LOS	B			B			D	C
Queue Length 50th (ft)	28	122	0	88	199	5	126	0
Queue Length 95th (ft)	m28	m52	m0	m131	m0	m7	160	0
Internal Link Dist (ft)	100	740	100	200	100	100	704	0
Turn Bay Length (ft)	0	0	0	0	0	0	0	0
Base Capacity (vph)	300	2356	957	300	2614	1172	401	654
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.72	0.11	0.33	0.46	0.02	0.39	0.12

Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 94 (72%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.71  
Intersection LOS: B  
Intersection Capacity Utilization 71.4%  
Analysis Period (min) 15  
User Entered Value  
Volume for 95th percentile queue is metered by upstream signal.



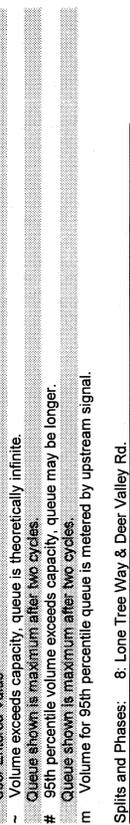
Splits and Phases: 7: Lone Tree Way &

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8: Lone Tree Way & Deer Valley Rd.  
Antioch Walmart Expansion  
Long-Term Conditions  
PM Peak

Lane Group	EBL	EBR	WBL	WBR	NBL	NBR	SBT	SBR
Lane Configurations	AA	AA	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	1583	3433	3539	2000
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1768	3539	1523	1764	1551	3429	3539	1558
Satd. Flow (RTOR)	98	1136	389	485	807	216	377	466
Volume (vph)	113	1306	447	511	849	227	436	542
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	1	6	1	6	3	8
Protected Phases								
Permitted Phases	20.0	44.0	44.0	25.0	49.0	20.0	32.0	29.0
Total Split (s)	14.3	41.0	41.0	26.7	53.4	17.0	26.4	26.4
Act Effect Green (s)	0.11	0.92	0.32	0.21	0.41	0.13	0.20	0.18
Actuated g/C Ratio	0.58	1.17	0.63	1.41	0.58	0.29	0.98	0.75
v/c Ratio	75.8	125.0	18.9	286.4	41.3	15.5	92.9	55.7
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	75.8	125.0	18.9	286.4	41.3	15.5	92.9	55.7
Total Delay	E	F	B	F	D	B	F	E
LOS	E	F	B	F	D	B	F	E
Approach Delay	96.9			100.4			62.5	51.6
Approach LOS	F			F			E	D
Queue Length 50th (ft)	90	-67.3	112	-651	223	19	192	222
Queue Length 95th (ft)	m146	#74	123	#878	471	m171	#277	271
Internal Link Dist (ft)	195	850	400	500	1580	400	180	825
Turn Bay Length (ft)	0	0	0	0	0	0	0	0
Base Capacity (vph)	231	1116	712	363	1454	771	448	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	1.17	0.63	1.41	0.58	0.29	0.98	0.69

Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 80 (62%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 1.41  
Intersection LOS: F  
Intersection Capacity Utilization 94.2%  
Analysis Period (min) 15  
User Entered Value  
Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 8: Lone Tree Way & Deer Valley Rd.

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Kimley-Horn and Associates, Inc.

9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

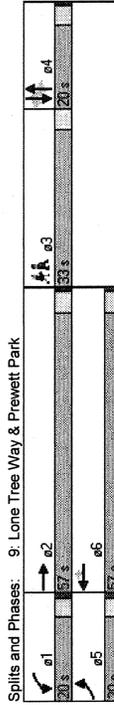
Long-Term Conditions  
PM Peak

Lane Group	EBL	EBT	EBL	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3535	0	1770	3539	1583	1770	1561	0	1770	1863
Satd. Flow (prot)	0.950			0.950		0.755			0.744		1583
Fit Permitted	1770	3535	0	1770	3539	1545	1394	1561	0	1383	1863
Satd. Flow (perm)	36	1798	7	32	1475	10	44	0	10	8	2
Satd. Flow (RTOR)	39	1982	0	37	1715	12	90	20	0	15	4
Volume (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Lane Group Flow (vph)	5	2	1	6	4	4	4	4	4	4	4
Turn Type	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases
Protected Phases	20.0	57.0	0.0	20.0	57.0	20.0	20.0	20.0	0.0	20.0	20.0
Permitted Phases	9.8	88.0	9.6	85.5	14.3	14.3	14.3	14.3	14.3	14.3	14.3
Total Split (s)	0.08	0.88	0.07	0.66	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Act Effct Green (s)	0.28	0.74	0.01	0.59	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Actuated g/C Ratio	60.1	15.5	71.9	13.3	3.3	70.0	0.1	51.8	49.5	19.2	19.2
v/c Ratio	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	60.1	15.5	71.9	11.4	3.3	70.0	0.1	51.8	49.5	19.2	19.2
Control Delay	E	B	E	B	A	E	A	D	D	D	B
Queue Delay	16.3	12.6	12.6	57.3	57.3	33.1	33.1	33.1	33.1	33.1	33.1
Total Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay
LOS	B	B	B	E	E	C	C	C	C	C	C
Approach Delay	33	278	32	395	0	73	0	11	3	3	0
Queue Length 50th (ft)	m34	m4964	m47	#899	m2	66	0	20	9	9	9
Queue Length 95th (ft)	145	1590	150	605	609	609	609	609	609	609	609
Internal Link Dist (ft)	231	2393	231	2325	1019	183	643	182	246	229	229
Turn Bay Length (ft)	0	0	0	57	0	0	0	0	0	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.82	0.16	0.75	0.01	0.49	0.03	0.08	0.02	0.11	0.11

Lane Group	EBL	EBT	EBL	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3535	0	1770	3539	1583	1770	1561	0	1770	1863
Satd. Flow (prot)	0.950			0.950		0.755			0.744		1583
Fit Permitted	1770	3535	0	1770	3539	1545	1394	1561	0	1383	1863
Satd. Flow (perm)	36	1798	7	32	1475	10	44	0	10	8	2
Satd. Flow (RTOR)	39	1982	0	37	1715	12	90	20	0	15	4
Volume (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Lane Group Flow (vph)	5	2	1	6	4	4	4	4	4	4	4
Turn Type	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases
Protected Phases	20.0	57.0	0.0	20.0	57.0	20.0	20.0	20.0	0.0	20.0	20.0
Permitted Phases	9.8	88.0	9.6	85.5	14.3	14.3	14.3	14.3	14.3	14.3	14.3
Total Split (s)	0.08	0.88	0.07	0.66	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Act Effct Green (s)	0.28	0.74	0.01	0.59	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Actuated g/C Ratio	60.1	15.5	71.9	13.3	3.3	70.0	0.1	51.8	49.5	19.2	19.2
v/c Ratio	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	60.1	15.5	71.9	11.4	3.3	70.0	0.1	51.8	49.5	19.2	19.2
Control Delay	E	B	E	B	A	E	A	D	D	D	B
Queue Delay	16.3	12.6	12.6	57.3	57.3	33.1	33.1	33.1	33.1	33.1	33.1
Total Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay	Approach Delay
LOS	B	B	B	E	E	C	C	C	C	C	C
Approach Delay	33	278	32	395	0	73	0	11	3	3	0
Queue Length 50th (ft)	m34	m4964	m47	#899	m2	66	0	20	9	9	9
Queue Length 95th (ft)	145	1590	150	605	609	609	609	609	609	609	609
Internal Link Dist (ft)	231	2393	231	2325	1019	183	643	182	246	229	229
Turn Bay Length (ft)	0	0	0	57	0	0	0	0	0	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.82	0.16	0.75	0.01	0.49	0.03	0.08	0.02	0.11	0.11

Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 113 (87%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.82  
Intersection Signal Delay: 16.0  
Intersection Capacity Utilization: 65.8%  
Analysis Period (min): 15  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.

Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 113 (87%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.82  
Intersection Signal Delay: 16.0  
Intersection Capacity Utilization: 65.8%  
Analysis Period (min): 15  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 9: Lone Tree Way & Prewett Park

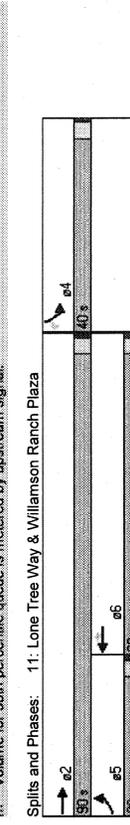
11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

10: Lone Tree Way & Sagebrush Dr.  
Antioch Walmart Expansion

Long-Term Conditions  
PM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	3539	1583	1770	1583	1583
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Flt Permitted	1756	3539	3539	1451	1770	1582	1582
Satd. Flow (perm)	94	1720	1381	36	90	67	67
Volume (vph)	106	1933	1534	40	127	94	94
Lane Group Flow (vph)	Prot	5	2	6	4	4	4
Turn Type	Prot	5	2	6	4	4	4
Permitted Phases	Prot	5	2	6	4	4	4
Total Split (s)	30.0	90.0	60.0	60.0	40.0	40.0	40.0
Act Effct Green (s)	11.8	108.8	93.9	93.9	15.2	15.2	15.2
Actuated g/C Ratio	0.09	0.84	0.72	0.72	0.12	0.12	0.12
v/c Ratio	0.66	0.65	0.60	0.04	0.61	0.35	0.35
Control Delay	77.8	9.2	8.1	0.1	65.9	12.6	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.8	9.2	8.1	0.1	65.9	12.6	12.6
LOS	E	A	A	A	E	E	B
Approach Delay	12.8	6.0	43.2				
Approach LOS	B	A	D				
Queue Length 50th (ft)	93	178	11	0	105	0	0
Queue Length 95th (ft)	m120	831	226	m0	120	22	22
Internal Link Dist (ft)	155	1855	820	115	457		
Turn Bay Length (ft)	368	2961	2557	1052	504	512	512
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.65	0.60	0.04	0.25	0.18	0.18

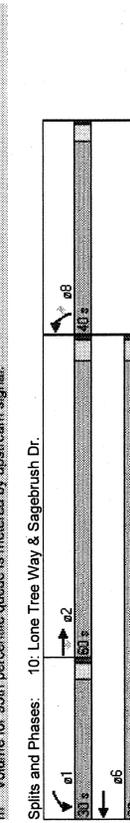
Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 75 (58%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.66  
Intersection Signal Delay: 11.7  
Intersection LOS: B  
Intersection Capacity Utilization 58.7%  
ICU Level of Service B  
Analysis Period (min) 15  
m - Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 11: Lone Tree Way & Williamson Ranch Plaza

Lane Group	EBL	EBT	WBL	WBT	NBL	NBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	3539	1583	1770	3539	1770	1583
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0.950
Flt Permitted	3539	1511	1767	3539	1770	1583
Satd. Flow (perm)	1888	146	45	1385	85	101
Volume (vph)	1835	159	56	1710	139	165
Lane Group Flow (vph)	Prot	2	1	6	8	8
Turn Type	Prot	2	1	6	8	8
Permitted Phases	Prot	2	1	6	8	8
Total Split (s)	60.0	60.0	30.0	90.0	40.0	40.0
Act Effct Green (s)	98.8	9.4	109.3	14.7	14.7	14.7
Actuated g/C Ratio	0.76	0.76	0.07	0.84	0.11	0.11
v/c Ratio	0.68	0.14	0.44	0.57	0.69	0.51
Control Delay	6.0	0.3	79.0	1.7	72.6	12.9
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	6.1	0.3	79.0	1.7	72.6	12.9
LOS	A	A	E	A	E	B
Approach Delay	5.6		4.1	40.1		
Approach LOS	A		A	D		
Queue Length 50th (ft)	25	1	43	25	115	0
Queue Length 95th (ft)	197	m0	m77	15	116	3
Internal Link Dist (ft)	805		1855	497		
Turn Bay Length (ft)	80	600	368	2974	504	599
Base Capacity (vph)	2889	1156	368	2974	504	599
Starvation Cap Reductn	93	0	0	0	0	0
Spillback Cap Reductn	0	0	0	39	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.14	0.15	0.58	0.28	0.29

Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 122 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.69  
Intersection Signal Delay: 7.6  
Intersection LOS: A  
Intersection Capacity Utilization 59.6%  
ICU Level of Service B  
Analysis Period (min) 15  
m - Volume for 95th percentile queue is metered by upstream signal.



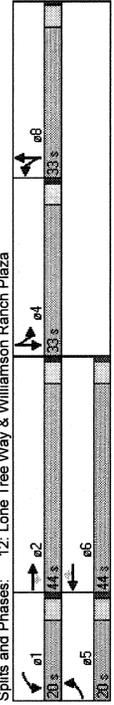
Splits and Phases: 10: Lone Tree Way & Sagebrush Dr.

12: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

13: Lone Tree Way & Wal-Mart Driveway  
Antioch Walmart Expansion

Movement	EBL	EBT	WBL	WBT	WBR	SBL	SBR
Lane Configurations	4A	4A	4A	4A	4A	4A	4A
Sign Control	Free	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	1888	1402	83	0	38	0
Peak Hour Factor	0.86	0.86	0.94	0.84	0.84	0.84	0.84
Hourly Flow Rate (vph)	0	2197	1491	99	0	45	0
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type							None
Median storage (veh)							
Upstream signal (ft)		510	500				
PA, platoon unblocked	0.74					0.56	0.74
VC, conflicting volume	1590					2590	497
VC1, stage 1 cont vol							
VC2, stage 2 cont vol							
VCU, unblocked vol	1108					1231	0
IC, single (s)	4.1					6.8	6.9
IC, 2 stage (s)							
IF (s)	2.2					3.5	3.3
P0 queue free %	100					100	94
GM capacity (veh/h)	486					95	808
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	1098	1098	497	497	497	99	45
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
CSH	1700	1700	1700	1700	1700	1700	808
Volume to Capacity	0.65	0.65	0.29	0.29	0.29	0.06	0.06
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.7
Lane LOS	A	A	A	A	A	A	A
Approach LOS							
Intersection Summary							
Average Delay	0.1						
Intersection Capacity Utilization	65.6%						
Analysis Period (min)	15						
ICU Level of Service	B						

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	4A	4A	4A	4A	4A	4A	4A	4A	4A	4A
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1643	0	3433
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	1630
Satd. Flow (perm)	1755	3539	1422	1762	3539	1419	1767	1643	0	3419
Satd. Flow (RTOR)	6	6	13	6	6	13	6	6	0	77
Volume (vph)	48	1659	32	55	1337	52	8	18	47	157
Lane Group Flow (vph)	57	1975	38	65	1592	62	11	90	0	201
Turn Type	Prot	Perm	Prot	Perm	Prot	Perm	Split	Split	Split	Split
Protected Phases	5	2	1	6	8	8	6	4	4	4
Permitted Phases	20.0	44.0	44.0	20.0	44.0	33.0	33.0	0.0	33.0	33.0
Act Effct Green (s)	11.4	77.2	13.2	78.7	78.7	13.1	13.1	16.9	16.9	16.9
Actuated v/c Ratio	0.09	0.59	0.10	0.61	0.61	0.10	0.10	0.13	0.13	0.13
v/c Ratio	0.37	0.94	0.04	0.36	0.74	0.07	0.06	0.40	0.45	0.36
Control Delay	69.5	26.5	9.7	59.3	24.1	15.3	48.0	22.8	64.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.5	26.5	9.7	59.3	24.1	15.3	48.0	22.8	64.2	18.6
LOS	E	C	A	E	C	B	D	C	D	B
Approach Delay	27.4			25.1		25.6			42.3	
Approach LOS	C			C		C			D	
Queue Length 50th (ft)	47	927	2	57	412	13	9	20	83	18
Queue Length 95th (ft)	m65	#1311	m20	m61	m#854	m25	19	40	91	47
Internal Link Dist (ft)	170	820	80	135	430	731			200	440
Turn Bay Length (ft)	231	2102	847	231	2143	864	408	429	792	435
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.94	0.04	0.28	0.74	0.07	0.03	0.21	0.25	0.23
Intersection Summary										
Cycle Length	130									
Actuated Cycle Length	130									
Offset	53 (41%). Referenced to phase 2:EBT and 6:WBT. Start of Yellow									
Control Type	Actuated-Coordinated									
Maximum v/c Ratio	0.94									
Intersection Signal Delay	27.5									
Intersection LOS	C									
Intersection Capacity Utilization	64.1%									
Analysis Period (min)	15									
# 95th percentile volume exceeds capacity. queue may be longer.										
m 95th percentile volume exceeds capacity. queue may be longer.										
m Volume for 95th percentile queue is metered by upstream signal.										

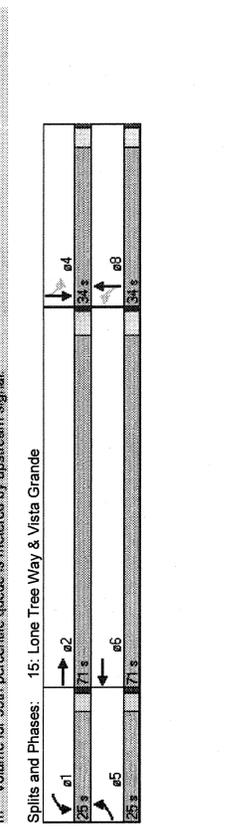


15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

14: Lone Tree Way & Hillcrest Ave  
Antioch Walmart Expansion

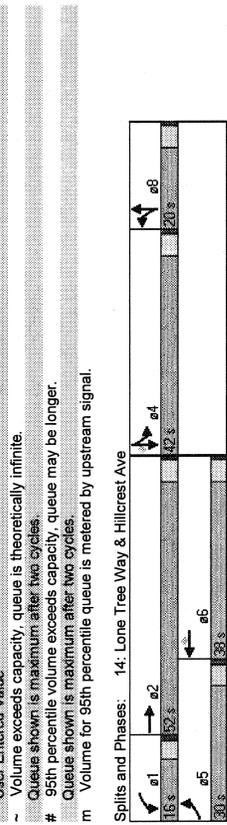
EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1770	4938	0	1770	5085	1583	1770	3171	0	2000	3539	1583
0.950			0.950			0.950			0.950		
1768	5049	0	1769	5055	0	1760	1610	0	1770	1649	0
6			6			6			6		
39	2031	78	167	1753	62	54	26	124	81	22	54
40	2174	0	178	1931	0	68	187	0	109	103	0
5	2	1	6	1	6	8	8	8	4	4	4
25.0	71.0	0.0	25.0	71.0	0.0	34.0	34.0	0.0	34.0	34.0	0.0
10.7	79.2	0.0	19.6	90.3	0.0	22.2	22.2	0.0	22.2	22.2	0.0
0.08	0.61	0.0	0.15	0.69	0.0	0.17	0.17	0.0	0.17	0.17	0.0
0.27	0.71	0.0	0.67	0.55	0.0	0.34	0.46	0.0	0.34	0.46	0.0
69.7	14.4	0.0	58.1	12.1	0.0	48.9	14.0	0.0	48.9	14.0	0.0
0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69.7	15.0	0.0	69.1	12.1	0.0	49.9	14.0	0.0	49.9	14.0	0.0
E	B	B	E	B	B	D	B	B	E	B	B
16.0			15.9			23.6			23.6		
36	470	0	143	110	0	51	23	0	88	22	0
m31	m535		237	409		79	61		114	46	
200	660		200	1055		130	786		100	614	
300	3080		365	3514		277	502		206	449	
0	489		0	0		0	0		0	0	
0	0		0	0		0	0		0	0	
0	0		0	0		0	0		0	0	
0.13	0.84		0.58	0.55		0.25	0.37		0.53	0.23	

**Intersection Summary**  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 98 (75%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 17.8  
 Intersection LOS: B  
 Intersection Capacity Utilization: 76.8%  
 Analysis Period (min): 15  
 Volume for 95th percentile queue is metered by upstream signal



EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1770	4938	0	1770	5085	1583	1770	3171	0	2000	3539	1583
0.950			0.950			0.950			0.950		
1764	4938	0	1766	5085	1517	1754	3171	0	3406	3539	1534
32			374			163			3406		
229	1378	249	366	1224	318	238	222	286	543	443	145
254	1808	0	431	1440	374	336	730	0	662	540	177
5	2	1	6	1	6	8	8	8	4	4	4
30.0	52.0	0.0	16.0	38.0	0.0	20.0	20.0	0.0	42.0	42.0	0.0
24.6	49.0	0.0	13.0	37.4	0.0	17.0	17.0	0.0	39.0	39.0	0.0
0.12	0.38	0.0	0.10	0.29	0.0	0.13	0.13	0.0	0.30	0.30	0.0
0.76	0.96	0.0	2.44	0.53	0.0	1.45	1.31	0.0	1.10	0.51	0.30
68.3	36.9	0.0	684.7	69.6	0.0	12.8	264.8	0.0	110.8	39.6	6.2
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	26.9	0.0	0.0
68.3	36.9	0.0	684.7	69.6	0.0	12.8	264.8	0.0	137.6	39.6	6.2
E	D	D	F	B	B	F	F	F	F	D	A
40.8			178.2			212.4			82.4		
177	450		-616	-491		63	-384		-326	197	0
m252	m4333		#773	#511		117	#410		#384	227	38
620	420		210	690		730	195		400	1660	280
368	1881		177	1465		703	231		600	1062	564
0	0		0	0		0	0		0	0	0
0	0		0	0		0	0		0	0	0
0	0		0	0		0	0		0	0	0
0.69	0.96		2.44	0.98		0.53	1.45		1.17	0.51	0.30

**Intersection Summary**  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 2.44  
 Intersection Signal Delay: 12.0  
 Intersection LOS: F  
 Intersection Capacity Utilization: 101.3%  
 Analysis Period (min): 15  
 User Entered Value



17: Lone Tree Way & Canada Valley  
Antioch Walmart Expansion

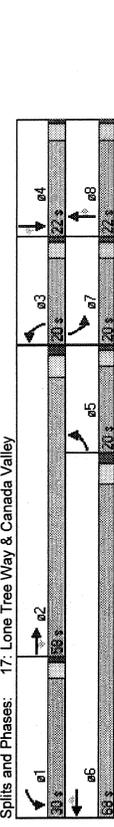
16: Lone Tree Way & Heidorn Ranch Rd.  
Antioch Walmart Expansion

Long-Term Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	1603	1504	1770	1863	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3432	5085	1534	3428	5085	1559	3428	1603	1481	1765	1863	1562
Satd. Flow (RTOR)	128	2039	86	450	1956	472	213	71	371	349	126	63
Volume (vph)	138	2192	86	500	2173	524	284	221	369	478	173	86
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	1	6	3	6	3	6	7	4	4	4
Protected Phases	5	2	1	6	3	6	3	6	7	4	4	4
Permitted Phases	2	2	2	6	6	6	6	6	6	6	6	6
Total Split (s)	20.0	58.0	58.0	30.0	68.0	20.0	22.0	22.0	20.0	22.0	22.0	22.0
Act Effct Green (s)	17.0	60.7	60.7	22.8	66.5	66.5	15.2	17.5	17.0	19.3	19.3	19.3
Actuated g/C Ratio	0.13	0.47	0.47	0.18	0.51	0.51	0.12	0.13	0.13	0.13	0.13	0.13
v/c Ratio	0.31	0.92	0.11	0.63	0.84	0.50	0.71	0.87	0.77	2.07	0.62	0.28
Control Delay	48.6	32.7	9.6	68.7	23.5	1.9	65.3	75.8	20.5	524.0	62.8	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.6	32.7	9.6	68.7	23.5	1.9	65.3	75.8	20.5	524.0	62.8	12.4
LOS	D	C	A	E	C	A	E	E	C	F	E	B
Approach Delay	32.8	32.8	32.8	27.1	27.1	27.1	49.1	49.1	49.1	49.1	49.1	49.1
Approach LOS	C	C	C	C	C	C	D	D	D	D	D	D
Queue Length 50th (ft)	41	350	13	204	513	21	119	156	35	-634	138	0
Queue Length 95th (ft)	m38	m309	m10	m230	m442	m24	136	200	62	#650	173	26
Internal Link Dist (ft)	320	905	630	400	760	350	150	542	483	231	280	308
Turn Bay Length (ft)	0	0	0	0	0	15	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.92	0.11	0.70	0.84	0.50	0.63	0.82	0.75	2.07	0.62	0.28

