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22 October 2021

Darcy Goulart
Planning Manager
City of Rancho Cordova
Planning Division
2729 Prospect Park Dr.
Rancho Cordova, CA 95670

Subject: **Aquatic Resources Assessment for the Capital Center Project, City of Rancho Cordova, Sacramento County, California**

Dear Ms. Goulart:

This letter presents the results of an aquatic resources assessment of the Capital Center Project site (Study Area) performed by Madrone Ecological Consulting, LLC (Madrone) at the request of GGC HWY 50 LLC. The approximately 25-acre Study Area is located generally northeast of the intersection of Kilgore Road and International Drive in the City of Rancho Cordova, Sacramento County, California (38.586954, -121.268263). The Study Area consists of APNs 072-0260-053, 072-0260-054, 072-0260-056, 072-0260-051, 072-0680-065, and 070-0680-068.

Methodology

Madrone senior biologist Dustin Brown conducted an aerial photograph review and preformed a visit the site to on 14 October 2021 to determine if aquatic resources were present within the Study Area.

The assessment was performed in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008b), and the Sacramento District's *Minimum Standards for Acceptance of Preliminary Wetlands Delineations* (USACE 2016b). U.S. Army Corps of Engineers (USACE) regulations (33 CFR 328) were used to determine the presence of Waters of the United States other than wetlands. The most recent *National Wetland Plant List*, which went into effect on 18 May 2020, was used to determine the wetland indicator status of plants observed in the Study Area (USACE 2020). The *Jepson eFlora* (Jepson Flora Project 2020) was used for plant nomenclature, except where

it conflicted with the nomenclature in the *National Wetland Plant List*, which was given priority.

During the 14 October 2021 site visit Mr. Brown walked the entire Study Area to determine the presence or absence of aquatic resources. During the survey Mr. Brown also noted the soils and vegetation present.

Results

The U.S. Army Corps of Engineers makes legal determinations regarding the presence or absence of wetlands or waters of the U.S. on any given property. However, in our professional opinion, aquatic resources are not present within the Study Area. The Study Area consists of gently rolling terrain. Soils onsite are cobbly loam and appear to be very well drained. Vegetation onsite consists upland non-native annual grasses and forbs associated with fallow and previously disturbed areas such as wild oat (*Avena fatua*), tarplant (*Holocarpha virgata*), soft brome (*Bromus hordeacious*), yellow star thistle (*Centaurea solstitalis*), and bull thistle (*Cirsium vulgare*). No evidence of ponding or saturated soils were observed within the Study Area.

Please contact me with any questions about this survey at (916) 822-3230 or svonderohe@madroneeco.com.

Sincerely,

Sarah VonderOhe

Sarah VonderOhe
Senior Biologist/Principal

cc: Dan Cole/Cole Partners
Rob Cole/Cole Partners
Richard Weng/Cole Partners
Jeremy White/The Grupe Company

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Appendix C

South Sacramento Habitat Conservation Plan Avoidance and Minimization Measures

5.4.1 General Avoidance and Minimization Measures

General AMMs are designed to avoid or minimize effects of Covered Activities on SSHCP land cover types and Covered Species.

Condition 1. Avoid and Minimize Urban Development Impacts to Watershed Hydrology and Water Quality

National Pollution Discharge Elimination System permits are issued by the Regional Water Quality Control Board to jurisdictions in the region, including the jurisdictions that are also SSHCP Land Use Authority Permittees (i.e., County of Sacramento, and Cities of Rancho

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[16] In a situation like this, the Local Land Use Authority Permittee will suspend one or more local permits (e.g., grading permit, building permit) until compliance with terms of all SSHCP requirements is demonstrated.

[17] Post-construction monitoring by the Land Use Authority Permittee could continue for several years.

Cordova and Galt). The National Pollution Discharge Elimination System permit is issued to each of the Land Use Authority Permittees every 5 years, and is referred to as the Municipal Separate Storm Sewer System (MS4) permit. MS4 permits contain specific design measures required for all projects constructed within the region. The Stormwater Quality Design Manual for the Sacramento and South Placer Regions (Stormwater Manual) outlines planning tools and requirements to reduce urban runoff from new development and redevelopment projects within the region (Sacramento Stormwater Quality Partnership 2007). The Stormwater Manual is used as a general guidance document to aid with the selection, siting, design, operation, and long-term maintenance of stormwater quality control measures. The Stormwater Manual contains control measures intended to meet the standard of "reducing pollutants in urban runoff to the maximum extent practicable" set forth in the local agencies' MS4 permits issued by the Central Valley Regional Water Quality Control Board. AMM LID-1 (see below) is designed to ensure compliance with MS4 requirements by requiring Third-Party Project Proponents to minimize increases of peak discharge of stormwater and to eliminate or reduce runoff of pollutants.

Development Covered Activities may adversely alter watershed hydrology and degrade water quality, which, in turn, could diminish or eliminate the conservation benefits provided by the SSHCP Preserve System. Condition 1 is designed to conserve and/or rehabilitate on-site natural creeks and streams. This condition will require the provision of BMPs and low-impact development (LID) drainage control measures to ensure that runoff from developed lands will closely mimic the pre-development hydrograph and retain most pre-development hydrologic functions. Condition 1 will accomplish the hydrograph and hydrologic objectives through application of the listed AMMs to all UDA Covered Activities that occur at the parcel, subdivision, or master plan scale.

LID-1 (Stormwater Quality): When the size of a Covered Activity project exceeds the thresholds established by the State Water Resources Control Board (SWRCB) (see the most recent Stormwater Quality Design Manual for the Sacramento and South Placer Regions, or future SWRCB-approved design manuals applicable to the Plan Area), incorporate stormwater management into site design to satisfy the requirements outlined in the most recent Stormwater Quality Design Manual for the Sacramento and South Placer Regions. Stormwater management may include groundwater recharge (LID-2) and natural site features (LID-3).

LID-2 (Groundwater Recharge): When siting SSHCP Preserves containing Riparian, Open Water, or Freshwater Marsh SSHCP land cover types, the Implementing Entity will prioritize locations that are suitable for groundwater recharge.

LID-3 (Natural Site Features): Incorporate preservation of a site's natural aquatic features (such as creeks and streams) into project design to retain natural hydrologic patterns and to retain habitat that might be used by Covered Species.

Condition 2. Avoid and Minimize Urban Development Direct and Indirect Impacts to Existing Preserves and SSHCP Preserves

Development Covered Activities adjacent to Preserves may adversely impact species that use the Preserve, and erode or eliminate the conservation benefits provided by the Preserve. Condition 2 seeks to avoid or minimize the following Covered Activity environmental stressors that may result in direct and indirect impacts to the SSHCP Preserve System:

- Alterations to landscape hydrology from new impervious surfaces may adversely affect natural communities in the lower watershed, the ecology of a Preserve, and/or downstream aquatic resources.
- Water runoff from development or from roadways directed into Preserves may introduce harmful substances into Preserves. Unseasonal and/or additional water entering a Preserve may eliminate vernal pools and other seasonal wetlands native to the region by converting them to low-functioning perennial wetlands.
- Development adjacent to Preserves may partially to fully remove the soil's "perched aquifer" (see Chapter 3) and reduce or eliminate the micro-watersheds that support the hydrology of vernal pools within the Preserve boundary. These changes may adversely affect the existing hydrologic regime of vernal pools by changing the timing, depth, and/or duration of vernal pool saturation and/or ponding, causing long-term changes to a suite of vernal pool functions. For example, changes to water chemistry could adversely affect species habitat. Although the vernal pools remain, the environmental conditions of the pools may no longer provide habitat for vernal pool Covered Species, or provide the benefit of other wetland functions (e.g., stormwater attenuation) compared to pre-project conditions.
- Introduction or proliferation of non-native or invasive plant and wildlife species may displace native species.
- Landscaping in the interface of a development and a Vernal Pool–Grassland Preserve often includes native or non-native trees and other plant species that are not found in California grasslands and, therefore, cannot survive on the Vernal Pool–Grassland Preserve border without intensive irrigation and cultivation. In addition to adverse effects from irrigation and landscape maintenance, adult trees may become landscape barriers that inhibit species movement and may act to isolate individual Preserves from the larger SSHCP Preserve System.
- Recreational use of Preserves near developed areas may compact soils, eliminate vegetation, impair hydrologic functions, introduce weeds or invasive plant species, and disturb plants and wildlife.

- Introduction of light, noise, or vibrations may disrupt normal nocturnal and diurnal cycles of native species.

AMMs associated with Condition 2 must be applied to all UDA Covered Activities that border an existing Preserve or planned SSHCP Preserve.

EDGE-1 (Compatible Land Uses): To the maximum extent practicable, development project Covered Activities will locate compatible land uses (e.g., designated open space such as parks and ball fields, detention basins, and other land uses with less-intensive human activity) in areas immediately adjacent to existing or planned Preserve boundaries. The compatible land use will provide additional buffering of Preserves from potential indirect effects of adjacent urban development. The soil surfaces in a compatible land use area may be re-contoured provided that the soil restrictive layer remains undamaged and most of the soil profile above the restrictive layer remains intact. The Land Use Authority will determine when it is not practicable to locate a compatible land use adjacent to existing or planned Preserve boundaries.

EDGE-2 (Single-Loaded Streets): To the maximum extent practicable, the design of Urban Development Covered Activities will locate single-loaded streets adjacent to existing or planned Preserve. The Land Use Authority will determine when single-loaded streets are not practicable.

EDGE-3 (Preserve Setbacks): Urban Development Covered Activities constructed adjacent to existing or planned Preserves must establish a minimum 50-foot-wide setback outward from the boundary of any existing Preserve or planned SSHCP Preserve. This minimum 50-foot-wide setback will function as a transition between Urban Development and the Preserve, and must be managed to maintain the natural community of vegetation present in the adjacent Preserve. As much of the setback as possible should remain in the same natural habitat as the Preserve.

However, as discussed in Section 5.2.5, Covered Activities in Preserve Setbacks in the UDA, where an existing or planned Preserve is adjacent to an existing roadway (e.g., collectors, arterials, thoroughfares), the 50-foot Preserve Setback will not be required, and any bicycle or pedestrian trail will be established in the road right-of-way. In addition, where a planned roadway crosses an existing or planned Preserve, no Preserve Setback will be required, and any bicycle or pedestrian trail will be established in the road right-of-way.

EDGE-3a (Setback Recreational Trails): Trails are best suited outside of the setback; however, certain types of recreational trails or facilities (e.g., benches, trash receptacles, shade structures, fencing) that can be constructed with minimum ground disturbance and in compliance with EDGE-7 may be allowed within a Preserve Setback, as specified in Section 5.2.5, Covered Activities in Preserve Setbacks in the UDA. Preserve Setback design must locate trails on the side nearest development, away from the Preserve boundary. Trails may be permeable or semi-permeable hiking trails or paved community trials. The maximum trail width will be 16 feet total, including 2-foot-wide shoulders. Post and cable fencing, split rail, or other open fencing will be installed adjacent to recreation trails to keep pedestrians on the trail.

EDGE-3b (Setback Firebreaks): If approved by the local authorities, the Preserve Setback trail may also be used as a firebreak. In instances where a trail cannot act as a firebreak, the firebreak will be located between the trail and the Preserve boundary (see Section 5.2.7). Firebreaks allowed inside the setbacks must be created by methods that will not disturb the soil's restrictive layer, such as mowing, minor scraping of surface vegetation, or shallow tilling, to comply with EDGE-7. Firebreak width within Preserve Setbacks is the minimum width needed to comply with applicable local codes.

EDGE-3c (Setback Shade Trees and Landscaping): To prevent potential impacts from irrigation water or from accumulation of leaf litter onto the grasslands or vernal pools of a Preserve, planting of shade trees or landscaping vegetation will be limited to the area of the Preserve Setback located between the recreation trail and the adjacent urban development (i.e., away from Preserves).

- Only drought-tolerant plant species will be planted. The planting pallet used for Preserve Setback landscaping will not include invasive plant species listed in the California Invasive Plant Council's (Cal-IPC) California Invasive Plant Inventory Database or listed in the Cal-IPC California Invasive Plant Watch List (see http://www.cal-ipc.org/paf/). Any shade trees planted along Preserve Setback trails will be native species that are found in California grasslands and that can survive in the Vernal Pool–Grassland border without long-term irrigation or fertilization (e.g., valley oak, black oak, blue oak, oracle oak). In general, no more than 30% of any 1,000-foot-long segment of a Preserve Setback trail will have canopy cover from tree plantings (to be consistent with maximum tree densities naturally found within native California grasslands and savanna).

- Drip irrigation will be allowed for a maximum of 5 years to establish shade trees or landscape vegetation between the recreation trail and adjacent urban development. The Implementing Entity has the discretion to allow irrigation to continue past 5 years if extenuating circumstances necessitate it (e.g., during a drought) and the continuance of irrigation will not affect the Preserve. Any irrigation systems located within Preserve Setbacks will be inspected quarterly to determine if such systems are affecting soils or vegetation not part of the intended plantings. Irrigation system repairs will be completed immediately if it is determined that the irrigation system is affecting vegetation or soil moisture not part of the intended tree planting.
- If, during annual monitoring of the adjacent Preserve (see Chapter 8), adverse indirect effects (e.g., leaf litter accumulation, irrigation runoff, plant encroachment) of the Preserve Setback's planted vegetation are detected, then the SSHCP Implementing Entity, the Preserve Manager, and the entity responsible for the Preserve Setback will identify appropriate adaptive management of the Preserve Setback tree or landscape plantings in accordance with the Preserve Setback Easement (see Section 5.2.5 and Chapter 9).

EDGE-4 (Locate Stormwater Control Outside Preserves): Roads, sidewalks, and other impermeable surfaces of Urban Development Covered Activities adjacent to existing or planned Preserves will slope away from Preserves and Preserve Setbacks or intercept drainage with swales or curbs and gutters to preclude drainage from entering Preserves and Preserve Setbacks. Stormwater flows must be directed away from Preserves and Preserve Setbacks and directed into stormwater control facilities inside the development (outside Preserves and Preserve Setbacks)[18] (see EDGE-6 for exception to EDGE-4 in certain SSHCP Linkage Preserves).

EDGE-5 (Stormwater Control in Preserve Setbacks): If trails are established in any Preserve Setback in compliance with EDGE-3, the trail must be sloped away from the Preserve, and rainwater leaving the trail surface must flow into an adjacent low-velocity bio-retention swale or cell to keep rainwater runoff and trail contaminants from entering the Preserve. Low-velocity bio-retention swales or cells are typically small linear features placed on one or both sides of a trail. As required by EDGE-3, trails and their adjacent bio-retention swales or cells must be located on the side of the Preserve Setback nearest development.

[18] Detention basins are allowed in some Linkage Preserves consistent with the requirements of EDGE-6. At the time of SSHCP preparation, seven Linkage Preserves with drainages are planned SSHCP Preserves: L1, L2, L4, L7, L8, L9, and L10 (see Section 5.2.7 and Section 7.5). Also see project-specific measures in Section 5.5.1.

EDGE-6 (Detention Basins in Linkage Preserves): Because planned SSHCP Linkage Preserves L1, L2, L4, L7, L8, L9, and L10 (see Section 7.5) surround natural creeks or streams that must receive stormwater from planned adjacent Urban Development Covered Activities, a limited number of stormwater detention basins will be allowed on those Linkage Preserves. Detention basins within Linkage Preserves (see Section 5.2.7) will be designed and constructed with fill material to build up the perimeter of the detention basin so as not to impact the soil restrictive layer (duripan or hardpan) and function of the soil perched aquifer. Detention basins within Linkage Preserves will capture stormwater flows and runoff, and will discharge water to the stream/creek or percolate collected water to the soil perched aquifer. Detention basin structures that collect stormwater entering the basin or convey stormwater leaving the basin must be designed to avoid and minimize effects to Covered Species habitat in the Linkage Preserve.

EDGE-7 (Hardpan/Duripan Protection): To protect the soil perched aquifer and the micro-watersheds supporting existing vernal pool hydrology, activities that have the potential to cut into, disrupt, or remove the soil's restrictive layer (hardpan or duripan) will not occur within Preserves or Preserve Setbacks. However, in certain circumstances, the Covered Activities defined in Section 5.2.6, Covered Activities in Stream Setbacks in the UDA, and Section 5.2.8, Covered Activities in the Laguna Creek Wildlife Corridor of the Preserve System, may result in punctures[19] or other minor disruptions of the soil hardpan or duripan if approved by the Implementing Entity and the Technical Advisory Committee according to the process described in Chapter 9 of the SSHCP. If a Covered Activity on a Preserve or Preserve Setback results in a puncture or other disruption to the soil hardpan or duripan, the puncture will be sealed using bentonite clay or other material that maintains the functionality of the soil's restrictive layer and associated perched aquifer.

EDGE-8 (Outdoor Lighting): All outdoor lighting in Urban Development Covered Activity projects will be designed to minimize light pollution into existing and planned Preserves, except where a Land Use Authority Permittee determines lighting is necessary for public safety or security. Minimization measures may include light fixture placement (e.g., as low to the ground as possible), lamp designs (e.g., shielding, low glare, or no lighting), directing light away from Preserves, or other means to avoid or minimize light pollution. The Third-Party Project Proponent will use the best information available at the time of project design to minimize effects of light pollution on target SSHCP Covered Species (e.g., western spadefoot (*Spea*

[19] Punctures may include small holes that penetrate the soil hardpan or duripan such as might occur when digging or drilling holes for the installation of fence posts, sign posts, or trees.

hammondii), Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*)).

EDGE-9 (Livestock Access to Preserves): Urban Development Covered Activity projects that include on-site Preserves will include in their design an adequate number of access points and facilities for delivery and pick up of grazing animals (livestock), such that these activities will not significantly alter the Preserve's habitat and are consistent with the protection of livestock and protection of adjacent public property, and include adequate public safety measures.

EDGE-10 (Prevent Invasive Species Spread): Completed Covered Activities (including roads) will be maintained in a manner that avoids the spread of invasive species into Preserve and Open Space areas. Such maintenance measures will include the following:

- To prevent the transport of non-native invasive species onto Preserves, before bringing any equipment onto an SSHCP Preserve or Preserve Setback, equipment must be cleaned of mud, dirt, and plant material. Cleaning will occur in the infested area or another appropriate location as approved by a Plan Permittee.
- Mowing rotation will start in un-infested areas and move to infested areas.
- Invasive plant prevention techniques will be incorporated into maintenance plans.
- The SSHCP Implementing Entity will survey road shoulders, ditches, and rights-of-way that border SSHCP Preserves for invasive weeds or other exotic plant species. Where roadside weed infestations have reached a critical control point, the Implementing Entity or Land Use Authority Permittee will apply the appropriate manual, mechanical, or chemical treatment.

Condition 3. Implement Construction Best Management Practices

AMMs associated with Condition 3 must be applied to all UDA Covered Activities.

BMP-1 (Construction Fencing): Orange construction fencing will be installed to ensure that ground disturbance does not extend beyond the allowed construction footprint (i.e., the limit of project construction plus equipment staging areas and access roads). Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will mark the outer boundary of any Preserve Setback or Stream Setback adjacent to or within the project site with orange construction fencing prior to ground disturbance. This fencing will remain in place until project completion, as identified by the Plan Permittee.

BMP-2 (Erosion Control): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will install temporary control measures for sediment, stormwater, and pollutant runoff as required by the Plan Permittee to protect water quality and species habitat. Silt fencing or other appropriate sediment control device(s) will be installed downslope of any Covered Activity that disturbs soils.

Fiber rolls and seed mixtures used for erosion control will be certified as free of viable noxious weed seed. As discussed in Section 5.4.2, Covered Species Take Avoidance and Minimization Measures, erosion controls installed in or adjacent to Plan Area modeled habitat for giant gartersnake (*Thamnophis gigas*), western pond turtle (*Actinemys marmorata*), California tiger salamander (*California tiger salamander*), or western spadefoot (see Chapter 3) must be of appropriate design and materials that will not entrap the species (e.g., not contain mesh netting). Regular monitoring and maintenance of the project's erosion control measures will be conducted until project completion to ensure effective operation of erosion control measures.

BMP-3 (Equipment Storage and Fueling): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will ensure that equipment storage and staging will occur in the development footprint only (not sited in any existing on-site Preserve, planned on-site Preserve, Preserve Setback, Stream Setback, or aquatic land cover type). Fuel storage and equipment fueling will occur away from waterways, stream channels, stream banks, and other environmentally sensitive areas within the development footprint.

However, certain equipment storage and fueling activities can be allowed on Preserves within habitat re-establishment/establishment sites (refer to Section 5.2.7) if no location outside of the site is available. If a Covered Activity results in a spill of fuel, hydraulic fluid, lubricants, or other petroleum products, the spill will be absorbed and waste disposed of in a manner to prevent pollutants from entering a waterway, Preserve, Preserve Setback, or Stream Setback.

BMP-4 (Erodible Materials): Plan Permittees and Third-Party Project Proponents implementing Covered Activities must not deposit erodible materials into waterways. Vegetation clippings, brush, loose soils, or other debris material will not be stockpiled within stream channels or on adjacent banks. Erodible material must be disposed of such that it cannot enter a waterway, Preserve, Preserve Setback, Stream Setback, or aquatic land cover type. If water and sludge must be pumped from a subdrain or other structure, the material will be conveyed to a temporary settling basin to prevent sediment from entering a waterway.

BMP-5 (Dust Control): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will water active construction sites regularly, if warranted, to avoid or minimize impacts from construction dust on adjacent vegetation and wildlife habitats. No surface water will be used from aquatic land covers; water will be obtained from a municipal source or existing groundwater well.

BMP-6 (Construction Lighting): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will direct all temporary construction lighting (e.g., lighting used for security or nighttime equipment maintenance) away from adjacent natural habitats, and particularly Riparian and Wetland habitats and wildlife movement areas.

BMP-7 (Biological Monitor): If a Covered Activity includes ground disturbance within Covered Species modeled habitat, an approved biologist will be on site during the period of ground disturbance, and may need to be on site during other construction activities depending on the Covered Species affected. After ground-disturbing project activities are complete, the approved biologist will train an individual to act as the on-site construction monitor for the remainder of construction, with the concurrence of the Permitting Agencies. The on-site monitor will attend the training described in BMP-8. The approved biologist and the on-site monitor will have oversight over implementation of Avoidance and Minimization Measures, and will have the authority to stop activities if any of the requirements associated with those measures are not met. If the monitor requests that work be stopped, the Wildlife Agencies will be notified within one working day by email. The approved biologist and/or on-site monitor will record all observations of listed species on California Natural Diversity Database field sheets and submit them to the California Department of Fish and Wildlife. The approved biologist or on-site monitor will be the contact source for any employee or contractor who might inadvertently kill or injure a Covered Species or who finds a dead, injured or entrapped individual. The approved biologist and on-site monitor's names and telephone numbers will be provided to the Wildlife Agencies prior to the initiation of ground-disturbing activities. Refer to species-specific measures for details on requirements for biological monitors.

BMP-8 (Training of Construction Staff): A mandatory Worker Environmental Awareness Program will be conducted by an approved biologist for all construction workers, including contractors, prior to the commencement of construction activities. The training will include how to identify Covered Species that might enter the construction site, relevant life history information and habitats, SSHCP and

statutory requirements and the consequences of non-compliance, the boundaries of the construction area and permitted disturbance zones, litter control training (SPECIES-2), and appropriate protocols if a Covered Species is encountered. Supporting materials containing training information will be prepared and distributed by the approved biologist. When necessary, training and supporting materials will also be provided in Spanish. Upon completion of training, construction personnel will sign a form stating that they attended the training and understand all of the Avoidance and Minimization Measures. Written documentation of the training must be submitted to the Implementing Entity within 30 days of completion of the training, and the Implementing Entity will provide this information to the Wildlife Agencies.

BMP-9 (Soil Compaction): After construction is complete, all temporarily disturbed areas will be restored similar to pre-project conditions, including impacts relating to soil compaction, water infiltration capacity, and soil hydrologic characteristics.

BMP-10 (Revegetation): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will revegetate any cut-and-fill slopes with native or existing non-invasive, non-native plants (e.g., non-native grasses) suitable for the altered soil conditions and in compliance with EDGE-2 and EDGE-8, if applicable.

BMP-11 (Speed Limit): Project-related vehicles will observe the posted speed limits on paved roads and a 10-mile-per-hour speed limit on unpaved roads and during travel in project areas. Construction crews will be given weekly tailgate instruction to travel only on designated and marked existing, cross-country, and project-only roads.

Condition 4. Avoid and Minimize Impacts that May Result from Implementation of Covered Transportation Projects

Urban Development transportation project and Rural Transportation Project Covered Activities, including bridge projects, can affect Covered Species. AMMs included for Condition 4 seek to avoid or minimize direct and indirect impacts that may result from construction of roadways or roadway improvements. Condition 4 applies to all transportation-related Covered Activities (see Sections 5.2.1 and 5.2.3).

Plan Permittees and Third-Party Project Proponents implementing Urban Development transportation or Rural Transportation Project Covered Activities must comply with the roadway siting, design, and construction AMMs described below.

ROAD-1 (Road Project Location): Road projects will be located in the least environmentally sensitive area to avoid, to the maximum extent practicable, impacts on Covered Species, Covered Species habitat, and waters of the United States. Road project alignments will follow existing roads, road easements, and rights-of-way, or be sited in disturbed areas to minimize habitat loss and additional habitat fragmentation.

ROAD-2 (Wildlife Crossing Structures): Road projects that are Urban Development Covered Activities (see Section 5.2.1) (including the Capital Southeast Connector, see Section 5.2.1.1) or are Rural Transportation Covered Activities (see Section 5.2.3) will include an adequate number of wildlife crossing structures, as depicted in Figure 5-10. An adequate number of wildlife crossing structures within the Urban Development Area (UDA) and outside the UDA will provide for continued dispersal and movement of native wildlife throughout the SSHCP Plan Area, as required by the SSHCP Biological Goals and Objectives (see Chapter 7).