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 87 (67%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 2.07  
 Intersection Signal Delay: 65.2  
 Intersection LOS: E  
 Intersection Capacity Utilization: 96.8%  
 ICU Level of Service: F  
 Analysis Period (min): 15  
 Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

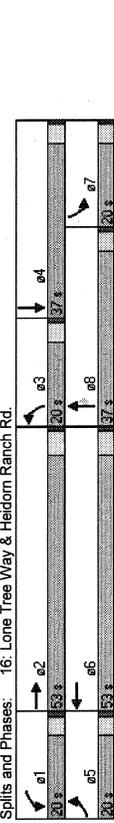
Splits and Phases: 17: Lone Tree Way & Canada Valley



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	4994	0	1770	5088	0	3433	1863	1583	1770	1799	0
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1769	4994	0	1769	5088	0	3433	1863	1561	1766	1799	0
Satd. Flow (RTOR)	9	2037	223	309	1899	33	201	28	289	25	34	10
Volume (vph)	9	2354	0	340	2123	0	264	37	380	42	74	0
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	1	6	3	6	3	6	7	4	4	4
Protected Phases	5	2	1	6	3	6	3	6	7	4	4	4
Permitted Phases	2	2	2	6	6	6	6	6	6	6	6	6
Total Split (s)	20.0	53.0	0.0	20.0	53.0	0.0	20.0	37.0	37.0	20.0	37.0	0.0
Act Effct Green (s)	8.7	50.0	0.0	40.4	90.8	0.0	16.1	16.3	16.3	13.5	13.6	0.0
Actuated g/C Ratio	0.07	0.38	0.00	0.31	0.70	0.00	0.12	0.13	0.13	0.10	0.10	0.00
v/c Ratio	0.06	1.22	0.00	0.62	0.60	0.00	0.62	0.16	0.16	0.23	0.37	0.00
Control Delay	78.7	128.8	0.0	48.5	7.7	0.0	80.9	48.8	15.6	56.1	48.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.7	128.8	0.0	48.5	7.7	0.0	80.9	48.8	15.6	56.1	48.6	0.0
LOS	E	F	F	D	A	A	E	D	B	E	D	D
Approach Delay	128.6	128.6	128.6	13.3	13.3	13.3	34.9	34.9	34.9	51.3	51.3	51.3
Approach LOS	F	F	F	B	B	B	C	C	C	D	D	D
Queue Length 50th (ft)	8	-884	0	193	84	0	109	30	17	32	52	0
Queue Length 95th (ft)	m11	#987	0	m#472	749	0	129	44	38	47	53	0
Internal Link Dist (ft)	185	1055	0	400	905	0	200	872	200	50	316	0
Turn Bay Length (ft)	231	1931	0	550	3542	0	449	487	673	231	479	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	1.22	0.00	0.62	0.60	0.00	0.59	0.08	0.06	0.16	0.15	0.00

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 114 (88%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.22  
 Intersection Signal Delay: 65.2  
 Intersection LOS: E  
 Intersection Capacity Utilization: 84.8%  
 ICU Level of Service: E  
 Analysis Period (min): 15  
 Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 16: Lone Tree Way & Heidorn Ranch Rd.



18: Lone Tree Way & SR 4 By-pass SB Off-ramp  
Antioch Walmart Expansion

19: Lone Tree Way & SR 4 By-pass NB On-ramp  
Antioch Walmart Expansion

Long-Term Conditions  
PM Peak

Long-Term Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA						
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Flt Permitted	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (perm)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583	0
Satd. Flow (RTOR)	0	2165	605	623	2134	0	0	0	765	13	556	0
Volume (vph)	0	2453	880	716	2453	0	0	0	430	445	625	0
Lane Group Flow (vph)	0	2453	880	716	2453	0	0	0	430	445	625	0
Turn Type	2	1	6	1	6	1	6	1	6	1	6	1
Protected Phases	2	1	6	1	6	1	6	1	6	1	6	1
Permitted Phases	2	1	6	1	6	1	6	1	6	1	6	1
Total Split (s)	0.0	53.0	53.0	27.0	80.0	0.0	0.0	0.0	50.0	50.0	50.0	4.0
Act Effct Green (s)	0.0	50.0	50.0	24.0	77.0	0.0	0.0	0.0	47.0	47.0	47.0	4.0
Actuated g/C Ratio	0.38	0.38	0.38	0.18	0.59	0.38	0.38	0.38	0.36	0.36	0.36	0.36
v/c Ratio	1.24	0.77	1.13	0.81	0.81	1.24	0.77	1.13	0.73	0.73	1.09	0.73
Control Delay	145.7	13.2	12.4	18.3	18.3	145.7	13.2	12.4	43.2	44.3	103.3	43.2
Queue Delay	0.0	1.3	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	145.7	14.5	12.4	19.4	19.4	145.7	14.5	12.4	43.2	44.3	103.3	43.2
LOS	F	B	B	F	B	F	B	B	D	D	D	F
Approach Delay	117.1			42.4					88.6			
Approach LOS	F			D					E			
Queue Length 50th (ft)	-921	154	~361	456					325	340	~591	
Queue Length 95th (ft)	m#860	m152	m#461	486					451	470	#810	
Internal Link Dist (ft)	760			760					671		828	
Turn Bay Length (ft)	315	310		3012					280		610	574
Base Capacity (vph)	1956	888	634	3012					608		610	574
Starvation Cap Reductn	0	74	0	118					0		0	0
Spillback Cap Reductn	0	0	0	0					0		0	0
Storage Cap Reductn	0	0	0	0					0		0	0
Reduced v/c Ratio	1.24	0.84	1.13	0.85					0.71	0.73	1.09	0.73

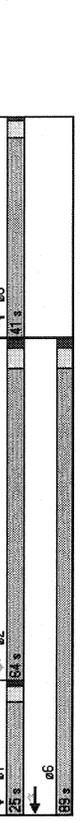
Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 100 (77%), Referenced to phase 2.EBT and 6.WBT. Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 1.24  
Intersection Signal Delay: 77.3  
Intersection Capacity Utilization 91.1%  
Analysis Period (min) 15  
# Volume exceeds capacity, queue is theoretically infinite.  
# Queue shown is maximum after two cycles.  
# 95th percentile volume exceeds capacity, queue may be longer.  
m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 18: Lone Tree Way & SR 4 By-pass SB Off-ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA						
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	0	5085	1583	3433	5085	1583	0	0	1681	1681	1583	0
Flt Permitted	0	5085	1583	3433	5085	1583	0	0	1681	1681	1583	0
Satd. Flow (perm)	0	5085	1583	3433	5085	1583	0	0	1681	1681	1583	0
Satd. Flow (RTOR)	0	2394	545	58	2169	751	599	43	442	0	0	0
Volume (vph)	0	2847	580	58	2437	844	386	407	546	0	0	0
Lane Group Flow (vph)	0	2847	580	58	2437	844	386	407	546	0	0	0
Turn Type	2	1	6	1	6	1	6	1	6	1	6	1
Protected Phases	2	1	6	1	6	1	6	1	6	1	6	1
Permitted Phases	2	1	6	1	6	1	6	1	6	1	6	1
Total Split (s)	0.0	64.0	64.0	25.0	89.0	89.0	41.0	41.0	41.0	0.0	0.0	0.0
Act Effct Green (s)	0.0	60.0	60.0	20.0	85.0	85.0	35.0	35.0	35.0	0.0	0.0	0.0
Actuated g/C Ratio	0.81	0.62	0.62	0.09	0.68	0.68	0.27	0.27	0.27	0.27	0.27	0.27
v/c Ratio	0.81	0.53	0.53	0.31	0.70	0.64	0.85	0.89	0.89	0.86	0.86	0.86
Control Delay	9.1	6.8	6.8	14.3	14.3	14.3	65.1	67.9	67.9	35.1	35.1	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	6.8	6.8	14.3	14.3	14.3	63.1	67.9	67.9	35.1	35.1	35.1
LOS	A	A	A	E	B	A	E	E	E	D	D	D
Approach Delay	7.6			12.4					53.1			
Approach LOS	A			B					D			
Queue Length 50th (ft)	412	0	27	452	0	314	336	216	216			
Queue Length 95th (ft)	m425	m5	51	494	38	386	410	289	289			
Internal Link Dist (ft)	760			620					1168			
Turn Bay Length (ft)	240	280		620		250	1000					
Base Capacity (vph)	3130	1691	581	3481	1324	481	495	662	662			
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.53	0.11	0.70	0.64	0.79	0.82	0.82	0.82	0.82	0.82	0.82

Intersection Summary  
Cycle Length: 130  
Actuated Cycle Length: 130  
Offset: 10 (6%), Referenced to phase 2.EBT and 6.WBT. Start of Yellow  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.89  
Intersection Signal Delay: 17.4  
Intersection Capacity Utilization 80.5%  
Analysis Period (min) 15  
m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 19: Lone Tree Way & SR 4 By-pass NB On-ramp

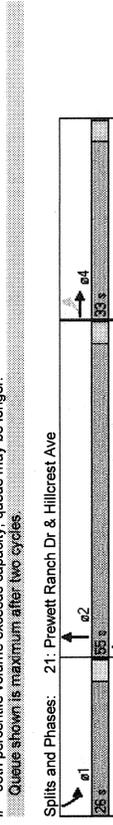
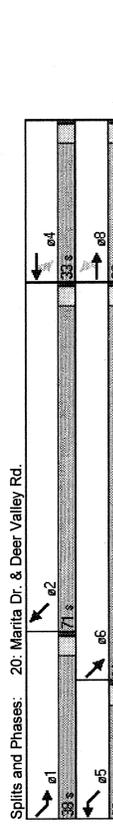
20: Marita Dr. & Deer Valley Rd.  
Antioch Walmart Expansion

21: Prewett Ranch Dr & Hillcrest Ave  
Antioch Walmart Expansion

Long-Term Conditions  
PM Peak

Long-Term Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1583	0	1770	1602	0	1770	3519	0	1770	3539	0
Satd. Flow (prot)	0.639	0.763	0	0.960	0.960	0	0.960	0.960	0	0.960	0.960	0
Fit Permitted	1004	1583	0	1403	1602	0	1766	3519	0	1760	3539	0
Satd. Flow (perm)	288	124	0	288	124	0	288	124	0	288	124	0
Satd. Flow (RTOR)	13	0	5	23	6	87	26	1136	29	25	1178	3
Volume (vph)	19	7	0	33	133	0	33	1493	0	27	1283	0
Lane Group Flow (vph)	Perm	Perm	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	8	4	4	1	6	5	2					
Permitted Phases	8	4	4	1	6	5	2					
Total Satd. (s)	33.0	33.0	33.0	33.0	33.0	33.0	81.0	0.0	28.0	71.0	0.0	0.0
Act Effort Green (s)	10.3	10.3	10.3	10.3	10.3	10.3	9.6	84.7	9.3	84.4	9.3	84.4
Actuated g/C Ratio	0.09	0.09	0.09	0.09	0.09	0.09	0.08	0.78	0.08	0.78	0.08	0.78
v/c Ratio	0.20	0.02	0.25	0.51	0.22	0.55	0.22	0.55	0.19	0.47	0.19	0.47
Control Delay	49.4	0.0	49.0	16.7	49.2	6.8	48.9	6.1	48.9	6.1	48.9	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	0.0	49.0	16.7	49.2	6.9	48.9	6.1	48.9	6.1	48.9	6.1
LOS	D	A	D	B	D	A	D	A	D	A	D	A
Approach Delay	38.1	23.1	23.1	7.8	7.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Approach LOS	D	C	C	A	A	A	A	A	A	A	A	A
Queue Length 50th (ft)	12	0	21	6	21	207	17	164	17	164	17	164
Queue Length 95th (ft)	27	0	40	29	46	257	47	265	47	265	47	265
Internal Link Dist (ft)	345	427	427	427	427	825	825	825	825	825	825	825
Turn Bay Length (ft)	40	100	100	125	125	2738	175	2744	175	2744	175	2744
Base Capacity (vph)	235	591	328	470	448	2738	345	2744	345	2744	345	2744
Starvation Cap Reductn	0	0	0	0	0	188	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.01	0.10	0.28	0.07	0.59	0.08	0.47	0.08	0.47	0.08	0.47
Intersection Summary												
Cycle Length	142											
Actuated Cycle Length	108.9											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.55											
Intersection Signal Delay	8.5											
Intersection LOS	A											
ICU Level of Service	A											
Intersection Capacity Utilization	47.3%											
Analysis Period (min)	15											



Splits and Phases: 20: Marita Dr. & Deer Valley Rd.

Intersection Summary  
 Cycle Length: 142  
 Actuated Cycle Length: 108.9  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.55  
 Intersection Signal Delay: 8.5  
 Intersection LOS: A  
 ICU Level of Service: A  
 Intersection Capacity Utilization: 47.3%  
 Analysis Period (min): 15

Splits and Phases: 21: Prewett Ranch Dr & Hillcrest Ave

Intersection Summary  
 Cycle Length: 114  
 Actuated Cycle Length: 94.3  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 28.0  
 Intersection LOS: C  
 ICU Level of Service: C  
 Intersection Capacity Utilization: 66.1%  
 Analysis Period (min): 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

**LONG-TERM + PROJECT TRAFFIC CONDITIONS  
(TRAFFIX & SYNCRHO)**



Antioch Walmart Expansion

Scenario: Cumulative + Project AM  
 Scenario Report  
 Cumulative + Project AM

Command: None  
 Volume: Cumulative+Project AM  
 Geometry: Cumulative  
 Impact Fee: Default Impact Fee  
 Trip Generation: Cum+Proj\_AM  
 Trip Distribution: Near-Term  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

Antioch Walmart Expansion

Impact Analysis Report  
 Level Of Service

Intersection	Base Del/V LOS Veh	Future Del/V LOS Veh	Change in
# 1 Deer Valley Rd/ Country Hills	A xxxxx 0.572	A xxxxx 0.574	+ 0.003 V/C
# 2 Hillcrest Avenue/Laurel Road	A xxxxx 0.599	B xxxxx 0.652	+ 0.053 V/C
# 3 Hillcrest Avenue/Country Hills	A xxxxx 0.471	A xxxxx 0.484	+ 0.013 V/C
# 4 Hillcrest Avenue/Driveway	C 16.5 0.031	C 17.2 0.033	+ 0.653 D/V
# 5 Hillcrest Avenue/South Drivewa	B 11.1 0.099	B 11.2 0.101	+ 0.005 D/V
# 6 Lone Tree Way/Mokelumne Dr	E xxxxx 0.959	E xxxxx 0.966	+ 0.008 V/C
# 7 Lone Tree Way/Deer Valley Plaz	A xxxxx 0.551	A xxxxx 0.558	+ 0.007 V/C
# 8 Lone Tree Way/Deer Valley Rd	D xxxxx 0.815	D xxxxx 0.840	+ 0.025 V/C
# 9 Lone Tree Way/Deer Valley HS	B xxxxx 0.609	B xxxxx 0.632	+ 0.023 V/C
# 10 Lone Tree Way/Sagebrush Drive	A xxxxx 0.579	B xxxxx 0.603	+ 0.024 V/C
# 11 Lone Tree Way/Williamson Ranch	A xxxxx 0.540	A xxxxx 0.552	+ 0.012 V/C
# 12 Lone Tree Way/Indian Hill Dr/W	B xxxxx 0.627	B xxxxx 0.612	-0.014 V/C
# 13 Lone Tree Way/Driveway	B 12.7 0.011	B 12.8 0.011	+ 0.059 D/V
# 14 Lone Tree Way/Hillcrest Avenue	B xxxxx 0.642	C xxxxx 0.731	+ 0.089 V/C
# 15 Lone Tree Way/Vista Grande Dri	A xxxxx 0.410	A xxxxx 0.464	+ 0.054 V/C
# 16 Lone Tree Way/Heidorn Ranch Ro	A xxxxx 0.421	A xxxxx 0.571	+ 0.149 V/C
# 17 Lone Tree Way/Canada Valley Ro	A xxxxx 0.542	B xxxxx 0.675	+ 0.133 V/C
# 18 Lone Tree Way/SB SR-4 Bypass	B xxxxx 0.668	C xxxxx 0.715	+ 0.047 V/C
# 19 Lone Tree Way/NB SR-4 Bypass (	A xxxxx 0.427	C xxxxx 0.702	+ 0.275 V/C
# 20 Deer Valley Road/Marita Drive	A xxxxx 0.457	A xxxxx 0.451	-0.005 V/C
# 21 Hillcrest Ave/Prewett Ranch Dr	A xxxxx 0.422	A xxxxx 0.429	+ 0.007 V/C

Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #3 Hillcrest Avenue/Country Hills Drive

Cycle (sec): 100  
Loss Time (sec): 9  
Optimal Cycle: 36  
Critical Vol./Cap.(X): 0.484  
Average Delay (sec/veh): xxxxxx  
Level Of Service: A

Street Name: Hillcrest Avenue  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Permitted Permitted  
Rights: Include Include Include Include  
Lanes: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0

Volume Module:  
Base Vol: 104 672 38 86 714 39 64 77 155 87 93 173  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 104 672 38 86 714 39 64 77 155 87 93 173  
Added Vol: 2 -116 2 0 41 0 0 0 0 2 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 106 556 40 86 755 39 64 77 157 89 93 173  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 106 556 40 86 755 39 64 77 157 89 93 173  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 106 556 40 86 755 39 64 77 157 89 93 173  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 106 556 40 86 755 39 64 77 157 89 93 173  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 106 556 40 86 755 39 64 77 157 89 93 173

Saturation Flow Module:  
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 1.87 0.13 1.00 1.90 0.10 1.00 1.00 1.00 1.00 0.35 0.65  
Final Sat: 1720 3209 231 1720 3271 169 1720 1720 1720 1720 601 1119

Capacity Analysis Module:  
Vol/Sat: 0.06 0.17 0.17 0.05 0.23 0.23 0.04 0.04 0.03 0.05 0.15 0.15  
Crit Volume: 106 397 64 266  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report  
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 Hillcrest Avenue/Driveaway

Average Delay (sec/veh): 0.1  
Worst Case Level Of Service: C [17.2]

Street Name: Hillcrest Avenue  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Stop Sign Stop Sign  
Rights: Include Include Include Include  
Lanes: 0 0 2 0 0 0 1 0 1 0 0 0 0 1 0 0 0 0 0

Volume Module:  
Base Vol: 0 812 0 0 934 8 0 0 10 0 0 0  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 0 812 0 0 934 8 0 0 10 0 0 0  
Added Vol: 0 -111 0 0 40 4 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 0 701 0 0 974 12 0 0 10 0 0 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 0 701 0 0 974 12 0 0 10 0 0 0  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
FinalVolume: 0 701 0 0 974 12 0 0 10 0 0 0

Critical Gap Module:  
Critical Gap: xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx 6.2 xxxxxx xxxxxx xxxxxx  
FollowUpTime: xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx 3.3 xxxxxx xxxxxx xxxxxx

Capacity Module:  
Conflict Vol: xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx 974 xxxxxx xxxxxx xxxxxx  
Potential Cap: xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx 306 xxxxxx xxxxxx xxxxxx  
Move Cap: xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx 306 xxxxxx xxxxxx xxxxxx  
Volume/Cap: xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx 0.03 xxxxxx xxxxxx xxxxxx



Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #7 Lone Tree Way/Deer Valley Plaza  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.558  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 42 Level Of Service: A  
\*\*\*\*\*

Street Name: Deer Valley Plaza Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Include Protected Include  
Rights: Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 1 0 1 1 0 2 0 1 1 0 2 0 1

Volume Module:  
Base Vol: 46 1 63 22 2 7 46 1219 85 42 1553 28  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 46 1 63 22 2 7 46 1219 85 42 1553 28  
Added Vol: 0 0 0 0 0 0 0 84 0 0 23 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 46 1 63 22 2 7 46 1303 85 42 1576 28  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 46 1 63 22 2 7 46 1303 85 42 1576 28  
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Reduct: 0 0 0 0 0 0 7 46 1303 85 42 1576 28  
RTOR Vol: 46 1 63 22 2 0 46 1303 39 42 1576 6  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 46 1 63 22 2 0 46 1303 39 42 1576 6

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.02 0.98 1.00 1.00 1.00 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 1650 26 1624 1650 1650 1650 3300 1650 1650 3300 1650  
Capacity Analysis Module:  
Vol/Sat: 0.03 0.04 0.04 0.01 0.00 0.00 0.03 0.39 0.02 0.03 0.48 0.00  
Crit Volume: 64 22 46 788  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
Intersection #8 Lone Tree Way/Deer Valley Rd  
Cycle (sec): 130 Critical Vol./Cap.(X): 0.840  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 142 Level Of Service: D  
\*\*\*\*\*

Street Name: Deer Valley Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Include Protected Include  
Rights: Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 2 0 2 0 1 2 0 1 1 0 2 0 1 1 0 2 0 1

Volume Module:  
Base Vol: 448 364 399 426 516 19 38 994 233 334 1171 257  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 448 364 399 426 516 19 38 994 233 334 1171 257  
Added Vol: 0 0 -18 13 0 0 0 84 0 -1 23 15  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 448 364 381 439 516 19 38 1078 233 333 1194 272  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 448 364 381 439 516 19 38 1078 233 333 1194 272  
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Reduct: 0 0 333 0 0 0 0 0 233 0 0 241  
RTOR Vol: 448 364 48 439 516 19 38 1078 0 333 1194 31  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 448 364 48 439 516 19 38 1078 0 333 1194 31

Saturation Flow Module:  
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 2.00 2.00 1.00 2.00 1.93 0.07 1.00 2.00 1.00 1.00 2.00 1.00  
Final Sat.: 3000 3300 1650 3000 3183 117 1650 3300 1650 1650 3300 1650  
Capacity Analysis Module:  
Vol/Sat: 0.15 0.11 0.03 0.15 0.16 0.16 0.02 0.33 0.00 0.20 0.36 0.02  
Crit Volume: 224 268 539 333  
Crit Moves: \*\*\*\*



Level Of Service Computation Report  
 CCTLALOS Method (Future Volume Alternative)  
 Intersection #11 Lone Tree Way/Williamson Ranch Plaza (OSH)  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.552  
 Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 32 Level Of Service: A  
 Street Name: Williamson Ranch Plaza (OSH) Lone Tree Way  
 Approach: North Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Permitted	Protected	Include	Permitted	Protected	Include
Rights:	Include	Include	Include	Include	Include	Include
Min. Green:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
Y+R:	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0
Lanes:	0 0 0 0	1 0 0 0	1 0 2 0	0 0 2 0	0 0 2 0	1 0 2 0

Volume Module:

Base Vol:	0 0 0 0	25 0 46	82 1376	0 0 1567	50
Growth Adj:	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00
Initial Bse:	0 0 0 0	25 0 46	82 1376	0 0 1567	50
Added Vol:	0 0 0 0	0 0 0 0	0 80 0 0	0 0 39 0	0
PasserByVol:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
Initial Fut:	0 0 0 0	25 0 46	82 1456	0 0 1606	50
User Adj:	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00
PHF Adj:	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00
PHF Volume:	0 0 0 0	25 0 46	82 1456	0 0 1606	50
Reduced Vol:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
RTOR Reduct:	0 0 0 0	25 0 46	82 1456	0 0 1606	50
RTOR Vol:	0 0 0 0	25 0 46	82 1456	0 0 1606	25
PCE Adj:	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00
MLF Adj:	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00
FinalVolume:	0 0 0 0	25 0 46	82 1456	0 0 1606	25

Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00  
 Final Sat.: 0 0 0 1650 0 1650 1650 3300  
 Capacity Analysis Module:  
 Vol/Sat: 0.00 0.00 0.00 0.02 0.00 0.00 0.05 0.44  
 Crit Volume: 0 25 82 803  
 Crit Moves: 0 25 82 803

Level Of Service Computation Report  
 CCTLALOS Method (Future Volume Alternative)  
 Intersection #12 Lone Tree Way/Indian Hill Dr/Williamson Ranch Plaza(Wal-Wart, OSH)  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.612  
 Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 59 Level Of Service: B  
 Street Name: Indian Hill Dr/Williamson Ranch Pl Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Split Phase	Protected	Include	Split Phase	Protected	Include
Rights:	Include	Include	Include	Include	Include	Include
Min. Green:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
Y+R:	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0
Lanes:	1 0 0 1	0 2 0 0	1 0 2 0	1 0 2 0	1 0 2 0	1 0 2 0

Volume Module:

Base Vol:	12 15 69	43 1 21	86 1275	6 26 1681	45
Growth Adj:	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:	12 15 69	43 1 21	86 1275	6 26 1681	45
Added Vol:	0 2 0 0	0 48 2 31	-61 141 0 0	0 8 7 0	0
PasserByVol:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
Initial Fut:	12 17 69	91 3 52	25 1416	6 26 1689	52
User Adj:	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume:	12 17 69	91 3 52	25 1416	6 26 1689	52
Reduced Vol:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
RTOR Reduct:	12 17 69	91 3 52	25 1416	6 26 1689	52
RTOR Vol:	12 17 69	91 3 52	25 1416	0 26 1689	2
PCE Adj:	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume:	12 17 69	91 3 52	25 1416	0 26 1689	2

Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00  
 Lanes: 1.00 0.20 0.80 2.00 0.05 0.95 1.00 2.00  
 Final Sat.: 1650 326 1324 3000 90 1560 1650 3300  
 Capacity Analysis Module:  
 Vol/Sat: 0.01 0.05 0.05 0.03 0.03 0.03 0.02 0.43  
 Crit Volume: 86 55 25 845  
 Crit Moves: 0 0 0 0



Antioch Walmart Expansion

Level Of Service Computation Report
CCTALOS Method (Future Volume Alternative)

Intersection #15 Lone Tree Way/Vista Grande Drive

Cycle (sec): 130
Loss Time (sec): 9
Optimal Cycle: 35

Street Name: Vista Grande Drive
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Permitted Include Protected
Rights: Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes: 1 0 0 1 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:

Base Vol: 60 27 156 36 22 66 48 1029 41 75 1244 71
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 60 27 156 36 22 66 48 1029 41 75 1244 71

Added Vol: 2 0 1 1 0 2 2 432 2 1 98 1
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 62 27 157 37 22 68 50 1461 43 76 1342 72

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 62 27 157 37 22 68 50 1461 43 76 1342 72

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 62 27 157 37 22 68 50 1461 43 76 1342 72
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0

RTOR Vol: 62 27 157 37 22 68 50 1461 43 76 1342 72
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume: 62 27 157 37 22 68 50 1461 43 76 1342 72

Saturation Flow Module:
Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720

Antioch Walmart Expansion

Level Of Service Computation Report
CCTALOS Method (Future Volume Alternative)

Intersection #16 Lone Tree Way/Heidorn Ranch Road

Cycle (sec): 120
Loss Time (sec): 12
Optimal Cycle: 53

Street Name: Heidorn Ranch Road
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Split Phase Split Phase Protected
Rights: Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes: 2 0 1 0 1 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:

Base Vol: 162 0 79 12 9 49 26 1112 211 107 1281 25
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 162 0 79 12 9 49 26 1112 211 107 1281 25

Added Vol: 0 0 219 0 0 0 0 433 0 34 99 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 162 0 298 12 9 49 26 1545 211 141 1380 25

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 162 0 298 12 9 49 26 1545 211 141 1380 25

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 162 0 298 12 9 49 26 1545 211 141 1380 25
RTOR Reduct: 0 0 141 0 0 0 0 0 0 0 0 0

RTOR Vol: 162 0 157 12 9 49 26 1545 211 141 1380 25
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume: 162 0 157 12 9 49 26 1545 211 141 1380 25

Saturation Flow Module:
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650

Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)

Intersection #17 Lone Tree Way/Canada Valley Road  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.675  
 Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 70 Level Of Service: B

Street Name: Canada Valley Road Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Protected	Include	Protected	Include	Protected	Include
Rights:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
Min. Green:	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0
Y+R:	2 0 0 1	1 0 1 0	1 0 1 0	2 0 3 0	1 2 0 3	0 1 2 0 3 0 1

Volume Module:

Base Vol:	66 36 93 336 81 97 56 1069 107 302 1244 287
Growth Adj:	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:	66 36 93 336 81 97 56 1069 107 302 1244 287
Added Vol:	0 0 0 2 0 2 2 650 0 0 0 131 1
PasserByVol:	0 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut:	66 36 93 338 81 99 58 1719 107 302 1375 288
User Adj:	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume:	66 36 93 338 81 99 58 1719 107 302 1375 288
Reduced Vol:	0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:	66 36 93 338 81 99 58 1719 107 302 1375 288
RTOR Reduct:	0 0 93 0 0 32 0 0 36 0 0 288
RTOR Vol:	66 36 0 338 81 67 58 1719 71 302 1375 0
PCE Adj:	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume:	66 36 0 338 81 67 58 1719 71 302 1375 0

Saturation Flow Module:

Sat/Lane:	1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment:	0.91 1.00 0.91 1.00 1.00 1.00 1.00 0.91 1.00 1.00 0.91 1.00 1.00
Lanes:	2.00 1.00 1.00 1.00 1.00 1.00 1.00 2.00 3.00 1.00 2.00 3.00 1.00
Final Sat.:	3000 1650 1500 1650 1650 1650 1650 3000 4950 1650 3000 4950 1650

Capacity Analysis Module:

Vol/Sat:	0.02 0.02 0.00 0.20 0.05 0.04 0.02 0.35 0.04 0.10 0.28 0.00
Crit Volume:	36 338 338 573 151
Crit Moves:	***

Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)

Intersection #18 Lone Tree Way/SB SR-4 Bypass  
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.715  
 Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 65 Level Of Service: C

Street Name: SB SR-4 Bypass Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Permitted	Protected	Permitted	Protected
Rights:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
Min. Green:	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0
Y+R:	0 0 0 0	1 1 0 0	1 0 0 1	0 0 3 0

Volume Module:

Base Vol:	0 0 0 0 545 7 531 0 993 474 176 1304 0
Growth Adj:	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:	0 0 0 0 545 7 531 0 993 474 176 1304 0
Added Vol:	0 0 0 0 -22 0 -16 0 652 0 36 148 0
PasserByVol:	0 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut:	0 0 0 0 523 7 515 0 1645 474 212 1452 0
User Adj:	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume:	0 0 0 0 523 7 515 0 1645 474 212 1452 0
Reduced Vol:	0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:	0 0 0 0 523 7 515 0 1645 474 212 1452 0
RTOR Reduct:	0 0 0 0 0 0 0 0 0 0 0 0 0
RTOR Vol:	0 0 0 0 523 7 515 0 1645 474 212 1452 0
PCE Adj:	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume:	0 0 0 0 523 7 515 0 1645 474 212 1452 0

Saturation Flow Module:

Sat/Lane:	1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment:	1.00 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 0.91 1.00 1.00
Lanes:	0.00 0.00 0.00 0.00 1.97 0.03 1.00 0.00 3.00 1.00 2.00 3.00 0.00
Final Sat.:	0 0 0 0 2960 44 1650 0 4950 1650 3000 4950 0

Capacity Analysis Module:

Vol/Sat:	0.00 0.00 0.00 0.18 0.16 0.31 0.00 0.33 0.29 0.07 0.29 0.00
Crit Volume:	0 515 548 106
Crit Moves:	***

Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #19 Lone Tree Way/NB SR-4 Bypass (Jeffrey Way)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.702  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 62 Level Of Service: C

Street Name: NB SR-4 Bypass (Jeffrey Way) Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Permitted Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 1 0 0 1 0 0 0 0 0 0 3 0 1 2 0 3 0 1

Volume Module:

Base Vol: 461 34 334 0 0 0 0 1072 472 137 1023 642  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 461 34 334 0 0 0 0 1072 472 137 1023 642  
Added Vol: 1 0 236 0 0 0 0 693 -63 0 184 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 462 34 570 0 0 0 0 1765 409 137 1207 642  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 462 34 570 0 0 0 0 1765 409 137 1207 642  
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Reduct: 0 0 75 0 0 0 0 254 0 0 0 0  
RTOR Vol: 462 34 495 0 0 0 0 1765 155 137 1207 642  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 462 34 495 0 0 0 0 1765 155 137 1207 642

Saturation Flow Module:

Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 1.00 0.00 0.00 0.00 0.00 0.91 1.00 1.00 1.00  
Lanes: 1.86 0.14 1.00 0.00 0.00 0.00 0.00 3.00 1.00 2.00 3.00 1.00  
Final Sat.: 2794 226 1650 0 0 0 0 4950 1650 3000 4950 1650

Capacity Analysis Module:

Vol/Sat: 0.17 0.15 0.30 0.00 0.00 0.00 0.00 0.36 0.09 0.05 0.24 0.39  
Crit Volume: 495 588 69  
Crit Moves: \*\*\*\*

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Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #20 Deer Valley Road/Marita Drive

Cycle (sec): 100 Critical Vol./Cap.(X): 0.451  
Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 26 Level Of Service: A

Street Name: Deer Valley Road Marita Drive  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected  
Rights: Include Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0

Volume Module:

Base Vol: 61 1210 27 137 906 24 21 8 21 1 1 7  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 61 1210 27 137 906 24 21 8 21 1 1 7  
Added Vol: 0 -18 0 0 0 0 0 0 0 0 0 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 61 1192 27 137 905 24 21 8 21 1 1 7  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 61 1192 27 137 905 24 21 8 21 1 1 7  
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 61 1192 27 137 905 24 21 8 21 1 1 7  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 61 1192 27 137 905 24 21 8 21 1 1 7

Saturation Flow Module:

Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 1.96 0.04 1.00 1.95 0.05 1.00 0.28 0.72 1.00 0.12 0.88  
Final Sat.: 1720 3364 76 1720 3351 89 1720 474 1246 1720 215 1505

Capacity Analysis Module:

Vol/Sat: 0.04 0.35 0.35 0.08 0.27 0.27 0.01 0.02 0.02 0.00 0.00 0.00  
Crit Volume: 610 137  
Crit Moves: \*\*\*\*

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Antioch Walmart Expansion

Level Of Service Computation Report  
 CCRALOS Method (Future Volume Alternative)

Intersection #21 Hillcrest Ave/Prewett Ranch Dr

Cycle (sec): 100 Critical Vol./Cap.(X): 0.429  
 Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 33 Level Of Service: A

Street Name: Hillcrest Ave Prewett Dr  
 Approach: North Bound South Bound East Bound West Bound

Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected	Protected	Protected	Protected	Protected	Protected	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted
Rights:	Include											
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	1	0	1	0	1	0	1	0

Volume Module:

Base Vol:	138	776	0	13	613	112	118	133	93	0	48	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	138	776	0	13	613	112	118	133	93	0	48	10
Added Vol:	0	144	0	0	21	2	2	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	138	920	0	13	634	114	120	133	93	0	48	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	138	920	0	13	634	114	120	133	93	0	48	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	920	0	13	634	114	120	133	93	0	48	10
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	138	920	0	13	634	114	120	133	93	0	48	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	138	920	0	13	634	114	120	133	93	0	48	10

Saturation Flow Module:

Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	1.00	1.70	0.30	1.00	0.59	0.41	1.00	0.83	0.17
Final Sat.:	1720	3440	0	1720	2916	524	1720	1012	708	1720	1423	297

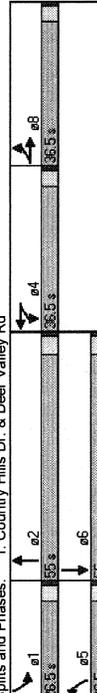
Capacity Analysis Module:

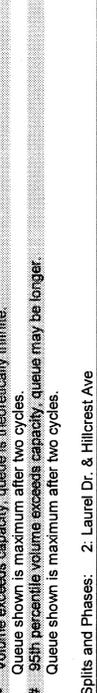
Vol/Sat:	0.08	0.27	0.00	0.01	0.22	0.22	0.07	0.13	0.13	0.00	0.03	0.03
Crit Volume:	138	374	0	374	226	0	0	0	0	0	0	0
Crit Moves:	***	***	***	***	***	***	***	***	***	***	***	***

1: Country Hills Dr. & Deer Valley Rd  
Antioch Walmart Expansion

2: Laurel Dr. & Hillcrest Ave  
Antioch Walmart Expansion

Long-Term + Project  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1809	0	1770	1724	0	1770	3417	0	1770	3357
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0
Fit Permitted	1765	1809	0	1770	1724	0	1751	3417	0	1738	3357
Satd. Flow (perm)	7	24	0	24	14	0	14	14	0	23	23
Satd. Flow (RTOR)	172	130	31	163	156	127	13	562	100	77	826
Volume (vph)	207	194	0	209	363	0	15	769	0	93	1253
Lane Group Flow (vph)	Split										
Turn Type	Prot										
Protected Phases	Split										
Permitted Phases	8 8 4 4 4 4 5 2 1 6										
Total Split (s)	36.5	36.5	0.0	36.5	36.5	0.0	26.5	55.0	0.0	26.5	55.0
Act Effct Green (s)	20.2	20.2	0.0	29.3	29.3	0.0	8.2	45.4	0.0	12.9	54.4
Actuated g/c Ratio	0.17	0.17	0.00	0.25	0.25	0.00	0.07	0.39	0.00	0.11	0.46
v/c Ratio	0.68	0.61	0.00	0.47	0.81	0.00	0.13	0.58	0.00	0.48	0.80
Control Delay	58.9	53.5	0.0	43.9	55.3	0.0	62.2	33.5	0.0	61.4	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.9	53.5	0.0	43.9	55.3	0.0	62.2	33.5	0.0	61.4	33.9
LOS	E D E E C E C										
Approach Delay	56.3										
Approach LOS	E D E D C										
Queue Length 50th (ft)	142	126	0	123	222	0	10	251	0	64	392
Queue Length 95th (ft)	240	218	0	219	365	0	37	370	0	130	599
Internal Link Dist (ft)	308										
Turn Bay Length (ft)	145	120	0	495	499	0	110	1466	0	175	220
Base Capacity (vph)	460	475	0	495	499	0	302	1466	0	323	1573
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.41	0.00	0.42	0.73	0.00	0.05	0.52	0.00	0.29	0.80
Intersection Summary											
Cycle Length	154.5										
Actuated Cycle Length	117.4										
Control Type	Actuated-Uncoordinated										
Maximum v/c Ratio	0.81										
Intersection Signal Delay	40.8										
Intersection Capacity Utilization	73.3%										
Analysis Period (min)	15										
Splits and Phases: 1: Country Hills Dr. & Deer Valley Rd											
											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1684	0	1770	1863	1583	1770	3452	0	1770	3311
Satd. Flow (prot)	0.931	0.931	0	0.468	0.950	0.950	0.950	0.950	0	0.950	0.950
Fit Permitted	1171	1684	0	861	1863	1557	1768	3452	0	1752	3311
Satd. Flow (perm)	65	241	0	241	18	18	18	18	0	139	139
Satd. Flow (RTOR)	150	89	102	292	118	210	353	564	80	69	537
Volume (vph)	208	265	0	336	136	241	406	740	0	91	1127
Lane Group Flow (vph)	Perm Prot										
Turn Type	Perm Prot										
Protected Phases	4 8 8 8 8 8 8 8 8 8 8 8										
Permitted Phases	4 8 8 8 8 8 8 8 8 8 8 8										
Total Split (s)	40.0	40.0	0.0	40.0	40.0	40.0	20.0	40.0	0.0	20.0	40.0
Act Effct Green (s)	37.0	37.0	0.0	37.0	37.0	37.0	17.0	44.7	0.0	11.3	37.0
Actuated g/c Ratio	0.37	0.37	0.00	0.37	0.37	0.37	0.17	0.45	0.00	0.11	0.37
v/c Ratio	0.48	0.40	0.00	1.05	0.20	0.33	1.35	0.48	0.00	0.46	0.86
Control Delay	28.7	19.4	0.0	98.0	22.4	4.2	212.0	21.3	0.0	48.0	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.7	19.4	0.0	98.0	22.4	4.2	212.0	21.3	0.0	48.0	33.3
LOS	C B C F C A F C C										
Approach Delay	23.5										
Approach LOS	C D D D F										
Queue Length 50th (ft)	100	81	0	236	58	0	341	172	0	55	307
Queue Length 95th (ft)	127	114	0	438	98	43	501	232	0	84	298
Internal Link Dist (ft)	468										
Turn Bay Length (ft)	75	664	0	175	600	175	600	140	0	150	1313
Base Capacity (vph)	433	664	0	319	669	728	301	1554	0	301	1313
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.40	0.00	1.05	0.20	0.33	1.35	0.48	0.00	0.30	0.86
Intersection Summary											
Cycle Length	100										
Actuated Cycle Length	100										
Offset (26%)	Referenced to phase 2: NWT and 6: SET, Start of Yellow										
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	1.35										
Intersection Signal Delay	54.0										
Intersection Capacity Utilization	91.1%										
Analysis Period (min)	15										
Splits and Phases: 2: Laurel Dr. & Hillcrest Ave											
											

Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.  
95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.



5: Southeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

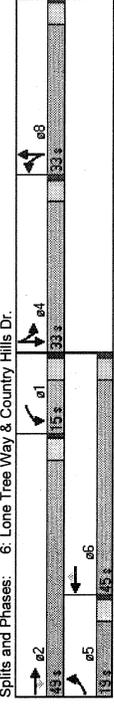
Long-Term + Project  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grade	0	0	0	0	0	0	0	0	0	0	0	0
Volume (veh/h)	0.88	0.88	0.88	0.63	0.63	0.63	0.82	0.82	0.82	0.89	0.89	104
Peak Hour Factor	0	0	0	0	0	0	0	0	0	0	0	0.89
Hourly flow rate (vph)	0	0	0	0	0	0	0	0	0	0	0	117
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median storage (veh)												
Upstream signal (ft)												
pX platoon unblocked	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
YC conflicting volume	1538	2027	368	1353	2053	474	1104					980
YC2, stage 2 cont vol												
YC, single (s)	1460	2031	388	1244	2062	217	1104					808
YC2, stage 2 cont vol	7.5	6.5	6.9	7.5	6.5	6.9	4.1					4.1
IC, 2 stage (s)												
IC, single (s)												
IC, 2 stage (s)												
IC, single (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	100	100	88	100	100	97	100					100
dM capacity (veh/h)	75	48	611	98	46	674	628					695
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	75	17	474	474	32	395	395	314				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	75	17	0	0	32	0	0	117				
cSH	611	674	1700	1700	1700	1700	1700	1700				
Volume to Capacity	0.12	0.03	0.28	0.28	0.02	0.23	0.23	0.18				
Queue Length 95th (ft)	10	2	0	0	0	0	0	0				
Control Delay (s)	11.7	10.5	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS	B	B	B	B	B	B	B	B				
Approach Delay (s)	11.7	10.5	0.0	0.0	0.0	0.0	0.0	0.0				
Approach LOS	B	B	B	B	B	B	B	B				
Intersection Summary												
Average Delay	0.5											
Intersection Capacity Utilization	31.5%											
Analysis Period (min)	15											
ICU Level of Service	A											

6: Lone Tree Way & Country Hills Dr.  
Antioch Walmart Expansion

Long-Term + Project  
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	3539	1583	1770	1751	0	1770	1699	0
Satd. Flow (prot)	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0	0.960	0.960	0
Flt Permitted	1762	3539	1125	1691	3539	1486	1770	1751	0	1770	1699	0
Satd. Flow (perm)	92	1111	44	82	1551	101	196	275	184	39	123	145
Satd. Flow (RTOR)	13	20	24	43	43	24	43	43	0	45	312	0
Volume (vph)	92	1111	44	82	1551	101	196	275	184	39	123	145
Lane Group Flow (vph)	107	1292	51	88	1668	109	261	612	0	45	312	0
Turn Type	Prot	Perm	Prot	Perm	Prot	Perm	Split	Split	Split	Split	Split	Split
Protected Phases	5	2	1	6	8	8	4	4				
Permitted Phases	19.0	49.0	49.0	15.0	45.0	33.0	33.0	33.0	0.0	33.0	33.0	0.0
Total Split (s)	14.0	46.0	46.0	12.0	44.0	44.0	33.9	33.9	26.1	26.1	26.1	0.0
Act Effect Green (s)	0.11	0.35	0.35	0.09	0.34	0.34	0.26	0.26	0.20	0.20	0.20	0.0
Actuated g/C Ratio	0.56	1.03	1.03	0.54	1.39	0.21	0.57	1.29	0.13	0.13	0.13	0.0
v/c Ratio	66.2	75.2	23.2	54.5	209.8	17.6	48.6	183.6	41.6	61.3	61.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.2	75.2	23.2	54.5	209.8	17.6	48.6	183.6	41.6	61.3	61.3	0.0
LOS	E	E	C	D	F	B	D	F	D	D	E	E
Approach Delay	72.7	191.3										58.8
Approach LOS	E	F										E
Queue Length 50th (ft)	86	-613	21	64	-963	11	195	-665	31	218	31	218
Queue Length 95th (ft)	140	4693	49	m112	#1143	m53	237	#704	61	302	61	302
Internal Link Dist (ft)	1420			740			709					577
Turn Bay Length (ft)	145			75	145		75	170	120			120
Base Capacity (vph)	218	1252	406	163	1196	516	461	474	408	425	408	425
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	1.03	0.13	0.54	1.39	0.21	0.57	1.29	0.11	0.13	0.13	0.0
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	74 (57%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	1.39											
Intersection Signal Delay	133.8											
Intersection LOS	F											
Intersection Capacity Utilization	98.3%											
Analysis Period (min)	15											
ICU Level of Service	E											
Volume exceeds capacity, queue is theoretically infinite.	#											
Queue shown is maximum after two cycles.	m											
Queue shown is maximum after two cycles.	m											
Volume for 96th percentile queue is metered by upstream signal.	m											
Splits and Phases:	6: Lone Tree Way & Country Hills Dr.											