The Plan defines "wildlife crossing structure" as a physical structure specifically designed or retrofitted to facilitate undercrossing for target wildlife species. The Plan further classifies wildlife crossings as hydrologic crossings and dry crossings. Hydrologic crossings are built where there is an existing stream, creek, or intermittent drainage to maintain existing hydrologic connectivity within the Plan Area. As described below, hydrologic crossings require specialized features to be built into the crossing structure, such as elevated platforms to allow wildlife to pass under a crossing structure when it is inundated with water. Dry wildlife crossings are built where there is no hydrologic feature but where a crossing is needed to provide for overland connectivity. SSHCP wildlife crossing structures may include structures such as bridges, arches, or box and pipe culverts.

Plan Permittees expect that future wildlife movement and dispersal within the UDA will occur almost entirely within the boundaries of the future interconnected SSHCP Preserve System (see Section 7.5). Therefore, wildlife crossings are needed wherever a roadway crosses (bisects) the conceptual SSHCP Preserve System (see Figure 5-10). Wildlife crossing structures inside the UDA will be sized to accommodate movement of a highly mobile native indicator species (i.e., coyote (*Canis latrans*)). By designing UDA wildlife crossing structures to meet the movement and dispersal requirements of coyote, the Plan Permittees anticipate that the crossing structure will also accommodate most native wildlife species that currently occupy the UDA (see Chapter 3).

The Plan Permittees expect that most of the Plan Area outside of the UDA will remain as Open Space over the 50-year Permit Term (see Chapter 4). Therefore,

the Plan Permittees expect that the Rural Transportation Project Covered Activities proposed outside the UDA will have a relatively small effect on the movement and dispersal of larger or more mobile native wildlife species, including coyote. Consequently, the Plan Permittees anticipate that the design of Rural Transportation Project Covered Activities outside the UDA will need to include wildlife crossing structures primarily where the Rural Transportation Project Covered Activities occur within California tiger salamander modeled habitat (see CTS-3 and also Chapter 3, Figure 3-16).

The design and location of wildlife crossing structures both inside the UDA and outside the UDA will be determined by collaboration between the Third-Party Project Proponent, the Land Use Authority, and the Implementing Entity. Crossing design will use the best available scientific and commercial information for the target species. The design of crossing structures will be based on demonstrated effectiveness of design for the target species when such information is available, or will be designed with a high level of certainty of success based on studies of similar taxa in similar environmental settings. The proposed wildlife crossing structures designs will be reviewed and approved by the Implementing Entity prior to final design.

The Implementing Entity will develop a Wildlife Crossing Maintenance Manual to be provided to the entity responsible for maintaining the wildlife crossing. The Wildlife Crossing Maintenance Manual will identify vegetation management, clearing of obstructions, and other techniques to maintain the desired movement and hydrologic connectivity, and to avoid effects to adjacent Preserves.

All SSHCP wildlife crossing structures in the UDA will include the following design elements:

- Open-bottom bridges or arches where the roadway crosses a river or stream. Where an open-bottom bridge or arch is used, the span of the crossing will be at least 1.2 times the bankfull width of the stream and span the banks to allow for dry wildlife passage along each side of the stream and to avoid or minimize piers or footings within the stream. (Bankfull width refers to the width of a stream channel at the point where over-bank flow begins during a flood event.)
- Any wildlife crossing structure that also maintains hydrologic connectivity will be designed to maintain pre-construction water capacity, depth, and velocity. The crossing structure will not restrict or impede normal flows or flood flows, unless a primary purpose of the structure is to manage such

flow(s). Wildlife crossing structures must be designed to provide a dry passage (e.g., a platform ledge) higher than flows for a 10-year storm event to allow wildlife to pass through an inundated crossing structure.

- Wildlife crossing structures in the UDA will be designed and sized to accommodate movement of at least medium-sized mammals (e.g., coyote). The opening must be at least 3 feet high and the crossing structure must have a minimum openness ratio of at least 0.4.
- Vegetation leading up to the entrance of a crossing structure and the substrate leading into and within the crossing structure will be natural and appropriate to provide for continuity of habitat, attract the target animal species for which the crossing is designed, and facilitate use of the crossing structure.
- A wildlife crossing under six-lane roads or larger will be designed to provide ambient light and temperature in the longer crossing structures (e.g., either by providing a larger opening or a grate at the top of the structure to improve the attractiveness of the crossing to certain Covered Species and wildlife that may hesitate to cross through dark, confined structures or one with a temperature gradient (Jackson and Griffin 2000)). If a road is less than six lanes in width, these designs will be optional.
- Lighting will not be placed at or near the entrance of a wildlife crossing structure to maintain natural ambient light conditions at night and to increase chances of wildlife use. However, a Land Use Authority Permittees may allow lighting if necessary for human health or safety.

Outside the UDA, wildlife crossing structures may be required for California tiger salamander (refer to CTS-1), and could also be required for other native species.

ROAD-3 (Roadside Pesticide Use[20]): If pesticide use is necessary along roadsides, the appropriate SSHCP Permittee will ensure that the pesticide application strictly complies with the pesticide label and all other applicable federal, state, and local authorities pertaining to the use, safety, storage, disposal, and reporting of the pesticide. Where roadside weed infestations have reached a critical control point, the Implementing Entity or a Land Use Authority Permittee will apply the appropriate manual, mechanical, or chemical treatment. In addition, the Implementing Entity or appropriate Land Use Authority Permittee will post signs along road shoulders adjacent to sensitive areas that are within the SSHCP

[20] Use of pesticides (including rodenticides and herbicides) is not an SSHCP Covered Activity. However, pesticide use specified in Section 5.3 is an allowed land management tool, provided the pesticide application is otherwise legal and conforms to all conditions in Section 5.4.

Preserve System (e.g., California tiger salamander breeding ponds, endemic plant populations, vertebrates that rely on insects for part of their diet). The signs will identify pesticide use restrictions or other roadside maintenance restrictions.

Condition 5. Avoid and Minimize Impacts that Result from Public Use of Low-Impact Nature Trails in Preserves

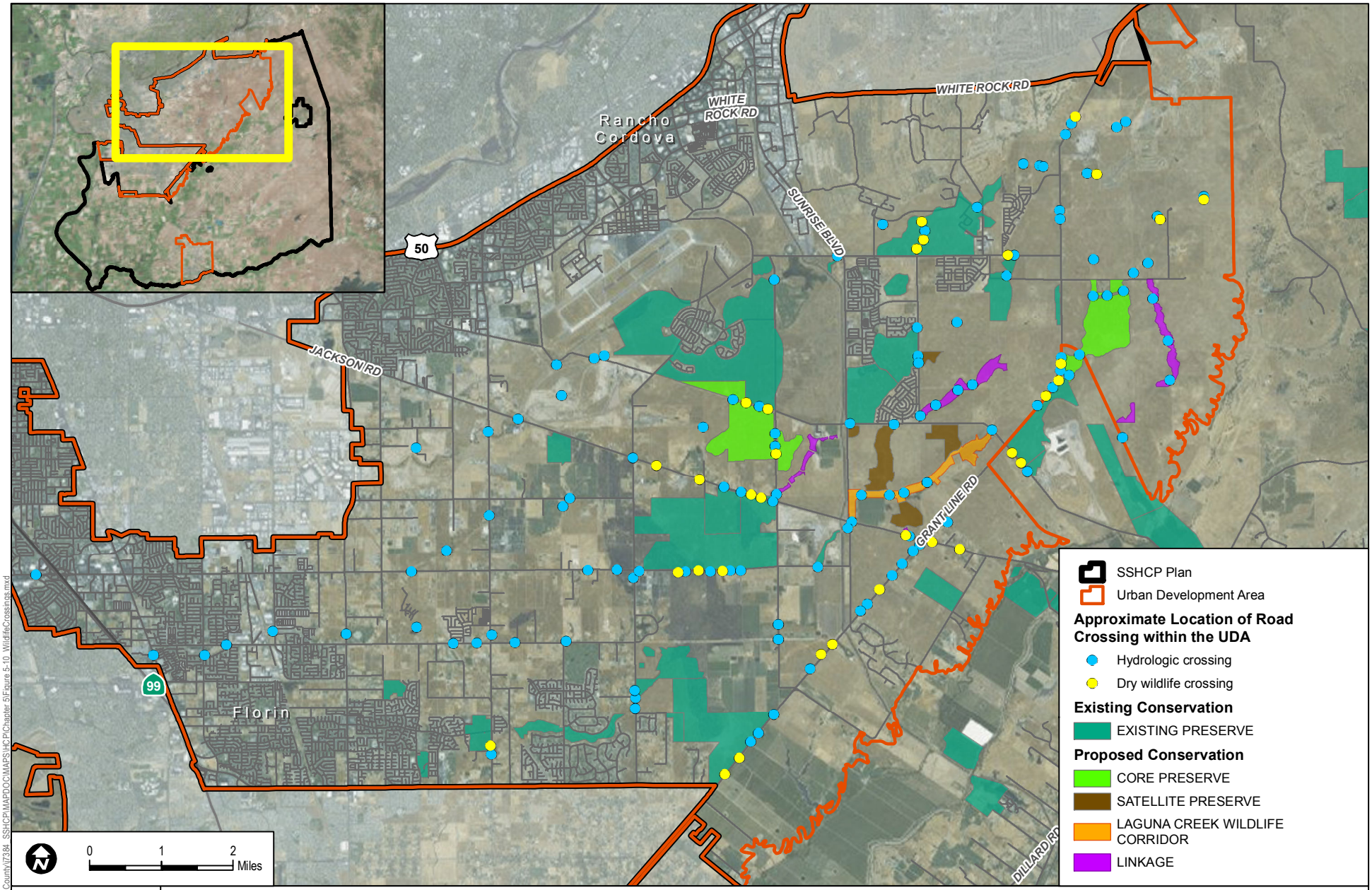
Preserves within the UDA are likely to be surrounded by urban development. As discussed in Section 5.2.7, allowing limited use of SSHCP Preserves will help to foster a sense of community ownership and will provide an opportunity to educate the community about the natural resources to be protected within the SSHCP Preserve System.

Low-impact nature trails will be designed following the AMMs outlined below.

NATURE TRAIL-1 (Nature Trail Plan): A nature trail plan must be prepared for each Preserve where a trail is allowed by the Preserve Management Plan. Nature trails will be unpaved trails that vary in width depending on terrain and existing constraints, but will never exceed 4 feet in width. Where a trail crosses a swale, wooden walkways elevated to a height no greater than 2 feet will be installed. Trail improvements may include mowing vegetation to create or maintain a trail, minor grading to remove trip hazards, and signs providing directional and educational information. Public access to land acquired for preservation will be prohibited until a trail plan can be prepared by the Implementing Entity and approved by the Permitting Agencies. A trail plan will include the following:

- Maps identifying areas that contain sensitive habitats or species occurrences.
- Maps that show the location and footprint of proposed trails.
- Methods used to control public access.
- Trail and use monitoring methods, schedules, and responsibilities.
- Trail operation and maintenance guidelines and responsibilities.
- Clear triggers for use restrictions or closure based on sensitive biological indicators (e.g., seasonal closures of some trails on the basis of activity periods of Covered Species or sensitive species).

NATURE TRAIL-2 (Nature Trail Protection of Duripan): Nature trails will be sited and constructed so as not to interfere with existing soil duripan and the perched aquifer that support the existing hydrologic regime of the Vernal Pool–Grassland, and will not interfere with existing pool hydrology. Trails within Preserves will not be paved.



Path: Z:\Projects\Sacramento_County\7384_SSHCP\MAPDOC\MAPS\HCP\Chapter 5\Figure 5-10_WildlifeCrossings.mxd

SOURCE: ESRI, County of Sacramento 2014, USFWS 2015

FIGURE 5-10

Wildlife Crossings

SOUTH SACRAMENTO HABITAT CONSERVATION PLAN

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NATURE TRAIL-3 (Nature Trail Location): Nature trails will be located away from sensitive natural resources (e.g., vernal pools, riparian habitat, woodland habitat, Covered Species occurrences, raptor nesting sites, tricolored blackbird (*Agelaius tricolor*) colony sites). The Wildlife Agencies will determine the distance necessary to avoid impacts to sensitive natural resources.

NATURE TRAIL-4 (Biological Studies Prior to Nature Trail Design): Biological studies will be conducted within the area being considered for nature trail construction prior to project design. The studies will include land cover type mapping and focused species surveys and/or wetland delineations. The biological studies will include assessments of potential effects of trail construction on Preserve System resources, and recommendations for avoidance and minimization that may be incorporated into project siting, design, construction, and operation.

NATURE TRAIL-5 (Monitoring of Nature Trail Impacts): Impacts that could result from use of a nature trail within a Preserve will be monitored according to the Preserve Management Plan (Chapter 8) to ensure that uses do not conflict with the individual Preserve Management Plan. If use of a trail is found to conflict with the individual Preserve Management Plan, use of that trail will be discontinued until adjustments in the use can be made to reduce or eliminate conflicts. The Implementing Entity will make decisions about discontinuing or modifying use of a trail in consultation with the Preserve Manager or other applicable Preserve management agency or organization.

Condition 6. Avoid and Minimize Impacts When Re-Establishing or Establishing Wetlands

As discussed in Chapter 7, the Plan Permittees anticipate that 389 acres of Vernal Pool habitat will be re-established or established[21] within the Plan Area as part of the SSHCP Conservation Strategy. Although re-establishment or establishment of vernal pools is a Measurable Objective under this Plan, if not done correctly, the action could have an adverse impact on existing vernal pools.

RE-ESTABLISHMENT/ESTABLISHMENT-1 (Vernal Pool): Re-establish or establish Vernal Pool Wetland according to the following guidelines:

- Re-establishment will always take priority over establishment of vernal pools. Establishment will be permitted only after it has been determined that sites with the potential to re-establish vernal pools no longer exist in the Plan Area or cannot be acquired through a willing seller/buyer agreement.

[21] In the context of this Plan, "establish" is synonymous with "create."

- When possible, re-established or established sites will be located adjacent to an existing Preserve(s) to maximize connectivity and Preserve area.
- Re-establishment or establishment will not result in direct or indirect adverse impacts to the hydrologic regime of existing vernal pools. Vernal pool re-establishment or establishment actions will not remove more than 10% of any existing vernal pool watershed, as defined by the SSHCP LIDAR analysis (see Section 3.3 and Conservation Action VPI1.2 in Table 7.1).
- Vernal pool re-establishment will attempt to restore the historical density and range of vernal pool sizes to the maximum extent feasible using historical aerial photography of the site, if available. Where aerial photography of the site's historical conditions is not available, vernal pool re-establishment will include a range of pool sizes (area and depth) to accommodate the different habitat needs and life history characteristics of the vernal pool invertebrate Covered Species.
- Established vernal pools must be located on sites with vernal pool soils, defined as any Plan Area soil type where vernal pools currently exist.
- Established vernal pool sites will include a range of pool sizes to accommodate the different habitat needs and life history characteristics of the three vernal pool invertebrate Covered Species.
- The total density of vernal pools will not exceed 10% of the suitable soil areas in any vernal pool re-establishment and/or establishment site, unless it can be shown that the suitable areas of that site historically supported greater densities.
- Re-establishment or establishment may include inoculation when it is likely that no seed or cyst bank of vernal pool species remains at a site. Vernal Pool inocula will come from nearby vernal pools that are on the same geologic formation and soil type.

RE-ESTABLISHMENT/ESTABLISHMENT-2 (Vernal Pool Inocula Bank): Vernal pool re-establishment or establishment may include "soil inoculation" when it is likely that no seed or cyst bank of vernal pool species remains at a re-establishment or establishment site.

- During conversion of Urban Development Area vernal pools to a developed land cover type, project proponents will excavate and retain soil from vernal pools following protocols developed by the SSHCP Technical Advisory Committee (Chapter 9).

- Inocula applied in re-established or established vernal pools must be harvested from a vernal pool that is on the same geologic formation and soil type shown on the County General Soil Map as the re-establishment/establishment site. Geologic formations and soil types will follow U.S. Department of Agriculture Soil Conservation Service's 1993 Soil Survey of Sacramento County, California. Proposed off-site inocula sources must be approved by the Wildlife Agencies.

RE-ESTABLISHMENT/ESTABLISHMENT-3 (Re-Establishment/Establishment of Freshwater Marsh or Open Water Near Airports): During review of proposed re-establishment/establishment projects for freshwater marsh or open water on SSHCP Preserves, the Implementing Entity shall consider the potential for the location of the re-establishment/establishment projects to increase the risk of wildlife strikes or generation of ground fog at airports. If a re-establishment/ establishment project would result in (1) a net increase in open water or freshwater marsh acreage over baseline conditions[22] within 5 miles of Mather Field, Sacramento Executive Airport, or Franklin Field; or (2) replacement of open water/freshwater marsh habitat that is located 2 or more miles from Mather Field or Sacramento Executive Airport with open water/freshwater marsh habitat that is located less than 2 miles from those airports, a qualified biologist shall prepare a concise letter report. The letter report shall summarize the biologist's findings regarding (1) the species likely to use the re-established/established habitat, (2) a rough order of magnitude estimate on the peak number of birds that might use the re-established/established habitat, and (3) potential movement patterns for birds using the re-established/established habitat and whether they might cross through the airport safety zones (e.g., to reach foraging habitat or another wildlife attractant). The letter report will also provide recommendations to the Implementing Entity on how they could reduce any of the identified wildlife hazards if there are any feasible means to do so that would not conflict with the biological goals and measurable objectives of the Conservation Plan.

Condition 7. Avoid and Minimize Impacts to Streams and Creeks

AMMs associated with Condition 7 must be applied to all Covered Activities where a stream or creek is located within a project footprint.

[22] For purposes of establishing baseline conditions, Freshwater Marsh and Open Water acreages will be calculated using that version of the SSHCP Land Cover Type Map in existence as of the date that the SSHCP permit was issued to the Plan Permittees by the USFWS.

STREAM-1 (Laguna Creek Wildlife Corridor): A 150-foot setback measured from the top of the bank on both sides of the stream will be applied to Laguna Creek within the Urban Development Area (minimum 300-foot corridor width). If trails are located within the Laguna Creek Wildlife Corridor, the nearest edge of the trail will be located at least 80 feet from the top of the bank.

STREAM-2 (UDA Stream Setbacks): A 100-foot setback measured from the top of the bank on both sides of the stream channel will be applied to all streams listed in Table 5-1 (see also Figure 2-4). If a stream reach supports woody riparian vegetation, the setback will be equal to the riparian edge plus 25 feet or will be the setback defined above, whichever is greater. If trails are located within the Stream Setback, the nearest edge of the trail will be located at least 50 feet from the top of the bank.

Table 5-1
Stream Setback Minimum Requirements in the Urban Development Area

Stream	Minimum Setback (from the Top of Bank Measured in Aerial Perspective) on Both Sides of the Stream
Elder Creek	100 feet
Frye Creek	100 feet or as depicted as part of the NewBridge development project hardline Preserve (see Appendix K)
Gerber Creek	100 feet
Morrison Creek	100 feet
Central Paseo	100 feet or as depicted as part of the Cordova Hills development project hardline Preserve (Appendix K)
Sun Creek	100 feet or as depicted as part of the Sun Creek development project hardline Preserve (see Appendix K)

STREAM-3 (Minor Tributaries to UDA Streams): A 25-foot setback measured from the top of the bank on both sides of the stream channel will be applied to all avoided first and second order tributaries to the streams listed in Table 5-1 and Laguna Creek. Refer to Objective W6 in Chapter 7 (Table 7-1) regarding avoided first and second order tributaries. Trails are not permitted within headwater ephemeral Stream Setbacks.

STREAM-4 (Minimize Effects from Temporary Channel Re-Routing): When an Urban Development Covered Activity temporarily re-routes a stream, creek, or drainage, the re-routing will be completed in a manner that minimizes impacts to beneficial uses and habitat. The following measures will be employed to minimize disturbances that will adversely impact water quality:

- No equipment will be operated in areas of flowing or standing water.
- Construction materials and heavy equipment must be stored outside of the active flow of any waters.

- When work within waters is necessary, the entire stream flow will be diverted around the work area.
- In the event of rain, the disturbed in-water work area will be temporarily stabilized before water body flow exceeds the capacity of the diversion structure. The disturbed water body will be stabilized so that the disturbed areas will not come in contact with the flow.
- Once construction is complete, all project-introduced material (e.g., pipes, gravel, cofferdam, sandbags) must be removed, leaving the water as it was before construction. Excess materials will be disposed of at an appropriate disposal site.
- All work areas will be effectively isolated from stream flows using suitable control measures before commencement of any in-water work. The diverted stream flow will not be contaminated by construction activities. Structures for isolating the in-water work area and/or diverting the stream flow (e.g., cofferdam, geo-textile silt curtain) will not be removed until all disturbed areas are cleaned and stabilized.
- Any flow diversion used during construction will be designed in a manner to prevent pollution and minimize siltation, and will provide flows to downstream reaches. Flows will be maintained to support existing aquatic life, riparian wetlands, and habitat that may be located upstream and downstream from any temporary diversion.
- All surface waters, including ponded waters, will be diverted away from areas undergoing grading, construction, excavation, vegetation removal, and/or any other activity that may result in a discharge to waters.
- All temporary dewatering methods will be designed to have the minimum necessary impacts to waters to isolate the immediate work area. All dewatering methods will be installed such that natural flow is maintained upstream and downstream of the diversion area. Any temporary dams and diversions will be installed such that the diversion does not cause sedimentation, siltation, or erosion upstream or downstream of the diversion area. All dewatering methods will be removed immediately upon completion of diversion activities.
- A method of containment must be used below any bridge, boardwalk, and/or temporary crossing to prevent debris from falling into the waters through the entire duration of a project.

- If temporary surface water diversions and/or dewatering are anticipated, the Third-Party Project Proponent will develop and maintain on site a surface water diversion and/or dewatering plan. The plan(s) must be developed prior to initiation of any water diversions and will include the proposed method and duration of diversion activities. The plan(s) must be made available to Central Valley Water Board staff upon request.
- When work in a flowing stream is unavoidable and any dam or other artificial obstruction is being constructed, maintained, or placed in operation, sufficient water will be allowed at all times to pass downstream to maintain beneficial uses of waters below the dam. Construction, dewatering, and removal of temporary cofferdams will not violate the turbidity, settle-able matter, pH, temperature, or dissolved oxygen requirements of any Water Quality Control Plan.
- Any temporary dam or other artificial obstruction will only be built from clean materials such as sandbags, gravel bags, water dams, or clean/washed gravel that will cause little or no siltation. Stream flow will be temporarily diverted using gravity flow through temporary culverts or pipes, or pumped around the work site with the use of hoses.

STREAM-5 (Design for Stream Channel Re-Routing, Widening, or Deepening): When an Urban Development Covered Activity alters a stream, creek, or drainage by re-routing, widening, or deepening a channel, the project design will include the following:

- The main channel of a re-routed channel will be free to migrate laterally over its active and terrace floodplain.
- Channel geometry (plan, profile, and cross-section) of the site will be appropriate for the watershed location and physical/hydrologic condition.
- Local, native materials will be used as fill material to the extent practicable.
- Bioengineering techniques will be used for construction and maintenance of bank stabilization. Bioengineered bank stabilization structures will use vegetation in combination with bank reshaping; biodegradeable geotextile materials; and, in some cases, a minimal amount of rock or wood to the extent practicable to dissipate erosive energy. Third-Party Project Proponents will consult a professional engineer when considering using bioengineering techniques.
- All re-routed, widened, or deepened streams are required to establish Stream Setbacks with minimum widths required under STREAM-1, STREAM-2, or STREAM-3. All re-routed, widened, or deepened streams must re-establish/

establish and maintain native Woody Riparian land cover and/or native Grassland Riparian land cover in the entire Stream Setback.

Condition 8. Avoid and Minimize Impacts to Covered Species from Utility and Utility Maintenance Covered Activities

AMMs associated with Condition 8 must be applied to all Covered Activities associated with construction and maintenance of infrastructure projects.

UTILITY-1 (Avian Collision Avoidance): Installation of new, or relocation of existing, utility poles, lines, and cell towers located within the Preserve System or within 1,000 feet of a Preserve boundary will be coordinated with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. The applicant or relevant utility/service provider will install utility poles, lines, and cell towers in conformance with Avian Powerline Interaction Committee (APLIC) standards for collision-reducing techniques, as outlined in Reducing Avian Collisions with Power Lines: State of the Art in 2012 (APLIC 2012), or any superseding document issued by the APLIC.

UTILITY-2 (Utility Maintenance on Preserves): Utility maintenance inside SSHCP Preserves and SSHCP Preserve Setbacks containing vernal pools will occur only when vernal pools have been dry for 30 days, except in emergency situations related to human health and safety.

UTILITY-3 (Trenchless Construction Methods): Where a pipeline or conduit crosses an existing or planned Preserve or will be located between adjacent Preserves (e.g., under a roadway that has a Preserve on both sides), trenchless construction methods will be used to minimize impacts to the existing soil profile (including impacts to a hardpan or duripan) to maintain the perched aquifer in Vernal Pool Grassland land cover type.

UTILITY-4 (Siting of Entry and Exit Location): The entry and exit locations for the trenchless construction method (see Utility-3) will be sited to avoid impacts to vernal pools and Riparian Woodland, and to avoid direct take of SSHCP Covered Species.

Condition 9. Avoid and Minimize Impacts That Might Result From Removing or Breaching Levees to Establish or Re-establish Riparian Habitat

LEVEE-1 (Preparation of Hydrologic Analysis): Prior to approving a draft Preserve Management Plan that includes (1) modifying or breaching an existing levee, or (2) would place a potential impedance to high-water event flood-flows on the water side of an existing levee (including new riparian vegetation plantings or

other new Preserve facilities), a hydrologic analysis will be conducted. The Preserve activity will only be implemented if the hydrologic analysis concludes that the activity will not result in a substantial increase in flood stage elevations or flood risk on lands outside the Preserve.