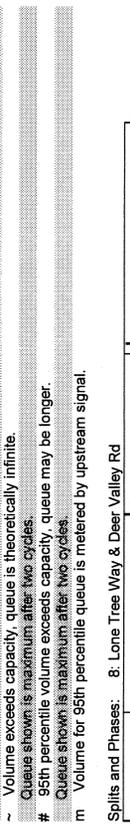
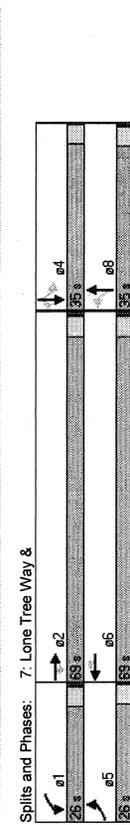
7: Lone Tree Way & Antioch Walmart Expansion

8: Lone Tree Way & Deer Valley Rd Antioch Walmart Expansion

Long-Term + Project AM Peak

Long-Term + Project AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1587	0	1770	1863	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	1770	3539	1333	1738	3539	1583	1410	1587	0	1289	1863	1583
Satd. Flow (RTOR)	35	85	42	1576	28	46	1	63	22	2	2	7
Volume (vph)	51	1432	93	48	1791	32	50	69	0	24	2	8
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	5	2	2	1	6	1	6	8	8	8	4	4
Protected Phases												
Permitted Phases	26.0	69.0	69.0	26.0	69.0	69.0	35.0	35.0	0.0	35.0	35.0	35.0
Total Split (s)	10.2	104.1	104.1	10.4	104.2	104.2	11.1	11.1	11.1	11.0	11.0	11.0
Act Effct Green (s)	0.06	0.80	0.80	0.06	0.80	0.80	0.09	0.09	0.09	0.08	0.08	0.08
Actuated g/C Ratio	0.37	0.51	0.09	0.34	0.63	0.03	0.41	0.35	0.22	0.01	0.06	0.06
v/c Ratio	54.1	1.1	0.1	57.2	6.8	0.9	66.7	17.3	58.7	52.0	28.1	28.1
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	54.1	1.2	0.1	57.2	6.8	0.9	66.7	17.3	58.7	52.0	28.1	28.1
Total Delay	D	A	A	E	A	A	E	B	E	D	C	C
LOS	D	A	A	E	A	A	E	B	E	D	C	C
Approach Delay	2.8	8.0	8.0	2.8	8.0	8.0	37.7	37.7	37.7	51.1	51.1	51.1
Approach LOS	A	A	A	A	A	A	D	D	D	D	D	D
Queue Length 50th (ft)	45	17	0	43	59	0	41	1	19	2	2	0
Queue Length 95th (ft)	m43	m18	m1	m48	m214	m1	81	46	47	10	16	16
Internal Link Dist (ft)	100	740	100	200	860	100	95	704	346	346	346	346
Turn Bay Length (ft)	313	2833	1074	313	2838	1271	347	442	317	459	398	398
Base Capacity (vph)	0	186	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.54	0.09	0.15	0.63	0.03	0.14	0.15	0.06	0.00	0.02	0.02



Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 90 (69%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.63  
 Intersection Signal Delay: 7.1  
 Intersection Capacity Utilization: 60.2%  
 Analysis Period (min): 15  
 m: Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Lone Tree Way &

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 54 (42%), Referenced to phase 2.EBT and 6.WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.44  
 Intersection Signal Delay: 94.1  
 Intersection Capacity Utilization: 93.4%  
 Analysis Period (min): 15  
 \* User Entered Value  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 # Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Lone Tree Way & Deer Valley Rd

9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

9: Lone Tree Way & Prewett Park  
Antioch Walmart Expansion

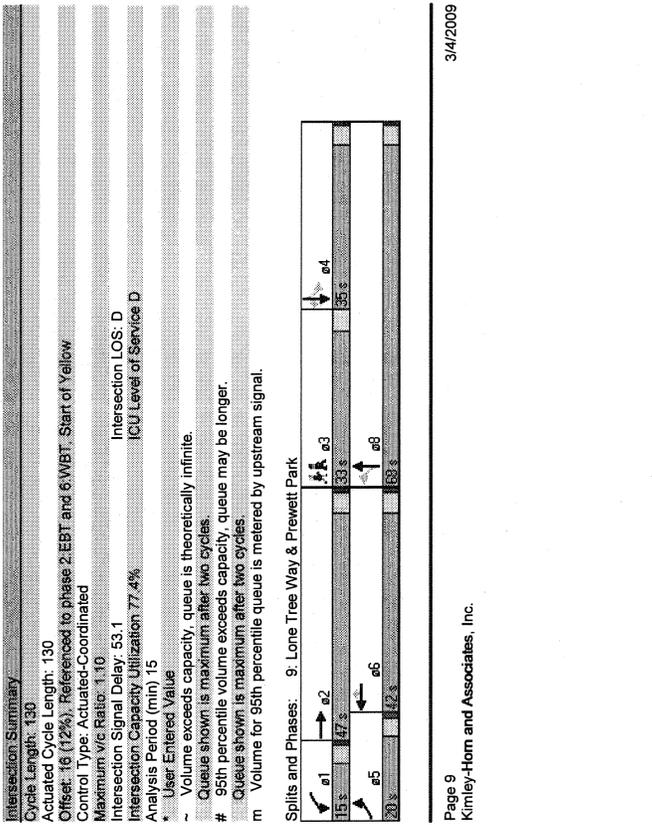
Long-Term + Project  
AM Peak

Long-Term + Project  
AM Peak

EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1770	3480	0	1770	3539	1583	1770	1532	0	1770	1863	1583
0.950	0.950	0	0.950	0.950	0.372	0.372	0.372	0	0.681	0.681	0.681
1769	3460	0	1769	3539	1539	1600	1532	0	1225	1863	1432
8	8	0	32	32	239	239	239	0	26	1	65
120	1547	145	91	1589	61	149	0	64	26	1	33
146	2084	0	101	1766	58	276	119	0	51	2	65
5	2	1	6	6	8	8	8	4	4	4	4
20.0	47.0	0.0	15.0	42.0	42.0	68.0	68.0	0.0	35.0	35.0	35.0
17.4	70.2	0.0	14.6	67.4	67.4	36.3	36.3	0.0	13.1	13.1	13.1
0.13	0.54	0.0	0.11	0.52	0.52	0.28	0.28	0.0	0.10	0.10	0.10
0.62	1.10	0.0	0.51	0.96	0.96	0.62	0.62	0.0	0.41	0.41	0.41
46.6	76.5	0.0	33.0	46.6	46.6	16.3	16.3	0.0	64.5	64.5	64.5
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46.6	76.5	0.0	33.0	46.6	46.6	16.3	16.3	0.0	64.5	64.5	64.5
D	E	E	E	C	A	D	A	A	E	D	B
74.5	74.5	34.1	34.1	31.8	31.8	37.7	37.7	0.0	0.0	0.0	0.0
107	-1166	82	-875	1	184	0	42	2	0	0	0
m92	m4914	m132	#1166	m19	137	0	45	5	3	3	3
145	1580	150	606	609	609	819	819	100	100	100	100
260	1882	206	1834	813	866	866	866	302	469	401	401
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0.56	1.10	0.49	0.96	0.08	0.34	0.13	0.13	0.17	0.00	0.16	0.16

EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1770	3480	0	1770	3539	1583	1770	1532	0	1770	1863	1583
0.950	0.950	0	0.950	0.950	0.372	0.372	0.372	0	0.681	0.681	0.681
1769	3460	0	1769	3539	1539	1600	1532	0	1225	1863	1432
8	8	0	32	32	239	239	239	0	26	1	65
120	1547	145	91	1589	61	149	0	64	26	1	33
146	2084	0	101	1766	58	276	119	0	51	2	65
5	2	1	6	6	8	8	8	4	4	4	4
20.0	47.0	0.0	15.0	42.0	42.0	68.0	68.0	0.0	35.0	35.0	35.0
17.4	70.2	0.0	14.6	67.4	67.4	36.3	36.3	0.0	13.1	13.1	13.1
0.13	0.54	0.0	0.11	0.52	0.52	0.28	0.28	0.0	0.10	0.10	0.10
0.62	1.10	0.0	0.51	0.96	0.96	0.62	0.62	0.0	0.41	0.41	0.41
46.6	76.5	0.0	33.0	46.6	46.6	16.3	16.3	0.0	64.5	64.5	64.5
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46.6	76.5	0.0	33.0	46.6	46.6	16.3	16.3	0.0	64.5	64.5	64.5
D	E	E	E	C	A	D	A	A	E	D	B
74.5	74.5	34.1	34.1	31.8	31.8	37.7	37.7	0.0	0.0	0.0	0.0
107	-1166	82	-875	1	184	0	42	2	0	0	0
m92	m4914	m132	#1166	m19	137	0	45	5	3	3	3
145	1580	150	606	609	609	819	819	100	100	100	100
260	1882	206	1834	813	866	866	866	302	469	401	401
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0.56	1.10	0.49	0.96	0.08	0.34	0.13	0.13	0.17	0.00	0.16	0.16

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 16 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.10  
 Intersection Signal Delay: 53.1  
 Intersection Capacity Utilization 77.4%  
 Analysis Period (min) 15  
 User Entered Value  
 - Volume exceeds capacity, queue is theoretically infinite.  
 # Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



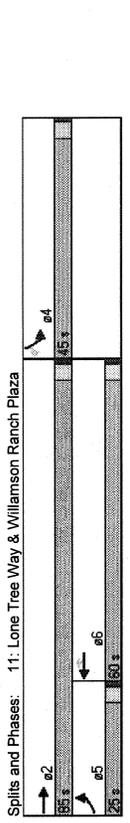
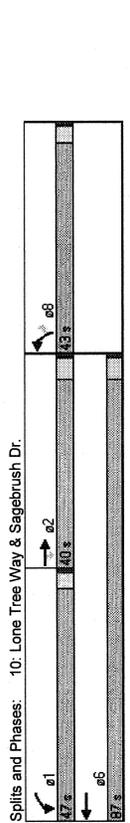
10: Lone Tree Way & Sagebrush Dr.  
Antioch Walmart Expansion

11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

Long-Term + Project  
AM Peak

Long-Term + Project  
AM Peak

Lane Group	EBL	EBR	WBL	WBT	NBL	NBR
Lane Configurations	AA	AA	AA	AA	AA	AA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3539	1482	1767	3539	1715	1559
Satd. Flow (RTOR)	1467	234	200	1500	104	88
Volume (vph)	1811	289	233	1744	162	138
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	2	1	6	8	8	8
Protected Phases						
Permitted Phases	40.0	40.0	47.0	87.0	43.0	43.0
Total Split (s)	80.5	80.5	23.8	107.3	16.7	16.7
Act Effct Green (s)	0.82	0.82	0.18	0.83	0.13	0.13
Actuated g/C Ratio	0.83	0.31	0.72	0.60	0.71	0.43
v/c Ratio	9.1	0.8	62.4	4.3	70.5	11.6
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	0.8	62.4	4.3	70.5	11.6
LOS	A	A	E	A	E	B
Approach Delay	8.0	0	11.2	43.4	0	0
Approach LOS	A	B	B	D	D	D
Queue Length 50th (ft)	46	0	183	96	134	0
Queue Length 95th (ft)	m785	m2	m198	3	133	11
Internal Link Dist (ft)	605	0	0	1865	497	0
Turn Bay Length (ft)	80	600	0	115	0	0
Base Capacity (vph)	2192	936	599	2920	545	575
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.31	0.39	0.60	0.30	0.24
Intersection Summary						
Cycle Length	130					
Actuated Cycle Length	130					
Offset	40 (31%), Referenced to phase 2:EBT and 6:WBT. Start of Yellow					
Control Type	Actuated-Coordinated					
Maximum v/c Ratio	0.83					
Intersection Signal Delay	11.9					
Intersection Capacity Utilization	68.3%					
Analysis Period (min)	15					
m	Volume for 95th percentile queue is metered by upstream signal.					



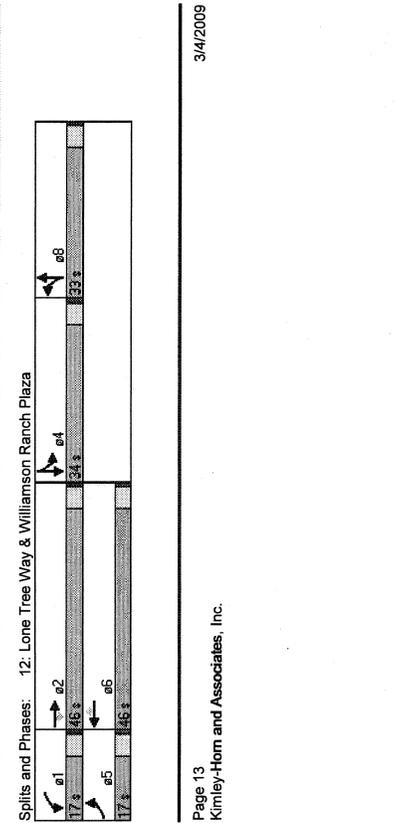
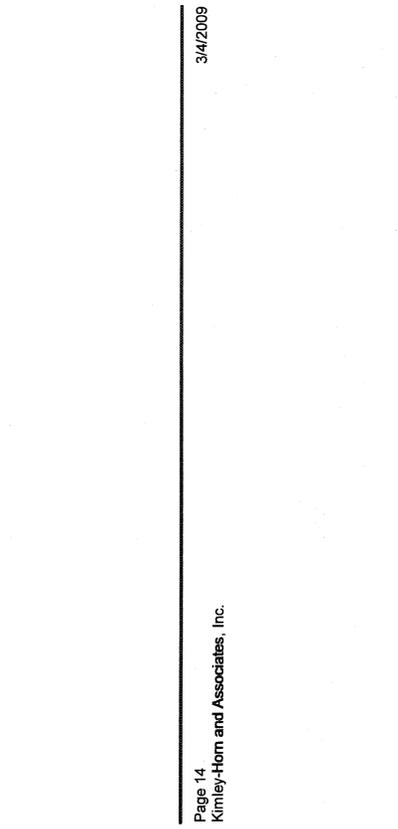
13: Lone Tree Way & Wai-Mart Driveway  
Antioch Walmart Expansion

12: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

Long-Term + Project  
AM Peak

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (veh/h)	0	1880	1701	78	0	5
Hourly flow rate (vph)	0	0.82	0.82	0.85	0.42	0.42
Pedestrians	0	1927	2001	92	0	12
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						None
Median storage (veh)						
Upstream signal (ft)		510	500			
pX, platoon unblocked		0.77				0.65
vC, conflicting volume		2083				2965
vC1, stage 1 conf vol						687
vC2, stage 2 conf vol						
vC, unblocked vol	1823					2072
IC, single (s)	4.1					6.8
IC, 2 stage (s)						6.9
IF (s)	2.2					3.5
p0 queue free %	100					100
cm capacity (veh/h)	285					30
Direction	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4
Volume Total	963	963	667	667	667	92
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	1700	1700	1700	1700	1700	836
Volume to Capacity	0.57	0.57	0.39	0.39	0.39	0.05
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.4
Lane LOS	A	A	A	A	A	A
Approach LOS	A	A	A	A	A	A
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	47.0%					
Analysis Period (min)	15					
ICU Level of Service	A					

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Volume (veh/h)	1770	3539	1583	1770	3539	1583	1770	3539	1574
Hourly flow rate (vph)	0.860	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
Pedestrians	1765	3539	1286	1746	3539	1455	1764	3539	1574
Lane Width (ft)	25	1416	6	26	1689	52	12	17	69
Volume (vph)	31	1770	8	33	2138	66	15	109	0
Turn Type	Prot	Perm	Prot	Perm	Split	Split	Split	Split	Split
Permitted Phases	5	2	1	6	8	8	8	4	4
Total Spk (s)	17.0	46.0	46.0	46.0	33.0	33.0	33.0	34.0	34.0
Act Effct Green (s)	9.7	73.3	10.9	74.1	21.0	21.0	21.0	17.6	17.6
Accel'd %C Ratio	0.07	0.86	0.08	0.87	0.57	0.16	0.16	0.14	0.14
vC Ratio	0.23	0.89	0.01	0.22	1.06	0.08	0.05	0.32	0.49
Control Delay	72.6	26.5	10.5	64.0	55.1	9.2	40.3	14.7	54.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	26.5	10.5	64.0	55.1	9.2	40.3	14.7	54.6
LOS	E	C	B	E	A	D	B	D	B
Approach Delay	27.2			53.8			17.8		38.3
Approach LOS	C			D			B		D
Queue Length 50th (ft)	23	-878	2	25	-1204	16	10	15	95
Queue Length 95th (ft)	m38	#1010	m4	m36	#183	m20	26	48	47
Internal Link Dist (ft)	170	820	80	135	430	80	200	200	440
Turn Bay Length (ft)	191	1995	725	191	2017	833	408	445	619
Base Capacity (veh)	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced vC Ratio	0.16	0.89	0.01	0.17	1.06	0.08	0.04	0.24	0.28
Intersection Summary									
Cycle Length	130								
Actuated Cycle Length	130								
Offset	# 97 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow								
Control Type	Actuated-Coordinated								
Maximum vC Ratio	1.06								
Intersection Signal Delay	41.0								
Intersection LOS	D								
Analysis Period (min)	15								
ICU Level of Service	B								
Volume exceeds capacity, queue is theoretically infinite.									
Queue shown is maximum after two cycles.									
# 95th percentile volume exceeds capacity, queue may be longer.									
Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									



14: Lone Tree Way & Hillcrest Ave  
Antioch Walmart Expansion

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	4763	0	1770	5085	1583	1770	3240	0	1900	3539
Flt Permitted	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950
Satd. Flow (perm)	1762	4783	0	1764	5085	1515	1762	3240	0	3419	3539
Satd. Flow (RTOR)	93	236	0	236	353	157	157	317	0	317	317
Volume (vph)	252	935	415	109	1117	215	353	357	342	415	232
Lane Group Flow (vph)	286	1534	0	120	1227	236	441	874	0	519	280
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	2	1	6	8	8	8	8	4	4
Permitted Phases	29.0	47.0	0.0	18.0	36.0	36.0	23.0	23.0	0.0	42.0	42.0
Total Split (s)	25.2	45.3	0.0	13.7	33.8	33.8	20.5	20.5	0.0	36.5	36.5
Act Effct Green (s)	0.19	0.35	0.0	0.11	0.26	0.26	0.16	0.16	0.0	0.30	0.30
Actuated g/C Ratio	0.83	0.89	0.0	0.64	0.93	0.41	1.58	1.36	0.0	0.92	0.28
v/c Ratio	75.1	44.6	0.0	71.5	51.1	10.8	313.1	205.3	0.0	67.6	36.8
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.1	44.6	0.0	71.5	51.1	10.8	313.1	205.3	0.0	67.6	36.8
LOS	E	D	D	E	D	B	F	F	F	E	D
Approach Delay	49.4	46.6	0.0	46.6	46.6	0.0	241.5	241.5	0.0	41.6	41.6
Approach LOS	D	D	D	D	D	D	F	F	F	D	D
Queue Length 50th (ft)	258	292	0.0	90	378	45	-534	-454	0.0	217	98
Queue Length 95th (ft)	m298	420	0.0	157	4472	124	#634	#483	0.0	#251	120
Internal Link Dist (ft)	620	420	0.0	690	690	0.0	2575	2575	0.0	400	172
Turn Bay Length (ft)	620	210	0.0	210	730	195	0.0	0.0	0.0	400	290
Base Capacity (vph)	354	1726	204	1324	569	279	643	570	1062	688	688
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.89	0.0	0.59	0.83	0.41	1.58	1.36	0.0	0.91	0.27
Intersection Summary											
Cycle Length	130										
Offset	78 (60%), Referenced to phase 2, EBT and 6,WBT, Start of Yellow										
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	1.56										
Intersection Signal Delay	89.9										
Intersection Capacity Utilization	65.5%										
Analysis Period (min)	15										
User Entered Value											
Volume exceeds capacity, queue is theoretically infinite.											
Queue shown is maximum after two cycles.											
95th percentile volume exceeds capacity, queue may be longer.											
Queue shown is maximum after two cycles.											
Volume for 95th percentile queue is metered by upstream signal.											
Splits and Phases:	14: Lone Tree Way & Hillcrest Ave										

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

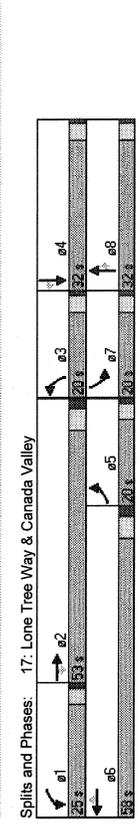
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	5062	0	1770	5039	0	1770	1605	0	1770	1652
Flt Permitted	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950
Satd. Flow (perm)	1770	5062	0	1770	5039	0	890	1605	0	764	1652
Satd. Flow (RTOR)	5	10	0	10	10	0	191	191	0	116	116
Volume (vph)	50	1461	43	76	1342	72	62	27	157	37	22
Lane Group Flow (vph)	58	1749	0	81	1505	0	78	233	0	79	192
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	2	1	6	8	8	8	8	4	4
Permitted Phases	18.0	75.0	0.0	18.0	75.0	0.0	37.0	37.0	0.0	37.0	37.0
Total Split (s)	12.1	90.1	0.0	13.7	91.6	0.0	19.6	19.6	0.0	19.6	19.6
Act Effct Green (s)	0.09	0.69	0.0	0.11	0.70	0.0	0.15	0.15	0.0	0.15	0.15
Actuated g/C Ratio	0.35	0.50	0.0	0.43	0.42	0.0	0.58	0.58	0.0	0.69	0.55
v/c Ratio	50.4	18.1	0.0	52.7	9.0	0.0	66.6	16.3	0.0	79.0	25.4
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	18.1	0.0	52.7	9.0	0.0	66.6	16.3	0.0	79.0	25.4
LOS	D	B	B	D	A	A	E	B	E	E	C
Approach Delay	19.1	11.3	0.0	11.3	28.9	0.0	28.9	28.9	0.0	41.0	41.0
Approach LOS	B	B	B	B	C	C	D	D	D	D	D
Queue Length 50th (ft)	48	348	0.0	64	154	0.0	62	31	0.0	64	58
Queue Length 95th (ft)	m48	m408	0.0	m121	185	0.0	93	68	0.0	53	21
Internal Link Dist (ft)	200	965	0.0	1050	1050	0.0	786	786	0.0	100	814
Turn Bay Length (ft)	200	200	0.0	200	200	0.0	130	130	0.0	200	518
Base Capacity (vph)	206	3511	215	215	3554	233	561	561	0.0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.50	0.0	0.38	0.42	0.0	0.33	0.42	0.0	0.40	0.37
Intersection Summary											
Cycle Length	130										
Offset	55 (42%), Referenced to phase 2, EBT and 6,WBT, Start of Yellow										
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	0.89										
Intersection Signal Delay	18.2										
Intersection Capacity Utilization	61.2%										
Analysis Period (min)	15										
User Entered Value											
Volume exceeds capacity, queue is theoretically infinite.											
Queue shown is maximum after two cycles.											
95th percentile volume exceeds capacity, queue may be longer.											
Queue shown is maximum after two cycles.											
Volume for 95th percentile queue is metered by upstream signal.											
Splits and Phases:	15: Lone Tree Way & Vista Grande										

17: Lone Tree Way & Canada Valley  
Antioch Walmart Expansion

16: Lone Tree Way & Heidorn Ranch Rd.  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	W	W	W	W	W	W	W	W	W	W	W
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	1638	1504	1770	1863
Fit Permitted	0.950			0.950			0.950			0.950	
Satd. Flow (perm)	3432	5085	1587	3432	5085	1583	3433	1638	1482	1767	1863
Satd. Flow (RTOR)	114			297			30	85		93	99
Volume (vph)	58	1719	107	302	1375	288	66	36	93	338	81
Lane Group Flow (vph)	62	1829	114	339	1545	324	89	90	85	428	103
Turn Type	Prot	Perm	Prot	Prot	Perm	Prot	Prot	Perm	Prot	Perm	Prot
Protected Phases	2	2	2	1	6	3	3	6	8	7	4
Permitted Phases	2	2	2	6	6	6	6	6	8	7	4
Total Split (\$)	20.0	53.0	25.0	58.0	58.0	20.0	32.0	32.0	20.0	20.0	32.0
Act Effct Green (s)	14.8	71.5	71.5	17.9	76.4	76.4	8.7	11.6	11.6	17.0	20.0
Actuated g/C Ratio	0.11	0.55	0.55	0.14	0.59	0.59	0.07	0.09	0.09	0.13	0.15
v/c Ratio	0.16	0.65	0.13	0.72	0.52	0.31	0.39	0.52	0.40	1.85	0.36
Control Delay	38.3	14.0	3.0	69.6	13.4	2.1	62.7	46.7	15.6	431.4	51.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	14.0	3.0	69.6	13.4	2.1	62.7	46.7	15.6	431.4	51.8
LOS	D	B	A	E	B	A	E	D	B	F	D
Approach Delay	14.1			20.4			42.1			291.5	
Approach LOS	B			C			D			F	
Queue Length 50th (ft)	21	138	0	146	178	1	37	51	0	547	80
Queue Length 95th (ft)	m24	m296	m6	m173	m261	m15	53	75	28	638	108
Internal Link Dist (ft)	900			775			542			1084	
Turn Bay Length (ft)	320	630	285	245	150		160			170	
Base Capacity (vph)	449	2797	908	586	2987	1038	449	389	397	231	416
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.65	0.13	0.58	0.52	0.21	0.20	0.23	0.21	1.85	0.25

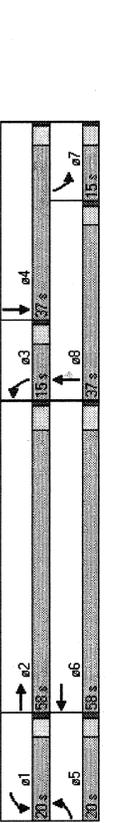
Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 37 (28%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.85  
 Intersection Signal Delay: 53.7  
 Intersection Capacity Utilization: 77.2%  
 Analysis Period (min): 15  
 Intersection LOS: D  
 ICU Level of Service: D



Spills and Phases: 17: Lone Tree Way & Canada Valley

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	W	W	W	W	W	W	W	W	W	W	W
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	4979	0	1770	5068	0	3433	1863	1583	1770	1628
Fit Permitted	0.950			0.950			0.950			0.950	
Satd. Flow (perm)	1769	4979	0	1769	5068	0	3433	1863	1581	1765	1628
Satd. Flow (RTOR)	23			337			63			9	49
Volume (vph)	26	1545	211	141	1380	25	162	0	288	12	9
Lane Group Flow (vph)	29	1930	0	158	1579	0	377	0	693	15	75
Turn Type	Prot	Perm	Prot	Prot	Perm	Prot	Prot	Perm	Prot	Perm	Prot
Protected Phases	5	2	2	1	6	3	3	8	7	7	4
Permitted Phases	5	2	2	6	6	6	6	6	8	7	4
Total Split (\$)	20.0	58.0	0.0	20.0	58.0	0.0	45.0	37.0	37.0	15.0	37.0
Act Effct Green (s)	10.1	64.3		17.4	76.1		16.4		34.0	9.1	22.0
Actuated g/C Ratio	0.09	0.49		0.13	0.58		0.13		0.26	0.07	0.17
v/c Ratio	0.21	0.78		0.67	0.53		0.87		1.05	0.12	0.23
Control Delay	81.8	25.9		78.0	5.2		77.1		74.5	58.3	13.9
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	81.8	25.9		78.0	5.2		77.1		74.5	58.3	13.9
LOS	F	C		E	A		E		E	E	B
Approach Delay	26.7			12.7			21.3			21.3	
Approach LOS	C			B			C			C	
Queue Length 50th (ft)	25	537		121	40		~187		~414	12	9
Queue Length 95th (ft)	m51	678		191	173		100		972	38	31
Internal Link Dist (ft)	1050			900			972			316	
Turn Bay Length (ft)	185	400		200			200		200	50	
Base Capacity (vph)	231	2475		248	2968		433		657	163	472
Starvation Cap Reductn	0	0		0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0		0		0	0	0
Reduced v/c Ratio	0.13	0.78		0.64	0.53		0.87		1.05	0.09	0.16

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 55 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.05  
 Intersection Signal Delay: 32.3  
 Intersection Capacity Utilization: 67.1%  
 Analysis Period (min): 15  
 Intersection LOS: C  
 ICU Level of Service: C



Spills and Phases: 16: Lone Tree Way & Heidorn Ranch Rd.

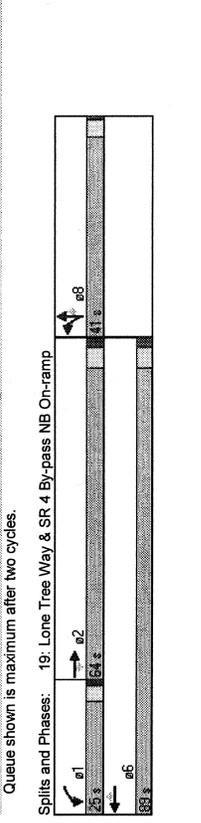
18: Lone Tree Way & SR 4 Bypass SB Off-ramp  
Antioch Walmart Expansion

19: Lone Tree Way & SR 4 By-pass NB On-ramp  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583
Flt. Permitted		0.950		0.950					0.950	0.954	
Satd. Flow (perm)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583
Satd. Flow (RTOR)	0	1645	474	212	1452	0	0	0	523	7	515
Volume (vph)	0	1828	527	226	1545	0	0	0	306	315	606
Lane Group Flow (vph)	0	1828	527	226	1545	0	0	0	306	315	606
Turn Type		2	1	6					Split	Split	Perm
Protected Phases		2	1	6					4	4	
Permitted Phases		0.0	59.0	23.0	82.0	0.0	0.0	0.0	48.0	48.0	48.0
Total Split (s)		61.2	61.2	14.8	79.0				45.0	45.0	45.0
Act Effct Green (s)		0.47	0.47	0.11	0.61				0.35	0.35	0.35
Actuated g/C Ratio		0.76	0.52	0.58	0.50				0.53	0.54	1.06
v/c Ratio		20.7	2.5	68.2	12.2				38.1	38.4	93.7
Control Delay		0.0	0.0	0.0	0.0				0.0	0.0	0.0
Queue Delay		20.7	2.5	68.2	12.2				38.1	38.4	93.7
Total Delay		20.7	2.5	68.2	12.2				38.1	38.4	93.7
LOS		C	A	E	B				D	D	F
Approach Delay		16.6		19.3					65.6		
Approach LOS		B		B					E		
Queue Length 50th (ft)		379	37	102	216				217	224	542
Queue Length 95th (ft)		m221	m29	141	239				294	302	#702
Internal Link Dist (ft)		775		750					536		616
Turn Bay Length (ft)		2392	315	175	3090				280	280	584
Base Capacity (vph)		0	0	0	0				0	0	0
Starvation Cap Reductn		0	0	0	0				0	0	0
Spillback Cap Reductn		0	0	0	0				0	0	0
Storage Cap Reductn		0	0	0	0				0	0	0
Reduced v/c Ratio		0.76	0.52	0.43	0.50				0.53	0.54	1.06

Lane Group	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	0	5085	1583	3433	5085	1583	1681	1695	1583	0	0
Flt. Permitted		0.950		0.950					0.950	0.958	
Satd. Flow (perm)	0	5085	1583	3433	5085	1545	1681	1695	1583	0	0
Satd. Flow (RTOR)	0	1765	409	137	1207	642	462	34	570	0	0
Volume (vph)	0	1983	460	152	1341	713	271	286	640	0	0
Lane Group Flow (vph)	0	1983	460	152	1341	713	271	286	640	0	0
Turn Type		2	1	6					Split	Split	Perm
Protected Phases		2	1	6					8	8	
Permitted Phases		0.0	64.0	25.0	89.0	89.0	41.0	41.0	41.0	0.0	0.0
Total Split (s)		73.6	73.6	10.9	87.5	87.5	36.5	36.5	36.5	36.5	36.5
Act Effct Green (s)		0.57	0.57	0.08	0.67	0.67	0.28	0.28	0.28	0.28	0.28
Actuated g/C Ratio		0.69	0.45	0.53	0.39	0.56	0.58	0.60	0.98		
v/c Ratio		13.8	3.4	63.4	10.0	2.4	45.3	46.2	55.6		
Control Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay		13.8	3.4	63.4	10.0	2.4	45.3	46.2	55.6		
Total Delay		13.8	3.4	63.4	10.0	2.4	45.3	46.2	55.6		
LOS		B	A	E	B	A	D	D	E		
Approach Delay		11.9		11.3					51.0		
Approach LOS		B		B					D		
Queue Length 50th (ft)		158	34	64	176	0	203	215	398		
Queue Length 95th (ft)		170	47	98	204	40	295	312	#569		
Internal Link Dist (ft)		750		640					935		1156
Turn Bay Length (ft)		215	170	170	210				495	669	
Base Capacity (vph)		2880	1023	581	3424	1273	481	495	669		
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.69	0.45	0.26	0.39	0.56	0.55	0.58	0.98		

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 88 (68%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 19.6  
 Intersection Capacity Utilization: 78.1%  
 Analysis Period (min): 15  
 ICU Level of Service: D  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m. Volume for 95th percentile queue is metered by upstream signal.

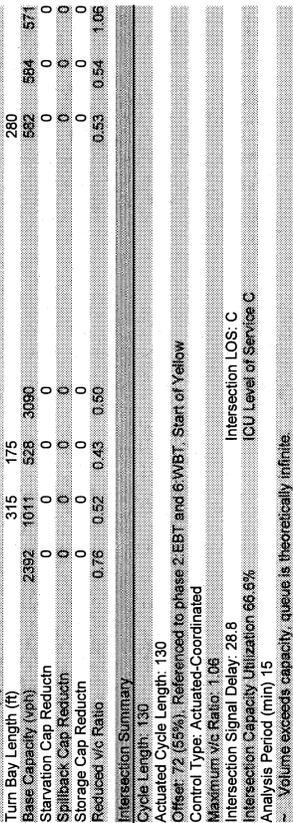


Splits and Phases: 18: Lone Tree Way & SR 4 Bypass SB Off-ramp

19: Lone Tree Way & SR 4 By-pass NB On-ramp  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	0	5085	1583	3433	5085	1583	1681	1695	1583	0	0
Flt. Permitted		0.950		0.950					0.950	0.958	
Satd. Flow (perm)	0	5085	1583	3433	5085	1545	1681	1695	1583	0	0
Satd. Flow (RTOR)	0	1765	409	137	1207	642	462	34	570	0	0
Volume (vph)	0	1983	460	152	1341	713	271	286	640	0	0
Lane Group Flow (vph)	0	1983	460	152	1341	713	271	286	640	0	0
Turn Type		2	1	6					Split	Split	Perm
Protected Phases		2	1	6					8	8	
Permitted Phases		0.0	64.0	25.0	89.0	89.0	41.0	41.0	41.0	0.0	0.0
Total Split (s)		73.6	73.6	10.9	87.5	87.5	36.5	36.5	36.5	36.5	36.5
Act Effct Green (s)		0.57	0.57	0.08	0.67	0.67	0.28	0.28	0.28	0.28	0.28
Actuated g/C Ratio		0.69	0.45	0.53	0.39	0.56	0.58	0.60	0.98		
v/c Ratio		13.8	3.4	63.4	10.0	2.4	45.3	46.2	55.6		
Control Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay		13.8	3.4	63.4	10.0	2.4	45.3	46.2	55.6		
Total Delay		13.8	3.4	63.4	10.0	2.4	45.3	46.2	55.6		
LOS		B	A	E	B	A	D	D	E		
Approach Delay		11.9		11.3					51.0		
Approach LOS		B		B					D		
Queue Length 50th (ft)		158	34	64	176	0	203	215	398		
Queue Length 95th (ft)		170	47	98	204	40	295	312	#569		
Internal Link Dist (ft)		750		640					935		1156
Turn Bay Length (ft)		215	170	170	210				495	669	
Base Capacity (vph)		2880	1023	581	3424	1273	481	495	669		
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.69	0.45	0.26	0.39	0.56	0.55	0.58	0.98		

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 88 (68%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 19.6  
 Intersection Capacity Utilization: 78.1%  
 Analysis Period (min): 15  
 ICU Level of Service: D  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m. Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 19: Lone Tree Way & SR 4 By-pass NB On-ramp

20: Marita Dr. & Deer Valley Rd  
Antioch Walmart Expansion

21: Prewett Ranch Dr & Hillcrest Ave  
Antioch Walmart Expansion

Long-Term + Project  
AM Peak

Long-Term + Project  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1619	0	1770	1577	0	1770	3521	0	1770	3525	0
Satd. Flow (prot)	0.742	0.735	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1364	1619	0	1347	1577	0	1765	3521	0	1758	3525	0
Satd. Flow (perm)	25	8	21	1	7	137	905	24	61	1192	27	27
Satd. Flow (RTOR)	21	34	0	3	24	0	149	1010	0	75	1505	0
Volume (vph)	Perm	Perm	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot
Lane Group Flow (vph)	8	8	4	4	4	4	1	6	5	2	2	2
Turn Type	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases	Permitted Phases
Protected Phases	4	4	4	4	4	4	4	4	4	4	4	4
Permitted Phases	33.0	33.0	0.0	33.0	33.0	0.0	38.0	81.0	0.0	28.0	71.0	0.0
Total Split (s)	16.3	16.3	0.0	16.3	16.3	0.0	16.5	85.6	0.0	12.1	78.2	0.0
Act Effct Green (s)	0.14	0.14	0.0	0.14	0.14	0.0	0.14	0.73	0.0	0.10	0.66	0.0
Actuated g/C Ratio	0.02	0.02	0.0	0.02	0.02	0.0	0.60	0.39	0.0	0.42	0.64	0.0
v/c Ratio	44.0	20.9	0.0	41.0	18.8	0.0	57.6	10.2	0.0	58.2	17.1	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	44.0	20.9	0.0	41.0	18.8	0.0	57.6	10.2	0.0	58.2	17.1	0.0
Total Delay	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS
Approach Delay	30.7	21.2	0.0	30.7	21.2	0.0	16.3	16.3	0.0	19.1	19.1	0.0
Approach LOS	C	C	C	C	C	C	B	B	B	B	B	B
Queue Length 50th (ft)	16	6	2	2	2	2	97	125	49	275	5	128
Queue Length 95th (ft)	41	32	4	4	4	4	188	314	100	540	26	245
Internal Link Dist (ft)	345	345	0	427	427	0	825	825	0	845	845	0
Turn Bay Length (ft)	40	100	0	100	100	0	125	2563	175	335	2342	0
Base Capacity (vph)	306	386	0	305	373	0	457	2563	335	2342	487	2287
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.08	0.0	0.01	0.06	0.0	0.33	0.39	0.22	0.64	0.03	0.41
Intersection Summary												
Cycle Length	142											
Actuated Cycle Length	117.7											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.64											
Intersection Signal Delay	13.2											
Intersection LOS	B											
Intersection Capacity Utilization	64.0%											
ICU Level of Service	C											
Analysis Period (min)	15											



Antioch Walmart Expansion

Scenario: Cumulative + Project PM

Command: None  
 Volume: Cumulative+Project PM  
 Geometry: Cumulative  
 Impact Fee: Default Impact Fee  
 Trip Generation: Cum+Proj PM  
 Trip Distribution: Near-Term  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

Antioch Walmart Expansion

Impact Analysis Report  
 Level Of Service

Intersection	Base Del/ LOS Veh C	V/ C	Future Del/ LOS Veh C	Change in
# 1 Deer Valley Rd/ Country Hills	A xxxxx	0.520	A xxxxx 0.524	+ 0.003 V/C
# 2 Hillcrest Avenue/Laurel Road	B xxxxx	0.672	B xxxxx 0.626	-0.046 V/C
# 3 Hillcrest Avenue/Country Hills	A xxxxx	0.476	A xxxxx 0.466	-0.010 V/C
# 4 Hillcrest Avenue/Driveway	C	19.9 0.028	C 19.2 0.027	-0.726 D/V
# 5 Hillcrest Avenue/South Driveva	B	13.4 0.206	B 12.6 0.233	-0.823 D/V
# 6 Lone Tree Way/Mokelumne Dr	D xxxxx	0.874	D xxxxx 0.883	+ 0.009 V/C
# 7 Lone Tree Way/Deer Valley Plaz	A xxxxx	0.598	B xxxxx 0.607	+ 0.008 V/C
# 8 Lone Tree Way/Deer Valley Rd	D xxxxx	0.889	D xxxxx 0.890	+ 0.000 V/C
# 9 Lone Tree Way/Deer Valley HS	A xxxxx	0.565	A xxxxx 0.571	+ 0.006 V/C
# 10 Lone Tree Way/Sagebrush Drive	A xxxxx	0.561	A xxxxx 0.567	+ 0.006 V/C
# 11 Lone Tree Way/Williamson Ranch	A xxxxx	0.571	A xxxxx 0.577	+ 0.006 V/C
# 12 Lone Tree Way/Indian Hill Dr/W	B xxxxx	0.601	B xxxxx 0.633	+ 0.032 V/C
# 13 Lone Tree Way/Driveway	B	11.9 0.068	B 12.2 0.083	+ 0.343 D/V
# 14 Lone Tree Way/Hillcrest Avenue	C xxxxx	0.734	E xxxxx 0.912	+ 0.178 V/C
# 15 Lone Tree Way/Vista Grande Dri	A xxxxx	0.590	B xxxxx 0.641	+ 0.051 V/C
# 16 Lone Tree Way/Heidorn Ranch Ro	A xxxxx	0.572	C xxxxx 0.738	+ 0.166 V/C
# 17 Lone Tree Way/Canada Valley Ro	C xxxxx	0.775	D xxxxx 0.839	+ 0.064 V/C
# 18 Lone Tree Way/SB SR-4 Bypass	D xxxxx	0.872	E xxxxx 0.983	+ 0.110 V/C
# 19 Lone Tree Way/NB SR-4 Bypass (	B xxxxx	0.655	C xxxxx 0.752	+ 0.097 V/C
# 20 Deer Valley Road/Marita Drive	A xxxxx	0.425	A xxxxx 0.420	-0.005 V/C
# 21 Hillcrest Ave/Prewett Ranch Dr	A xxxxx	0.535	A xxxxx 0.576	+ 0.040 V/C







Antioch Walmart Expansion

Level Of Service Computation Report
CCTALOS Method (Future Volume Alternative)

Intersection #7 Lone Tree Way/Deer Valley Plaza

Cycle (sec): 130
Loss Time (sec): 9
Optimal Cycle: 47

Street Name: Deer Valley Plaza
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes: 1 0 0 1 0 1 0 1 0 2 0 1 1 0 2 0 1

Volume Module:
Base Vol: 121 0 62 40 3 40 29 1531 101 90 1007 25
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Saturation Flow Module:
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Capacity Analysis Module:
Vol/Sat: 0.07 0.00 0.04 0.02 0.00 0.01 0.02 0.47 0.00 0.05 0.33 0.00
Crit Volume: 121 11 779 90
Crit Moves: \*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report
CCTALOS Method (Future Volume Alternative)

Intersection #8 Lone Tree Way/Deer Valley Rd

Cycle (sec): 130
Loss Time (sec): 12
Optimal Cycle: 180

Street Name: Deer Valley Road
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes: 2 0 2 0 1 2 0 1 0 2 0 1 1 0 2 0 1

Volume Module:
Base Vol: 377 466 436 235 390 22 98 1110 389 499 730 208
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Saturation Flow Module:
Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment: 0.91 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Capacity Analysis Module:
Vol/Sat: 0.13 0.14 0.00 0.08 0.12 0.12 0.06 0.34 0.11 0.29 0.25 0.05
Crit Volume: 189 206 568 486
Crit Moves: \*\*\*\*

Antioch Walmart Expansion  
 Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #9 Lone Tree Way/Deer Valley HS  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.571  
 Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 43 Level Of Service: A  
 Street Name: Deer Valley HS Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Permitted	Include	Protected	Include	Protected
Rights:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
Min. Green:	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0
Y+R:	1 0 0 1	1 0 1 0	1 0 1 0	1 0 2 0	1 0 2 0
Lanes:	1 0 0 1	1 0 1 0	1 0 1 0	1 0 2 0	1 0 2 0

Volume Module:

Base Vol:	44	0	10	8	2	14	36	1781	7	32	1403	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	44	0	10	8	2	14	36	1781	7	32	1403	10
Added Vol:	0	0	0	0	0	0	0	19	0	0	78	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	44	0	10	8	2	14	36	1800	7	32	1481	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	44	0	10	8	2	14	36	1800	7	32	1481	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	44	0	10	8	2	14	36	1800	7	32	1481	10
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	44	0	10	8	2	0	36	1800	7	32	1481	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	44	0	10	8	2	0	36	1800	7	32	1481	2

Saturation Flow Module:

Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.00	1.00	1.00	1.99	0.01	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1720	0	1720	1720	1720	3427	13	1720	3440	1720		

Capacity Analysis Module:

Vol/Sat:	0.03	0.00	0.01	0.00	0.00	0.00	0.02	0.53	0.53	0.02	0.43	0.00
Crit Volume:	44		2				904	32				
Crit Moves:	****		****				****	****				

Antioch Walmart Expansion  
 Level Of Service Computation Report  
 CCTALOS Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #10 Lone Tree Way/Sagebrush Drive  
 Cycle (sec): 130 Critical Vol./Cap.(X): 0.567  
 Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 33 Level Of Service: A  
 Street Name: Sagebrush Drive Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Permitted	Include	Protected	Include	Protected
Rights:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
Min. Green:	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0
Y+R:	1 0 0 1	0 0 0 0	0 0 0 0	0 0 2 0	1 1 0 2
Lanes:	1 0 0 1	0 0 0 0	0 0 0 0	0 0 2 0	1 1 0 2

Volume Module:

Base Vol:	85	0	101	0	0	0	0	1671	146	45	1313	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	85	0	101	0	0	0	0	1671	146	45	1313	0
Added Vol:	0	0	0	0	0	0	0	19	0	0	78	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	85	0	101	0	0	0	0	1690	146	45	1391	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	85	0	101	0	0	0	0	1690	146	45	1391	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	85	0	101	0	0	0	0	1690	146	45	1391	0
RTOR Reduct:	0	0	45	0	0	0	0	0	85	0	0	0
RTOR Vol:	85	0	56	0	0	0	0	1690	61	45	1391	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	85	0	56	0	0	0	0	1690	61	45	1391	0

Saturation Flow Module:

Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	1720	0	1720	0	0	0	0	3440	1720	1720	3440	0

Capacity Analysis Module:

Vol/Sat:	0.05	0.00	0.03	0.00	0.00	0.00	0.00	0.49	0.04	0.03	0.40	0.00
Crit Volume:	85		0				845	45				
Crit Moves:	****		****				****	****				

Antioch Walmart Expansion

Level Of Service Computation Report  
 CCTLALOS Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #11 Lone Tree Way/Williamson Ranch Plaza (OSH)

Cycle (sec): 130 Critical Vol./Cap.(X): 0.577  
 Loss Time (sec): 6 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 180 Level Of Service: A

\*\*\*\*\*  
 Street Name: Williamson Ranch Plaza (OSH) Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Permitted Protected Include Permitted  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 0 0 0 0 1 0 0 0 1 0 2 0 0 0 0 2 0 1