Condition 10. Avoid and Minimize Impacts That Might Result From Potential Residual Contamination of Preserves and Related Exposure of People to Such Hazardous Materials

HAZARDOUS MATERIALS-1 (Preparation of Phase I Environmental Site Assessment): Prior to the acquisition of a preserve site or implementation of a stream or riparian restoration project, a Phase I Environmental Site Assessment shall be conducted in general accordance with the American Society for Testing and Materials Standard Practice E1527-05. The purpose of this Environmental Site Assessment is to identify, to the extent feasible pursuant to the American Society for Testing and Materials Standard, recognized environmental conditions in connection with the potential site. The term "recognized environmental condition" means the presence or likely presence of hazardous substances or petroleum products on the property under conditions that may indicate an existing release, a past release, or a material threat of release of these substances to the property. If the Phase 1 Environmental Site Assessment indicates the presence of a recognized environmental condition, the Implementing Entity shall consider the following options.

- Determine that the acquisition/project can proceed on the basis that the Habitat Plan goals and objectives can be met on the site even with the presence of a recognized environmental condition.
- Conduct a Phase II Environmental Site Assessment, including soil and groundwater testing, to further study the potential for contamination to limit the Implementing Entity's management activities.
- If the results of the Phase I (or Phase II) Environmental Site Assessment indicate that the Habitat Plan goals and objectives cannot be met on the site, the Implementing Entity should not acquire the site.

HAZARDOUS MATERIALS-2 (Contingency Plan): As part of each Preserve Management Plan or site restoration plan, a Contingency Plan shall be prepared to address the actions that would be taken during construction in the event that unexpected contaminated soil or groundwater is discovered. The Contingency Plan shall include health and safety considerations, handling and disposal of wastes, reporting requirements, and emergency procedures. The Contingency Plan shall include a requirement that if evidence of contaminated materials is encountered

during construction, construction would cease immediately and applicable requirements of the Comprehensive Environmental Release Compensation and Liability Act and the California Code of Regulations Title 22 regarding the disposal of waste would be implemented.

5.4.2 Covered Species Take Avoidance and Minimization Measures

The following section describes measures to avoid or minimize effects of Covered Activities on specific SSHCP Covered Species. Species-specific AMMs include species surveys, pre-construction surveys, and construction monitoring. Most species-specific AMMs require that species surveys be conducted if Covered Species modeled habitat is within the proposed Covered Activity footprint or within a specified distance of the proposed Covered Activity. Section 3.4 provides maps and descriptions of modeled habitat for each Covered Species. The AMMs described below apply to Covered Activities when Covered Species modeled habitat or a Covered Species occurrence are at a project site. The Implementing Entity and Wildlife Agencies may update specific SSHCP AMMs over the Permit Term to provide the best and most appropriate protective measures for a Covered Species.

General Covered Species Take Avoidance and Minimization Measures

The following AMMs will apply to all Covered Activities that are required to implement Covered Species take AMMs.

SPECIES-1 (Litter Removal Program): A litter control program will be instituted for the entire project site. All workers will ensure that their food scraps, paper wrappers, food containers, cans, bottles, and other trash are deposited in covered or closed trash containers. All garbage will be removed from the project site at the end of each work day, and construction personnel will not feed or otherwise attract wildlife to the area where construction activities are taking place.

SPECIES-2 (No Pets in Construction Areas): To avoid harm and harassment of native species, workers and visitors will not bring pets onto a project site.

SPECIES-3 (Take Report): If accidental injury or death of any Covered Species occurs, workers will immediately inform the approved biologist or on-site monitor and site supervisor. The approved biologist or on-site monitor will phone the appropriate contact person at the Implementing Entity. The Implementing Entity will immediately contact the Wildlife Agencies by telephone. A memorandum will be provided to the Implementing Entity and Wildlife Agencies within 1 working day of the incident. The report will provide the date and location of the incident, number of individuals taken,

the circumstances resulting in the take, and any corrective measures taken to prevent additional take.

SPECIES-4 (Post-Construction Compliance Report): A post-construction compliance report will be submitted to the SSHCP Implementing Entity within 30 calendar days of completion of construction activities or within 30 calendar days of any break in construction activity that lasts more than 30 days. The report will detail the construction start and completion dates, any information about meeting or failing to meet species take Avoidance and Minimization Measures (AMM), effectiveness of each AMM that was applied at the project site, and any known project effects to Covered Species.

Rare Plants

PLANT-1 (Rare Plant Surveys): If a Covered Activity project site contains modeled habitat for Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii)*, Bogg's Lake hedge-hyssop (*Gratiola heterosepala)*, dwarf downingia (*Downingia pusilla)*, Legenere (*Legenere limosa*), pincushion navarretia (*Navarretia myersii)*, or Sanford's arrowhead (*Sagittaria sanfordii*), the Covered Activity project site will be surveyed for the rare plant by an approved biologist and following the California Department of Fish and Wildlife (CDFW) rare plant survey protocols (CDFG 2009) or the most recent CDFW rare plant survey protocols. An approved biologist will conduct the field surveys and will identify and map plant species occurrences according to the protocols. See Chapter 10 for the process to submit survey information to the Plan Permittee and the Permitting Agencies.

PLANT-2 (Rare Plant Protection): If a rare plant listed in AMM PLANT-1 is detected within an area proposed to be disturbed by a Covered Activity or is detected within 250 feet of the area proposed to be disturbed by a Covered Activity, the Implementing Entity will assure one unprotected occurrence of the species is protected within a SSHCP Preserve before any ground disturbance occurs a the project site.

Sacramento and Slender Orcutt Grass

Sacramento Orcutt grass (*Orcuttia viscida*) is a federally and state endangered species and is ranked by the California Native Plant Society as a California Rare Plant Rank 1B.1 species. Slender Orcutt grass (*Orcuttia tenuis*) is a federally threatened and state endangered species and is ranked by the California Native Plant Society as a California Rare Plant Rank 1B.1 species. Both Orcutt grasses are very rare, and the likelihood of finding new occurrences within the Plan Area is low. Due to their rarity, take of either of these species is not permitted under the SSHCP, with the exception of take related to Preserve management and monitoring (see Section 5.2.7, SSHCP Preserve System Covered Activities).

ORCUTT-1 (Orcutt Grass Surveys): If a Covered Activity project site is located within 1 mile of the Mather Core Recovery Area and contains the Vernal Pool land cover type, the project site will be surveyed for Sacramento and slender Orcutt grass by an approved biologist following California Department of Fish and Wildlife (CDFW) rare plant survey protocols (CDFG 2009) or most recent CDFW guidelines to determine if Sacramento and/or slender Orcutt grass is present. An approved biologist will conduct the field investigation to identify and map occurrences. See Chapter 10 for the process to conduct and submit survey information.

ORCUTT-2 (Orcutt Grass Protection): Where known or new Sacramento or slender Orcutt grass occurrences are found, they will be protected within an SSHCP Preserve that is at least 50 acres. The occurrence will be located interior to the Preserve at a distance of no less than 300 feet from the edge of the Preserve boundary. If a Third-Party Project Proponent encounters a previously undiscovered occurrence of Sacramento or slender Orcutt grass on a Covered Activity project site, the Third-Party Project Proponent will contact the Implementing Entity or Land Use Authority Permittee with authority over the project, who will coordinate with the Wildlife Agencies for written concurrence of avoidance to ensure that the project does not cause take of the species.

California Tiger Salamander

To avoid direct and indirect effects of Covered Activities on California tiger salamander (*Ambystoma californiense*), the following AMMs will be implemented.

CTS-1 (California Tiger Salamander Daily Construction Schedule): Ground-disturbing Covered Activities within California tiger salamander modeled habitat (Figure 3-16) will occur outside the breeding and dispersal season (occur after July 31 and before October 15), to the maximum extent practicable. If Covered Activities must be implemented in modeled habitat (Figure 3-16) during the breeding and dispersal season (after October 15 and before July 31), construction activities will not start until 30 minutes after sunrise and must be complete 30 minutes prior to sunset.

CTS-2 (California Tiger Salamander Exclusion Fencing): If a Covered Activity must be implemented in modeled habitat (Figure 3-16) during the breeding and dispersal season (after October 15 and before July 31), exclusion fencing will be installed around the project footprint before October 15. Temporary high-visibility construction fencing will be installed along the edge of work areas, and exclusion fencing will be installed immediately outside of the temporary high-visibility construction fencing to exclude California tiger salamanders from entering the construction area or becoming entangled in the construction fencing. Exclusion fencing will be at least 1 foot tall and be buried

at least 6 inches below the ground to prevent salamanders from going under the fencing. Fencing will remain in place until all construction activities within the construction area are complete. No project activities will occur outside the delineated project footprint. An approved biologist must inspect the exclusion fencing and project site every morning before 7:00 a.m. for integrity and for any entrapped California tiger salamanders. If a California tiger salamander is encountered, refer to CTS-5, below. (However, the Implementing Entity may, with approval of the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW), determine that it is appropriate for a Covered Activity project to not implement CTS-2 for certain long and linear roadway Covered Activity projects if it appears that the exclusion fencing will likely trap individuals or cause more take of California tiger salamander than it would prevent.)

CTS-3 (California Tiger Salamander Monitoring): If Covered Activities must be implemented in modeled habitat (Figure 3-16), an approved biologist experienced with California tiger salamander identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place, and will inspect the project site for California tiger salamander every morning before 7:00 a.m., or prior to construction activities. As required by BMP-8 (Training of Construction Staff), the approved biologist will also train construction personnel on the required California tiger salamander avoidance procedures, exclusion fencing, and correct protocols in the event that a California tiger salamander enters an active construction zone. If a California tiger salamander is encountered, refer to CTS-5, below.

CTS-4 (Avoid California Tiger Salamander Entrapment): If Covered Activities must be implemented in modeled habitat, all excavated steep-walled holes or trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes or trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within California tiger salamander modeled habitat will be inspected for California tiger salamanders by the approved biologist prior to being moved. If a California tiger salamander is encountered, refer to CTS-5, below.

CTS-5 (California Tiger Salamander Encounter Protocol): If a California tiger salamander is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately (California Department of Fish and Wildlife (CDFW)

and U.S. Fish and Wildlife Service (USFWS)). Construction activities will be suspended in a 100-foot radius of the animal until the animal is relocated by an approved biologist with appropriate handling permits from the Wildlife Agencies. Prior to relocation, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the salamander, within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to USFWS and CDFW immediately. Any worker who inadvertently injures or kills a California tiger salamander or who finds dead, injured, or entrapped California tiger salamander(s) must immediately report the incident to the approved biologist.

CTS-6 (Erosion Control Materials in California Tiger Salamander Habitat): If erosion control (BMP-2) is implemented within California tiger salamander modeled habitat (Figure 3-16), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that salamanders are not trapped (no monofilament). Coconut coir matting and fiber rolls with burlap are examples of acceptable erosion control materials. This limitation will be communicated to the contractor through use of special provisions included in the bid solicitation package.

CTS-7 (Rodent Control): CTS-7 only applies to projects that are within California tiger salamander modeled habitat (Figure 3-16) and on Covered Activities. Rodent control will be allowed only in developed portions of a Covered Activity project site. Where rodent control is allowed, the method of rodent control will comply with the methods of rodent control discussed in the 4(d) Rule published in the U.S. Fish and Wildlife Service's (2004) final listing rule for tiger salamander.

Western Spadefoot

To avoid direct and indirect effects of Covered Activities on western spadefoot (*Spea hammondii*), the following AMMs will be implemented.

WS-1 (Western Spadefoot Work Window): Ground-disturbing Covered Activities within western spadefoot modeled habitat (Figure 3-17) will occur outside the breeding and dispersal season (after May 15 and before October 15), to the maximum extent practicable.

WS-2 (Western Spadefoot Exclusion Fencing): If Covered Activities must be implemented in modeled habitat (Figure 3-17) after October 15 and before May 15, exclusion fencing

will be installed around the project footprint before October 15, and the project site must be monitored by an approved biologist following rain events. Temporary high-visibility construction fencing will be installed along the edge of work areas, and silt fencing will be installed immediately behind the temporary high-visibility construction fencing to exclude western spadefoot from entering the construction area. Fencing will remain in place until all construction activities within the construction area are completed. No project activities will occur outside the delineated project footprint. If a western spadefoot is encountered, refer to WS-6, below.

WS-3 (Western Spadefoot Monitoring): If Covered Activities must be implemented in modeled habitat (Figure 3-17) in the breeding and dispersal season (after October 15 and before May 15), an approved biologist experienced with western spadefoot identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place, and will inspect the project site daily for western spadefoot prior to construction activities. The approved biologist will also train construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a western spadefoot enters an active construction zone (i.e., outside the buffer zone). If a western spadefoot is encountered, refer to WS-6, below.

WS-4 (Avoid Western Spadefoot Entrapment): If a Covered Activity occurs in western spadefoot modeled habitat (Figure 3-17), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within western spadefoot modeled habitat will be inspected for western spadefoot by the approved biologist prior to being moved. If a western spadefoot is encountered, refer to WS-6, below.

WS-5 (Erosion Control Materials in Western Spadefoot Habitat): If erosion control (BMP-2) is implemented within western spadefoot modeled habitat (Figure 3-17), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that western spadefoots are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.

WS-6 (Western Spadefoot Encounter Protocol): If Covered Activities must be implemented in modeled habitat (Figure 3-17) during the breeding and dispersal season (after October 15 and before May 15), and a western spadefoot is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the western spadefoot within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife immediately. Any worker who inadvertently injures or kills a western spadefoot or who finds dead, injured, or entrapped western spadefoot(s) must immediately report the incident to the approved biologist.

Giant Gartersnake

To avoid direct and indirect effects of Covered Activities on giant gartersnake (*Thamnophis gigas*), the following AMMs will be implemented.

GGS-1 (Giant Gartersnake Surveys): If the SSHCP giant gartersnake modeled habitat maps (Figure 3-18) show that modeled habitat for giant gartersnake is present within a Covered Activity's project footprint or within 300 feet of a project footprint, then an approved biologist will conduct a field investigation to delineate giant gartersnake aquatic habitat within the project footprint and adjacent areas within 300 feet of the project footprint. In addition to the SSHCP land cover types shown in Figure 3-18, giant gartersnake aquatic habitat includes, but is not limited to, low-gradient streams and creeks, open water, freshwater marsh, agricultural ditches, and rice fields. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential sites and provide these maps to the Local Land Use Permittees and the Implementing Entity. Locations of delineated giant gartersnake habitat must also be noted on plans that are submitted to a Local Land Use Permittee. The applicant will use this information to finalize project design. Covered Activities may occur throughout the year as long as giant gartersnake habitat is identified and fully avoided. Otherwise, Covered Activities must comply with GGS-2 through GGS-8, below. See Chapter 10 for the process to conduct and submit survey information.

GGS-2 (Giant Gartersnake Work Window): Covered Activities that do not fully avoid giant gartersnake modeled habitat (Figure 3-18) will be conducted during the snake's active

season. Construction and ground-disturbing activities will be initiated after May 1 and will end prior to September 15. If it appears that construction activities may go beyond September 15, the Third-Party Project Proponent or Plan Permittee will contact the Local Land Use Permittee and the Implementing Entity as soon as possible, but not later than September 1. The Local Land Use Permittee and the Implementing Entity will discuss with the Wildlife Agencies additional measures necessary to minimize take.

GGS-3 (Giant Gartersnake Monitoring): If a Covered Activity is occurring in giant gartersnake modeled habitat (Figure 3-18), an approved biologist experienced with giant gartersnake identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place in aquatic habitat or within 300 feet of aquatic habitat, and will inspect the project site daily for giant gartersnake prior to construction activities. If a giant gartersnake is encountered, refer to GGS-7. The approved biologist will also train construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a giant gartersnake enters an active construction zone (i.e., outside the buffer zone).

GGS-4 (Giant Gartersnake Habitat Dewatering and Exclusion): If construction activities will occur in giant gartersnake aquatic habitat, aquatic habitat will be dewatered and then remain dry and absent of aquatic prey (e.g., fish and tadpoles) for 15 days prior to initiation of construction activities. If complete dewatering is not possible, the Implementing Entity will be contacted to determine what additional measures may be necessary to minimize effects to giant gartersnake. After aquatic habitat has been dewatered 15 days prior to construction activities, exclusion fencing will be installed extending a minimum of 300 feet into adjacent uplands to isolate both the aquatic and adjacent upland habitat. Exclusionary fencing will be erected 36 inches above ground and buried at least 6 inches below the ground to prevent snakes from attempting to move under the fence into the construction area. In addition, high-visibility fencing will be erected to identify the construction limits and to protect adjacent habitat from encroachment of personnel and equipment. Giant gartersnake habitat outside construction fencing will be avoided by all construction personnel. The fencing and the work area will be inspected by the approved biologist to ensure that the fencing is intact and that no snakes have entered the work area before the start of each work day. The fencing will be maintained by the contractor until completion of the project. If giant gartersnake is encountered, refer to GGS-7, below.

GGS-5 (Avoid Giant Gartersnake Entrapment): If a Covered Activity occurs in giant gartersnake modeled habitat (Figure 3-18), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or

provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within giant gartersnake modeled habitat will be inspected for giant gartersnake by the approved biologist prior to being moved. If a giant gartersnake is encountered, refer to GGS-7.

GGS-6 (Erosion Control Materials in Giant Gartersnake Habitat): If erosion control (BMP-2) is implemented within giant gartersnake modeled habitat (Figure 3-18), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure snakes are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.

GGS-7 (Giant Gartersnake Encounter Protocol): If a giant gartersnake is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the giant gartersnake within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service immediately. Any worker who inadvertently injures or kills a giant gartersnake or who finds one dead, injured, or entrapped must immediately report the incident to the approved biologist.

GGS-8 (Giant Gartersnake Post-Construction Restoration): After completion of ground-disturbing Covered Activities, the applicant will remove any temporary fill and construction debris and will restore temporarily disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Implementing Entity. Restoration work may include replanting emergent aquatic vegetation. Refer to the U.S. Fish and Wildlife Service's (USFWS) Guidelines for the Restoration and/or Replacement of Giant Gartersnake Habitat (USFWS 1997), or the most current USFWS guidelines at the time of the

activity. A photo documentation report showing pre- and post-project conditions will be submitted to the Implementing Entity 1 month after implementation of the restoration.

Western Pond Turtle

To avoid direct and indirect effects of Covered Activities on western pond turtle (*Actinemys marmorata*), the following AMMs will be implemented.

WPT-1 (Western Pond Turtle Surveys): If the SSHCP western pond turtle modeled habitat maps (Figure 3-19) show that modeled habitat for western pond turtle is present within a Covered Activity's project footprint or within 300 feet of a project footprint, then an approved biologist will conduct a field investigation to delineate western pond turtle aquatic habitat within the project footprint and within 300 feet of the project footprint. In addition to the SSHCP land cover types shown in Figure 3-19, western pond turtle aquatic habitat includes, but is not limited to, low-gradient streams and creeks, open water, freshwater marsh, and rice fields. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential sites and provide those maps to the Local Land Use Permittees and the Implementing Entity. Locations of delineated western pond turtle habitat must also be noted on plans that are submitted to a Local Land Use Permittee. The applicant will use this information to finalize project design. Covered Activities may occur throughout the year as long as western pond turtle habitat is identified and fully avoided. Otherwise, Covered Activities must comply with WPT-2 through WPT-9. See Chapter 10 for the process to conduct and submit survey information.

WPT-2 (Western Pond Turtle Work Window): Maintenance and improvements to existing structures may occur throughout the year as long as western pond turtle habitat is identified and avoided, and movement of equipment is confined to existing roads. Otherwise, construction and ground-disturbing Covered Activities must be conducted outside of western pond turtle's active season. Construction and ground-disturbing activities will be initiated after May 1 and will commence prior to September 15. If it appears that construction activities may go beyond September 15, the appropriate Plan Permittee will contact the Local Land Use Permittee and the Implementing Entity as soon as possible, but not later than September 1, to determine if additional measures are necessary to minimize take.

WPT-3 (Western Pond Turtle Monitoring): If a Covered Activity is occurring in western pond turtle modeled habitat (Figure 3-19), an approved biologist experienced with western pond turtle identification and behavior will monitor the project site, including the

integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place in aquatic habitat or within 300 feet of aquatic habitat, and will inspect the project site daily for western pond turtle prior to construction activities. The approved biologist will also training construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a western pond turtle enters an active construction zone (i.e., outside the buffer zone).

WPT-4 (Western Pond Turtle Habitat Dewatering and Exclusion): If construction activities will occur in western pond turtle aquatic habitat, aquatic habitat for the turtle will be dewatered and then remain dry and absent of aquatic prey (e.g., crustaceans and other aquatic invertebrates) for 15 days prior to the initiation of construction activities. If complete dewatering is not possible, the Implementing Entity will be contacted to determine what additional measures may be necessary to minimize effects to western pond turtle. After aquatic habitat has been dewatered 15 days prior to construction activities, exclusion fencing will be installed extending a minimum of 300 feet into adjacent uplands to isolate both the aquatic and adjacent upland habitat. Exclusionary fencing will be erected 36 inches above ground and buried at least 6 inches below the ground to prevent turtles from attempting to burrow or move under the fence into the construction area. In addition, high-visibility fencing will be erected to identify construction limits and to protect adjacent habitat from encroachment of personnel and equipment. Western pond turtle habitat outside construction fencing will be avoided by all construction personnel. The fencing and work area will be inspected by the approved biologist to ensure that the fencing is intact and that no turtles have entered the work area before the start of each work day. Fencing will be maintained by the contractor until completion of the project. If, after exclusion fencing and dewatering, western pond turtles are found within the project footprint or within 300 feet of the project footprint, the Third-Party Project Proponent will discuss the next best steps with the Implementing Entity and Wildlife Agencies.

WPT-5 (Avoid Western Pond Turtle Entrapment): If a Covered Activity occurs within western pond turtle modeled habitat (Figure 3-19), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within western pond turtle modeled habitat will be inspected for western pond turtle by the approved biologist prior to being moved.

WPT-6 (Erosion Control Materials in Western Pond Turtle Habitat): If erosion control (BMP-2) is implemented within western pond turtle modeled habitat (Figure 3-19), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that turtles are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.

WPT-7 (Western Pond Turtle Modeled Habitat Speed Limit): Covered Activity construction and maintenance vehicles will observe a 20-mile-per-hour speed limit within western pond turtle modeled upland habitat (Figure 3-19).

WPT-8 (Western Pond Turtle Encounter Protocol): If a western pond turtle is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the turtle, within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service immediately. Any worker who inadvertently injures or kills a western pond turtle or who finds one dead, injured, or entrapped must immediately report the incident to the approved biologist.

WPT-9 (Western Pond Turtle Post-Construction Restoration): After completion of ground-disturbing Covered Activities, the applicant will remove any temporary fill and construction debris and will restore temporarily disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Implementing Entity. Restoration work may include replanting emergent aquatic vegetation and placing appropriate artificial or natural basking areas in waterways and wetlands. A photo documentation report showing pre- and post-project conditions will be submitted to the Implementing Entity 1 month after implementation of the restoration.

Tricolored Blackbird

To avoid direct and indirect effects of Covered Activities on tricolored blackbird (*Agelaius tricolor*), the following AMMs will be implemented.

TCB-1 (Tricolored Blackbird Surveys): If modeled habitat for tricolored blackbird is present within a Covered Activity's project footprint or within 500 feet of a project footprint, then an approved biologist will conduct a field investigation to determine if existing or potential nesting or foraging sites are present within the project footprint and adjacent areas within 500 feet of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Within the Plan Area, potential tricolor blackbird nest sites are often associated with freshwater marsh and seasonal wetlands, or in thickets of willow, blackberry, wild rose, thistle, and other thorny vegetation. Tricolored blackbirds are also known to nest in crops associated with dairy farms. Foraging habitat is associated with annual grasslands, wet and dry vernal pools and other seasonal wetlands, agricultural fields (such as large tracts of alfalfa and pastures with continuous haying schedules and recently tilled fields), cattle feedlots, and dairies. The Third-Party Project Proponent will map all existing or potential nesting or foraging sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Nesting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

TCB-2 (Tricolored Blackbird Pre-Construction Surveys): Pre-construction surveys will be required to determine if active nests are present within a project footprint or within 500 feet of a project footprint if existing or potential nest sites were found during design surveys and construction activities will occur during the breeding season (March 1 through September 15). An approved biologist will conduct pre-construction surveys within 30 days and within 3 days of ground-disturbing activities, and within the proposed project footprint and 500 feet of the proposed project footprint to determine the presence of nesting tricolored blackbird. Pre-construction surveys will be conducted during the breeding season (March 1 through August 31). Surveys conducted in February (to meet pre-construction survey requirements for work starting in March) must be conducted within 14 days and 3 days in advance of ground-disturbing activities. If a nest is present, then TCB-3 and TCB-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and the Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

TCB-3 (Tricolored Blackbird Nest Buffer): If active nests are found within the project footprint or within 500 feet of any project-related Covered Activity, the Third-Party Project Proponent will establish a 500-foot temporary buffer around the active nest until the young have fledged.

TCB-4 (Tricolored Blackbird Nest Buffer Monitoring): If nesting tricolored blackbirds are present within the project footprint or within 500 feet of any project-related Covered

Activity, then an approved biologist experienced with tricolored blackbird behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place near the disturbance buffer. Work within the nest disturbance buffer will not be permitted. If the approved biologist determines that tricolored blackbirds are exhibiting agitated behavior, construction will cease until the buffer size is increased to a distance necessary to result in no harm or harassment to the nesting tricolored blackbirds. If the biologist determines that the colonies are at risk, a meeting with the Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will be held to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a tricolored blackbird flies into an active construction zone (i.e., outside the buffer zone).

TCB-5 (Timing of Pesticide Use and Harvest Timing on Agricultural Preserves): On SSHCP Agricultural Preserves, pesticides (including herbicides) will not be applied from January 1 through July 15.