Volume Module:  
 Base Vol: 0 0 0 90 0 67 94 1703 0 0 1309 36  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 90 0 67 94 1703 0 0 1309 36  
 Added Vol: 0 0 0 0 0 0 0 20 0 0 78 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 90 0 67 94 1723 0 0 1387 36  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 0 0 0 90 0 67 94 1723 0 0 1387 36  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 0 0 0 90 0 67 94 1723 0 0 1387 36  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
 RTOR Vol: 0 0 0 90 0 0 94 1723 0 0 1387 0  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 0 0 0 90 0 0 94 1723 0 0 1387 0

Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 0.00 0.00 0.00 1.00 0.00 1.00 1.00 2.00 0.00 0.00 2.00 1.00  
 Final Sat.: 0 0 0 1650 0 1650 1650 3300 0 0 3300 1650

Capacity Analysis Module:  
 Vol/Sat: 0.00 0.00 0.00 0.05 0.00 0.00 0.06 0.52 0.00 0.00 0.42 0.00  
 Crit Volume: 0 90 862 694  
 Crit Moves: \*\*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report  
 CCTLALOS Method (Future Volume Alternative)

\*\*\*\*\*  
 Intersection #12 Lone Tree Way/Indian Hill Dr/Williamson Ranch Plaza (Wal-Mart, OSH)

Cycle (sec): 130 Critical Vol./Cap.(X): 0.633  
 Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 62 Level Of Service: B

\*\*\*\*\*  
 Street Name: Indian Hill Dr/Williamson Ranch Pl Lone Tree Way  
 Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Split Phase Split Phase Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
 Lanes: 1 0 0 1 0 2 0 0 1 0 2 0 1 1 0 2 0 1

Volume Module:  
 Base Vol: 8 18 47 157 18 60 119 1571 32 55 1265 52  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 8 18 47 157 18 60 119 1571 32 55 1265 52  
 Added Vol: 0 0 0 11 1 7 -68 88 0 0 72 1  
 PasserByVol: 0 0 0 21 0 11 19 -19 0 0 -8 8  
 Initial Fut: 8 18 47 189 19 78 70 1640 32 55 1329 61  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Volume: 8 18 47 189 19 78 70 1640 32 55 1329 61  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 8 18 47 189 19 78 70 1640 32 55 1329 61  
 RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
 RTOR Vol: 8 18 47 189 19 78 70 1640 24 55 1329 0  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 FinalVolume: 8 18 47 189 19 78 70 1640 24 55 1329 0

Saturation Flow Module:  
 Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
 Adjustment: 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Lanes: 1.00 0.28 0.72 2.00 0.20 0.80 1.00 2.00 1.00 1.00 2.00 1.00  
 Final Sat.: 1650 457 1193 3000 323 1327 1650 3300 1650 1650 3300 1650

Capacity Analysis Module:  
 Vol/Sat: 0.00 0.04 0.04 0.06 0.06 0.06 0.04 0.50 0.01 0.03 0.40 0.00  
 Crit Volume: 65 95 820 55  
 Crit Moves: \*\*\*\*\*



Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #15 Lone Tree Way/Vista Grande Drive

Cycle (sec): 130 Critical Vol./Cap.(X): 0.641  
Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 52 Level Of Service: B

Street Name: Vista Grande Drive Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Include Protected Include Protected  
Rights: Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 1 0 0 1 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:

Base Vol: 54 26 121 78 22 54 39 1799 78 164 1412 59  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 54 26 121 78 22 54 39 1799 78 164 1412 59  
Added Vol: 0 0 3 3 0 0 1 236 1 3 343 3  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 54 26 124 81 22 54 40 2035 79 167 1755 62  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 54 26 124 81 22 54 40 2035 79 167 1755 62  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 54 26 124 81 22 54 40 2035 79 167 1755 62  
RTOR Reduct: 0 0 0 0 0 0 0 0 0 0 0 0  
RTOR Vol: 54 26 124 81 22 54 40 2035 79 167 1755 62  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 54 26 124 81 22 54 40 2035 79 167 1755 62

Saturation Flow Module:

Sat/Lane: 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720  
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 1.00 0.17 0.83 1.00 0.29 0.71 1.00 2.89 0.11 1.00 2.90 0.10  
Final Sat.: 1720 298 1422 1720 498 1222 1720 4967 193 1720 4984 176

Capacity Analysis Module:

Vol/Sat: 0.03 0.09 0.09 0.05 0.04 0.04 0.02 0.41 0.41 0.10 0.35 0.35  
Crit Volume: 150 81 705 167  
Crit Moves: \*\*\*\*

Antioch Walmart Expansion

Level Of Service Computation Report  
CCTALOS Method (Future Volume Alternative)

Intersection #16 Lone Tree Way/Heidorn Ranch Road

Cycle (sec): 120 Critical Vol./Cap.(X): 0.738  
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx  
Optimal Cycle: 87 Level Of Service: C

Street Name: Heidorn Ranch Road Lone Tree Way  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Split Phase Protected  
Rights: Include Include Include  
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0  
Lanes: 2 0 1 0 1 1 0 0 1 0 1 0 2 1 0 1 0 2 1 0

Volume Module:

Base Vol: 201 28 226 25 34 10 9 1799 223 93 1552 33  
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Initial Bse: 201 28 226 25 34 10 9 1799 223 93 1552 33  
Added Vol: 0 0 63 0 0 0 0 242 0 216 348 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 201 28 289 25 34 10 9 2041 223 309 1900 33  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Volume: 201 28 289 25 34 10 9 2041 223 309 1900 33  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Reduced Vol: 201 28 289 25 34 10 9 2041 223 309 1900 33  
RTOR Reduct: 0 0 289 0 0 0 0 0 0 0 0 0  
RTOR Vol: 201 28 0 25 34 10 9 2041 223 309 1900 33  
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
FinalVolume: 201 28 0 25 34 10 9 2041 223 309 1900 33

Saturation Flow Module:

Sat/Lane: 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650  
Adjustment: 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
Lanes: 2.00 1.00 1.00 1.00 0.77 0.23 1.00 2.70 0.30 1.00 2.95 0.05  
Final Sat.: 3000 1650 1650 1650 1275 375 1650 4462 488 1650 4865 85

Capacity Analysis Module:

Vol/Sat: 0.07 0.02 0.00 0.02 0.03 0.03 0.01 0.46 0.46 0.19 0.39 0.39  
Crit Volume: 101 44 755 309  
Crit Moves: \*\*\*\*





Antioch Walmart Expansion

Level Of Service Computation Report  
 CCTLALOS Method (Future Volume Alternative)

Intersection #21 Hillcrest Ave/Prewett Ranch Dr

Cycle (sec): 100 Critical Vol./Cap.(X): 0.576  
 Loss Time (sec): 9 Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 44 Level Of Service: A

Street Name: Hillcrest Ave Prewett Dr  
 Approach: North Bound South Bound East Bound West Bound

Movement	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected	Protected	Include									
Rights:	Include	Include	Include									
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	1	0	1	0	1	0	1	0

Volume Module:

Base Vol:	120	739	0	12	976	140	136	150	77	0	104	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	120	739	0	12	976	140	136	150	77	0	104	3
Added Vol:	0	37	0	0	138	1	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	120	776	0	12	1114	141	136	150	77	0	104	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	120	776	0	12	1114	141	136	150	77	0	104	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	120	776	0	12	1114	141	136	150	77	0	104	3
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	120	776	0	12	1114	141	136	150	77	0	104	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	120	776	0	12	1114	141	136	150	77	0	104	3

Saturation Flow Module:

Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	1.00	1.78	0.22	1.00	0.66	0.34	1.00	0.97	0.03
Final Sat:	1720	3440	0	1720	3054	386	1720	1137	583	1720	1672	48

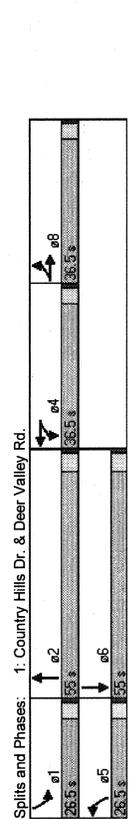
Capacity Analysis Module:

Vol/Sat:	0.07	0.23	0.00	0.01	0.36	0.36	0.08	0.13	0.13	0.00	0.06	0.06
Crit Volume:	120	628	0	136	136	107	136	107	136	0	107	136
Crit Moves:	***	***	***	***	***	***	***	***	***	***	***	***

1: Country Hills Dr. & Deer Valley Rd.  
Antioch Walmart Expansion

Long-Term + Project  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1846	0	1770	1704	0	1770	3433	0	1770	3311	0
Satd. Flow (prot)	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Fit Permitted	1765	1846	2	1770	1704	0	1762	3433	0	1745	3311	0
Satd. Flow (perm)	246	100	6	54	76	80	8	684	111	101	531	280
Satd. Flow (RTOR)	304	130	0	59	172	0	9	854	0	109	872	0
Volume (vph)	Split	8	8	4	4	4	5	2	1	6		
Lane Group Flow (vph)	Perm	4	4	4	4	4	5	2	1	6		
Turn Type	Protected Phases	8	8	4	4	4	5	2	1	6		
Permitted Phases	Total Split (s)	36.5	0.0	36.5	36.5	0.0	26.5	55.0	0.0	26.5	55.0	0.0
Act Effect Green (s)	23.4	23.4	16.5	16.5	16.5	8.9	38.1	13.7	49.2	13.7	49.2	0.0
Actuated g/C Ratio	0.24	0.24	0.17	0.17	0.17	0.08	0.39	0.14	0.51	0.14	0.51	0.0
v/c Ratio	0.71	0.29	0.20	0.56	0.20	0.06	0.63	0.45	0.51	0.45	0.51	0.0
Control Delay	50.3	39.8	44.6	43.8	44.6	62.9	32.2	54.9	19.6	54.9	19.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	39.8	44.6	43.8	44.6	62.9	32.2	54.9	19.6	54.9	19.6	0.0
LOS	D	D	D	D	D	E	C	D	B	D	B	C
Approach Delay	47.1	44.0	44.0	44.0	44.0	32.5	32.5	23.5	23.5	23.5	23.5	0.0
Approach LOS	D	D	D	D	D	C	C	C	C	C	C	C
Queue Length 50th (ft)	174	65	33	83	33	5	237	64	166	64	166	0.0
Queue Length 95th (ft)	354	154	90	199	90	29	466	166	398	166	398	0.0
Internal Link Dist (ft)	308	274	274	274	274	880	880	220	220	220	220	0.0
Turn Bay Length (ft)	145	120	120	120	120	110	175	175	175	175	175	0.0
Base Capacity (vph)	607	634	549	550	549	386	1699	419	1886	419	1886	0.0
Starvation Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0.0
Spillback Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0.0
Storage Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0.0
Reduced v/c Ratio	0.50	0.21	0.11	0.31	0.11	0.02	0.50	0.26	0.46	0.26	0.46	0.0
Intersection Summary												
Cycle Length	154.5											
Actuated Cycle Length	97.3											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.71											
Intersection Signal Delay	32.6											
Intersection Capacity Utilization	65.3%											
Analysis Period (min)	15											

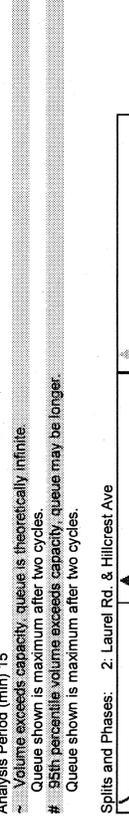


Splits and Phases: 1: Country Hills Dr. & Deer Valley Rd.

2: Laurel Rd. & Hillcrest Ave.  
Antioch Walmart Expansion

Long-Term + Project  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1635	0	1770	1663	1583	1770	3417	0	1770	2787	0
Satd. Flow (prot)	0.741	0.741	0	0.702	0.702	0.950	0.950	0.956	0	0.950	0.950	0
Fit Permitted	1379	1635	0	1305	1663	1563	1768	3417	0	1770	2787	0
Satd. Flow (perm)	17	13	39	550	20	220	241	648	50	28	467	207
Satd. Flow (RTOR)	27	81	0	686	25	278	246	712	0	31	749	0
Volume (vph)	Perm	4	4	8	8	8	1	6	5	2		
Lane Group Flow (vph)	Protected Phases	4	4	8	8	8	1	6	5	2		
Turn Type	Permitted Phases	4	4	8	8	8	1	6	5	2		
Permitted Phases	Total Split (s)	37.0	37.0	37.0	37.0	37.0	30.0	46.0	0.0	17.0	33.0	0.0
Act Effect Green (s)	34.0	34.0	34.0	34.0	34.0	34.0	19.6	52.7	8.2	37.4	37.4	0.0
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.20	0.53	0.08	0.37	0.37	0.0
v/c Ratio	0.06	0.14	0.14	0.04	0.39	0.71	0.39	0.21	0.69	0.21	0.69	0.0
Control Delay	22.8	9.3	283.4	22.4	4.7	48.5	15.7	45.8	28.5	45.8	28.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	9.3	283.4	22.4	4.7	48.5	15.7	45.8	28.5	45.8	28.5	0.0
LOS	C	A	F	C	A	D	B	D	D	D	C	C
Approach Delay	12.7	206.3	206.3	12.7	206.3	206.3	24.1	30.2	30.2	30.2	30.2	0.0
Approach LOS	B	F	F	B	F	F	C	C	C	C	C	C
Queue Length 50th (ft)	12	8	-633	11	0	148	142	19	207	19	207	0.0
Queue Length 95th (ft)	22	21	#711	25	32	213	197	47	#340	47	#340	0.0
Internal Link Dist (ft)	75	778	196	196	175	600	600	150	150	150	150	0.0
Turn Bay Length (ft)	469	566	444	633	715	478	1805	248	1081	248	1081	0.0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0.0
Starvation Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0.0
Spillback Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0.0
Storage Cap. Reductn	0	0	0	0	0	0	0	0	0	0	0	0.0
Reduced v/c Ratio	0.06	0.14	1.87	0.04	0.39	0.51	0.39	0.13	0.69	0.13	0.69	0.0
Intersection Summary												
Cycle Length	100											
Actuated Cycle Length	100											
Offset: 21 (21%)	Referenced to phase 2: NWR and 6: SBL, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	1.57											
Intersection Signal Delay	89.3											
Intersection Capacity Utilization	80.5%											
Analysis Period (min)	15											
Intersection LOS	F											
ICU Level of Service	D											
Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

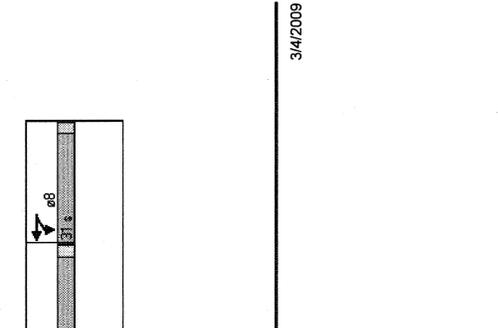


Splits and Phases: 2: Laurel Rd. & Hillcrest Ave

3: Country Hills Dr. & Hillcrest Ave  
Antioch Walmart Expansion

Long-Term + Project  
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1863	1583	1770	1689	0	1770	3493	0	1770	3476	0
Satd. Flow (prot)	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0
Permitted	1765	1863	1549	1754	1689	0	1770	3493	0	1770	3476	0
Satd. Flow (perm)	86	51	122	36	50	66	99	546	50	116	883	117
Volume (vph)	98	58	139	71	227	0	108	647	0	126	1087	0
Lane Group Flow (vph)	Split	Perm	Split	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	4	4	8	8	5	2	1	6				
Protected Phases												
Permitted Phases	38.0	38.0	31.0	31.0	0.0	38.0	69.0	0.0	38.0	69.0	0.0	0.0
Total Split (s)	14.1	14.1	14.1	20.2	20.2	13.5	67.2		14.8	68.4		
Act. Effct Green (s)	0.11	0.11	0.11	0.16	0.16	0.11	0.52		0.12	0.53		
Actuated G/C Ratio	0.51	0.28	0.47	0.26	0.78	0.58	0.35		0.62	0.59		
vc Ratio	64.8	58.1	14.0	52.1	64.3	69.9	21.2		69.8	24.7		
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Queue Delay	64.8	58.1	14.0	52.1	64.3	69.9	21.2		69.8	24.7		
Total Delay	E	E	B	D	E	E	C		E	C		
LOS	E	E	B	D	E	E	C		E	C		
Approach LOS	39.5	61.4	28.2	29.4								
Approach Delay	D	E	C	C								
Queue Length 50th (ft)	78	45	0	51	154	86	156		100	305		
Queue Length 95th (ft)	145	94	58	62	135	170	298		183	555		
Internal Link Dist (ft)	120	286		283			1680		190	1140		
Turn Bay Length (ft)	419	441	473	367	376	155	1831		421	1857		
Base Capacity (vph)	0	0	0	0	0	0	0		0	0		
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0		
Storage Cap Reductn	0	0	0	0	0	0	0		0	0		
Reduced vc Ratio	0.23	0.13	0.29	0.19	0.60	0.26	0.35		0.30	0.59		
Intersection Summary												
Cycle Length	176											
Actuated Cycle Length	128.4											
Control Type	Actuated-Uncoordinated											
Maximum vc Ratio	0.78											
Intersection Signal Delay	33.9											
Intersection Capacity Utilization	56.8%											
Analysis Period (min)	15											



Splits and Phases: 3: Country Hills Dr. & Hillcrest Ave  
 Intersection LOS: C  
 ICU Level of Service B

4: Northeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

Long-Term + Project  
PM Peak

Movement	EBL	EBR	NBL	NBR	SBL	SBR
Lane Configurations	Stop	Free	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%
Grade	0	7	0	677	1094	5
Volume (veh/h)	0.58	0.58	0.88	0.88	0.90	0.90
Peak Hour Factor	0	12	0	769	1216	6
Hourly flow rate (vph)						
Pedestrians						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	None					
Median type						
Median storage (veh)				727	1032	
Upstream signal (ft)	0.64	0.64	0.64			
pA, platoon unblocked	1800	1216	1221			
vc, conflicting volume						
vc1, stage 1 cont vol	1945	1339	1348			
vc2, stage 2 cont vol	6.8	6.9	4.1			
vcU, unblocked vol						
IC, single (s)	3.5	3.3	2.2			
IC, 2 stage (s)	100	87	100			
IF (s)	36	81	322			
p0 queue free %	12	385	385	1216	6	
ICM capacity (veh/h)	0	0	0	0	0	
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	385	385	1216	6	
Volume Left	0	0	0	0	0	
Volume Right	12	0	0	0	0	
CSH	91	1700	1700	1700	1700	
Volume to Capacity	0.13	0.23	0.23	0.72	0.00	
Queue Length 95th (ft)	11	0	0	0	0	
Control Delay (s)	50.6	0.0	0.0	0.0	0.0	
Lane LOS	F	F	F	F	F	
Approach Delay (s)	50.6	0.0	0.0	0.0	0.0	
Approach LOS	F	F	F	F	F	
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	67.6%					
Analysis Period (min)	15					
ICU Level of Service	C					

5: Southeast Driveway & Hillcrest Ave  
Antioch Walmart Expansion

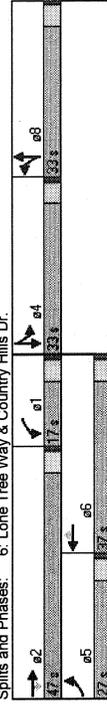
Long-Term + Project  
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Sign Control	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grade	0	0	144	0	0	40	0	707	68	9	968	99
Volume (veh/h)	0.78	0.78	0.78	0.62	0.62	0.62	0.89	0.89	0.89	0.96	0.96	0.96
Peak Hour Factor	0	0	185	0	0	65	0	794	76	9	1029	103
Flowing flow rate (vph)												
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)							347					
pX platoon unblocked	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
VC, conflicting volume	1661	1970	395	1341	1945	397	1132					871
VC1, stage 1 cont vol												
VC2, stage 2 cont vol												
tC, single (s)	1546	1969	395	1318	1944	342	1132					832
tC, 2 stage (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1					4.1
f (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	100	100	69	100	100	90	100					99
GM capacity (veh/h)	67	59	605	77	61	632	613					770
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	185	65	397	397	76	267	515	360				
Volume Left	0	0	0	0	0	9	0	0				
Volume Right	185	65	0	0	76	0	0	103				
cSH	605	632	1700	1700	1700	770	1700	1700				
Volume to Capacity	0.31	0.10	0.23	0.23	0.04	0.01	0.30	0.21				
Queue Length 95th (ft)	32	8	0	0	0	1	0	0				
Control Delay (s)	13.6	11.3	0.0	0.0	0.0	0.5	0.0	0.0				
Lane LOS	B	B	A	A	A	A	A	A				
Approach Delay (s)	13.6	11.3	0.0	0.0	0.1							
Approach LOS	B	B	A	A	A							
Intersection Summary												
Average Delay	1.5											
Intersection Capacity Utilization	37.1%											
Analysis Period (min)	15											
ICU Level of Service	A											

6: Lone Tree Way & Country Hills Dr.  
Antioch Walmart Expansion

Long-Term + Project  
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	3539	1583	1770	3539	1583	1770	1754	1754	0	1770	1782
Fit Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1766	3539	1386	1747	3539	1529	1760	1754	1754	0	1768	1782
Satd. Flow (ftOR)	44			42			20			20		
Volume (vph)	146	1403	182	138	1082	46	152	171	97	56	261	86
Lane Group Flow (vph)	152	1461	190	152	1189	51	214	378	0	68	411	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Split	Split	Split	Split	Split	Split	Split
Protected Phases	5	2	1	6	8	8	8	8	8	8	4	4
Permitted Phases			2			6						
Total Split (s)	27.0	47.0	17.0	37.0	37.0	33.0	33.0	33.0	33.0	0.0	33.0	33.0
Act Effect Green (s)	18.1	44.8	14.0	40.7	40.7	29.2	29.2	29.2	29.2	0.0	30.0	30.0
Actuated g/C Ratio	0.14	0.34	0.34	0.31	0.31	0.22	0.22	0.22	0.22	0.23	0.23	0.23
v/c Ratio	0.62	1.20	0.38	0.80	1.07	0.10	0.54	0.92	0.92	0.16	0.88	0.88
Control Delay	63.0	135.3	27.7	74.6	85.1	19.3	49.9	75.5	75.5	41.3	87.2	87.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.0	135.3	27.7	74.6	85.1	19.3	49.9	75.5	75.5	41.3	87.2	87.2
LOS	E	F	C	E	F	B	D	E	E	D	D	F
Approach Delay												
Approach LOS												
Queue Length 50th (ft)	122	-794	94	126	-594	13	159	297	297	45	338	338
Queue Length 95th (ft)	186	#934	162	#233	#794	m29	183	307	307	81	#498	498
Internal Link Dist (ft)	1420		740				675			675		675
Turn Bay Length (ft)	145		75	145		75	170			408		420
Base Capacity (vph)	327	1219	504	191	1108	487	408	420	420	0	408	420
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	1.20	0.38	0.80	1.07	0.10	0.52	0.90	0.90	0.16	0.88	0.88
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	80 (62%), Referenced to phase 2:EBT and 8:WBT, Start of Yellow											
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	1.20											
Intersection Signal Delay	94.7											
Intersection LOS	F											
Intersection Capacity Utilization	88.3%											
ICU Level of Service	E											
Analysis Period (min)	15											
Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
m Volume for 95th percentile queue is metered by upstream signal.												
Splits and Phases:	6: Lone Tree Way & Country Hills Dr.											



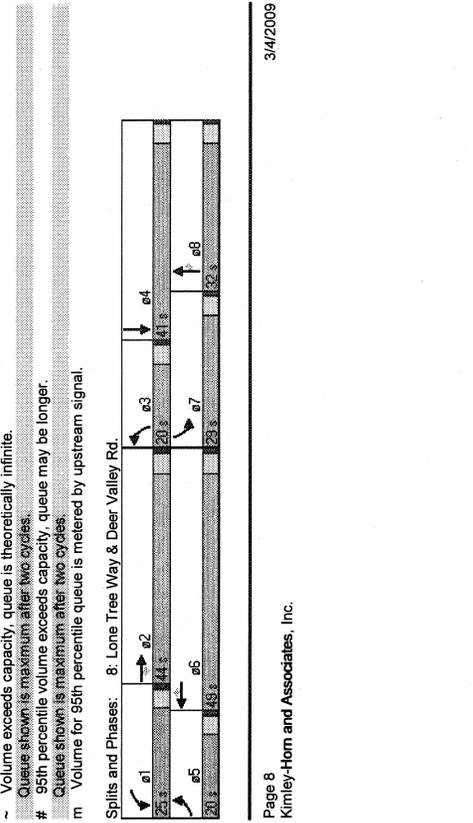
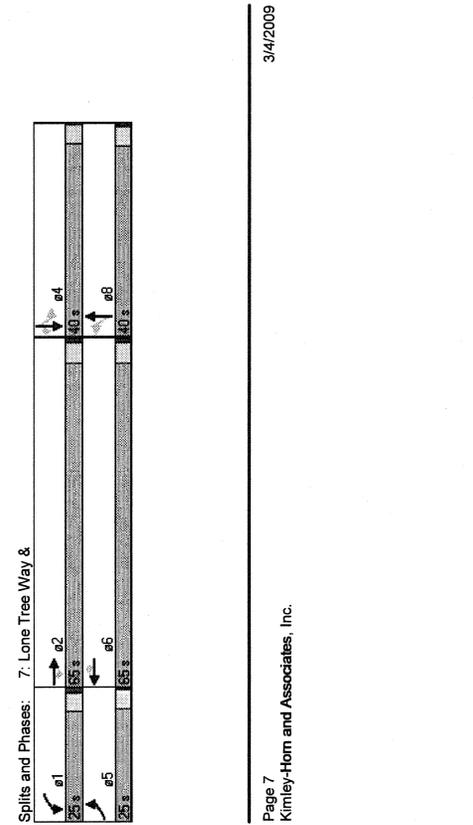
7: Lone Tree Way & Antioch Walmart Expansion

8: Lone Tree Way & Deer Valley Rd. Antioch Walmart Expansion

Long-Term + Project PM Peak

Long-Term + Project PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1A	1A	1A	1A	1A	1A	1A	1A	1A	1A	1A	1A
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (norm)	1770	3539	1436	1757	3539	1583	1408	1583	0	1269	1863	1583
Satd. Flow (RTOR)	32	1558	101	90	1087	25	121	284	0	62	40	3
Volume (Vph)	31	1857	107	99	1195	27	155	79	0	44	3	44
Lane Group Flow (Vph)	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm
Turn Type	5	2	2	1	6	1	6	8	8	4	4	4
Protected Phases												
Permitted Phases	25.0	65.0	65.0	25.0	65.0	65.0	40.0	40.0	0.0	40.0	40.0	40.0
Total Split (s)	8.8	86.6	86.6	14.2	96.0	96.0	20.2	20.2	0.0	20.2	20.2	20.2
Act Effct Green (s)	0.07	0.67	0.67	0.11	0.74	0.74	0.16	0.16	0.16	0.16	0.16	0.16
Actuated g/C Ratio	0.26	0.70	0.11	0.51	0.46	0.02	0.71	0.16	0.22	0.01	0.16	0.16
v/c Ratio	57.2	10.8	0.4	94.1	11.4	9.0	86.8	6.7	48.4	42.3	19.2	19.2
Control Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	57.2	10.8	0.4	94.1	11.4	9.0	86.8	6.7	48.4	42.3	19.2	19.2
Total Delay	E	B	A	D	B	A	E	A	D	D	D	B
LOS	11.1	B	A	D	B	A	E	A	D	D	D	B
Approach Delay												
Approach LOS	B	B	B	B	B	B	B	B	B	B	B	B
Queue Length 50th (ft)	28	122	0	88	198	4	126	0	33	2	0	0
Queue Length 95th (ft)	m28	m52	m0	m131	m0	m7	160	0	65	11	32	0
Internal Link Dist (ft)	100	740	100	200	860	100	704	100	361	530	482	0
Turn Bay Length (ft)	300	2387	967	300	2514	1172	401	654	361	530	482	0
Base Capacity (Vph)	0	66	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.72	0.11	0.33	0.46	0.02	0.39	0.12	0.12	0.01	0.09	0.09



Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 94 (72%), Referenced to phase 2,EBT and 6'WBT. Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 15.3  
 Intersection Capacity Utilization 71.4%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 80 (62%), Referenced to phase 2,EBT and 6'WBT. Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.41  
 Intersection Signal Delay: 82.7  
 Intersection Capacity Utilization 94.3%  
 Analysis Period (min) 15  
 n User Entered Value  
 - Volume exceeds capacity, queue is theoretically infinite.  
 # Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

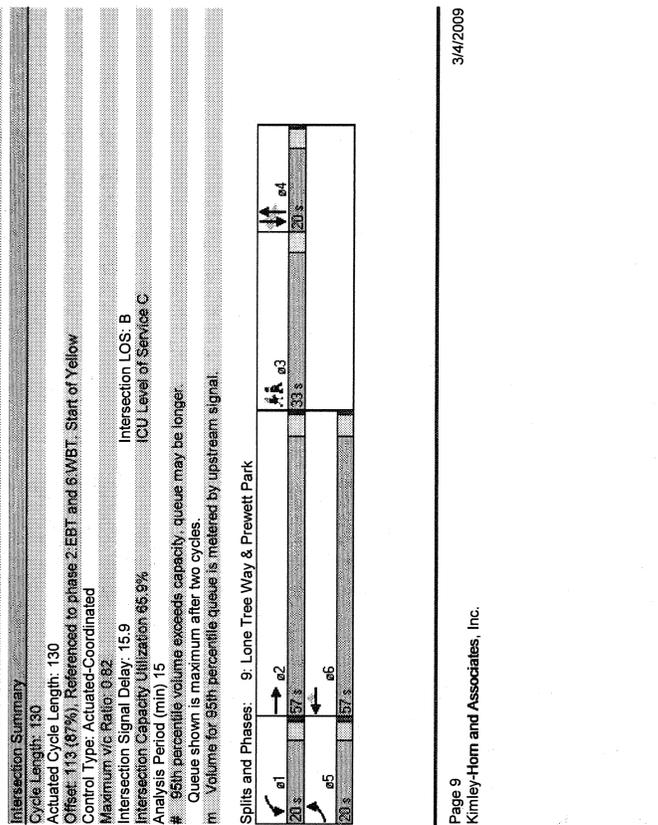
Splits and Phases: 7: Lone Tree Way & Deer Valley Rd.

Splits and Phases: 8: Lone Tree Way & Deer Valley Rd.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3535	0	1770	3539	1563	1770	1561	0	1770	1863
Flt Permitted	0.950	0	0.980	0	0.755	0.755	0	0.744	0	0.744	0
Satd. Flow (perm)	1770	3535	0	1768	3539	1545	1394	1561	0	1383	1863
Satd. Flow (RTOR)	36	1800	7	32	1481	10	44	0	10	8	2
Volume (vph)	39	1985	0	37	1722	12	90	20	0	15	4
Lane Group Flow (vph)	Prot	Prot	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Turn Type	5	2	1	6	4	4	4	4	4	4	4
Protected Phases											
Permitted Phases	20.0	57.0	0.0	20.0	57.0	20.0	20.0	0.0	20.0	20.0	20.0
Total Spilt (s)	9.8	88.0	9.6	85.5	85.5	14.3	14.3	14.3	14.3	14.3	14.3
Act Effct Green (s)	0.08	0.68	0.07	0.66	0.66	0.11	0.11	0.11	0.11	0.11	0.11
Actuated g/C Ratio	0.29	0.82	0.28	0.74	0.01	0.59	0.03	0.10	0.02	0.13	0.13
v/c Ratio	60.1	15.5	71.5	11.0	3.2	70.0	0.1	51.8	49.5	19.2	0.0
Control Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	60.1	15.5	71.5	11.0	3.2	70.0	0.1	51.8	49.5	19.2	0.0
Total Delay	E	B	E	B	A	E	A	D	D	D	B
LOS	E	B	E	B	A	E	A	D	D	D	B
Approach Delay	16.4		12.3		57.3		33.1				
Approach LOS	B		B		E		C				
Queue Length 50th (ft)	32	280	32	204	0	73	0	11	3	0	0
Queue Length 95th (ft)	m34	m#965	m47	#905	m3	66	0	20	9	0	0
Internal Link Dist (ft)	145	1580	150	605	609	609	609	819	100	819	100
Turn Bay Length (ft)	231	2393	231	2329	1019	163	643	162	246	229	0
Base Capacity (vph)	0	0	0	57	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.82	0.16	0.76	0.01	0.49	0.03	0.06	0.02	0.11	0.11

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3535	0	1770	3539	1563	1770	1561	0	1770	1863
Flt Permitted	0.950	0	0.980	0	0.755	0.755	0	0.744	0	0.744	0
Satd. Flow (perm)	1770	3535	0	1768	3539	1545	1394	1561	0	1383	1863
Satd. Flow (RTOR)	36	1800	7	32	1481	10	44	0	10	8	2
Volume (vph)	39	1985	0	37	1722	12	90	20	0	15	4
Lane Group Flow (vph)	Prot	Prot	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Turn Type	5	2	1	6	4	4	4	4	4	4	4
Protected Phases											
Permitted Phases	20.0	57.0	0.0	20.0	57.0	20.0	20.0	0.0	20.0	20.0	20.0
Total Spilt (s)	9.8	88.0	9.6	85.5	85.5	14.3	14.3	14.3	14.3	14.3	14.3
Act Effct Green (s)	0.08	0.68	0.07	0.66	0.66	0.11	0.11	0.11	0.11	0.11	0.11
Actuated g/C Ratio	0.29	0.82	0.28	0.74	0.01	0.59	0.03	0.10	0.02	0.13	0.13
v/c Ratio	60.1	15.5	71.5	11.0	3.2	70.0	0.1	51.8	49.5	19.2	0.0
Control Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	60.1	15.5	71.5	11.0	3.2	70.0	0.1	51.8	49.5	19.2	0.0
Total Delay	E	B	E	B	A	E	A	D	D	D	B
LOS	E	B	E	B	A	E	A	D	D	D	B
Approach Delay	16.4		12.3		57.3		33.1				
Approach LOS	B		B		E		C				
Queue Length 50th (ft)	32	280	32	204	0	73	0	11	3	0	0
Queue Length 95th (ft)	m34	m#965	m47	#905	m3	66	0	20	9	0	0
Internal Link Dist (ft)	145	1580	150	605	609	609	609	819	100	819	100
Turn Bay Length (ft)	231	2393	231	2329	1019	163	643	162	246	229	0
Base Capacity (vph)	0	0	0	57	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.82	0.16	0.76	0.01	0.49	0.03	0.06	0.02	0.11	0.11

Intersection Summary  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 113 (87%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.82  
 Intersection Signal Delay: 15.9  
 Intersection Capacity Utilization: 85.9%  
 Analysis Period (min): 15  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 m Volume for 95th percentile queue is metered by upstream signal.

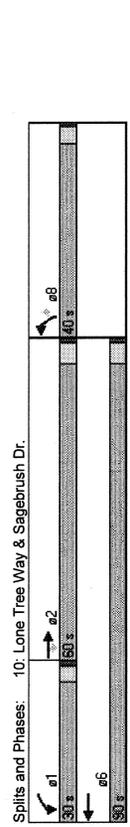


10: Lone Tree Way & Sagebrush Dr.  
Antioch Walmart Expansion

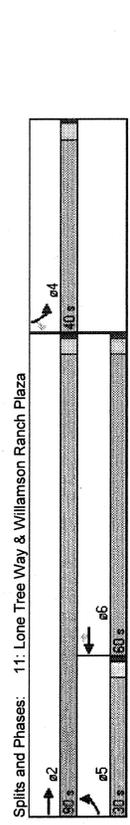
11: Lone Tree Way & Williamson Ranch Plaza  
Antioch Walmart Expansion

Long-Term + Project  
PM Peak

Lane Group	EBR	EBT	WBL	WBT	NBL	NBR
Lane Configurations	EB	EB	WB	WB	NB	NB
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Fit Permitted	0.960	0.960	0.960	0.960	0.960	0.960
Satd. Flow (perm)	3539	1511	1767	3539	1770	1583
Satd. Flow (RTOR)	34					
Volume (vph)	1690	146	45	1391	85	101
Lane Group Flow (vph)	1837	159	56	1717	136	166
Turn Type	Prot	Prot	Prot	Prot	Perm	Perm
Protected Phases	2	1	6	6	6	8
Permitted Phases	6.0	60.0	30.0	90.0	40.0	40.0
Total Split (s)	98.7	98.7	9.4	109.3	14.7	14.7
Act Effct Green (s)	0.76	0.76	0.07	0.84	0.11	0.11
Actuated g/C Ratio	0.66	0.14	0.43	0.58	0.69	0.51
v/c Ratio	6.0	0.3	81.3	1.2	72.6	12.9
Control Delay	0.1	0.0	0.0	0.0	0.0	0.0
Queue Delay	6.1	0.3	81.3	1.3	72.6	12.9
Total Delay	A	A	F	A	E	B
LOS	A	A	F	A	E	B
Approach Delay	5.6		3.8	40.1		
Approach LOS	A		A	D		
Queue Length 50th (ft)	25	1	45	27	115	0
Queue Length 95th (ft)	198	m0	m77	15	116	3
Internal Link Dist (ft)	606		1855	487		
Turn Bay Length (ft)	2668	186	368	2974	504	569
Base Capacity (vph)	92	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	41	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.14	0.15	0.59	0.28	0.29
Intersection Summary						
Cycle Length	130					
Actuated Cycle Length	122 (94%)					
Offset	Referenced to phase 2:EBT and 6:WBT, Start of Yellow					
Control Type	Actuated-Coordinated					
Maximum v/c Ratio	0.69					
Intersection Signal Delay	7.4					
Intersection Capacity Utilization	59.6%					
Analysis Period (min)	15					
m	Volume for 98th percentile queue is metered by upstream signal.					



Lane Group	EBL	EBT	WBL	WBT	SBL	SBR
Lane Configurations	EB	EB	WB	WB	SB	SB
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Fit Permitted	0.960	0.960	0.960	0.960	0.960	0.960
Satd. Flow (perm)	1756	3539	3539	1451	1770	1562
Satd. Flow (RTOR)	14					
Volume (vph)	94	1723	1387	36	90	67
Lane Group Flow (vph)	106	1936	1541	40	127	94
Turn Type	Prot	Prot	Prot	Perm	Perm	Perm
Protected Phases	5	2	6	6	4	4
Permitted Phases	30.0	90.0	60.0	60.0	40.0	40.0
Total Split (s)	11.9	108.8	93.9	93.9	15.2	15.2
Act Effct Green (s)	0.08	0.84	0.72	0.72	0.12	0.12
Actuated g/C Ratio	0.65	0.65	0.60	0.04	0.61	0.35
v/c Ratio	77.6	9.2	6.6	0.1	65.9	12.6
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	77.6	9.2	6.6	0.1	65.9	12.6
Total Delay	E	A	A	A	E	B
LOS	E	A	A	A	E	B
Approach Delay	12.8	6.4			43.2	
Approach LOS	B	A			D	
Queue Length 50th (ft)	93	178	13	0	105	0
Queue Length 95th (ft)	m120	832	251	m0	120	22
Internal Link Dist (ft)	155	1855	820	457		
Turn Bay Length (ft)	368	2961	2556	1052	504	512
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.65	0.60	0.04	0.25	0.18
Intersection Summary						
Cycle Length	130					
Actuated Cycle Length	130					
Offset	Referenced to phase 2:EBT and 6:WBT, Start of Yellow					
Control Type	Actuated-Coordinated					
Maximum v/c Ratio	0.65					
Intersection Signal Delay	11.9					
Intersection Capacity Utilization	59.8%					
Analysis Period (min)	15					
m	Volume for 98th percentile queue is metered by upstream signal.					



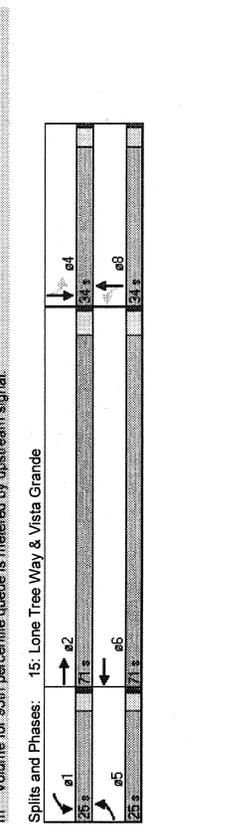


14: Lone Tree Way & Hillcrest Ave  
Antioch Walmart Expansion

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	4938	0	1770	5085	1583	1770	3171	0	2000	3539	1583
Flt Permitted	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0.950
Satd. Flow (perm)	1764	4938	0	1766	5085	1517	1754	3171	0	3406	3539	1534
Satd. Flow (RTOR)	32	32	0	374	374	163	163	163	0	163	163	177
Volume (vph)	234	1363	250	386	1226	318	238	222	296	543	443	145
Lane Group Flow (vph)	260	1815	0	431	1442	374	336	730	0	662	540	177
Turn Type	Prot											
Protected Phases	5	2	1	6	1	6	8	8	4	4	4	4
Permitted Phases	3,0	5,2	0,0	16,0	38,0	38,0	20,0	20,0	0,0	42,0	42,0	42,0
Total Split (s)	24.7	49.0	0.0	13.0	37.3	37.3	17.0	17.0	0.0	39.0	39.0	39.0
Act Effct Green (s)	0.19	0.38	0.0	0.10	0.29	0.29	0.13	0.13	0.0	0.30	0.30	0.30
Actuated g/C Ratio	0.77	0.96	0.0	2.44	0.99	0.53	1.45	1.31	1.10	0.51	0.30	0.30
v/c Ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	69.0	37.8	684.6	71.1	12.8	264.8	187.3	110.8	395.6	6.2	6.2	6.2
Control Delay	69.0	37.8	684.6	71.1	12.8	264.8	188.4	139.4	395.6	6.2	6.2	6.2
Total Delay	E	D	E	F	E	B	F	F	F	D	A	A
LOS	E	D	E	F	E	B	F	F	F	D	A	A
Approach Delay	41.7	179.1	0.0	0.0	0.0	0.0	212.4	0.0	0.0	83.2	0.0	0.0
Approach LOS	D	F	F	F	F	F	F	F	F	F	F	F
Queue Length 50th (ft)	182	457	~617	~495	63	~384	~351	~326	197	0	0	0
Queue Length 95th (ft)	m260	m#342	#773	#512	118	#410	#308	#384	227	38	0	0
Internal Link Dist (ft)	620	420	210	690	730	195	556	400	1660	280	0	0
Turn Bay Length (ft)	368	1881	177	1457	702	231	556	600	1662	584	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.96	2.44	0.99	0.53	1.45	1.32	1.17	0.51	0.30	0.30	0.30

**Intersection Summary**  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 2.44  
 Intersection Signal Delay: 122.7  
 Intersection Capacity Utilization: 101.4%  
 Analysis Period (min): 15  
 User Entered Value

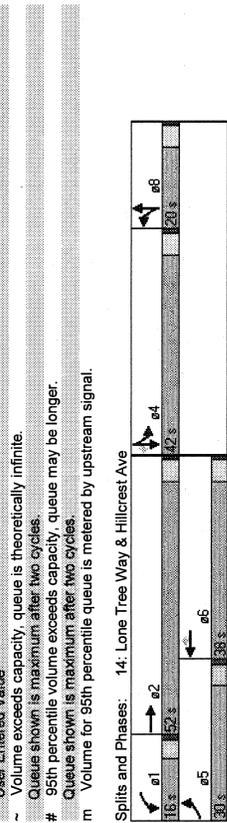


Splits and Phases: 14: Lone Tree Way & Hillcrest Ave  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

15: Lone Tree Way & Vista Grande  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	5049	0	1770	5055	0	1770	1610	0	1770	1649	0
Flt Permitted	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0	0.950	0.950	0.950
Satd. Flow (perm)	1768	5049	0	1769	5055	0	1760	1610	0	1764	1649	0
Satd. Flow (RTOR)	7	7	0	6	6	0	155	155	0	73	73	0
Volume (vph)	40	2035	79	167	1755	62	54	26	124	81	22	54
Lane Group Flow (vph)	41	2179	0	178	1833	0	68	187	0	109	103	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	1	6	1	6	8	8	4	4	4	4
Permitted Phases	25,0	71,0	0,0	25,0	71,0	0,0	34,0	34,0	0,0	34,0	34,0	0,0
Total Split (s)	10.7	79.2	0.0	19.6	90.3	0.0	22.2	22.2	0.0	22.2	22.2	0.0
Act Effct Green (s)	0.08	0.61	0.0	0.16	0.69	0.0	0.17	0.17	0.0	0.17	0.17	0.0
Actuated g/C Ratio	0.28	0.71	0.0	0.67	0.55	0.0	0.34	0.46	0.0	0.34	0.46	0.0
v/c Ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	69.8	14.4	684.6	71.1	12.1	49.9	14.0	77.7	17.5	6.2	6.2	6.2
Control Delay	69.8	14.4	684.6	71.1	12.1	49.9	14.0	77.7	17.5	6.2	6.2	6.2
Total Delay	E	B	E	E	B	D	B	E	B	E	B	E
LOS	E	B	E	E	B	D	B	E	B	E	B	E
Approach Delay	16.1	16.1	0.0	16.0	16.0	0.0	23.6	0.0	0.0	48.4	0.0	0.0
Approach LOS	B	B	F	B	B	C	C	C	C	D	D	D
Queue Length 50th (ft)	37	469	~617	143	110	51	23	89	22	0	0	0
Queue Length 95th (ft)	m32	m535	#773	237	409	79	61	114	46	0	0	0
Internal Link Dist (ft)	200	660	210	690	730	195	556	400	1660	280	0	0
Turn Bay Length (ft)	368	1881	177	1457	702	231	556	600	1662	584	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.84	2.44	0.58	0.55	0.25	0.37	0.53	0.23	0.30	0.30	0.30

**Intersection Summary**  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 98 (75%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 17.9  
 Intersection Capacity Utilization: 78.9%  
 Analysis Period (min): 15  
 User Entered Value

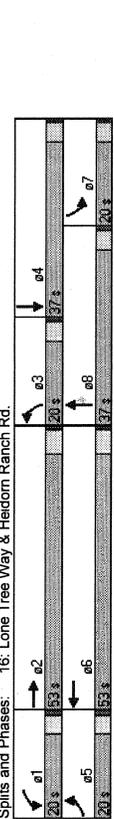


Splits and Phases: 15: Lone Tree Way & Vista Grande  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

16: Lone Tree Way & Heidorn Ranch Rd.  
Antioch Walmart Expansion

Long-Term + Project  
PM Peak

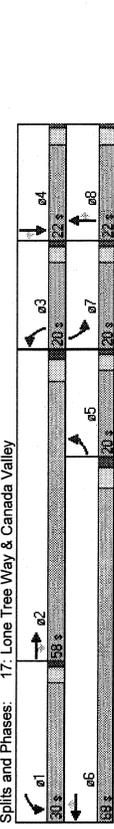
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	1770	4994	0	1770	5068	0	3433	1863	1583	1770	1799	0
Flt Permitted	0.950	0.950	0	0.950	0.950	0	0.950	0.950	0.950	0.950	0.950	0
Satd. Flow (perm)	1769	4994	0	1769	5068	0	3433	1863	1561	1766	1799	0
Satd. Flow (RTOR)	17	17	0	17	17	0	17	17	17	17	17	11
Volume (vph)	9	2041	223	309	1900	33	201	28	289	25	34	10
Lane Group Flow (vph)	9	2368	0	340	2124	0	264	37	380	42	74	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	1	6	3	8	7	4				
Permitted Phases	20.0	53.0	0.0	20.0	53.0	0.0	20.0	37.0	20.0	37.0	20.0	0.0
Total Split (s)	8.7	50.0	40.4	90.8	16.1	16.3	16.3	13.5	13.5	13.6		
Act Effect Green (s)	0.07	0.38	0.31	0.70	0.12	0.13	0.13	0.10	0.10	0.10		
Activated g/C Ratio	0.08	1.22	0.62	0.60	0.62	0.16	0.75	0.23	0.37			
Control Delay	79.6	139.6	48.6	7.7	60.9	48.8	15.6	56.1	48.6			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	79.6	139.6	48.6	7.7	60.9	48.8	15.6	56.1	48.6			
LOS	E	F	F	A	D	A	E	D	B	E	D	D
Approach Delay	129.5	13.3					34.9			51.3		
Approach LOS	F	C					C			D		
Queue Length 50th (ft)	8	-897		193	84		109	30	17	32	52	
Queue Length 95th (ft)	m11	#990		m#471	749		129	44	38	47	53	
Internal Link Dist (ft)		1055			905			972			316	
Turn Bay Length (ft)	185	400		400			200	200	50		50	
Base Capacity (vph)	231	1931		560	3542		448	487	673	231	479	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	1.22	0.62	0.60	0.59	0.06	0.56	0.18	0.15			
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	114 (88%)	Referenced to phase 2:EBT and 6:WBT. Start of Yellow										
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	1.22											
Intersection Signal Delay	65.6											
Intersection Capacity Utilization	84.9%											
Analysis Period (min)	15											
Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
m Volume for 95th percentile queue is metered by upstream signal.												