Swainson's Hawk

To avoid direct and indirect effects of Covered Activities on Swainson's hawk (*Buteo swainsoni*), the following AMMs will be implemented.

SWHA-1 (Swainson's Hawk Surveys): If modeled habitat for Swainson's hawk (Figure 3-25) is present within a Covered Activity's project footprint or within 0.25 mile of a project footprint, then an approved biologist will conduct a survey to determine if existing or potential nesting sites are present within the project footprint and adjacent areas within 0.25 mile of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Nest sites are often associated with Riparian land cover, but also include lone trees in fields, trees along roadways, and trees around structures. Nest trees may include, but are not limited to, Fremont's cottonwood (*Populus fremontii*), oaks (*Quercus* spp.), willows (*Salix* spp.), walnuts (*Juglans* spp.), eucalyptus (*Eucalyptus* spp.), pines (*Pinus* spp.), and Deodar cedar (*Cedrus deodara*). The Third-Party Project Proponent will map all existing and potential nesting sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Nesting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

SWHA-2 (Swainson's Hawk Pre-Construction Surveys): Pre-construction surveys will be required to determine if active nests are present within a project footprint or within 0.25 mile of a project footprint if existing or potential nest sites were found during initial surveys and construction activities will occur during the breeding season (March 1 through September 15). An approved biologist will conduct pre-construction surveys within 30 days and 3 days of ground-disturbing activities to determine presence of nesting Swainson's hawk. Pre-construction surveys will be conducted during the breeding season (March 1 through September 15). If a nest is present, then SWHA-3 and SWHA-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

SWHA-3 (Swainson's Hawk Nest Buffer): If active nests are found within the project footprint or within 0.25 mile of any project-related Covered Activity, the Third-Party Project Proponent will establish a 0.25 mile disturbance buffer around the active nest until the young have fledged, with concurrence from the Wildlife Agencies.

SWHA-4 (Swainson's Hawk Nest Buffer Monitoring): If nesting Swainson's hawks are present within the project footprint or within 0.25 mile of any project-related Covered Activity, then an approved biologist experienced with Swainson's hawk behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place within the buffer. Work within the temporary nest disturbance buffer can occur with the written permission of the Implementing Entity and Wildlife Agencies. If nesting Swainson's hawks begin to exhibit agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, the approved biologist will have the authority to shut down construction activities. If agitated behavior is exhibited, the biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a Swainson's hawk flies into an active construction zone (i.e., outside the buffer zone).

Greater Sandhill Crane

To avoid direct and indirect effects of Covered Activities on greater sandhill crane (*Grus canadensis*), the following AMMs will be implemented.

GSC-1 (Greater Sandhill Crane Surveys): If modeled habitat for greater sandhill crane (Figure 3-22) is present within a Covered Activity's project footprint or within 0.5 mile of a project footprint, then an approved biologist will conduct a field investigation to determine if existing or potential roosting sites are present within the project footprint and adjacent areas within 0.5 mile of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Roosting sites within the Plan Area are often associated with flooded fields, seasonal wetlands, and freshwater marsh. The Third-Party Project Proponent will map all existing or potential roosting sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Roosting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

GSC-2 (Greater Sandhill Crane Pre-Construction Surveys): Pre-construction surveys will be required to determine if active roosting sites are present within a project footprint or within 0.5 mile of a project footprint if existing or potential roosting sites were found during initial surveys and construction activities will occur when wintering flocks are present within the Plan Area (September 1 through March 15). An approved biologist will conduct pre-construction surveys within 15 days of ground-disturbing activities, and within 0.5 mile of a project footprint, to determine presence of roosting greater sandhill cranes. Pre-construction surveys will be conducted September 1 through March 15, when wintering flocks are present within the Plan Area. If birds are present, then GSC-3, GSC-4, and GSC-5 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

GSC-3 (Greater Sandhill Crane Roosting Buffer): If active roosting sites are found within the project footprint or within 0.5 mile of any project-related Covered Activity, the Third-Party Project Proponent will establish a 0.5 mile temporary roosting disturbance buffer around the roosting site until the cranes have left.

GSC-4 (Greater Sandhill Crane Visual Barrier): Greater sandhill cranes have low tolerance for human disturbance, and such disturbance has caused cranes to abandon foraging and roosting sites. Repeat disturbance affects their ability to feed and store energy needed for survival. If project-related activities occur within 0.5 mile of a known roosting site as identified by surveys conducted during implementation of GSC-1 or GSC-2, a visual barrier will be constructed.

GSC-5 (Greater Sandhill Crane Roosting Buffer Monitoring): If roosting sites are found within the project footprint or within 0.50 mile of any project-related Covered Activity, an

approved biologist experienced with greater sandhill crane behavior will be retained by the Third-Party Project Proponent to monitor the roosting site throughout the roosting season and to determine when the birds have left. The approved biologist will be on site daily while construction-related activities are taking place within the disturbance buffer. Work within the temporary disturbance buffer can only occur with the written permission of the Implementing Entity and Wildlife Agencies. If greater sandhill cranes are abandoning their roosting and/or forage sites, the approved biologist will have the authority to shut down construction activities. If roost abandonment occurs, the approved biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid harm and harassment of individuals. The approved biologist will also train construction personnel on the avoidance procedures, buffer zones, and protocols in the event that greater sandhill cranes move into an active construction zone (i.e., outside the buffer zone).

Western Burrowing Owl

To avoid direct and indirect effects of Covered Activities on western burrowing owl (*Athene cunicularia*), the following AMMs will be implemented.

WBO-1 (Western Burrowing Owl Surveys): Surveys within modeled habitat are required for both the breeding and non-breeding season. If the project site falls within modeled habitat, an approved biologist will survey the project site and map all burrows, noting any burrows that may be occupied. Occupied burrows are often (but not always) indicated by tracks, feathers, egg shell fragments, pellets, prey remains, and/or excrement. Surveying and mapping will be conducted by the approved biologist while walking transects throughout the entire project site plus all accessible areas within a 250-foot radius from the project site. The centerline of these transects will be no more than 50 feet apart and will vary in width to account for changes in terrain and vegetation that can preclude complete visual coverage of the area. For example, in hilly terrain with patches of tall grass, transects will be closer together, and in open areas with little vegetation, they can be 50 feet apart. This methodology is consistent with current survey protocols for this species (California Burrowing Owl Consortium 1993). Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. If suitable habitat is identified during the initial survey, and if the project does not fully avoid the habitat, pre-construction surveys will be required. Burrowing owl habitat is fully avoided if project-related activities do not impinge on a 250-foot buffer established by the approved biologist around suitable burrows. See Chapter 10 for the process to conduct and submit survey information.

WBO-2 (Western Burrowing Owl Pre-Construction Surveys): Prior to any Covered Activity ground disturbance, an approved biologist will conduct pre-construction surveys in all areas that were identified as suitable habitat during the initial surveys. The purpose of the pre-construction surveys is to document the presence or absence of burrowing owls on the project site, particularly in areas within 250 feet of construction activities. To maximize the likelihood of detecting owls, the pre-construction survey will last a minimum of 3 hours. The survey will begin 1 hour before sunrise and continue until 2 hours after sunrise (3 hours total), or begin 2 hours before sunset and continue until 1 hour after sunset. Additional time may be required for large project sites. A minimum of two pre-construction surveys will be conducted (if owls are detected on the first survey, a second survey is not needed). All owls observed will be counted and their location will be mapped. Surveys will conclude no more than 2 calendar days prior to construction. Therefore, the Third-Party Project Proponent must begin surveys no more than 4 days prior to construction (2 days of surveying plus up to 2 days between surveys and construction). To avoid last-minute changes in schedule or contracting that may occur if burrowing owls are found, the Third-Party Project Proponent may also conduct a preliminary survey up to 15 days before construction. This preliminary survey may count as the first of the two required surveys as long as the second survey concludes no more than 2 calendar days in advance of construction.

WBO-3 (Burrowing Owl Avoidance): If western burrowing owl or evidence of western burrowing owl is observed on the project site or within 250 feet of the project site during pre-construction surveys, then the following will occur:

During Breeding Season: If the approved biologist finds evidence of western burrowing owls within a project site during the breeding season (February 1 through August 31), all project-related activities will avoid nest sites during the remainder of the breeding season or while the nest remains occupied by adults or young (nest occupation includes individuals or family groups foraging on or near the site following fledging). Avoidance is establishment of a minimum 250-foot buffer zone around nests. Construction and other project-related activities may occur outside of the 250-foot buffer zone. Construction and other project-related activities may be allowed inside of the 250-foot non-disturbance buffer during the breeding season if the nest is not disturbed, and the Third-Party Project Proponent develops an avoidance, minimization, and monitoring plan that is approved by the Implementing Entity and Wildlife Agencies prior to project construction based on the following criteria:

- The Implementing Entity and Wildlife Agencies approve of the avoidance and minimization plan provided by the project applicant.

- An approved biologist monitors the owls for at least 3 days prior to construction to determine baseline nesting and foraging behavior (i.e., behavior without construction).
- The same approved biologist monitors the owls during construction and finds no change in owl nesting and foraging behavior in response to construction activities.

If there is any change in owl nesting and foraging behavior as a result of construction activities, the approved biologist will have authority to shut down activities within the 250-foot buffer. Construction cannot resume within the 250-foot buffer until any owls present are no longer affected by nearby construction activities, and with written concurrence from the Wildlife Agencies.

If monitoring by the approved biologist indicates that the nest is abandoned prior to the end of nesting season and the burrow is no longer in use, the non-disturbance buffer zone may be removed if approved by the Wildlife Agencies. The approved biologist will excavate the burrow in accordance with the latest California Department of Fish and Wildlife guidelines for burrowing owl to prevent reoccupation after receiving approval from the Wildlife Agencies.

The Implementing Entity and Wildlife Agencies will respond to a request from the Third-Party Project Proponent to review the proposed construction monitoring plan within 21 days.

During Non-Breeding Season: During the non-breeding season (September 1 through January 31), the approved biologist will establish a minimum 250-foot non-disturbance buffer around occupied burrows. Construction activities outside of this 250-foot buffer will be allowed. Construction activities within the non-disturbance buffer will be allowed if the following criteria are met to prevent owls from abandoning over-wintering sites:

- An approved biologist monitors the owls for at least 3 days prior to construction to determine baseline foraging behavior (i.e., behavior without construction).
- The same approved biologist monitors the owls during construction and finds no change in owl foraging behavior in response to construction activities.
- If there is any change in owl foraging behavior as a result of construction activities, the approved biologist will have authority to shut down activities within the 250-foot buffer.
- If the owls are gone for at least 1 week, the Third-Party Project Proponent may request approval from the Implementing Entity and Wildlife Agencies that an approved biologist excavate usable burrows and install one-way exclusionary

devices to prevent owls from re-occupying the site. After all usable burrows are excavated, the buffer zone will be removed and construction may continue.

Monitoring must continue as described above for the non-breeding season as long as the burrow remains active.

WBO-4 (Burrowing Owl Construction Monitoring): During construction of Covered Activities, 250-foot construction buffer zones will be established and maintained around any occupied burrow. An approved biologist will monitor the site to ensure that buffers are enforced and owls are not disturbed. The approved biologist will also train construction personnel on avoidance procedures, buffer zones, and protocols in the event that a burrowing owl flies into an active construction zone.

WBO-5 (Burrowing Owl Passive Relocation): Passive relocation is not allowed without the express written approval of the Wildlife Agencies. Passive owl relocation may be allowed on a case-by-case basis on project sites during the non-breeding season (September 1 through January 31) with the written approval of the Wildlife Agencies if the other measures described in this condition preclude work from continuing. Passive relocation must be done in accordance with the latest California Department of Fish and Wildlife guidelines for burrowing owl. Passive relocation will only be proposed if the burrow needing to be removed or with the potential to collapse from construction activities is the result of a Covered Activity. If passive relocation is approved by the Wildlife Agencies, an approved biologist can passively exclude birds from their burrows during the non-breeding season by installing one-way doors in burrow entrances. These doors will be in place for 48 hours to ensure that owls have left the burrow, and then the biologist will excavate the burrow to prevent reoccupation. Burrows will be excavated using hand tools only. During excavation, an escape route will be maintained at all times. This may include inserting an artificial structure into the burrow to avoid having materials collapse into the burrow and trap owls inside. Other methods of passive relocation, based on best available science, may be approved by the Wildlife Agencies over the 50-year Permit Term.

WBO-6 (Burrowing Owl Timing of Maintenance Activities): All activities adjacent to existing or planned Preserves, Preserve Setbacks, or Stream Setback areas will be seasonally timed, when safety permits, to avoid or minimize adverse effects on occupied burrows.

WBO-7 (Rodent Control): Rodent control will be allowed only in developed portions of a Covered Activity project site within western burrowing owl modeled habitat. Where rodent control is allowed, the method of rodent control will comply with the methods of

rodent control discussed in the 4(d) Rule published in the U.S. Fish and Wildlife Service's (2004) final listing rule for tiger salamander.

Covered Raptor Species

To avoid direct and indirect effects of Covered Activities on covered raptor species, the following AMMs will be implemented. This measure applies to Cooper's hawk (*Accipiter cooperii*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus cyaneus*), and white-tailed kite (*Elanus leucurus*). The following AMMs do not apply to ferruginous hawk (*Buteo regalis*), as they do not nest in the Plan Area. The following AMMs also do not apply to Swainson's hawk or burrowing owl, as specific AMMs have been developed for these covered raptor species.

RAPTOR-1 (Raptor Surveys): If modeled habitat for a covered raptor species (Figures 3-20, 3-23, 3-24, or 3-28) is present within a Covered Activity's project footprint or within 0.25 mile of a project footprint, then an approved biologist will conduct a field investigation to determine if existing or potential nesting sites are present within the project footprint and adjacent areas within 0.25 mile of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential nesting sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Nesting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

RAPTOR-2 (Raptor Pre-Construction Surveys): Pre-construction surveys will be required to determine if active nests are present with a project footprint or within 0.25 mile of a project footprint if existing or potential nest sites are found during initial surveys and construction activities will occur during the raptor breeding season. An approved biologist will conduct pre-construction surveys within 30 days and 3 days of ground-disturbing activities within the proposed project footprint and within 0.25 mile of the proposed project footprint to determine presence of nesting covered raptor species. Pre-construction surveys will be conducted during the raptor breeding season. If a nest is present, then RAPTOR-3 and RAPTOR-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

RAPTOR-3 (Raptor Nest/Roost Buffer): If active nests are found within the project footprint or within 0.25 mile of any project-related Covered Activity, the Third-Party Project

Proponent will establish a 0.25 mile temporary nest disturbance buffer around the active nest until the young have fledged.

RAPTOR-4 (Raptor Nest/Roost Buffer Monitoring): If project-related Covered Activities within the temporary nest disturbance buffer are determined to be necessary during the nesting season, then an approved biologist experienced with raptor behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place within the disturbance buffer. Work within the temporary nest disturbance buffer can occur with the written permission of the Implementing Entity and Wildlife Agencies. If nesting raptors begin to exhibit agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, the approved biologist/monitor will have the authority to shut down construction activities. If agitated behavior is exhibited, the biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a covered raptor species flies into an active construction zone (i.e., outside the buffer zone).

Western Red Bat

To avoid direct and indirect effects of Covered Activities on western red bat (*Lasiurus blossevillii*), the following AMMs will be implemented.

BAT-1 (Winter Hibernaculum Surveys): If modeled habitat (Figure 3-30) for western red bat is present within 300 feet of a Covered Activity's project footprint, then an approved biologist will conduct a field investigation of the project footprint and adjacent areas within 300 feet of a project footprint to determine if a potential winter hibernaculum is present, and to identify and map potential hibernaculum sites. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. If potential hibernaculum sites are found, the Third-Party Project Proponent will note their locations on project designs and will design the project to avoid all areas within a 300-foot buffer around the potential hibernaculum sites. Winter hibernaculum habitat is fully avoided if project-related activities do not impinge on a 300-foot buffer established by the approved biologist around an existing or potential winter hibernaculum site. See Chapter 10 for the process to conduct and submit survey information.

BAT-2 (Winter Hibernaculum Pre-Construction Surveys): If the Third-Party Project Proponent elects not to avoid potential winter hibernaculum sites within the project footprint plus a 300-foot buffer, additional surveys are required. Prior to any ground disturbance related to Covered Activities, an approved biologist will conduct a pre-construction survey within 3 days of ground-disturbing activities within the project footprint and 300 feet of the project footprint to determine the presence of winter hibernaculum sites. Pre-construction surveys will be conducted during the winter hibernaculum season (November 1 through March 31). If a winter hibernaculum is present, then BAT-3 and BAT-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

BAT-3 (Winter Hibernaculum Buffer): If active winter hibernaculum sites are found within the project footprint or within 300 feet of the project footprint, the Third-Party Project Proponent will establish a 300-foot temporary disturbance buffer around the active winter hibernaculum site until bats have vacated the hibernaculum and the Implementing Entity and Wildlife Agencies concur.

BAT-4 (Bat Eviction Methods): An approved biologist will determine if non-maternity and non-hibernaculum day and night roosts are present on the project site. If necessary, an approved biologist will use safe eviction methods to remove bats if direct impacts to non-maternity and non-hibernaculum day and night roosts cannot be avoided. If a winter hibernaculum site is present, Covered Activities will not occur until the hibernaculum is vacated, or, if necessary, safely evicted using methods acceptable to the Wildlife Agencies.

Appendix D

Air Quality, Greenhouse Gas, and Energy Modeling

Residences at Capital Center - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Residences at Capital Center

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Health Club	14.60	1000sqft	0.34	14,600.00	0
High Turnover (Sit Down Restaurant)	5.00	1000sqft	0.72	5,000.00	0
Apartments Mid Rise	240.00	Dwelling Unit	8.71	240,000.00	641
Condo/Townhouse	177.00	Dwelling Unit	9.93	177,000.00	473

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2026
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	186.1	**CH4 Intensity (lb/MWhr)**	0.012	**N2O Intensity (lb/MWhr)**	0.002

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SMUD Intentisty Factor update accoding to 2030 Carbon Neutrality goal

Land Use - Project specific acreage

Construction Phase - 36-month construction schedule

Grading - 22-acres to be graded

Architectural Coating - SMAQMD Rule 442

Vehicle Trips - Trip adjustments

Area Coating - SMAQMD Rule 442

Energy Use - No residential natural gas use. NG use for pool/spa and 2 outdoor fire pits- see supplemental calcs.

Construction Off-road Equipment Mitigation - SMAQMD Construciton BMPs

Residences at Capital Center - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblAreaCoating	Area_EF_Residential_Interior	100	50
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	34.00
tblConstructionPhase	NumDays	300.00	634.00
tblConstructionPhase	NumDays	30.00	60.00
tblConstructionPhase	NumDays	20.00	34.00
tblConstructionPhase	NumDays	10.00	17.00
tblEnergyUse	NT24E	3,054.10	3,842.08
tblEnergyUse	NT24E	3,795.01	8,621.49
tblEnergyUse	NT24NG	2,687.00	0.00
tblEnergyUse	NT24NG	2,687.00	0.00
tblEnergyUse	NT24NG	12.42	56.02
tblEnergyUse	T24E	98.18	2,071.56
tblEnergyUse	T24E	80.14	4,826.48
tblEnergyUse	T24E	3.05	9.84
tblEnergyUse	T24E	7.86	25.18
tblEnergyUse	T24NG	6,729.23	0.00
tblEnergyUse	T24NG	16,185.01	0.00
tblEnergyUse	T24NG	23.15	0.00
tblEnergyUse	T24NG	59.07	0.00
tblGrading	AcresOfGrading	180.00	22.00
tblGrading	AcresOfGrading	25.50	22.00
tblLandUse	LotAcreage	0.11	0.72

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblLandUse	LotAcreage	6.32	8.71
tblLandUse	LotAcreage	11.06	9.93
tblProjectCharacteristics	CH4IntensityFactor	0.033	0.012
tblProjectCharacteristics	CO2IntensityFactor	357.98	186.1
tblProjectCharacteristics	N2OIntensityFactor	0.004	0.002
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CC_TL	5.00	4.00
tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CNW_TL	6.50	0.00
tblVehicleTrips	CNW_TL	6.50	3.30
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	10.00	0.00
tblVehicleTrips	CW_TL	10.00	5.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	HO_TL	6.50	3.38
tblVehicleTrips	HO_TL	6.50	3.30
tblVehicleTrips	HS_TL	5.00	4.00
tblVehicleTrips	HS_TL	5.00	4.00
tblVehicleTrips	HW_TL	10.00	5.00
tblVehicleTrips	HW_TL	10.00	5.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	100.00
tblVehicleTrips	ST_TR	4.91	4.58
tblVehicleTrips	ST_TR	8.14	6.84
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	122.40	182.21
tblVehicleTrips	SU_TR	4.09	4.58
tblVehicleTrips	SU_TR	6.28	6.84
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	142.64	182.21
tblVehicleTrips	WD_TR	5.44	4.58
tblVehicleTrips	WD_TR	7.32	6.84
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	112.18	182.21

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1836	1.7614	1.4695	3.1700e-003	0.4052	0.0768	0.4819	0.1990	0.0709	0.2699	0.0000	280.8540	280.8540	0.0729	3.2900e-003	283.6574
2023	0.3278	2.2455	3.1399	7.2400e-003	0.3316	0.0942	0.4257	0.0890	0.0886	0.1776	0.0000	653.7531	653.7531	0.0820	0.0238	662.8801
2024	0.3092	2.1255	3.0857	7.1900e-003	0.3341	0.0835	0.4176	0.0897	0.0785	0.1682	0.0000	650.6718	650.6718	0.0815	0.0232	659.6107
2025	1.8029	0.7658	1.2146	2.6500e-003	0.1104	0.0298	0.1401	0.0296	0.0279	0.0575	0.0000	239.5404	239.5404	0.0357	6.9600e-003	242.5057
Maximum	**1.8029**	**2.2455**	**3.1399**	**7.2400e-003**	**0.4052**	**0.0942**	**0.4819**	**0.1990**	**0.0886**	**0.2699**	**0.0000**	**653.7531**	**653.7531**	**0.0820**	**0.0238**	**662.8801**

Residences at Capital Center - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1836	1.7614	1.4695	3.1700e-003	0.2049	0.0768	0.2816	0.0957	0.0709	0.1666	0.0000	280.8538	280.8538	0.0729	3.2900e-003	283.6571
2023	0.3278	2.2455	3.1399	7.2400e-003	0.3063	0.0942	0.4005	0.0828	0.0886	0.1714	0.0000	653.7527	653.7527	0.0820	0.0238	662.8797
2024	0.3092	2.1255	3.0857	7.1900e-003	0.3086	0.0835	0.3921	0.0835	0.0785	0.1620	0.0000	650.6714	650.6714	0.0815	0.0232	659.6104
2025	1.8029	0.7658	1.2146	2.6500e-003	0.1019	0.0298	0.1317	0.0275	0.0279	0.0555	0.0000	239.5402	239.5402	0.0357	6.9600e-003	242.5055
Maximum	**1.8029**	**2.2455**	**3.1399**	**7.2400e-003**	**0.3086**	**0.0942**	**0.4005**	**0.0957**	**0.0886**	**0.1714**	**0.0000**	**653.7527**	**653.7527**	**0.0820**	**0.0238**	**662.8797**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**21.96**	**0.00**	**17.71**	**28.93**	**0.00**	**17.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-1-2022**	**10-31-2022**	1.3478	1.3478
2	**11-1-2022**	**1-31-2023**	0.8089	0.8089
3	**2-1-2023**	**4-30-2023**	0.6323	0.6323
4	**5-1-2023**	**7-31-2023**	0.6501	0.6501
5	**8-1-2023**	**10-31-2023**	0.6519	0.6519
6	**11-1-2023**	**1-31-2024**	0.6418	0.6418
7	**2-1-2024**	**4-30-2024**	0.6003	0.6003
8	**5-1-2024**	**7-31-2024**	0.6103	0.6103

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

9	**8-1-2024**	**10-31-2024**	0.6120	0.6120
10	**11-1-2024**	**1-31-2025**	0.6016	0.6016
11	**2-1-2025**	**4-30-2025**	0.5294	0.5294
12	**5-1-2025**	**7-31-2025**	1.7894	1.7894
		Highest	1.7894	1.7894

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.0036	0.0495	4.2966	2.3000e-004		0.0238	0.0238		0.0238	0.0238	0.0000	7.0251	7.0251	6.7300e-003	0.0000	7.1933
Energy	7.5900e-003	0.0690	0.0580	4.1000e-004		5.2500e-003	5.2500e-003		5.2500e-003	5.2500e-003	0.0000	477.0054	477.0054	0.0274	5.7000e-003	479.3867
Mobile	1.1741	1.2277	8.9936	0.0166	1.7920	0.0136	1.8057	0.4790	0.0127	0.4917	0.0000	1,586.2106	1,586.2106	0.1288	0.0875	1,615.5101
Waste						0.0000	0.0000		0.0000	0.0000	73.3447	0.0000	73.3447	4.3346	0.0000	181.7084
Water						0.0000	0.0000		0.0000	0.0000	10.6966	17.9745	28.6711	0.0380	0.0235	36.6100
Total	**3.1853**	**1.3462**	**13.3482**	**0.0173**	**1.7920**	**0.0427**	**1.8347**	**0.4790**	**0.0418**	**0.5208**	**84.0413**	**2,088.2156**	**2,172.2568**	**4.5354**	**0.1167**	**2,320.4085**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.0036	0.0495	4.2966	2.3000e-004		0.0238	0.0238		0.0238	0.0238	0.0000	7.0251	7.0251	6.7300e-003	0.0000	7.1933
Energy	7.5900e-003	0.0690	0.0580	4.1000e-004		5.2500e-003	5.2500e-003		5.2500e-003	5.2500e-003	0.0000	477.0054	477.0054	0.0274	5.7000e-003	479.3867
Mobile	1.1741	1.2277	8.9936	0.0166	1.7920	0.0136	1.8057	0.4790	0.0127	0.4917	0.0000	1,586.2106	1,586.2106	0.1288	0.0875	1,615.5101
Waste						0.0000	0.0000		0.0000	0.0000	73.3447	0.0000	73.3447	4.3346	0.0000	181.7084
Water						0.0000	0.0000		0.0000	0.0000	10.6966	17.9745	28.6711	0.0380	0.0235	36.6100
Total	**3.1853**	**1.3462**	**13.3482**	**0.0173**	**1.7920**	**0.0427**	**1.8347**	**0.4790**	**0.0418**	**0.5208**	**84.0413**	**2,088.2156**	**2,172.2568**	**4.5354**	**0.1167**	**2,320.4085**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2022	8/23/2022	5	17	
2	Grading	Grading	8/24/2022	11/15/2022	5	60	
3	Building Construction	Building Construction	11/16/2022	4/21/2025	5	634	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Paving	Paving	4/22/2025	6/6/2025	5	34	
5	Architectural Coating	Architectural Coating	6/9/2025	7/24/2025	5	34	

Acres of Grading (Site Preparation Phase): 22

Acres of Grading (Grading Phase): 22

Acres of Paving: 0

Residential Indoor: 844,425; Residential Outdoor: 281,475; Non-Residential Indoor: 32,775; Non-Residential Outdoor: 10,925; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	309.00	48.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	62.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1652	0.0000	0.1652	0.0857	0.0000	0.0857	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0270	0.2812	0.1674	3.2000e-004		0.0137	0.0137		0.0126	0.0126	0.0000	28.4235	28.4235	9.1900e-003	0.0000	28.6533
Total	**0.0270**	**0.2812**	**0.1674**	**3.2000e-004**	**0.1652**	**0.0137**	**0.1789**	**0.0857**	**0.0126**	**0.0983**	**0.0000**	**28.4235**	**28.4235**	**9.1900e-003**	**0.0000**	**28.6533**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.1000e-004	3.8600e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9253	0.9253	3.0000e-005	3.0000e-005	0.9344
Total	**4.7000e-004**	**3.1000e-004**	**3.8600e-003**	**1.0000e-005**	**1.1200e-003**	**1.0000e-005**	**1.1300e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9253**	**0.9253**	**3.0000e-005**	**3.0000e-005**	**0.9344**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0744	0.0000	0.0744	0.0386	0.0000	0.0386	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0270	0.2812	0.1674	3.2000e-004		0.0137	0.0137		0.0126	0.0126	0.0000	28.4235	28.4235	9.1900e-003	0.0000	28.6533
Total	**0.0270**	**0.2812**	**0.1674**	**3.2000e-004**	**0.0744**	**0.0137**	**0.0881**	**0.0386**	**0.0126**	**0.0512**	**0.0000**	**28.4235**	**28.4235**	**9.1900e-003**	**0.0000**	**28.6533**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.1000e-004	3.8600e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9253	0.9253	3.0000e-005	3.0000e-005	0.9344
Total	**4.7000e-004**	**3.1000e-004**	**3.8600e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9253**	**0.9253**	**3.0000e-005**	**3.0000e-005**	**0.9344**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1923	0.0000	0.1923	0.1006	0.0000	0.1006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1087	1.1653	0.8713	1.8600e-003		0.0491	0.0491		0.0451	0.0451	0.0000	163.6038	163.6038	0.0529	0.0000	164.9266
Total	**0.1087**	**1.1653**	**0.8713**	**1.8600e-003**	**0.1923**	**0.0491**	**0.2414**	**0.1006**	**0.0451**	**0.1457**	**0.0000**	**163.6038**	**163.6038**	**0.0529**	**0.0000**	**164.9266**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8500e-003	1.2000e-003	0.0151	4.0000e-005	4.4100e-003	2.0000e-005	4.4300e-003	1.1700e-003	2.0000e-005	1.1900e-003	0.0000	3.6286	3.6286	1.2000e-004	1.1000e-004	3.6643
Total	**1.8500e-003**	**1.2000e-003**	**0.0151**	**4.0000e-005**	**4.4100e-003**	**2.0000e-005**	**4.4300e-003**	**1.1700e-003**	**2.0000e-005**	**1.1900e-003**	**0.0000**	**3.6286**	**3.6286**	**1.2000e-004**	**1.1000e-004**	**3.6643**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0866	0.0000	0.0866	0.0453	0.0000	0.0453	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1087	1.1653	0.8712	1.8600e-003		0.0491	0.0491		0.0451	0.0451	0.0000	163.6036	163.6036	0.0529	0.0000	164.9264
Total	**0.1087**	**1.1653**	**0.8712**	**1.8600e-003**	**0.0866**	**0.0491**	**0.1356**	**0.0453**	**0.0451**	**0.0904**	**0.0000**	**163.6036**	**163.6036**	**0.0529**	**0.0000**	**164.9264**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8500e-003	1.2000e-003	0.0151	4.0000e-005	4.0600e-003	2.0000e-005	4.0900e-003	1.0900e-003	2.0000e-005	1.1100e-003	0.0000	3.6286	3.6286	1.2000e-004	1.1000e-004	3.6643
Total	**1.8500e-003**	**1.2000e-003**	**0.0151**	**4.0000e-005**	**4.0600e-003**	**2.0000e-005**	**4.0900e-003**	**1.0900e-003**	**2.0000e-005**	**1.1100e-003**	**0.0000**	**3.6286**	**3.6286**	**1.2000e-004**	**1.1000e-004**	**3.6643**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0282	0.2577	0.2700	4.4000e-004		0.0134	0.0134		0.0126	0.0126	0.0000	38.2347	38.2347	9.1600e-003	0.0000	38.4637
Total	**0.0282**	**0.2577**	**0.2700**	**4.4000e-004**		**0.0134**	**0.0134**		**0.0126**	**0.0126**	**0.0000**	**38.2347**	**38.2347**	**9.1600e-003**	**0.0000**	**38.4637**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6900e-003	0.0455	0.0132	1.6000e-004	4.6400e-003	4.2000e-004	5.0600e-003	1.3400e-003	4.0000e-004	1.7400e-003	0.0000	15.2038	15.2038	4.0000e-004	2.2300e-003	15.8780
Worker	0.0157	0.0102	0.1286	3.3000e-004	0.0375	2.1000e-004	0.0377	9.9600e-003	1.9000e-004	0.0102	0.0000	30.8343	30.8343	1.0500e-003	9.3000e-004	31.1372
Total	**0.0174**	**0.0557**	**0.1418**	**4.9000e-004**	**0.0421**	**6.3000e-004**	**0.0427**	**0.0113**	**5.9000e-004**	**0.0119**	**0.0000**	**46.0381**	**46.0381**	**1.4500e-003**	**3.1600e-003**	**47.0151**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0282	0.2577	0.2700	4.4000e-004		0.0134	0.0134		0.0126	0.0126	0.0000	38.2346	38.2346	9.1600e-003	0.0000	38.4636
Total	**0.0282**	**0.2577**	**0.2700**	**4.4000e-004**		**0.0134**	**0.0134**		**0.0126**	**0.0126**	**0.0000**	**38.2346**	**38.2346**	**9.1600e-003**	**0.0000**	**38.4636**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6900e-003	0.0455	0.0132	1.6000e-004	4.3400e-003	4.2000e-004	4.7600e-003	1.2700e-003	4.0000e-004	1.6700e-003	0.0000	15.2038	15.2038	4.0000e-004	2.2300e-003	15.8780
Worker	0.0157	0.0102	0.1286	3.3000e-004	0.0345	2.1000e-004	0.0347	9.2400e-003	1.9000e-004	9.4400e-003	0.0000	30.8343	30.8343	1.0500e-003	9.3000e-004	31.1372
Total	**0.0174**	**0.0557**	**0.1418**	**4.9000e-004**	**0.0389**	**6.3000e-004**	**0.0395**	**0.0105**	**5.9000e-004**	**0.0111**	**0.0000**	**46.0381**	**46.0381**	**1.4500e-003**	**3.1600e-003**	**47.0151**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3462	301.3462	0.0717	0.0000	303.1383
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3462**	**301.3462**	**0.0717**	**0.0000**	**303.1383**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.1300e-003	0.3042	0.0917	1.1900e-003	0.0365	1.6200e-003	0.0382	0.0106	1.5500e-003	0.0121	0.0000	115.7328	115.7328	2.8500e-003	0.0170	120.8647
Worker	0.1152	0.0713	0.9365	2.5500e-003	0.2950	1.5800e-003	0.2966	0.0785	1.4500e-003	0.0799	0.0000	236.6741	236.6741	7.4900e-003	6.7600e-003	238.8771
Total	**0.1234**	**0.3754**	**1.0282**	**3.7400e-003**	**0.3316**	**3.2000e-003**	**0.3348**	**0.0890**	**3.0000e-003**	**0.0920**	**0.0000**	**352.4069**	**352.4069**	**0.0103**	**0.0237**	**359.7418**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3458	301.3458	0.0717	0.0000	303.1380
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3458**	**301.3458**	**0.0717**	**0.0000**	**303.1380**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.1300e-003	0.3042	0.0917	1.1900e-003	0.0342	1.6200e-003	0.0358	9.9900e-003	1.5500e-003	0.0115	0.0000	115.7328	115.7328	2.8500e-003	0.0170	120.8647
Worker	0.1152	0.0713	0.9365	2.5500e-003	0.2721	1.5800e-003	0.2737	0.0728	1.4500e-003	0.0743	0.0000	236.6741	236.6741	7.4900e-003	6.7600e-003	238.8771
Total	**0.1234**	**0.3754**	**1.0282**	**3.7400e-003**	**0.3063**	**3.2000e-003**	**0.3095**	**0.0828**	**3.0000e-003**	**0.0858**	**0.0000**	**352.4069**	**352.4069**	**0.0103**	**0.0237**	**359.7418**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.8400e-003	0.3004	0.0895	1.1800e-003	0.0368	1.6100e-003	0.0384	0.0106	1.5400e-003	0.0122	0.0000	114.4082	114.4082	2.8000e-003	0.0168	119.4917
Worker	0.1086	0.0639	0.8783	2.4800e-003	0.2973	1.5100e-003	0.2988	0.0791	1.3900e-003	0.0805	0.0000	232.5413	232.5413	6.8400e-003	6.3400e-003	234.6011
Total	**0.1164**	**0.3644**	**0.9678**	**3.6600e-003**	**0.3341**	**3.1200e-003**	**0.3372**	**0.0897**	**2.9300e-003**	**0.0926**	**0.0000**	**346.9495**	**346.9495**	**9.6400e-003**	**0.0232**	**354.0929**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.8400e-003	0.3004	0.0895	1.1800e-003	0.0345	1.6100e-003	0.0361	0.0101	1.5400e-003	0.0116	0.0000	114.4082	114.4082	2.8000e-003	0.0168	119.4917
Worker	0.1086	0.0639	0.8783	2.4800e-003	0.2742	1.5100e-003	0.2757	0.0734	1.3900e-003	0.0748	0.0000	232.5413	232.5413	6.8400e-003	6.3400e-003	234.6011
Total	**0.1164**	**0.3644**	**0.9678**	**3.6600e-003**	**0.3086**	**3.1200e-003**	**0.3118**	**0.0835**	**2.9300e-003**	**0.0864**	**0.0000**	**346.9495**	**346.9495**	**9.6400e-003**	**0.0232**	**354.0929**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0540	0.4926	0.6353	1.0600e-003		0.0208	0.0208		0.0196	0.0196	0.0000	91.6082	91.6082	0.0215	0.0000	92.1465
Total	**0.0540**	**0.4926**	**0.6353**	**1.0600e-003**		**0.0208**	**0.0208**		**0.0196**	**0.0196**	**0.0000**	**91.6082**	**91.6082**	**0.0215**	**0.0000**	**92.1465**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2800e-003	0.0888	0.0264	3.5000e-004	0.0111	4.8000e-004	0.0116	3.2100e-003	4.5000e-004	3.6600e-003	0.0000	33.7992	33.7992	8.3000e-004	4.9800e-003	35.3037
Worker	0.0307	0.0173	0.2477	7.2000e-004	0.0896	4.4000e-004	0.0901	0.0238	4.0000e-004	0.0242	0.0000	68.4217	68.4217	1.8700e-003	1.7900e-003	69.0009
Total	**0.0330**	**0.1061**	**0.2741**	**1.0700e-003**	**0.1007**	**9.2000e-004**	**0.1017**	**0.0271**	**8.5000e-004**	**0.0279**	**0.0000**	**102.2209**	**102.2209**	**2.7000e-003**	**6.7700e-003**	**104.3046**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0540	0.4926	0.6353	1.0600e-003		0.0208	0.0208		0.0196	0.0196	0.0000	91.6081	91.6081	0.0215	0.0000	92.1464
Total	**0.0540**	**0.4926**	**0.6353**	**1.0600e-003**		**0.0208**	**0.0208**		**0.0196**	**0.0196**	**0.0000**	**91.6081**	**91.6081**	**0.0215**	**0.0000**	**92.1464**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2800e-003	0.0888	0.0264	3.5000e-004	0.0104	4.8000e-004	0.0109	3.0300e-003	4.5000e-004	3.4900e-003	0.0000	33.7992	33.7992	8.3000e-004	4.9800e-003	35.3037
Worker	0.0307	0.0173	0.2477	7.2000e-004	0.0827	4.4000e-004	0.0831	0.0221	4.0000e-004	0.0225	0.0000	68.4217	68.4217	1.8700e-003	1.7900e-003	69.0009
Total	**0.0330**	**0.1061**	**0.2741**	**1.0700e-003**	**0.0931**	**9.2000e-004**	**0.0940**	**0.0252**	**8.5000e-004**	**0.0260**	**0.0000**	**102.2209**	**102.2209**	**2.7000e-003**	**6.7700e-003**	**104.3046**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0156	0.1459	0.2478	3.9000e-004		7.1100e-003	7.1100e-003		6.5500e-003	6.5500e-003	0.0000	34.0327	34.0327	0.0110	0.0000	34.3079
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0156**	**0.1459**	**0.2478**	**3.9000e-004**		**7.1100e-003**	**7.1100e-003**		**6.5500e-003**	**6.5500e-003**	**0.0000**	**34.0327**	**34.0327**	**0.0110**	**0.0000**	**34.3079**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4000e-004	3.6000e-004	5.1800e-003	2.0000e-005	1.8700e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.4295	1.4295	4.0000e-005	4.0000e-005	1.4416
Total	**6.4000e-004**	**3.6000e-004**	**5.1800e-003**	**2.0000e-005**	**1.8700e-003**	**1.0000e-005**	**1.8800e-003**	**5.0000e-004**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**1.4295**	**1.4295**	**4.0000e-005**	**4.0000e-005**	**1.4416**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0156	0.1459	0.2478	3.9000e-004		7.1100e-003	7.1100e-003		6.5500e-003	6.5500e-003	0.0000	34.0327	34.0327	0.0110	0.0000	34.3079
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0156**	**0.1459**	**0.2478**	**3.9000e-004**		**7.1100e-003**	**7.1100e-003**		**6.5500e-003**	**6.5500e-003**	**0.0000**	**34.0327**	**34.0327**	**0.0110**	**0.0000**	**34.3079**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4000e-004	3.6000e-004	5.1800e-003	2.0000e-005	1.7300e-003	1.0000e-005	1.7400e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4295	1.4295	4.0000e-005	4.0000e-005	1.4416
Total	**6.4000e-004**	**3.6000e-004**	**5.1800e-003**	**2.0000e-005**	**1.7300e-003**	**1.0000e-005**	**1.7400e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4295**	**1.4295**	**4.0000e-005**	**4.0000e-005**	**1.4416**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.6941					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9000e-003	0.0195	0.0308	5.0000e-005		8.8000e-004	8.8000e-004		8.8000e-004	8.8000e-004	0.0000	4.3405	4.3405	2.4000e-004	0.0000	4.3465
Total	**1.6970**	**0.0195**	**0.0308**	**5.0000e-005**		**8.8000e-004**	**8.8000e-004**		**8.8000e-004**	**8.8000e-004**	**0.0000**	**4.3405**	**4.3405**	**2.4000e-004**	**0.0000**	**4.3465**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	1.4900e-003	0.0214	6.0000e-005	7.7400e-003	4.0000e-005	7.7800e-003	2.0600e-003	3.0000e-005	2.0900e-003	0.0000	5.9085	5.9085	1.6000e-004	1.5000e-004	5.9585
Total	**2.6500e-003**	**1.4900e-003**	**0.0214**	**6.0000e-005**	**7.7400e-003**	**4.0000e-005**	**7.7800e-003**	**2.0600e-003**	**3.0000e-005**	**2.0900e-003**	**0.0000**	**5.9085**	**5.9085**	**1.6000e-004**	**1.5000e-004**	**5.9585**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.6941					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9000e-003	0.0195	0.0308	5.0000e-005		8.8000e-004	8.8000e-004		8.8000e-004	8.8000e-004	0.0000	4.3405	4.3405	2.4000e-004	0.0000	4.3465
Total	**1.6970**	**0.0195**	**0.0308**	**5.0000e-005**		**8.8000e-004**	**8.8000e-004**		**8.8000e-004**	**8.8000e-004**	**0.0000**	**4.3405**	**4.3405**	**2.4000e-004**	**0.0000**	**4.3465**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	1.4900e-003	0.0214	6.0000e-005	7.1400e-003	4.0000e-005	7.1800e-003	1.9100e-003	3.0000e-005	1.9500e-003	0.0000	5.9085	5.9085	1.6000e-004	1.5000e-004	5.9585
Total	**2.6500e-003**	**1.4900e-003**	**0.0214**	**6.0000e-005**	**7.1400e-003**	**4.0000e-005**	**7.1800e-003**	**1.9100e-003**	**3.0000e-005**	**1.9500e-003**	**0.0000**	**5.9085**	**5.9085**	**1.6000e-004**	**1.5000e-004**	**5.9585**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Residences at Capital Center - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.1741	1.2277	8.9936	0.0166	1.7920	0.0136	1.8057	0.4790	0.0127	0.4917	0.0000	1,586.2106	1,586.2106	0.1288	0.0875	1,615.5101
Unmitigated	1.1741	1.2277	8.9936	0.0166	1.7920	0.0136	1.8057	0.4790	0.0127	0.4917	0.0000	1,586.2106	1,586.2106	0.1288	0.0875	1,615.5101

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,099.20	1,099.20	1099.20	1,684,778	1,684,778
Condo/Townhouse	1,210.68	1,210.68	1210.68	1,841,192	1,841,192
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	911.04	911.04	911.04	1,310,549	1,310,549
Total	3,220.92	3,220.92	3,220.92	4,836,520	4,836,520

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	5.00	4.00	3.38	46.50	12.50	41.00	100	0	0
Condo/Townhouse	5.00	4.00	3.30	46.50	12.50	41.00	100	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
High Turnover (Sit Down	5.00	4.00	3.30	8.50	72.50	19.00	100	0	0

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Condo/Townhouse	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Health Club	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
High Turnover (Sit Down Restaurant)	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	401.8642	401.8642	0.0259	4.3200e-003	403.7990
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	401.8642	401.8642	0.0259	4.3200e-003	403.7990
NaturalGas Mitigated	7.5900e-003	0.0690	0.0580	4.1000e-004		5.2500e-003	5.2500e-003		5.2500e-003	5.2500e-003	0.0000	75.1412	75.1412	1.4400e-003	1.3800e-003	75.5877
NaturalGas Unmitigated	7.5900e-003	0.0690	0.0580	4.1000e-004		5.2500e-003	5.2500e-003		5.2500e-003	5.2500e-003	0.0000	75.1412	75.1412	1.4400e-003	1.3800e-003	75.5877

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	817892	4.4100e-003	0.0401	0.0337	2.4000e-004		3.0500e-003	3.0500e-003		3.0500e-003	3.0500e-003	0.0000	43.6458	43.6458	8.4000e-004	8.0000e-004	43.9052
High Turnover (Sit Down Restaurant)	590200	3.1800e-003	0.0289	0.0243	1.7000e-004		2.2000e-003	2.2000e-003		2.2000e-003	2.2000e-003	0.0000	31.4953	31.4953	6.0000e-004	5.8000e-004	31.6825
Total		**7.5900e-003**	**0.0690**	**0.0580**	**4.1000e-004**		**5.2500e-003**	**5.2500e-003**		**5.2500e-003**	**5.2500e-003**	**0.0000**	**75.1412**	**75.1412**	**1.4400e-003**	**1.3800e-003**	**75.5877**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	817892	4.4100e-003	0.0401	0.0337	2.4000e-004		3.0500e-003	3.0500e-003		3.0500e-003	3.0500e-003	0.0000	43.6458	43.6458	8.4000e-004	8.0000e-004	43.9052
High Turnover (Sit Down Restaurant)	590200	3.1800e-003	0.0289	0.0243	1.7000e-004		2.2000e-003	2.2000e-003		2.2000e-003	2.2000e-003	0.0000	31.4953	31.4953	6.0000e-004	5.8000e-004	31.6825
Total		**7.5900e-003**	**0.0690**	**0.0580**	**4.1000e-004**		**5.2500e-003**	**5.2500e-003**		**5.2500e-003**	**5.2500e-003**	**0.0000**	**75.1412**	**75.1412**	**1.4400e-003**	**1.3800e-003**	**75.5877**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.59722e+006	134.8269	8.6900e-003	1.4500e-003	135.4761
Condo/Townhouse	2.55749e+006	215.8864	0.0139	2.3200e-003	216.9258
Health Club	315506	26.6330	1.7200e-003	2.9000e-004	26.7612
High Turnover (Sit Down Restaurant)	290450	24.5179	1.5800e-003	2.6000e-004	24.6360
Total		**401.8642**	**0.0259**	**4.3200e-003**	**403.7991**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.59722e+006	134.8269	8.6900e-003	1.4500e-003	135.4761
Condo/Townhouse	2.55749e+006	215.8864	0.0139	2.3200e-003	216.9258
Health Club	315506	26.6330	1.7200e-003	2.9000e-004	26.7612
High Turnover (Sit Down Restaurant)	290450	24.5179	1.5800e-003	2.6000e-004	24.6360
Total		**401.8642**	**0.0259**	**4.3200e-003**	**403.7991**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.0036	0.0495	4.2966	2.3000e-004		0.0238	0.0238		0.0238	0.0238	0.0000	7.0251	7.0251	6.7300e-003	0.0000	7.1933
Unmitigated	2.0036	0.0495	4.2966	2.3000e-004		0.0238	0.0238		0.0238	0.0238	0.0000	7.0251	7.0251	6.7300e-003	0.0000	7.1933

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1694					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.7051					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1290	0.0495	4.2966	2.3000e-004		0.0238	0.0238		0.0238	0.0238	0.0000	7.0251	7.0251	6.7300e-003	0.0000	7.1933
Total	**2.0036**	**0.0495**	**4.2966**	**2.3000e-004**		**0.0238**	**0.0238**		**0.0238**	**0.0238**	**0.0000**	**7.0251**	**7.0251**	**6.7300e-003**	**0.0000**	**7.1933**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1694					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.7051					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1290	0.0495	4.2966	2.3000e-004		0.0238	0.0238		0.0238	0.0238	0.0000	7.0251	7.0251	6.7300e-003	0.0000	7.1933
Total	**2.0036**	**0.0495**	**4.2966**	**2.3000e-004**		**0.0238**	**0.0238**		**0.0238**	**0.0238**	**0.0000**	**7.0251**	**7.0251**	**6.7300e-003**	**0.0000**	**7.1933**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	28.6711	0.0380	0.0235	36.6100
Unmitigated	28.6711	0.0380	0.0235	36.6100

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	15.637 / 9.85809	15.0218	0.0197	0.0121	19.1288
Condo/Townhouse	11.5323 / 7.27034	11.0786	0.0145	8.9500e-003	14.1075
Health Club	0.86349 / 0.529236	0.8251	1.0900e-003	6.7000e-004	1.0518
High Turnover (Sit Down Restaurant)	2.20062 / 0.140465	1.7457	2.7400e-003	1.7000e-003	2.3219
Total		**28.6711**	**0.0380**	**0.0235**	**36.6100**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	15.637 / 9.85809	15.0218	0.0197	0.0121	19.1288
Condo/Townhouse	11.5323 / 7.27034	11.0786	0.0145	8.9500e-003	14.1075
Health Club	0.86349 / 0.529236	0.8251	1.0900e-003	6.7000e-004	1.0518
High Turnover (Sit Down Restaurant)	2.20062 / 0.140465	1.7457	2.7400e-003	1.7000e-003	2.3219
Total		**28.6711**	**0.0380**	**0.0235**	**36.6100**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	73.3447	4.3346	0.0000	181.7084
Unmitigated	73.3447	4.3346	0.0000	181.7084

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	110.4	22.4102	1.3244	0.0000	55.5203
Condo/Townhouse	81.42	16.5275	0.9768	0.0000	40.9462
Health Club	83.22	16.8929	0.9983	0.0000	41.8515
High Turnover (Sit Down Restaurant)	86.28	17.5141	1.0351	0.0000	43.3903
Total		**73.3447**	**4.3346**	**0.0000**	**181.7084**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	110.4	22.4102	1.3244	0.0000	55.5203
Condo/Townhouse	81.42	16.5275	0.9768	0.0000	40.9462
Health Club	83.22	16.8929	0.9983	0.0000	41.8515
High Turnover (Sit Down Restaurant)	86.28	17.5141	1.0351	0.0000	43.3903
Total		**73.3447**	**4.3346**	**0.0000**	**181.7084**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number

11.0 Vegetation

Residences at Capital Center - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Residences at Capital Center

Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Health Club	14.60	1000sqft	0.34	14,600.00	0
High Turnover (Sit Down Restaurant)	5.00	1000sqft	0.72	5,000.00	0
Apartments Mid Rise	240.00	Dwelling Unit	8.71	240,000.00	641
Condo/Townhouse	177.00	Dwelling Unit	9.93	177,000.00	473

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2026
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	186.1	**CH4 Intensity (lb/MWhr)**	0.012	**N2O Intensity (lb/MWhr)**	0.002

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SMUD Intentisty Factor update accoding to 2030 Carbon Neutrality goal

Land Use - Project specific acreage

Construction Phase - 36-month construction schedule

Grading - 22-acres to be graded

Architectural Coating - SMAQMD Rule 442

Vehicle Trips - Trip adjustments

Area Coating - SMAQMD Rule 442

Energy Use - No residential natural gas use. NG use for pool/spa and 2 outdoor fire pits- see supplemental calcs.

Construction Off-road Equipment Mitigation - SMAQMD Construciton BMPs

Residences at Capital Center - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblAreaCoating	Area_EF_Residential_Interior	100	50
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	17.00
tblConstructionPhase	NumDays	30.00	60.00
tblConstructionPhase	NumDays	300.00	634.00
tblConstructionPhase	NumDays	20.00	34.00
tblConstructionPhase	NumDays	20.00	34.00
tblEnergyUse	NT24E	3,054.10	3,842.08
tblEnergyUse	NT24E	3,795.01	8,621.49
tblEnergyUse	NT24NG	2,687.00	0.00
tblEnergyUse	NT24NG	2,687.00	0.00
tblEnergyUse	NT24NG	12.42	56.02
tblEnergyUse	T24E	98.18	2,071.56
tblEnergyUse	T24E	80.14	4,826.48
tblEnergyUse	T24E	3.05	9.84
tblEnergyUse	T24E	7.86	25.18
tblEnergyUse	T24NG	6,729.23	0.00
tblEnergyUse	T24NG	16,185.01	0.00
tblEnergyUse	T24NG	23.15	0.00
tblEnergyUse	T24NG	59.07	0.00
tblGrading	AcresOfGrading	180.00	22.00
tblGrading	AcresOfGrading	25.50	22.00
tblLandUse	LotAcreage	0.11	0.72

Residences at Capital Center - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblLandUse	LotAcreage	6.32	8.71
tblLandUse	LotAcreage	11.06	9.93
tblProjectCharacteristics	CH4IntensityFactor	0.033	0.012
tblProjectCharacteristics	CO2IntensityFactor	357.98	186.1
tblProjectCharacteristics	N2OIntensityFactor	0.004	0.002
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CC_TL	5.00	4.00
tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CNW_TL	6.50	0.00
tblVehicleTrips	CNW_TL	6.50	3.30
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	10.00	0.00
tblVehicleTrips	CW_TL	10.00	5.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	HO_TL	6.50	3.38
tblVehicleTrips	HO_TL	6.50	3.30
tblVehicleTrips	HS_TL	5.00	4.00
tblVehicleTrips	HS_TL	5.00	4.00
tblVehicleTrips	HW_TL	10.00	5.00
tblVehicleTrips	HW_TL	10.00	5.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	100.00
tblVehicleTrips	ST_TR	4.91	4.58
tblVehicleTrips	ST_TR	8.14	6.84
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	122.40	182.21
tblVehicleTrips	SU_TR	4.09	4.58
tblVehicleTrips	SU_TR	6.28	6.84
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	142.64	182.21
tblVehicleTrips	WD_TR	5.44	4.58
tblVehicleTrips	WD_TR	7.32	6.84
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	112.18	182.21

2.0 Emissions Summary

Residences at Capital Center - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.6973	38.8801	29.6330	0.0635	19.5756	1.6357	21.1889	10.1152	1.5049	11.5995	0.0000	6,157.5609	6,157.5609	1.9486	0.2071	6,207.4001
2023	2.6782	17.1078	25.3571	0.0576	2.6398	0.7243	3.3640	0.7068	0.6815	1.3882	0.0000	5,735.4037	5,735.4037	0.6924	0.1978	5,811.6632
2024	2.5056	16.0679	24.6543	0.0567	2.6397	0.6371	3.2768	0.7067	0.5992	1.3060	0.0000	5,661.7554	5,661.7554	0.6824	0.1916	5,735.9240
2025	100.0066	15.0039	24.0365	0.0558	2.6397	0.5506	3.1903	0.7067	0.5179	1.2246	0.0000	5,590.6919	5,590.6919	0.7161	0.1858	5,662.8874
Maximum	**100.0066**	**38.8801**	**29.6330**	**0.0635**	**19.5756**	**1.6357**	**21.1889**	**10.1152**	**1.5049**	**11.5995**	**0.0000**	**6,157.5609**	**6,157.5609**	**1.9486**	**0.2071**	**6,207.4001**

Residences at Capital Center - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.6973	38.8801	29.6330	0.0635	8.8736	1.6357	10.4869	4.5692	1.5049	6.0534	0.0000	6,157.5609	6,157.5609	1.9486	0.2071	6,207.4001
2023	2.6782	17.1078	25.3571	0.0576	2.4374	0.7243	3.1616	0.6571	0.6815	1.3385	0.0000	5,735.4037	5,735.4037	0.6924	0.1978	5,811.6632
2024	2.5056	16.0679	24.6543	0.0567	2.4373	0.6371	3.0744	0.6571	0.5992	1.2563	0.0000	5,661.7554	5,661.7554	0.6824	0.1916	5,735.9240
2025	100.0066	15.0039	24.0365	0.0558	2.4373	0.5506	2.9879	0.6570	0.5179	1.1749	0.0000	5,590.6919	5,590.6919	0.7161	0.1858	5,662.8874
Maximum	**100.0066**	**38.8801**	**29.6330**	**0.0635**	**8.8736**	**1.6357**	**10.4869**	**4.5692**	**1.5049**	**6.0534**	**0.0000**	**6,157.5609**	**6,157.5609**	**1.9486**	**0.2071**	**6,207.4001**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**41.13**	**0.00**	**36.46**	**46.55**	**0.00**	**36.70**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.3037	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907	0.0000	61.9506	61.9506	0.0593	0.0000	63.4339
Energy	0.0416	0.3782	0.3177	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.8572	453.8572	8.7000e-003	8.3200e-003	456.5543
Mobile	8.3089	6.2415	51.4784	0.0979	10.1951	0.0750	10.2701	2.7175	0.0699	2.7874		10,303.6476	10,303.6476	0.7271	0.5091	10,473.5500
Total	**19.6541**	**7.0157**	**86.1685**	**0.1020**	**10.1951**	**0.2944**	**10.4896**	**2.7175**	**0.2894**	**3.0069**	**0.0000**	**10,819.4554**	**10,819.4554**	**0.7952**	**0.5175**	**10,993.5382**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.3037	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907	0.0000	61.9506	61.9506	0.0593	0.0000	63.4339
Energy	0.0416	0.3782	0.3177	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.8572	453.8572	8.7000e-003	8.3200e-003	456.5543
Mobile	8.3089	6.2415	51.4784	0.0979	10.1951	0.0750	10.2701	2.7175	0.0699	2.7874		10,303.6476	10,303.6476	0.7271	0.5091	10,473.5500
Total	**19.6541**	**7.0157**	**86.1685**	**0.1020**	**10.1951**	**0.2944**	**10.4896**	**2.7175**	**0.2894**	**3.0069**	**0.0000**	**10,819.4554**	**10,819.4554**	**0.7952**	**0.5175**	**10,993.5382**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2022	8/23/2022	5	17	
2	Grading	Grading	8/24/2022	11/15/2022	5	60	
3	Building Construction	Building Construction	11/16/2022	4/21/2025	5	634	
4	Paving	Paving	4/22/2025	6/6/2025	5	34	
5	Architectural Coating	Architectural Coating	6/9/2025	7/24/2025	5	34	

Acres of Grading (Site Preparation Phase): 22

Acres of Grading (Grading Phase): 22

Acres of Paving: 0

Residential Indoor: 844,425; Residential Outdoor: 281,475; Non-Residential Indoor: 32,775; Non-Residential Outdoor: 10,925; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	309.00	48.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	62.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.4387	0.0000	19.4387	10.0789	0.0000	10.0789			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.4387**	**1.6126**	**21.0512**	**10.0789**	**1.4836**	**11.5624**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0652	0.0329	0.5324	1.2900e-003	0.1369	7.4000e-004	0.1377	0.0363	6.8000e-004	0.0370		131.5353	131.5353	3.9000e-003	3.4000e-003	132.6458
Total	**0.0652**	**0.0329**	**0.5324**	**1.2900e-003**	**0.1369**	**7.4000e-004**	**0.1377**	**0.0363**	**6.8000e-004**	**0.0370**		**131.5353**	**131.5353**	**3.9000e-003**	**3.4000e-003**	**132.6458**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7474	0.0000	8.7474	4.5355	0.0000	4.5355			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.7474**	**1.6126**	**10.3600**	**4.5355**	**1.4836**	**6.0191**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0652	0.0329	0.5324	1.2900e-003	0.1262	7.4000e-004	0.1270	0.0337	6.8000e-004	0.0344		131.5353	131.5353	3.9000e-003	3.4000e-003	132.6458
Total	**0.0652**	**0.0329**	**0.5324**	**1.2900e-003**	**0.1262**	**7.4000e-004**	**0.1270**	**0.0337**	**6.8000e-004**	**0.0344**		**131.5353**	**131.5353**	**3.9000e-003**	**3.4000e-003**	**132.6458**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.4109	0.0000	6.4109	3.3522	0.0000	3.3522			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**6.4109**	**1.6349**	**8.0458**	**3.3522**	**1.5041**	**4.8563**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0725	0.0366	0.5915	1.4400e-003	0.1521	8.3000e-004	0.1530	0.0404	7.6000e-004	0.0411		146.1503	146.1503	4.3400e-003	3.7800e-003	147.3843
Total	**0.0725**	**0.0366**	**0.5915**	**1.4400e-003**	**0.1521**	**8.3000e-004**	**0.1530**	**0.0404**	**7.6000e-004**	**0.0411**		**146.1503**	**146.1503**	**4.3400e-003**	**3.7800e-003**	**147.3843**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.8849	0.0000	2.8849	1.5085	0.0000	1.5085			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**2.8849**	**1.6349**	**4.5198**	**1.5085**	**1.5041**	**3.0126**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0725	0.0366	0.5915	1.4400e-003	0.1402	8.3000e-004	0.1411	0.0374	7.6000e-004	0.0382		146.1503	146.1503	4.3400e-003	3.7800e-003	147.3843
Total	**0.0725**	**0.0366**	**0.5915**	**1.4400e-003**	**0.1402**	**8.3000e-004**	**0.1411**	**0.0374**	**7.6000e-004**	**0.0382**		**146.1503**	**146.1503**	**4.3400e-003**	**3.7800e-003**	**147.3843**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1039	2.6146	0.7872	9.4800e-003	0.2892	0.0254	0.3146	0.0833	0.0243	0.1075		1,015.7719	1,015.7719	0.0266	0.1488	1,060.7641
Worker	1.1196	0.5654	9.1390	0.0222	2.3506	0.0128	2.3633	0.6235	0.0118	0.6353		2,258.0227	2,258.0227	0.0670	0.0584	2,277.0870
Total	**1.2235**	**3.1800**	**9.9262**	**0.0317**	**2.6398**	**0.0382**	**2.6779**	**0.7068**	**0.0360**	**0.7428**		**3,273.7946**	**3,273.7946**	**0.0936**	**0.2071**	**3,337.8510**

Residences at Capital Center - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1039	2.6146	0.7872	9.4800e-003	0.2707	0.0254	0.2961	0.0787	0.0243	0.1030		1,015.7719	1,015.7719	0.0266	0.1488	1,060.7641
Worker	1.1196	0.5654	9.1390	0.0222	2.1667	0.0128	2.1795	0.5784	0.0118	0.5901		2,258.0227	2,258.0227	0.0670	0.0584	2,277.0870
Total	**1.2235**	**3.1800**	**9.9262**	**0.0317**	**2.4374**	**0.0382**	**2.4755**	**0.6571**	**0.0360**	**0.6931**		**3,273.7946**	**3,273.7946**	**0.0936**	**0.2071**	**3,337.8510**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0642	2.2226	0.6919	9.1500e-003	0.2892	0.0124	0.3016	0.0832	0.0119	0.0951		981.0442	981.0442	0.0242	0.1438	1,024.5049
Worker	1.0412	0.5003	8.4211	0.0215	2.3506	0.0121	2.3627	0.6235	0.0112	0.6347		2,199.1495	2,199.1495	0.0604	0.0540	2,216.7522
Total	**1.1054**	**2.7229**	**9.1131**	**0.0306**	**2.6398**	**0.0245**	**2.6643**	**0.7068**	**0.0230**	**0.7298**		**3,180.1937**	**3,180.1937**	**0.0846**	**0.1978**	**3,241.2571**

Residences at Capital Center - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0642	2.2226	0.6919	9.1500e-003	0.2706	0.0124	0.2830	0.0787	0.0119	0.0906		981.0442	981.0442	0.0242	0.1438	1,024.5049
Worker	1.0412	0.5003	8.4211	0.0215	2.1667	0.0121	2.1788	0.5784	0.0112	0.5895		2,199.1495	2,199.1495	0.0604	0.0540	2,216.7522
Total	**1.1054**	**2.7229**	**9.1131**	**0.0306**	**2.4374**	**0.0245**	**2.4619**	**0.6571**	**0.0230**	**0.6801**		**3,180.1937**	**3,180.1937**	**0.0846**	**0.1978**	**3,241.2571**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0614	2.1785	0.6702	8.9700e-003	0.2892	0.0122	0.3014	0.0832	0.0117	0.0949		962.3604	962.3604	0.0236	0.1414	1,005.0858
Worker	0.9726	0.4457	7.8173	0.0208	2.3506	0.0115	2.3621	0.6235	0.0106	0.6341		2,143.6961	2,143.6961	0.0545	0.0502	2,160.0306
Total	**1.0340**	**2.6241**	**8.4875**	**0.0298**	**2.6397**	**0.0238**	**2.6635**	**0.7067**	**0.0223**	**0.7291**		**3,106.0565**	**3,106.0565**	**0.0781**	**0.1916**	**3,165.1163**

Residences at Capital Center - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0614	2.1785	0.6702	8.9700e-003	0.2706	0.0122	0.2828	0.0787	0.0117	0.0904		962.3604	962.3604	0.0236	0.1414	1,005.0858
Worker	0.9726	0.4457	7.8173	0.0208	2.1667	0.0115	2.1783	0.5784	0.0106	0.5890		2,143.6961	2,143.6961	0.0545	0.0502	2,160.0306
Total	**1.0340**	**2.6241**	**8.4875**	**0.0298**	**2.4373**	**0.0238**	**2.4611**	**0.6571**	**0.0223**	**0.6794**		**3,106.0565**	**3,106.0565**	**0.0781**	**0.1916**	**3,165.1163**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0592	2.1341	0.6545	8.7800e-003	0.2891	0.0120	0.3011	0.0832	0.0115	0.0947		942.8461	942.8461	0.0231	0.1388	984.7831
Worker	0.9131	0.4001	7.2974	0.0201	2.3506	0.0110	2.3616	0.6235	0.0102	0.6337		2,091.3715	2,091.3715	0.0494	0.0470	2,106.6062
Total	**0.9723**	**2.5342**	**7.9519**	**0.0289**	**2.6397**	**0.0230**	**2.6627**	**0.7067**	**0.0216**	**0.7283**		**3,034.2176**	**3,034.2176**	**0.0724**	**0.1858**	**3,091.3893**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0592	2.1341	0.6545	8.7800e-003	0.2706	0.0120	0.2826	0.0787	0.0115	0.0901		942.8461	942.8461	0.0231	0.1388	984.7831
Worker	0.9131	0.4001	7.2974	0.0201	2.1667	0.0110	2.1778	0.5784	0.0102	0.5885		2,091.3715	2,091.3715	0.0494	0.0470	2,106.6062
Total	**0.9723**	**2.5342**	**7.9519**	**0.0289**	**2.4373**	**0.0230**	**2.4603**	**0.6570**	**0.0216**	**0.6787**		**3,034.2176**	**3,034.2176**	**0.0724**	**0.1858**	**3,091.3893**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0443	0.0194	0.3542	9.7000e-004	0.1141	5.4000e-004	0.1146	0.0303	4.9000e-004	0.0308		101.5229	101.5229	2.4000e-003	2.2800e-003	102.2624
Total	**0.0443**	**0.0194**	**0.3542**	**9.7000e-004**	**0.1141**	**5.4000e-004**	**0.1146**	**0.0303**	**4.9000e-004**	**0.0308**		**101.5229**	**101.5229**	**2.4000e-003**	**2.2800e-003**	**102.2624**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0443	0.0194	0.3542	9.7000e-004	0.1052	5.4000e-004	0.1057	0.0281	4.9000e-004	0.0286		101.5229	101.5229	2.4000e-003	2.2800e-003	102.2624
Total	**0.0443**	**0.0194**	**0.3542**	**9.7000e-004**	**0.1052**	**5.4000e-004**	**0.1057**	**0.0281**	**4.9000e-004**	**0.0286**		**101.5229**	**101.5229**	**2.4000e-003**	**2.2800e-003**	**102.2624**

Residences at Capital Center - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	99.6525					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**99.8234**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1832	0.0803	1.4642	4.0300e-003	0.4716	2.2100e-003	0.4739	0.1251	2.0400e-003	0.1271		419.6279	419.6279	9.9000e-003	9.4300e-003	422.6847
Total	**0.1832**	**0.0803**	**1.4642**	**4.0300e-003**	**0.4716**	**2.2100e-003**	**0.4739**	**0.1251**	**2.0400e-003**	**0.1271**		**419.6279**	**419.6279**	**9.9000e-003**	**9.4300e-003**	**422.6847**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	99.6525					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**99.8234**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1832	0.0803	1.4642	4.0300e-003	0.4348	2.2100e-003	0.4370	0.1161	2.0400e-003	0.1181		419.6279	419.6279	9.9000e-003	9.4300e-003	422.6847
Total	**0.1832**	**0.0803**	**1.4642**	**4.0300e-003**	**0.4348**	**2.2100e-003**	**0.4370**	**0.1161**	**2.0400e-003**	**0.1181**		**419.6279**	**419.6279**	**9.9000e-003**	**9.4300e-003**	**422.6847**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.3089	6.2415	51.4784	0.0979	10.1951	0.0750	10.2701	2.7175	0.0699	2.7874		10,303.6476	10,303.6476	0.7271	0.5091	10,473.5500
Unmitigated	8.3089	6.2415	51.4784	0.0979	10.1951	0.0750	10.2701	2.7175	0.0699	2.7874		10,303.6476	10,303.6476	0.7271	0.5091	10,473.5500

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,099.20	1,099.20	1099.20	1,684,778	1,684,778
Condo/Townhouse	1,210.68	1,210.68	1210.68	1,841,192	1,841,192
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	911.04	911.04	911.04	1,310,549	1,310,549
Total	3,220.92	3,220.92	3,220.92	4,836,520	4,836,520

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	5.00	4.00	3.38	46.50	12.50	41.00	100	0	0
Condo/Townhouse	5.00	4.00	3.30	46.50	12.50	41.00	100	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High Turnover (Sit Down	5.00	4.00	3.30	8.50	72.50	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Condo/Townhouse	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Health Club	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
High Turnover (Sit Down Restaurant)	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0416	0.3782	0.3177	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.8572	453.8572	8.7000e-003	8.3200e-003	456.5543
NaturalGas Unmitigated	0.0416	0.3782	0.3177	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.8572	453.8572	8.7000e-003	8.3200e-003	456.5543

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	2240.8	0.0242	0.2197	0.1845	1.3200e-003		0.0167	0.0167		0.0167	0.0167		263.6235	263.6235	5.0500e-003	4.8300e-003	265.1901
High Turnover (Sit Down Restaurant)	1616.99	0.0174	0.1585	0.1332	9.5000e-004		0.0121	0.0121		0.0121	0.0121		190.2337	190.2337	3.6500e-003	3.4900e-003	191.3642
Total		**0.0416**	**0.3782**	**0.3177**	**2.2700e-003**		**0.0288**	**0.0288**		**0.0288**	**0.0288**		**453.8572**	**453.8572**	**8.7000e-003**	**8.3200e-003**	**456.5543**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	2.2408	0.0242	0.2197	0.1845	1.3200e-003		0.0167	0.0167		0.0167	0.0167		263.6235	263.6235	5.0500e-003	4.8300e-003	265.1901
High Turnover (Sit Down Restaurant)	1.61699	0.0174	0.1585	0.1332	9.5000e-004		0.0121	0.0121		0.0121	0.0121		190.2337	190.2337	3.6500e-003	3.4900e-003	191.3642
Total		**0.0416**	**0.3782**	**0.3177**	**2.2700e-003**		**0.0288**	**0.0288**		**0.0288**	**0.0288**		**453.8572**	**453.8572**	**8.7000e-003**	**8.3200e-003**	**456.5543**

6.0 Area Detail

6.1 Mitigation Measures Area

Residences at Capital Center - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	11.3037	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907	0.0000	61.9506	61.9506	0.0593	0.0000	63.4339
Unmitigated	11.3037	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907	0.0000	61.9506	61.9506	0.0593	0.0000	63.4339

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9283					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.3432					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0321	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907		61.9506	61.9506	0.0593		63.4339
Total	**11.3037**	**0.3959**	**34.3724**	**1.8200e-003**		**0.1907**	**0.1907**		**0.1907**	**0.1907**	**0.0000**	**61.9506**	**61.9506**	**0.0593**	**0.0000**	**63.4339**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9283					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.3432					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0321	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907		61.9506	61.9506	0.0593		63.4339
Total	**11.3037**	**0.3959**	**34.3724**	**1.8200e-003**		**0.1907**	**0.1907**		**0.1907**	**0.1907**	**0.0000**	**61.9506**	**61.9506**	**0.0593**	**0.0000**	**63.4339**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Residences at Capital Center

Sacramento County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Health Club	14.60	1000sqft	0.34	14,600.00	0
High Turnover (Sit Down Restaurant)	5.00	1000sqft	0.72	5,000.00	0
Apartments Mid Rise	240.00	Dwelling Unit	8.71	240,000.00	641
Condo/Townhouse	177.00	Dwelling Unit	9.93	177,000.00	473

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2026
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	186.1	**CH4 Intensity (lb/MWhr)**	0.012	**N2O Intensity (lb/MWhr)**	0.002

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SMUD Intentisty Factor update accoding to 2030 Carbon Neutrality goal

Land Use - Project specific acreage

Construction Phase - 36-month construction schedule

Grading - 22-acres to be graded

Architectural Coating - SMAQMD Rule 442

Vehicle Trips - Trip adjustments

Area Coating - SMAQMD Rule 442

Energy Use - No residential natural gas use. NG use for pool/spa and 2 outdoor fire pits- see supplemental calcs.

Construction Off-road Equipment Mitigation - SMAQMD Construciton BMPs

Residences at Capital Center - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblAreaCoating	Area_EF_Residential_Interior	100	50
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	17.00
tblConstructionPhase	NumDays	30.00	60.00
tblConstructionPhase	NumDays	300.00	634.00
tblConstructionPhase	NumDays	20.00	34.00
tblConstructionPhase	NumDays	20.00	34.00
tblEnergyUse	NT24E	3,054.10	3,842.08
tblEnergyUse	NT24E	3,795.01	8,621.49
tblEnergyUse	NT24NG	2,687.00	0.00
tblEnergyUse	NT24NG	2,687.00	0.00
tblEnergyUse	NT24NG	12.42	56.02
tblEnergyUse	T24E	98.18	2,071.56
tblEnergyUse	T24E	80.14	4,826.48
tblEnergyUse	T24E	3.05	9.84
tblEnergyUse	T24E	7.86	25.18
tblEnergyUse	T24NG	6,729.23	0.00
tblEnergyUse	T24NG	16,185.01	0.00
tblEnergyUse	T24NG	23.15	0.00
tblEnergyUse	T24NG	59.07	0.00
tblGrading	AcresOfGrading	180.00	22.00
tblGrading	AcresOfGrading	25.50	22.00
tblLandUse	LotAcreage	0.11	0.72

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblLandUse	LotAcreage	6.32	8.71
tblLandUse	LotAcreage	11.06	9.93
tblProjectCharacteristics	CH4IntensityFactor	0.033	0.012
tblProjectCharacteristics	CO2IntensityFactor	357.98	186.1
tblProjectCharacteristics	N2OIntensityFactor	0.004	0.002
tblVehicleTrips	CC_TL	5.00	0.00
tblVehicleTrips	CC_TL	5.00	4.00
tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CNW_TL	6.50	0.00
tblVehicleTrips	CNW_TL	6.50	3.30
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	10.00	0.00
tblVehicleTrips	CW_TL	10.00	5.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	HO_TL	6.50	3.38
tblVehicleTrips	HO_TL	6.50	3.30
tblVehicleTrips	HS_TL	5.00	4.00
tblVehicleTrips	HS_TL	5.00	4.00
tblVehicleTrips	HW_TL	10.00	5.00
tblVehicleTrips	HW_TL	10.00	5.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	100.00
tblVehicleTrips	ST_TR	4.91	4.58
tblVehicleTrips	ST_TR	8.14	6.84
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	122.40	182.21
tblVehicleTrips	SU_TR	4.09	4.58
tblVehicleTrips	SU_TR	6.28	6.84
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	142.64	182.21
tblVehicleTrips	WD_TR	5.44	4.58
tblVehicleTrips	WD_TR	7.32	6.84
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	112.18	182.21

2.0 Emissions Summary

Residences at Capital Center - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.6889	38.8884	29.5539	0.0634	19.5756	1.6357	21.1889	10.1152	1.5049	11.5995	0.0000	6,141.3666	6,141.3666	1.9492	0.2160	6,191.3878
2023	2.5570	17.3875	24.3017	0.0552	2.6398	0.7244	3.3642	0.7068	0.6816	1.3883	0.0000	5,493.1687	5,493.1687	0.7015	0.2061	5,572.1215
2024	2.3940	16.3323	23.7086	0.0544	2.6397	0.6372	3.2769	0.7067	0.5993	1.3061	0.0000	5,426.3812	5,426.3812	0.6909	0.1993	5,503.0504
2025	99.9862	15.2551	23.1793	0.0536	2.6397	0.5507	3.1904	0.7067	0.5180	1.2247	0.0000	5,361.7130	5,361.7130	0.7165	0.1929	5,436.2428
Maximum	**99.9862**	**38.8884**	**29.5539**	**0.0634**	**19.5756**	**1.6357**	**21.1889**	**10.1152**	**1.5049**	**11.5995**	**0.0000**	**6,141.3666**	**6,141.3666**	**1.9492**	**0.2160**	**6,191.3878**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.6889	38.8884	29.5539	0.0634	8.8736	1.6357	10.4869	4.5692	1.5049	6.0534	0.0000	6,141.3666	6,141.3666	1.9492	0.2160	6,191.3878
2023	2.5570	17.3875	24.3017	0.0552	2.4374	0.7244	3.1618	0.6571	0.6816	1.3387	0.0000	5,493.1687	5,493.1687	0.7015	0.2061	5,572.1215
2024	2.3940	16.3323	23.7086	0.0544	2.4373	0.6372	3.0745	0.6571	0.5993	1.2564	0.0000	5,426.3812	5,426.3812	0.6909	0.1993	5,503.0504
2025	99.9862	15.2551	23.1793	0.0536	2.4373	0.5507	2.9880	0.6570	0.5180	1.1750	0.0000	5,361.7130	5,361.7130	0.7165	0.1929	5,436.2428
Maximum	**99.9862**	**38.8884**	**29.5539**	**0.0634**	**8.8736**	**1.6357**	**10.4869**	**4.5692**	**1.5049**	**6.0534**	**0.0000**	**6,141.3666**	**6,141.3666**	**1.9492**	**0.2160**	**6,191.3878**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**41.13**	**0.00**	**36.46**	**46.55**	**0.00**	**36.70**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.3037	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907	0.0000	61.9506	61.9506	0.0593	0.0000	63.4339
Energy	0.0416	0.3782	0.3177	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.8572	453.8572	8.7000e-003	8.3200e-003	456.5543
Mobile	6.0881	7.1990	53.9939	0.0898	10.1951	0.0751	10.2702	2.7175	0.0701	2.7876		9,445.2127	9,445.2127	0.8529	0.5576	9,632.6959
Total	**17.4334**	**7.9731**	**88.6840**	**0.0939**	**10.1951**	**0.2946**	**10.4897**	**2.7175**	**0.2895**	**3.0070**	**0.0000**	**9,961.0205**	**9,961.0205**	**0.9209**	**0.5659**	**10,152.6841**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.3037	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907	0.0000	61.9506	61.9506	0.0593	0.0000	63.4339
Energy	0.0416	0.3782	0.3177	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.8572	453.8572	8.7000e-003	8.3200e-003	456.5543
Mobile	6.0881	7.1990	53.9939	0.0898	10.1951	0.0751	10.2702	2.7175	0.0701	2.7876		9,445.2127	9,445.2127	0.8529	0.5576	9,632.6959
Total	**17.4334**	**7.9731**	**88.6840**	**0.0939**	**10.1951**	**0.2946**	**10.4897**	**2.7175**	**0.2895**	**3.0070**	**0.0000**	**9,961.0205**	**9,961.0205**	**0.9209**	**0.5659**	**10,152.6841**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2022	8/23/2022	5	17	
2	Grading	Grading	8/24/2022	11/15/2022	5	60	
3	Building Construction	Building Construction	11/16/2022	4/21/2025	5	634	
4	Paving	Paving	4/22/2025	6/6/2025	5	34	
5	Architectural Coating	Architectural Coating	6/9/2025	7/24/2025	5	34	

Acres of Grading (Site Preparation Phase): 22

Acres of Grading (Grading Phase): 22

Acres of Paving: 0

Residential Indoor: 844,425; Residential Outdoor: 281,475; Non-Residential Indoor: 32,775; Non-Residential Outdoor: 10,925; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	309.00	48.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	62.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.4387	0.0000	19.4387	10.0789	0.0000	10.0789			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.4387**	**1.6126**	**21.0512**	**10.0789**	**1.4836**	**11.5624**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0576	0.0404	0.4612	1.1500e-003	0.1369	7.4000e-004	0.1377	0.0363	6.8000e-004	0.0370		116.9605	116.9605	4.4700e-003	3.9000e-003	118.2347
Total	**0.0576**	**0.0404**	**0.4612**	**1.1500e-003**	**0.1369**	**7.4000e-004**	**0.1377**	**0.0363**	**6.8000e-004**	**0.0370**		**116.9605**	**116.9605**	**4.4700e-003**	**3.9000e-003**	**118.2347**

Residences at Capital Center - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7474	0.0000	8.7474	4.5355	0.0000	4.5355			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.7474**	**1.6126**	**10.3600**	**4.5355**	**1.4836**	**6.0191**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0576	0.0404	0.4612	1.1500e-003	0.1262	7.4000e-004	0.1270	0.0337	6.8000e-004	0.0344		116.9605	116.9605	4.4700e-003	3.9000e-003	118.2347
Total	**0.0576**	**0.0404**	**0.4612**	**1.1500e-003**	**0.1262**	**7.4000e-004**	**0.1270**	**0.0337**	**6.8000e-004**	**0.0344**		**116.9605**	**116.9605**	**4.4700e-003**	**3.9000e-003**	**118.2347**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.4109	0.0000	6.4109	3.3522	0.0000	3.3522			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**6.4109**	**1.6349**	**8.0458**	**3.3522**	**1.5041**	**4.8563**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0640	0.0449	0.5124	1.2800e-003	0.1521	8.3000e-004	0.1530	0.0404	7.6000e-004	0.0411		129.9561	129.9561	4.9700e-003	4.3300e-003	131.3719
Total	**0.0640**	**0.0449**	**0.5124**	**1.2800e-003**	**0.1521**	**8.3000e-004**	**0.1530**	**0.0404**	**7.6000e-004**	**0.0411**		**129.9561**	**129.9561**	**4.9700e-003**	**4.3300e-003**	**131.3719**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.8849	0.0000	2.8849	1.5085	0.0000	1.5085			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**2.8849**	**1.6349**	**4.5198**	**1.5085**	**1.5041**	**3.0126**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0640	0.0449	0.5124	1.2800e-003	0.1402	8.3000e-004	0.1411	0.0374	7.6000e-004	0.0382		129.9561	129.9561	4.9700e-003	4.3300e-003	131.3719
Total	**0.0640**	**0.0449**	**0.5124**	**1.2800e-003**	**0.1402**	**8.3000e-004**	**0.1411**	**0.0374**	**7.6000e-004**	**0.0382**		**129.9561**	**129.9561**	**4.9700e-003**	**4.3300e-003**	**131.3719**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1021	2.8082	0.8220	9.4700e-003	0.2892	0.0256	0.3148	0.0833	0.0245	0.1077		1,015.6534	1,015.6534	0.0265	0.1490	1,060.7170
Worker	0.9893	0.6942	7.9166	0.0197	2.3506	0.0128	2.3633	0.6235	0.0118	0.6353		2,007.8213	2,007.8213	0.0767	0.0670	2,029.6964
Total	**1.0914**	**3.5024**	**8.7386**	**0.0292**	**2.6398**	**0.0383**	**2.6781**	**0.7068**	**0.0362**	**0.7430**		**3,023.4747**	**3,023.4747**	**0.1032**	**0.2160**	**3,090.4134**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1021	2.8082	0.8220	9.4700e-003	0.2707	0.0256	0.2962	0.0787	0.0245	0.1032		1,015.6534	1,015.6534	0.0265	0.1490	1,060.7170
Worker	0.9893	0.6942	7.9166	0.0197	2.1667	0.0128	2.1795	0.5784	0.0118	0.5901		2,007.8213	2,007.8213	0.0767	0.0670	2,029.6964
Total	**1.0914**	**3.5024**	**8.7386**	**0.0292**	**2.4374**	**0.0383**	**2.4757**	**0.6571**	**0.0362**	**0.6933**		**3,023.4747**	**3,023.4747**	**0.1032**	**0.2160**	**3,090.4134**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0621	2.3888	0.7234	9.1500e-003	0.2892	0.0126	0.3017	0.0832	0.0120	0.0952		981.7473	981.7473	0.0241	0.1442	1,025.3080
Worker	0.9222	0.6138	7.3343	0.0191	2.3506	0.0121	2.3627	0.6235	0.0112	0.6347		1,956.2115	1,956.2115	0.0695	0.0619	1,976.4075
Total	**0.9842**	**3.0026**	**8.0577**	**0.0283**	**2.6398**	**0.0247**	**2.6644**	**0.7068**	**0.0232**	**0.7299**		**2,937.9588**	**2,937.9588**	**0.0936**	**0.2061**	**3,001.7155**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0621	2.3888	0.7234	9.1500e-003	0.2706	0.0126	0.2832	0.0787	0.0120	0.0907		981.7473	981.7473	0.0241	0.1442	1,025.3080
Worker	0.9222	0.6138	7.3343	0.0191	2.1667	0.0121	2.1788	0.5784	0.0112	0.5895		1,956.2115	1,956.2115	0.0695	0.0619	1,976.4075
Total	**0.9842**	**3.0026**	**8.0577**	**0.0283**	**2.4374**	**0.0247**	**2.4620**	**0.6571**	**0.0232**	**0.6802**		**2,937.9588**	**2,937.9588**	**0.0936**	**0.2061**	**3,001.7155**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0593	2.3420	0.7011	8.9800e-003	0.2892	0.0124	0.3015	0.0832	0.0118	0.0950		963.1723	963.1723	0.0235	0.1417	1,005.9939
Worker	0.8631	0.5465	6.8407	0.0185	2.3506	0.0115	2.3621	0.6235	0.0106	0.6341		1,907.5100	1,907.5100	0.0631	0.0576	1,926.2488
Total	**0.9224**	**2.8885**	**7.5418**	**0.0275**	**2.6397**	**0.0239**	**2.6636**	**0.7067**	**0.0224**	**0.7292**		**2,870.6823**	**2,870.6823**	**0.0866**	**0.1993**	**2,932.2428**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0593	2.3420	0.7011	8.9800e-003	0.2706	0.0124	0.2830	0.0787	0.0118	0.0905		963.1723	963.1723	0.0235	0.1417	1,005.9939
Worker	0.8631	0.5465	6.8407	0.0185	2.1667	0.0115	2.1783	0.5784	0.0106	0.5890		1,907.5100	1,907.5100	0.0631	0.0576	1,926.2488
Total	**0.9224**	**2.8885**	**7.5418**	**0.0275**	**2.4373**	**0.0239**	**2.4612**	**0.6571**	**0.0224**	**0.6795**		**2,870.6823**	**2,870.6823**	**0.0866**	**0.1993**	**2,932.2428**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0571	2.2951	0.6846	8.7900e-003	0.2891	0.0121	0.3012	0.0832	0.0116	0.0948		943.7479	943.7479	0.0230	0.1391	985.7787
Worker	0.8114	0.4904	6.4101	0.0179	2.3506	0.0110	2.3616	0.6235	0.0102	0.6337		1,861.4907	1,861.4907	0.0574	0.0538	1,878.9661
Total	**0.8684**	**2.7854**	**7.0947**	**0.0267**	**2.6397**	**0.0231**	**2.6628**	**0.7067**	**0.0217**	**0.7285**		**2,805.2386**	**2,805.2386**	**0.0804**	**0.1929**	**2,864.7448**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0571	2.2951	0.6846	8.7900e-003	0.2706	0.0121	0.2827	0.0787	0.0116	0.0902		943.7479	943.7479	0.0230	0.1391	985.7787
Worker	0.8114	0.4904	6.4101	0.0179	2.1667	0.0110	2.1778	0.5784	0.0102	0.5885		1,861.4907	1,861.4907	0.0574	0.0538	1,878.9661
Total	**0.8684**	**2.7854**	**7.0947**	**0.0267**	**2.4373**	**0.0231**	**2.4604**	**0.6570**	**0.0217**	**0.6788**		**2,805.2386**	**2,805.2386**	**0.0804**	**0.1929**	**2,864.7448**

Residences at Capital Center - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0394	0.0238	0.3112	8.7000e-004	0.1141	5.4000e-004	0.1146	0.0303	4.9000e-004	0.0308		90.3636	90.3636	2.7900e-003	2.6100e-003	91.2120
Total	**0.0394**	**0.0238**	**0.3112**	**8.7000e-004**	**0.1141**	**5.4000e-004**	**0.1146**	**0.0303**	**4.9000e-004**	**0.0308**		**90.3636**	**90.3636**	**2.7900e-003**	**2.6100e-003**	**91.2120**

Residences at Capital Center - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0394	0.0238	0.3112	8.7000e-004	0.1052	5.4000e-004	0.1057	0.0281	4.9000e-004	0.0286		90.3636	90.3636	2.7900e-003	2.6100e-003	91.2120
Total	**0.0394**	**0.0238**	**0.3112**	**8.7000e-004**	**0.1052**	**5.4000e-004**	**0.1057**	**0.0281**	**4.9000e-004**	**0.0286**		**90.3636**	**90.3636**	**2.7900e-003**	**2.6100e-003**	**91.2120**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	99.6525					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**99.8234**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1628	0.0984	1.2862	3.5900e-003	0.4716	2.2100e-003	0.4739	0.1251	2.0400e-003	0.1271		373.5030	373.5030	0.0115	0.0108	377.0094
Total	**0.1628**	**0.0984**	**1.2862**	**3.5900e-003**	**0.4716**	**2.2100e-003**	**0.4739**	**0.1251**	**2.0400e-003**	**0.1271**		**373.5030**	**373.5030**	**0.0115**	**0.0108**	**377.0094**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	99.6525					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**99.8234**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1628	0.0984	1.2862	3.5900e-003	0.4348	2.2100e-003	0.4370	0.1161	2.0400e-003	0.1181		373.5030	373.5030	0.0115	0.0108	377.0094
Total	**0.1628**	**0.0984**	**1.2862**	**3.5900e-003**	**0.4348**	**2.2100e-003**	**0.4370**	**0.1161**	**2.0400e-003**	**0.1181**		**373.5030**	**373.5030**	**0.0115**	**0.0108**	**377.0094**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.0881	7.1990	53.9939	0.0898	10.1951	0.0751	10.2702	2.7175	0.0701	2.7876		9,445.2127	9,445.2127	0.8529	0.5576	9,632.6959
Unmitigated	6.0881	7.1990	53.9939	0.0898	10.1951	0.0751	10.2702	2.7175	0.0701	2.7876		9,445.2127	9,445.2127	0.8529	0.5576	9,632.6959

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,099.20	1,099.20	1099.20	1,684,778	1,684,778
Condo/Townhouse	1,210.68	1,210.68	1210.68	1,841,192	1,841,192
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	911.04	911.04	911.04	1,310,549	1,310,549
Total	3,220.92	3,220.92	3,220.92	4,836,520	4,836,520

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	5.00	4.00	3.38	46.50	12.50	41.00	100	0	0
Condo/Townhouse	5.00	4.00	3.30	46.50	12.50	41.00	100	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High Turnover (Sit Down	5.00	4.00	3.30	8.50	72.50	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Condo/Townhouse	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Health Club	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
High Turnover (Sit Down Restaurant)	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0416	0.3782	0.3177	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.8572	453.8572	8.7000e-003	8.3200e-003	456.5543
NaturalGas Unmitigated	0.0416	0.3782	0.3177	2.2700e-003		0.0287	0.0287		0.0287	0.0287		453.8572	453.8572	8.7000e-003	8.3200e-003	456.5543

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	2240.8	0.0242	0.2197	0.1845	1.3200e-003		0.0167	0.0167		0.0167	0.0167		263.6235	263.6235	5.0500e-003	4.8300e-003	265.1901
High Turnover (Sit Down Restaurant)	1616.99	0.0174	0.1585	0.1332	9.5000e-004		0.0121	0.0121		0.0121	0.0121		190.2337	190.2337	3.6500e-003	3.4900e-003	191.3642
Total		**0.0416**	**0.3782**	**0.3177**	**2.2700e-003**		**0.0288**	**0.0288**		**0.0288**	**0.0288**		**453.8572**	**453.8572**	**8.7000e-003**	**8.3200e-003**	**456.5543**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	2.2408	0.0242	0.2197	0.1845	1.3200e-003		0.0167	0.0167		0.0167	0.0167		263.6235	263.6235	5.0500e-003	4.8300e-003	265.1901
High Turnover (Sit Down Restaurant)	1.61699	0.0174	0.1585	0.1332	9.5000e-004		0.0121	0.0121		0.0121	0.0121		190.2337	190.2337	3.6500e-003	3.4900e-003	191.3642
Total		**0.0416**	**0.3782**	**0.3177**	**2.2700e-003**		**0.0288**	**0.0288**		**0.0288**	**0.0288**		**453.8572**	**453.8572**	**8.7000e-003**	**8.3200e-003**	**456.5543**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	11.3037	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907	0.0000	61.9506	61.9506	0.0593	0.0000	63.4339
Unmitigated	11.3037	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907	0.0000	61.9506	61.9506	0.0593	0.0000	63.4339

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9283					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.3432					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0321	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907		61.9506	61.9506	0.0593		63.4339
Total	**11.3037**	**0.3959**	**34.3724**	**1.8200e-003**		**0.1907**	**0.1907**		**0.1907**	**0.1907**	**0.0000**	**61.9506**	**61.9506**	**0.0593**	**0.0000**	**63.4339**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9283					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.3432					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0321	0.3959	34.3724	1.8200e-003		0.1907	0.1907		0.1907	0.1907		61.9506	61.9506	0.0593		63.4339
Total	**11.3037**	**0.3959**	**34.3724**	**1.8200e-003**		**0.1907**	**0.1907**		**0.1907**	**0.1907**	**0.0000**	**61.9506**	**61.9506**	**0.0593**	**0.0000**	**63.4339**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod VMT Calculator

This calcultor was created based on the default trip inputs for the unmitigated CalEEMod run. The calculator calculateds the annual VMT from the proposed project using the same methodology from CalEEMod, described in Appendix A, for the UNMITIGATED SCENARIO. This calculator can be used to adjust land use trip rates for the MITIGATED PROJECT scenario which is based on the traffic study conducted for the project

Daily VMT Provided 320 days per year

Annual VMT Provided 4,832,236

Trip Type

CalEEMod defaults based on land uses inputted

Land Use	Miles			Trip %			Trip Purpose		
	H-w or C-W	H-S or C-C	H-O or C-O	H-w or C-W	H-S or C-C	H-O or C-O	Primary	Diverted	Pass-by
Apartments Mid Rise	5.00	4.00	3.38	46.5%	12.5%	41.0%	100.0%	0.0%	0.0%
Townhomes	5.00	4.00	3.30	46.5%	12.5%	41.0%	100.0%	0.0%	0.0%
High Turnover Restaurant	5.00	4.00	3.30	8.5%	72.5%	19.0%	100.0%	0.0%	0.0%

Total Trips

Total Trips = (TripRate weekday x 5 +Trip Sat + Trip Sun)

Average Daily Trips Based on CalEEMod Trip Gen Defaults per land use unit. Total trips Calculated

Land Use	Average Daily Trip Rate			
	weekday	Saturday	Sunday	Total Trips (weekly)
Apartments Mid Rise	1,098.00	1,098.00	1,098.00	**7,686.00**
Townhomes	1,210.00	1,210.00	1,210.00	**8,470.00**
High Turnover Restaurant	911.00	911.00	911.00	**6,377.00**

Trip Length Calc

AVG Trip Length = Link % primary x trip length primary+link % divertedx0.25x length trip primary+link % passbyx0.1

Trip length calculated for each trip type based on trip purpose % and length defaults from CalEEMod

Land Use

Apartments Mid Rise	link % primary	trip length primary	link % diverted	Constant (0.25)	trip length primary	link % passby	constant	Trip Length
H-W or c-w	100.0%	5.00	0.0%	0.25	5	0.0%	0.1	5.0
h-s or c-c	100.0%	4.00	0.0%	0.25	4	0.0%	0.1	4.0
h-o or c-o	100.0%	3.38	0.0%	0.25	3.38	0.0%	0.1	3.4
Townhomes	link % primary	trip length primary	link % diverted	Constant (0.25)	trip length primary	link % passby	constant	Trip Length
H-W or c-w	100.0%	5.00	0.0%	0.25	5.00	0.0%	0.1	5.0
h-s or c-c	100.0%	4.00	0.0%	0.25	4.00	0.0%	0.1	4.0
h-o or c-o	100.0%	3.30	0.0%	0.25	3.30	0.0%	0.1	3.3
High Turnover Restaurant	link % primary	trip length primary	link % diverted	Constant (0.25)	trip length primary	link % passby	constant	Trip Length
H-W or c-w	100.0%	5.00	0.0%	0.25	5.00	0.0%	0.1	5.0
h-s or c-c	100.0%	4.00	0.0%	0.25	4.00	0.0%	0.1	4.0
h-o or c-o	100.0%	3.30	0.0%	0.25	3.30	0.0%	0.1	3.3
0	link % primary	trip length primary	link % diverted	Constant (0.25)	trip length primary	link % passby	constant	Trip Length
H-W or c-w	0.0%	0.00	0.0%	0.25	0.00	0.0%	0.1	0.0
h-s or c-c	0.0%	0.00	0.0%	0.25	0.00	0.0%	0.1	0.0
h-o or c-o	0.0%	0.00	0.0%	0.25	0.00	0.0%	0.1	0.0
0	link % primary	trip length primary	link % diverted	Constant (0.25)	trip length primary	link % passby	constant	Trip Length
H-W or c-w	0.0%	0.00	0.0%	0.25	0.00	0.0%	0.1	0.0
h-s or c-c	0.0%	0.00	0.0%	0.25	0.00	0.0%	0.1	0.0
h-o or c-o	0.0%	0.00	0.0%	0.25	0.00	0.0%	0.1	0.0

VMT Calc Per Land Use Type (Weekly)

VMT = #Trips x AVG Trip Length per land use and trip type

Trip number for each trip type are derived by multiplying the total trips for each land use calculated above in the Total Trip Calcs by the trip % shown in the Trip Type table for each land use

Apartments Mid Rise	**# trips**	**trip length**	**Weekly VMT**	**Annual VMT**
H-W or c-w	3,574	5.0	17,870	
h-s or c-c	961	4.0	3,843	
h-o or c-o	3,151	3.4	10,651	1,682,938.86
Townhomes				
H-W or c-w	3,939	5.0	19,693	
h-s or c-c	1,059	4.0	4,235	
h-o or c-o	3,473	3.3	11,460	1,840,158.32
High Turnover Restaurant				
h-s or c-c	542	5.0	2,710	
h-o or c-o	4,623	4.0	18,493	
h-o or c-o	1,212	3.3	3,998	1,310,499.01
0				
H-W or c-w	0	0.0	-	
h-s or c-c	0	0.0	-	
h-o or c-o	0	0.0	-	-
0				
H-W or c-w	0	0.0	-	
h-s or c-c	0	0.0	-	
h-o or c-o	0	0.0	-	-
Total VMT			92,954	4,833,596.19

Annual VMT Calc

the calculated weekly VMT for each land use is summed. This value is multiplied by 50 weeks/year to equal the annual VMT number calculated by CalEEMod

Summed Weekly VMT from Each Land Use	92,953.77		
Weeks per Year CalEEMod Uses for Annual VMT	52.00	52.0000	52.14285714
Calculated Annual VMT	**4,833,596**		

Natural Gas Conversion to Electricity

	CalEEMod Land Use Inputs			CalEEMod Energy Use Defaults					NG To E Conversion		CalEEMod Override	
				T24E	NT24E	LightingElect	T24NG	NT24NG	T24NG	NT24NG	T24NG	NT24NG
Land Use	Unit Amount	Size Metric	SF	kWh/size/yr	kWh/size/yr	kWh/size/yr	kBTU/size/year	kBTU/size/year	kBTU/size/year	kBTU/size/year		
Apartments Mid Rise	240	DU	240,000.00	98.18	3,054.10	741.44	6,729.23	2,687.00	1,973.38	787.98	**2,071.56**	**3,842.08**
Condo/Townhouse	177	DU	177,000.00	80.14	3,795.01	1,001.10	16,185.01	2,687.00	4,746.34	787.98	**4,826.48**	**8,621.49**
Health Club	14.6	1000 SF	14,600.00	3.05	7.20	4.57	23.15	12.42	6.79		**9.84**	**55.98**
High Turnover (Sit Down Restaurant)	4.999	1000 SF	4,999.00	7.86	26.72	6.19	59.07	118.04	17.32		**25.18**	
Energy Conversion Factors			3.41	kWh/kBTU								

Gas Firepit Natural Gas Use	Value	Unit	Source
Burner Rating	92000	BTU/HR	homedepot.com
Hours per use	4		assumption
days / month	12		assumption
days / year	72		assumption
NG / fire pit / year	317952000	BTU/YR	
Project (2 fire pits)	635904000	BTU/YR	
Annual NG Use	**635904**	**KBTU/YR**	
CalEEmod Input			
Health Club	14600	SF	
	43.6	KBTU/SF/YR	

Notes: NG use was converted to electricty use based on CalEEMod default energy demand and converting BTU to KWH. Then the converted values were added to the projects' Electricity demand. Hihglighted cells represent NG values converted to electricity. Natural gas for the non-residential uses would be limited to pool/spa heating and 2 outdoor firepits. Firepit gas use was added to NONT24 NG Use for the health club/community center use

Construction Schedule Adjustment

Phase Name	Phase Type	CalEEMod Total Days	Portion of Construction Schedule	Construction Schedule for 36 months	Check
Site Preparation	Site Preparation	10	2%	17	2%
Grading	Grading	35	8%	60	8%
Building Construction	Building Construction	370	81%	634	81%
Paving	Paving	20	4%	34	4%
Architectural Coating	Architectural Coating	20	4%	34	4%
		455	100%	780	100%

Electric Vehicle Charging GHG Credit Calculation

	EV Chargers		
1	Number of EV Chargers	12	From calcualted number of electrically connected parking spaces
2	Percent of EV vehicles in Sacramento County - Residential	8%	Calculated using EMFAC 2021
3	Connections per Charging Station	1	1 connection at each charging station
4	Average Charging Hours per Connection per Day	3	Note 1
5	Average Total Hours Charging per year for all Connections	13,140	Item 1 * Item 2 * Item 3 * Item 4 * 365
6	Typical Average Charging Rate (kWh/hr)	6	Note 2
7	Total kWh charged per year	78,840	Item 5 * Item 6
8	Total MWh charged per year	79	Item 7 / 1000
9	**Public Charging Stations**		
10	Average Efficiency of EV LDV (kWh/100 mi)	34.0	Note 3
11	Average Efficiency of EV LDV (miles per kWh)	2.9	100 mi / Item 10
12	Number of Equivalent Miles Charged per year (gasoline miles avoided)	231,882	Item 7 * Item 11
13			
14	SMUD CO2 intensity in 2026 (lbs/MWh)	186.1	Note 4
15			
16	CO2 running emission factor for gasoline vehicles in 2026 (g/mi)	281.1	Note 5
17			
18	Annual CO2 Emissions Saved through Charging (tons per year)	71.8	Item 12 * Item 16 converted to tons
19	Annual CO2 Emissions Saved through Charging (metric tons per year)	65.2	Convert Item 18 to metric tons
20	Annual CO2 Emissions from Electricity required to charge (metric tons per year)	6.7	Item 8 * Item 14 converted to metric tons
21	**Net Annual CO2 Emissions Saved (metric tons per year)**	**58.5**	Item 19 minus Item 20

Note 1: Drive Clean California states that it takes 4 to 6 hours to fully charge an EV. But one would not typically allow the vehicle to be empty before charging, thus assumed 3 hrs/charge.
Note 2: Drive Clean California states that EVs have battery capacities of 24 to 36 kWh and fully charge in 4 to 6 hours, so 6 kWh/hr.
Note 3: Average effeciency of 24 model year 2019 electric vehicles, per USDOE. Used only model year 2019 because vehicles will be more efficient in 2035 than in the past.
Note 4: 2026 operational year adjusted according to SMUD 2030 carbon neutrality goal
Note 5: From EMFAC 2021 for gasoline engines, all models and model years; calendar year 2026.

Sequestration Credit Calculation

Tree Type	Quantity
Red Maple	48
Chinese pistache	49
Frontier Elm	49
village green	49
deodar cedar	28
fern pine	28
holly oak	28
western redbud	68
red crape myrtle	69
little gem	69
pink dawn	69
trident maple	47
princeton sentry	47
golden rain	47
musashino	48
Red oak	30
True green lacebark elm	31
Total Trees	*804*
MTCO2 Accumulation per tree/year	0.0354
Total Redux (MT/yr)	**28**

Notes: Annual CO2 accumulation rate from CalEEMod 2020 Appendix A for miscellaneoous trees.

Operational Energy Summary

Land Use	Natural Gas kBTU/year	Natural Gas therm/year	Electricity kWh/year	Electricity MWh/year
Apartments Mid Rise	0	0	1,597,110	1,597
Condo/Townhouse	0	0	2,557,490	
Health Club	817,892	8,179	315,506	
High Turnover (Sit Down Restaurant)	590,200	5,902	290,450	
	0	0		0
Total	**1,408,092**	**14,081**	**4,760,556**	**1,597**

Energy Calculations Summary

Operational Fuel Use Summary

Fuel Type	Fleet Mix (%)	Gallons per Mile	Annual VMT	Gallons
Gasoline	98.81%	0.04	4,836,520	196,025
Diesel	1.19%	0.12		6,770

Notes:

1. Fleet mix calculated from CalEEMod default values.
2. Gallons per mile calculated from EMFAC 2021.
3. Annual VMT obtained from CalEEMod output file.

Source: EMFAC2021 (v1.0.1) Emissions Inventory
Region Type: County
Region: Sacramento
Calendar Year: 2026
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT	CVMT	EVMT	Trips	Gasoline Fuel Consumption	Diesel Fuel Consumption
				miles/hr		vehicles	miles/day	miles/day	miles/day	trips/day	1,000 gallons/day	1,000 gallons/day
Sacrament	2026	All Other Buses	Aggregate	Aggregate	Diesel	469.187762	24539.43255	24539.43255	0	4175.771082		2.749873598
Sacrament	2026	All Other Buses	Aggregate	Aggregate	Natural Ga	63.96416593	3722.56086	3722.56086	0	569.2810768	0	
Sacrament	2026	LDA	Aggregate	Aggregate	Gasoline	490520.664	17966701.5	17966701.5	0	2254615.988	604.9983217	
Sacrament	2026	LDA	Aggregate	Aggregate	Diesel	1430.745301	37721.50272	37721.50272	0	5893.808305		0.864720808
Sacrament	2026	LDA	Aggregate	Aggregate	Electricity	28982.42278	1380306.326	0	1380306.326	143407.6929	0	
Sacrament	2026	LDA	Aggregate	Aggregate	Plug-in Hyb	14977.6109	654841.653	312089.4567	342752.1963	61932.42107	0	
Sacrament	2026	LDT1	Aggregate	Aggregate	Gasoline	47430.07468	1500520.957	1500520.957	0	206539.2245	60.50798247	
Sacrament	2026	LDT1	Aggregate	Aggregate	Diesel	16.20559695	143.3004056	143.3004056	0	44.90788683		0.006017598
Sacrament	2026	LDT1	Aggregate	Aggregate	Electricity	175.1803744	7332.135322	0	7332.135322	826.2935804	0	
Sacrament	2026	LDT1	Aggregate	Aggregate	Plug-in Hyb	92.6274366	4507.170864	1927.974638	2579.196226	383.0144504	0	
Sacrament	2026	LDT2	Aggregate	Aggregate	Gasoline	241263.535	9009804.273	9009804.273	0	1117072.271	374.4565018	
Sacrament	2026	LDT2	Aggregate	Aggregate	Diesel	773.0221254	30675.15942	30675.15942	0	3663.465023		0.929146636
Sacrament	2026	LDT2	Aggregate	Aggregate	Electricity	1942.902522	68690.07787	0	68690.07787	9829.02384	0	
Sacrament	2026	LDT2	Aggregate	Aggregate	Plug-in Hyb	2236.214513	103421.9192	46576.65582	56845.26342	9246.747013	0	
Sacrament	2026	LHD1	Aggregate	Aggregate	Gasoline	20553.00978	740600.0124	740600.0124	0	306209.2217	76.09755447	
Sacrament	2026	LHD1	Aggregate	Aggregate	Diesel	13789.3624	491992.1781	491992.1781	0	173452.8319		30.6578936
Sacrament	2026	LHD1	Aggregate	Aggregate	Electricity	243.7058975	16291.82349	0	16291.82349	3410.850772	0	
Sacrament	2026	LHD2	Aggregate	Aggregate	Gasoline	2842.835824	102173.044	102173.044	0	42354.01795	11.68314156	
Sacrament	2026	LHD2	Aggregate	Aggregate	Diesel	5354.107557	200747.7344	200747.7344	0	67347.9376		15.02769638
Sacrament	2026	LHD2	Aggregate	Aggregate	Electricity	62.04140345	3950.499601	0	3950.499601	823.0006996	0	
Sacrament	2026	MCY	Aggregate	Aggregate	Gasoline	26668.73903	143066.9299	143066.9299	0	53337.47807	3.556738291	
Sacrament	2026	MDV	Aggregate	Aggregate	Gasoline	152420.7174	5305204.632	5305204.632	0	692362.459	270.171663	
Sacrament	2026	MDV	Aggregate	Aggregate	Diesel	2517.863077	91089.26373	91089.26373	0	11617.91905		3.686918234
Sacrament	2026	MDV	Aggregate	Aggregate	Electricity	2074.444415	73273.89269	0	73273.89269	10492.0296	0	
Sacrament	2026	MDV	Aggregate	Aggregate	Plug-in Hyb	1385.855033	62349.05819	28424.07977	33924.97841	5730.510562	0	
Sacrament	2026	MH	Aggregate	Aggregate	Gasoline	2559.574889	22993.19608	22993.19608	0	256.0598719	5.210088179	
Sacrament	2026	MH	Aggregate	Aggregate	Diesel	1079.195807	9690.490905	9690.490905	0	107.9195807		1.031832885
Sacrament	2026	Motor Coach	Aggregate	Aggregate	Diesel	100.32814	12949.10452	12949.10452	0	2305.540658		2.309416706
Sacrament	2026	OBUS	Aggregate	Aggregate	Gasoline	495.2475434	20608.72061	20608.72061	0	9908.912848	4.303585972	
Sacrament	2026	OBUS	Aggregate	Aggregate	Electricity	2.88628539	251.4188919	0	251.4188919	57.74879808	0	
Sacrament	2026	PTO	Aggregate	Aggregate	Diesel	0	24092.85203	24092.85203	0	0		4.755018899
Sacrament	2026	PTO	Aggregate	Aggregate	Electricity	0	481.9543973	0	481.9543973	0	0	
Sacrament	2026	SBUS	Aggregate	Aggregate	Gasoline	124.4030436	6562.066813	6562.066813	0	497.6121745	0.644930373	
Sacrament	2026	SBUS	Aggregate	Aggregate	Diesel	978.5761745	21442.65244	21442.65244	0	14169.78301		2.627989581
Sacrament	2026	SBUS	Aggregate	Aggregate	Electricity	10.02998753	298.0278886	0	298.0278886	130.771368	0	
Sacrament	2026	SBUS	Aggregate	Aggregate	Natural Ga	21.01785741	543.0029585	543.0029585	0	304.3385753	0	
Sacrament	2026	T6 CAIRP heavy	Aggregate	Aggregate	Diesel	86.00951747	17475.87079	17475.87079	0	1976.498711		1.754150003
Sacrament	2026	T6 CAIRP heavy	Aggregate	Aggregate	Electricity	1.487381231	319.9836782	0	319.9836782	34.18002069	0	
Sacrament	2026	T6 CAIRP small	Aggregate	Aggregate	Diesel	79.61842908	4571.996471	4571.996471	0	1829.6315		0.499597629
Sacrament	2026	T6 CAIRP small	Aggregate	Aggregate	Electricity	2.201360175	142.3572475	0	142.3572475	50.58725682	0	
Sacrament	2026	T6 instate heavy	Aggregate	Aggregate	Diesel	1843.780194	94154.78748	94154.78748	0	21847.76304		10.53189865
Sacrament	2026	T6 instate heavy	Aggregate	Aggregate	Electricity	17.53914364	1223.031882	0	1223.031882	207.4182443	0	
Sacrament	2026	T6 instate heavy	Aggregate	Aggregate	Natural Ga	22.09919057	1176.416337	1176.416337	0	263.1639654	0	
Sacrament	2026	T6 instate small	Aggregate	Aggregate	Diesel	8555.548547	342046.6012	342046.6012	0	105744.0557		40.04575231
Sacrament	2026	T6 instate small	Aggregate	Aggregate	Electricity	130.3058239	5927.817245	0	5927.817245	1609.535127	0	
Sacrament	2026	T6 OOS heavy	Aggregate	Aggregate	Diesel	40.80334327	10424.70385	10424.70385	0	937.6608284		1.035209095
Sacrament	2026	T6 OOS small	Aggregate	Aggregate	Diesel	41.63624961	2382.316205	2382.316205	0	956.8010162		0.254734086
Sacrament	2026	T6 Public	Aggregate	Aggregate	Diesel	4314.307581	176583.4194	176583.4194	0	22132.39789		22.20162172
Sacrament	2026	T6 Public	Aggregate	Aggregate	Electricity	74.23363427	4012.929923	0	4012.929923	380.8185438	0	0
Sacrament	2026	T6 Public	Aggregate	Aggregate	Natural Ga	315.5112084	15001.6853	15001.6853	0	1618.572499	0	
Sacrament	2026	T6 Utility	Aggregate	Aggregate	Diesel	56.74396494	2370.191415	2370.191415	0	726.3227512		0.264506374
Sacrament	2026	T6 Utility	Aggregate	Aggregate	Electricity	1.658707928	76.41549833	0	76.41549833	21.23146147	0	0
Sacrament	2026	T6 Utility	Aggregate	Aggregate	Natural Ga	0.226900822	8.924759104	8.924759104	0	2.904330522	0	
Sacrament	2026	T6TS	Aggregate	Aggregate	Gasoline	1903.640767	88998.34196	88998.34196	0	38088.04447	18.97044875	
Sacrament	2026	T6TS	Aggregate	Aggregate	Electricity	14.9545781	1303.3502	0	1303.3502	299.2111987	0	
Sacrament	2026	T7 CAIRP	Aggregate	Aggregate	Diesel	944.067804	190960.7055	190960.7055	0	21694.67814		30.29237639
Sacrament	2026	T7 CAIRP	Aggregate	Aggregate	Electricity	20.48343024	4095.007002	0	4095.007002	470.709227	0	0
Sacrament	2026	T7 CAIRP	Aggregate	Aggregate	Natural Ga	16.00862633	3223.636003	3223.636003	0	367.878233	0	
Sacrament	2026	T7 NNOOS	Aggregate	Aggregate	Diesel	835.5760283	228,427	228,427	0	19201.53713		34.89437454
Sacrament	2026	T7 NOOS	Aggregate	Aggregate	Diesel	356.6723128	83,058	83,058	0	8196.329747		13.065692
Sacrament	2026	T7 Other Port	Aggregate	Aggregate	Diesel	11.32242384	2,158	2,158	0	185.234854		0.357830914
Sacrament	2026	T7 Other Port	Aggregate	Aggregate	Electricity	0.088238037	22	0	22	1.443574288	0	0
Sacrament	2026	T7 POAK	Aggregate	Aggregate	Diesel	37.29725649	3,758	3,758	0	610.1831162		0.637245925
Sacrament	2026	T7 POAK	Aggregate	Aggregate	Electricity	0.357840542	32	0	32	5.854271264	0	0
Sacrament	2026	T7 Public	Aggregate	Aggregate	Diesel	4151.305876	177,857	177,857	0	21296.19914		33.47375916
Sacrament	2026	T7 Public	Aggregate	Aggregate	Electricity	50.6323713	3,126	0	3,126	259.7440648	0	
Sacrament	2026	T7 Public	Aggregate	Aggregate	Natural Ga	70.34116703	3,357	3,357	0	360.8501869	0	0
Sacrament	2026	T7 Single	Aggregate	Aggregate	Diesel	2123.052317	118,067	118,067	0	19999.15283		19.96260812
Sacrament	2026	T7 Single	Aggregate	Aggregate	Electricity	33.2038691	2,427	0	2,427	312.780447	0	
Sacrament	2026	T7 Single	Aggregate	Aggregate	Natural Ga	60.89407745	3,269	3,269	0	573.6222095		0
Sacrament	2026	T7 SWCV	Aggregate	Aggregate	Diesel	263.6072934	17,098	17,098	0	1212.59355		7.201061966
Sacrament	2026	T7 SWCV	Aggregate	Aggregate	Electricity	10.62555179	678	0	678	48.87753825	0	
Sacrament	2026	T7 SWCV	Aggregate	Aggregate	Natural Ga	645.7133562	41,831	41,831	0	2970.281438	0	0
Sacrament	2026	T7 Tractor	Aggregate	Aggregate	Diesel	1078.537414	78,676	78,676	0	15671.14863		12.68992142
Sacrament	2026	T7 Tractor	Aggregate	Aggregate	Electricity	10.00988609	818	0	818	145.4436448	0	
Sacrament	2026	T7 Tractor	Aggregate	Aggregate	Natural Ga	11.80534026	816	816	0	171.5315939	0	0
Sacrament	2026	T7 Utility	Aggregate	Aggregate	Diesel	30.09060645	1,316	1,316	0	385.1597625		0.224192357
Sacrament	2026	T7 Utility	Aggregate	Aggregate	Electricity	0.315515578	20	0	20	4.038599395	0	
Sacrament	2026	T7IS	Aggregate	Aggregate	Gasoline	5.564040018	168	168	0	111.3253127	0.046390148	
Sacrament	2026	T7IS	Aggregate	Aggregate	Electricity	0.013175005	4	0	4	0.263605508	0	
Sacrament	2026	UBUS	Aggregate	Aggregate	Gasoline	189.1264912	14,348	14,348	0	756.5059648	3.053781283	
Sacrament	2026	UBUS	Aggregate	Aggregate	Diesel	6.215216529	294	294	0	24.86086612		0.03113556
Sacrament	2026	UBUS	Aggregate	Aggregate	Electricity	4.985657859	521	0	521	19.94263144	0	
Sacrament	2026	UBUS	Aggregate	Aggregate	Natural Ga	359.717215	34,419	34,419	0	1438.86886		
											1433.70	**294.06**

TOTAL	39,926,625
Total (Gas)	34,921,749
Total (Diesel)	2,496,762

Annual VMT
4,832,236

	Mix (%)	Miles	Gallons
Gas	98.8%	4,774,742	196,025
Diesel	1.2%	57,484	6,770

Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
All Project Land Uses	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071

Gas	98.8%
Diesel	1.2%

23.1	0.04
24.4	0.04
8.5	0.12

Energy Calculations Summary

Construction Fuel Usage Summary

Construction Year	Diesel Off-road Equipment (gallons)	Gasoline On-road (gallons)	Diesel On-road (gallons)	Diesel Combined
2022	14,448	5,372	76	14,524
2023	18,039	37,039	76	18,115
2024	1,302	36,759	76	1,377
2025	7,873	12,024	75	7,948
TOTAL	**41,661**	**91,194**	**303**	41,964

Total Gasoline	**91,194**	**gallons**
Total Diesel	**41,964**	**gallons**

Construction Offroad Equipment

2022

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of days	Average Daily Factor	Diesel Fuel Usage
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40	17	0.6	1,209
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37	17	0.6	586
Grading	Excavators	2	8.00	158	0.38	60	0.6	1,729
Grading	Graders	1	8.00	187	0.41	60	0.6	1,104
Grading	Rubber Tired Dozers	1	8.00	247	0.40	60	0.6	1,423
Grading	Scrapers	2	8.00	367	0.48	60	0.6	5,073
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37	60	0.6	1,034
Building Construction	Cranes	1	7.00	231	0.29	33	0.6	464
Building Construction	Forklifts	3	8.00	89	0.20	33	0.6	423
Building Construction	Generator Sets	1	8.00	84	0.74	33	0.6	492
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37	33	0.6	746
Building Construction	Welders	1	8.00	46	0.45	33	0.6	164
							TOTAL	**14,448**

2023

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of days	Average Daily Factor	Diesel Fuel Usage
Building Construction	Cranes	1	7.00	231	0.29	260	0.6	3,658
Building Construction	Forklifts	3	8.00	89	0.20	260	0.6	3,332
Building Construction	Generator Sets	1	8.00	84	0.74	260	0.6	3,879
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37	260	0.6	5,879
Building Construction	Welders	1	8.00	46	0.45	260	0.6	1,292
							TOTAL	**18,039**

2024

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of days	Average Daily Factor	Diesel Fuel Usage
Building Construction	Cranes	1	7.00	231	0.29	262	0.6	3,686
Building Construction	Forklifts	3	8.00	89	0.20	262	0.6	3,358
Building Construction	Generator Sets	1	8.00	84	0.74	262	0.6	3,909
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37	262	0.6	5,924
Building Construction	Welders	1	8.00	46	0.45	262	0.6	1,302
							TOTAL	**18,178**

2025

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of days	Average Daily Factor	Diesel Fuel Usage

	Year	Start Date	End Date	Network Days
Site Preparation	2022	8/1/2022	8/23/2022	17
Grading	2022	8/24/2022	11/15/2022	60
Building Construction	2022	11/16/2022	12/31/2022	33
	2023	1/1/2023	12/31/2023	260
	2024	1/1/2024	12/31/2024	262
	2025	1/1/2025	4/21/2025	79
Paving	2025	4/22/2025	6/6/2025	34
Architectural Coating	2025	6/9/2025	7/24/2025	34

Building Construction	Cranes	1	7.00	231	0.29	79	0.6	1,111
Building Construction	Forklifts	3	8.00	89	0.20	79	0.6	1,012
Building Construction	Generator Sets	1	8.00	84	0.74	79	0.6	1,179
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37	79	0.6	1,786
Building Construction	Welders	1	8.00	46	0.45	79	0.6	392
Paving	Pavers	2	8.00	130	0.42	34	0.6	891
Paving	Paving Equipment	2	8.00	132	0.36	34	0.6	776
Paving	Rollers	2	8.00	80	0.38	34	0.6	496
Architectural Coating	Air Compressors	1	6.00	78	0.48	34	0.6	229
							TOTAL	**7,873**

Trips and VMT

2022

Phase Name	Daily Worker Trip	Days per Year	Total Worker Trips	Total Vendor Trips	Total Hauling Trips	Worker Trip Length (miles)	Vendor Trip Length (miles)	Haul Trip Length (miles)	Total Worker Trip Length (miles)	Total Vendor Trip Length (miles)	Total Haul Trip Length (miles)	**Total gallons of gasoline**	**Total gallons of diesel**
Site Preparation	18	17	306	0	0	10.00	6.50	20.00	3060	0	0	**121**	**0**
Grading	20	60	1200	0	0	10.00	6.50	20.00	12000	0	0	**473**	**0**
Building Construction	367	33	12111	71	0	10.00	6.50	20.00	121110	461.5	0	**4,778**	**76**
											TOTAL	**5,372**	**76**

2023

Phase Name	Daily Worker Trip	Days per Year	Total Worker Trips	Total Vendor Trips	Total Hauling Trips	Worker Trip Length (miles)	Vendor Trip Length (miles)	Haul Trip Length (miles)	Total Worker Trip Length (miles)	Total Vendor Trip Length (miles)	Total Haul Trip Length (miles)	**Total gallons of gasoline**	**Total gallons of diesel**
Building Construction	367	260	95420	71	0	10.00	6.50	20.00	954200	461.5	0	**37,039**	**76**
											TOTAL	**37,039**	**76**

2024

Phase Name	Daily Worker Trip	Days per Year	Total Worker Trips	Total Vendor Trips	Total Hauling Trips	Worker Trip Length (miles)	Vendor Trip Length (miles)	Haul Trip Length (miles)	Total Worker Trip Length (miles)	Total Vendor Trip Length (miles)	Total Haul Trip Length (miles)	**Total gallons of gasoline**	**Total gallons of diesel**
Building Construction	367	262	96154	71	0	10.00	6.50	20.00	961540	461.5	0	**36,759**	**76**
											TOTAL	**36,759**	**76**

2025

Phase Name	Daily Worker Trip	Days per Year	Total Worker Trips	Total Vendor Trips	Total Hauling Trips	Worker Trip Length (miles)	Vendor Trip Length (miles)	Haul Trip Length (miles)	Total Worker Trip Length (miles)	Total Vendor Trip Length (miles)	Total Haul Trip Length (miles)	**Total gallons of gasoline**	**Total gallons of diesel**
Building Construction	367	79	28993	71	0	10.00	6.50	20.00	289930	461.5	0	**10,899**	**75**
Architectural Coating	15	34	510	0	0	10.00	6.50	20.00	5100	0	0	**192**	**0**
Paving	73	34	2482	0	0	10.00	6.50	20.00	24820	0	0	**933**	**0**
											TOTAL	**12,024**	**75**

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

Source: EMFAC2021 (v1.0.1) Emissions Inventory
Region Type: County
Region: Sacramento
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed miles/hr	Fuel	Population vehicles	VMT miles/day	CVMT miles/day	EVMT miles/day	Trips trips/day	Fuel gas 1,000 gallons/day	Diesel gas 1,000 gallons/day	Miles per gallon	Gasoline miles per gallon	Diesel miles per gallon
Sacramento	2022	LDA	Aggregate	Aggregate	Gasoline	498280.3185	17917435.6	17917435.6	0	2295902.336	644.537125	0.00	27.80	25.35	6.04
Sacramento	2022	LDT1	Aggregate	Aggregate	Gasoline	53385.04527	1674043.998	1674043.998	0	234015.9091	71.26492603	0.00	23.49		
Sacramento	2022	LDT2	Aggregate	Aggregate	Gasoline	223889.1265	8219931.936	8219931.936	0	1039827.381	368.4103964	0.00	22.31		
Sacramento	2022	T7 Tractor	Aggregate	Aggregate	Diesel	874.6914234	72842.33002	72842.33002	0	12709.26638	0.00	12.06334267	6.04		

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

Source: EMFAC2021 (v1.0.1) Emissions Inventory
Region Type: County
Region: Sacramento
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed miles/hr	Fuel	Population vehicles	VMT miles/day	CVMT miles/day	EVMT miles/day	Trips trips/day	Fuel gas 1,000 gallons/day	Diesel gas 1,000 gallons/day	Miles per gallon	Gasoline miles per gallon	Diesel miles per gallon
Sacramento	2023	LDA	Aggregate	Aggregate	Gasoline	495444.1701	18039887.07	18039887.07	0	2281180.251	638.6074247	0.00	28.25	25.76	6.07
Sacramento	2023	LDT1	Aggregate	Aggregate	Gasoline	51757.60145	1638073.93	1638073.93	0	226418.361	68.8387086	0.00	23.80		
Sacramento	2023	LDT2	Aggregate	Aggregate	Gasoline	228403.2253	8495404.827	8495404.827	0	1060056.933	373.3642939	0.00	22.75		
Sacramento	2023	T7 Tractor	Aggregate	Aggregate	Diesel	917.7542763	74396.80266	74396.80266	0	13334.96964	0.00	12.25004566	6.07		

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

Source: EMFAC2021 (v1.0.1) Emissions Inventory
Region Type: County
Region: Sacramento
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed miles/hr	