17: Lone Tree Way & Canada Valley  
Antioch Walmart Expansion

Long-Term + Project  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	1603	1504	1770	1863	1583
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	3432	5085	1584	3428	5085	1589	3428	1603	1481	1765	1863	1562
Satd. Flow (RTOR)	86	86	86	86	86	86	86	86	86	86	86	86
Volume (vph)	129	2043	80	450	1958	472	213	71	371	349	126	63
Lane Group Flow (vph)	139	2197	86	500	2175	524	284	221	369	478	173	86
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	1	6	3	8	7	4				
Permitted Phases	20.0	58.0	58.0	30.0	68.0	20.0	22.0	22.0	20.0	20.0	22.0	22.0
Total Split (s)	17.0	60.7	60.7	22.8	66.5	15.2	17.5	17.5	17.0	19.3	19.3	19.3
Act Effect Green (s)	0.13	0.47	0.47	0.18	0.51	0.51	0.12	0.13	0.13	0.13	0.15	0.15
Activated g/C Ratio	0.31	0.93	0.11	0.63	0.84	0.50	0.71	0.87	0.77	2.07	0.62	0.26
Control Delay	48.6	32.8	9.6	66.7	23.6	1.9	66.3	75.8	20.5	524.0	62.8	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.6	32.8	9.6	66.7	23.6	1.9	65.3	75.8	20.5	524.0	62.8	12.4
LOS	D	C	A	E	C	A	E	E	C	F	E	B
Approach Delay	32.8						27.1			49.1		
Approach LOS	C						D			F		
Queue Length 50th (ft)	42	351	13	204	511	21	119	156	35	-634	138	0
Queue Length 95th (ft)	m38	m308	m10	m230	m445	m24	136	200	62	#650	173	26
Internal Link Dist (ft)		905			760			542			1064	
Turn Bay Length (ft)	320	630	400	400		350	150	150	493	231	280	308
Base Capacity (vph)	449	2375	762	713	2601	1056	449	271	493	231	280	308
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.93	0.11	0.70	0.84	0.50	0.63	0.82	0.75	2.07	0.62	0.26
Intersection Summary												
Cycle Length	130											
Actuated Cycle Length	130											
Offset	87 (67%)	Referenced to phase 2:EBT and 6:WBT. Start of Yellow										
Control Type	Actuated-Coordinated											
Maximum v/c Ratio	2.07											
Intersection Signal Delay	65.2											
Intersection Capacity Utilization	96.9%											
Analysis Period (min)	15											
Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
m Volume for 95th percentile queue is metered by upstream signal.												



18: Lone Tree Way & SR 4 By-pass SB Off-ramp  
Antioch Walmart Expansion

19: Lone Tree Way & SR 4 By-pass NB On-ramp  
Antioch Walmart Expansion

Lane Group	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA						
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Satd. Flow (prot)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583
Flt Permitted		0.9860		0.9860					0.9860	0.9864	
Satd. Flow (perm)	0	5085	1583	3433	5085	0	0	0	1681	1688	1583
Satd. Flow (RTOR)	0	2168	605	623	2135	0	0	0	765	13	556
Volume (vph)	0	2436	690	716	2454	0	0	0	430	445	625
Lane Group Flow (vph)	0	2436	690	716	2454	0	0	0	430	445	625
Turn Type		Perm	Prot						Split		
Protected Phases	2	1	6						4	4	
Permitted Phases	2	2							4	4	
Total Split (s)	0.0	53.0	27.0	80.0	0.0	0.0	0.0	0.0	50.0	50.0	50.0
Act Effct Green (s)	50.0	50.0	24.0	77.0	0.0	0.0	0.0	0.0	47.0	47.0	47.0
Actuated g/C Ratio	0.38	0.38	0.18	0.69					0.36	0.36	0.36
v/c Ratio	1.25	0.77	1.13	0.81					0.71	0.73	1.09
Control Delay	146.4	13.2	121.5	19.1					43.2	44.3	103.3
Queue Delay	0.0	1.3	0.0	0.2					0.0	0.0	0.0
Total Delay	146.4	14.4	121.5	19.4					43.2	44.3	103.3
LOS	F	F	F	B					D	D	F
Approach Delay	117.6			42.4					68.6		
Approach LOS	F			D					E		
Queue Length 50th (ft)	-923	155	-361	457					325	340	-591
Queue Length 95th (ft)	m#662	m152	m#461	486					451	470	#810
Internal Link Dist (ft)	760			760					671		528
Turn Bay Length (ft)	1956	315	310	3012					280		574
Base Capacity (vph)	0	74	0	118					0	0	0
Starvation Cap Reductn	0	0	0	0					0	0	0
Spillback Cap Reductn	0	0	0	0					0	0	0
Storage Cap Reductn	0	0	0	0					0	0	0
Reduced v/c Ratio	1.25	0.84	1.13	0.85					0.71	0.73	1.09
Intersection Summary											
Cycle Length	130										
Actuated Cycle Length	130										
Offset	103 (77%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow										
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	1.25										
Intersection Signal Delay	7.6										
Intersection Capacity Utilization	91.2%										
Analysis Period (min)	15										
* Volume exceeds capacity, queue is theoretically infinite.											
# 95th percentile volume exceeds capacity, queue may be longer.											
Queue shown is maximum after two cycles.											
m Volume for 95th percentile queue is metered by upstream signal.											
Spills and Phases: 18: Lone Tree Way & SR 4 By-pass SB Off-ramp											

Lane Group	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA						
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Satd. Flow (prot)	0	5085	1583	3433	5085	1583	1681	1681	1583	1583	0
Flt Permitted		0.9860		0.9860					0.9860	0.9868	
Satd. Flow (perm)	0	5085	1583	3433	5085	1545	1681	1681	1583	1583	0
Satd. Flow (RTOR)	0	2397	545	58	2170	751	599	43	442	0	0
Volume (vph)	0	2550	590	65	2438	844	386	407	546	0	0
Lane Group Flow (vph)	0	2550	590	65	2438	844	386	407	546	0	0
Turn Type		Perm	Prot			Perm	Split		Perm		
Protected Phases	2	1	6						8	8	
Permitted Phases	2	2							8	8	
Total Split (s)	0.0	64.0	25.0	89.0	0.0	41.0	41.0	0.0	0.0	0.0	0.0
Act Effct Green (s)	80.0	80.0	8.0	89.0	0.0	35.0	35.0	0.0	0.0	0.0	0.0
Actuated g/C Ratio	0.62	0.62	0.06	0.68		0.68	0.27	0.27	0.27	0.27	0.27
v/c Ratio	0.81	0.53	0.31	0.70		0.64	0.85	0.89	0.89	0.86	0.86
Control Delay	9.1	0.8	62.0	14.3		3.0	63.1	67.9	35.1		
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	0.8	62.0	14.3		3.0	63.1	67.9	35.1		
LOS	A	A	E	B		A	E	E	D		
Approach Delay	7.6			12.4					53.1		
Approach LOS	A			B					D		
Queue Length 50th (ft)	428	0	27	453		0	314	336	216		
Queue Length 95th (ft)	m425	m5	51	494		38	386	410	289		
Internal Link Dist (ft)	760			620					835		1156
Turn Bay Length (ft)	3130	1091	581	3461		1324	491	495	662		
Base Capacity (vph)	0	0	0	0		0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.53	0.11	0.70		0.64	0.79	0.82	0.82		
Intersection Summary											
Cycle Length	130										
Actuated Cycle Length	130										
Offset	10 (6%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow										
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	0.89										
Intersection Signal Delay	17.4										
Intersection Capacity Utilization	80.6%										
Analysis Period (min)	15										
* Volume for 95th percentile queue is metered by upstream signal.											
Spills and Phases: 19: Lone Tree Way & SR 4 By-pass NB On-ramp											

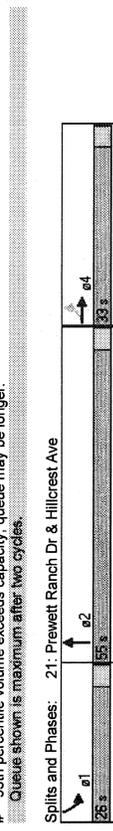
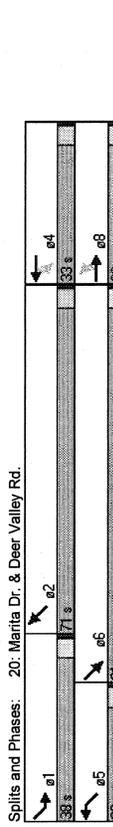
20: Marita Dr. & Deer Valley Rd.  
Antioch Walmart Expansion

21: Prewett Ranch Dr & Hillcrest Ave  
Antioch Walmart Expansion

Long-Term + Project  
PM Peak

Long-Term + Project  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost Time (s)	1770	1583	0	1770	1602	0	1770	3520	0	1770	3539	0
Satd. Flow (prot)	0.539	0	0.763	0	0.960	0	0.960	0	0.960	0	0.960	0
Fit Permitted	1004	1583	0	1403	1602	0	1766	3520	0	1760	3539	0
Satd. Flow (perm)	13	0	5	23	6	87	26	1137	29	25	1178	3
Satd. Flow (RTOR)	19	7	0	33	133	0	33	1495	0	27	1283	0
Volume (vph)	Perm	8	4	1	6	2	Prot					
Lane Group Flow (vph)	33.0	33.0	0.0	33.0	33.0	0.0	38.0	81.0	0.0	28.0	71.0	0.0
Turn Type	4	8	4	1	6	2	Prot					
Protected Phases	8	4	1	6	2	Prot						
Permitted Phases	33.0	33.0	0.0	33.0	33.0	0.0	38.0	81.0	0.0	28.0	71.0	0.0
Total Split (s)	10.3	10.3	0.0	10.3	10.3	0.0	9.6	84.7	0.0	9.3	84.4	0.0
Act Effct Green (s)	0.09	0.09	0.00	0.09	0.09	0.00	0.08	0.76	0.00	0.08	0.76	0.00
Actuated g/C Ratio	0.25	0.25	0.00	0.25	0.25	0.00	0.22	0.55	0.00	0.19	0.47	0.00
v/c Ratio	49.4	0.0	49.0	16.7	49.2	6.8	48.9	6.1	0.0	0.0	0.0	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	49.4	0.0	49.0	16.7	49.2	6.9	48.9	6.1	0.0	0.0	0.0	0.0
Total Delay	D	A	D	B	D	A	D	A	D	D	A	A
LOS	D	A	D	B	D	A	D	A	D	D	A	A
Approach Delay	36.1	23.1	7.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Approach LOS	D	C	C	A	A	A	A	A	A	A	A	A
Queue Length 50th (ft)	12	0	21	6	21	207	46	258	17	164	47	265
Queue Length 95th (ft)	27	0	40	29	46	525	46	525	17	164	47	265
Internal Link Dist (ft)	345	0	427	0	427	0	427	0	427	0	427	0
Turn Bay Length (ft)	40	100	125	100	125	175	100	125	175	100	125	175
Base Capacity (vph)	235	581	328	470	448	2738	345	2744	345	2744	345	2744
Starvation Cap Reductn	0	0	0	0	0	188	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.01	0.10	0.28	0.07	0.59	0.06	0.47	0.06	0.47	0.06	0.47
Intersection Summary												
Cycle Length	142											
Actuated Cycle Length	108.9											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.55											
Intersection Signal Delay	8.5											
Intersection LOS	A											
Intersection Capacity Utilization	47.3%											
Analysis Period (min)	15											
ICU Level of Service	A											





# **SIGNAL WARRANT ANALYSIS**



### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Northeast Driveway & Hillcrest Avenue, Antioch, CA

COUNT DATE: Existing

MAJOR STREET: Hillcrest Avenue

# OF APPROACH LANES: 2

MINOR STREET: Northeast Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
06:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	1,066	10	Y			Y				
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	924	7	Y			Y				
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	1,990	17			0		0	0	0	
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Southeast Driveway & Hillcrest Avenue, Antioch, CA

COUNT DATE: Existing

MAJOR STREET: Hillcrest Avenue

# OF APPROACH LANES: 2

MINOR STREET: Southeast Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
06:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	1,085	60	Y			Y	Y	Y		
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	972	125	Y	Y	Y	Y	Y	Y	Y	
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	2,057	185	1			2			2	1
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Lone Tree Way & Walmart Driveway, Antioch, CA

COUNT DATE: Existing

MAJOR STREET: Lone Tree Way

# OF APPROACH LANES: 3

MINOR STREET: Walmart Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
08:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	1,875	5	Y			Y				
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	1,933	37	Y			Y				
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	3,808	42	0			0			0	0
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Prewett Ranch Drive & Hillcrest Avenue, Antioch, CA

COUNT DATE: Existing

MAJOR STREET: Hillcrest Avenue

# OF APPROACH LANES: 2

MINOR STREET: Prewett Ranch Drive

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
06:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	124	156		Y			Y			
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	149	158		Y			Y			
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	273	314	0			0			0	0
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Northeast Driveway & Hillcrest Avenue, Antioch, CA

COUNT DATE: Near Term

MAJOR STREET: Hillcrest Avenue

# OF APPROACH LANES: 2

MINOR STREET: Northeast Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
06:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	1,280	10	Y			Y				
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	1,204	7	Y			Y				
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	2,484	17	0			0			0	0
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Lone Tree Way & Walmart Driveway, Antioch, CA

COUNT DATE: Near Term

MAJOR STREET: Lone Tree Way

# OF APPROACH LANES: 3

MINOR STREET: Walmart Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
06:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	2,632	5	Y			Y				
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	2,856	37	Y			Y				
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	5,488	42	0			0			0	0
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Northeast Driveway & Hillcrest Avenue, Antioch, CA

COUNT DATE: Near + Project Term

MAJOR STREET: Hillcrest Avenue

# OF APPROACH LANES: 2

MINOR STREET: Northeast Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3	
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET			
THRESHOLD VALUES			420	105		630	53				
06:00 AM	TO	07:00 AM									
07:00 AM	TO	08:00 AM	1,317	14	Y		Y				
08:00 AM	TO	09:00 AM									
09:00 AM	TO	10:00 AM									
10:00 AM	TO	11:00 AM									
11:00 AM	TO	12:00 PM									
12:00 PM	TO	01:00 PM									
01:00 PM	TO	02:00 PM									
02:00 PM	TO	03:00 PM									
03:00 PM	TO	04:00 PM									
04:00 PM	TO	05:00 PM									
05:00 PM	TO	06:00 PM	1,210	26	Y		Y				
06:00 PM	TO	07:00 PM									
07:00 PM	TO	08:00 PM									
08:00 PM	TO	09:00 PM									
09:00 PM	TO	10:00 PM									
			2,527	40	0			0			
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED		1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Lone Tree Way & Walmart Driveway, Antioch, CA

COUNT DATE: Near + Proj Term

MAJOR STREET: Lone Tree Way

# OF APPROACH LANES: 3

MINOR STREET: Walmart Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
06:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	2,697	5	Y			Y				
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	2,868	44	Y			Y				
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	5,565	49	0			0			0	0
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Northeast Driveway & Hillcrest Avenue, Antioch, CA

COUNT DATE: Cumulative Term

MAJOR STREET: Hillcrest Avenue

# OF APPROACH LANES: 2

MINOR STREET: Northeast Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
06:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	1,646	10	Y			Y				
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	1,769	7	Y			Y				
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	3,415	17	0			0			0	0
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Lone Tree Way & Walmart Driveway, Antioch, CA

COUNT DATE: Cumulative Term

MAJOR STREET: Lone Tree Way

# OF APPROACH LANES: 3

MINOR STREET: Walmart Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
06:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	3,295	5	Y			Y				
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	3,384	38	Y			Y				
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	6,679	43	0			0			0	0
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Northeast Driveway & Hillcrest Avenue, Antioch, CA

COUNT DATE: Cumulative + Project Term

MAJOR STREET: Hillcrest Avenue

# OF APPROACH LANES: 2

MINOR STREET: Northeast Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
06:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	1,687	10	Y			Y				
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	1,776	7	Y			Y				
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	3,463	17			0		0	0	0	
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Lone Tree Way & Walmart Driveway, Antioch, CA

COUNT DATE: Cumulative + Project Term

MAJOR STREET: Lone Tree Way

# OF APPROACH LANES: 3

MINOR STREET: Walmart Driveway

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH	Warrant 1 - Condition A			Warrant 1 - Condition B			WARRANT 2	WARRANT 3
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES			420	105		630	53			
06:00 AM TO 07:00 AM										
07:00 AM TO 08:00 AM	3,363	5	Y			Y				
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM	3,396	45	Y			Y				
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	6,759	50			0		0	0	0	
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 - Condition A -- Minimum Vehicular Volume Warrant (8 hours)

WARRANT 1 - Condition B -- Interruption of Continuous Traffic Warrant (8 hours)

WARRANT 2 -- Four Hour Volume Warrant - Figure 4C-2

WARRANT 3 -- Peak Hour Volume Warrant - Figure 4C-4

Conditions: Based on 2000 MUTCD

# **QUEUING SUMMARY**



Antioch Wal-Mart Expansion Queuing Summary

Scenarios Analyzed	Country Hills #6		Deer Valley Plaza #7		Deer Valley Road #8		Pinnacle #9		Sagebrush Drive #10		Williamson Ranch Plaza #11		Indian Hill Drive #12		Loma Tree Way #13		Diversity #13		Hilcrest Avenue #14		Vista Grande Drive #15		Hudson Ranch Road #16		Canada Valley Road #17		SR4 Business Ramps #18		Jeffrey Way #19		Country Hills Dr #20		Dear Valley Rd #20		Laval Road #21		Hilcrest Avenue Country Hills Drive #21											
	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM	Lnk	AM	PM									
Existing Traffic	EBL	145	25	166	195	72	139	145	146	53	155	76	105	170	52	103	205	205	202	200	39	29	185	<25	<25	300	82	72	145	95	123	40	51	26	75	137	24	120	78	80								
	EBR	75	35	93	100	<25	75	133	100	80	<25	80	<25	80	<25	25	205	<25	<25	75	<25	<25	630	<25	<25	315	50	93	215	35	82	100	<25	40	175	55	42	90	135	57								
	WBL	145	110	136	200	72	145	195	208	218	150	127	56	140	35	76	255	49	84	200	105	163	400	92	285	110	177	175	51	69	280	<25	25	120	168	47	100	<25	40	175	55	42						
	WBR	75	<25	<25	75	121	165	75	121	165	115	<25	<25	80	<25	235	<25	195	80	34	130	66	56	205	<25	63	75	34	63	170	<25	31	170	<25	40	175	55	42	90	135	57							
Near-Term Traffic	NBL	170	145	141	180	172	127	180	172	127	115	133	116	200	<25	25	200	<25	25	180	172	127	200	<25	<25	75	<25	33	210	264	281	175	27	<25	175	97	32	150	82	46	155	129	131					
	NBR	120	85	82	95	34	31	150	105	100	39	<25	200	<25	56	200	<25	56	200	187	269	100	41	64	50	37	<25	160	310	275	200	162	227	125	113	135	125	188	46	155	92	158	160	122	154			
	SBL	145	146	165	195	71	140	145	109	37	155	100	121	170	64	122	620	304	285	200	37	<25	165	<25	<25	300	41	86	145	110	265	40	51	26	75	137	<25	120	79	81	100	49	82					
	SBR	75	43	89	100	<25	400	167	111	80	<25	80	<25	80	<25	25	210	75	138	200	126	231	400	107	89	285	114	173	175	112	165	280	<25	25	120	178	88	100	<25	40	175	69	52	90	141	81	120	<25
Near-Term + Project Traffic	EBL	145	146	165	195	71	140	145	109	37	155	100	121	170	64	122	620	304	281	200	43	<25	165	<25	<25	300	41	86	145	110	265	40	51	26	75	137	<25	120	79	81	100	50	82					
	EBR	75	43	89	100	<25	400	167	111	80	<25	80	<25	80	<25	25	210	75	138	200	126	231	400	107	89	285	114	173	175	112	165	280	<25	25	120	178	88	100	<25	40	175	69	52	90	141	81	120	<25
	WBL	145	146	165	195	71	140	145	109	37	155	100	121	170	64	122	620	304	281	200	43	<25	165	<25	<25	300	41	86	145	110	265	40	51	26	75	137	<25	120	79	81	100	50	82					
	WBR	75	43	89	100	<25	400	167	111	80	<25	80	<25	80	<25	25	210	75	138	200	126	231	400	107	89	285	114	173	175	112	165	280	<25	25	120	178	88	100	<25	40	175	69	52	90	141	81	120	<25
Long-Term Traffic	NBL	170	145	141	180	172	127	180	172	127	115	133	116	200	<25	25	200	<25	25	180	172	127	200	<25	<25	75	<25	33	210	303	381	175	29	<25	175	97	32	150	82	48	155	148	149	85	<25			
	NBR	120	85	82	95	34	31	150	105	100	39	<25	200	<25	56	200	<25	56	200	187	269	100	41	64	50	37	<25	160	310	275	200	162	227	125	113	135	125	188	46	155	92	158	160	122	154			
	SBL	145	146	165	195	71	140	145	109	37	155	100	121	170	64	122	620	304	281	200	43	<25	165	<25	<25	300	41	86	145	110	265	40	51	26	75	137	<25	120	79	81	100	50	82					
	SBR	75	43	89	100	<25	400	167	111	80	<25	80	<25	80	<25	25	210	75	138	200	126	231	400	107	89	285	114	173	175	112	165	280	<25	25	120	178	88	100	<25	40	175	69	52	90	141	81	120	<25





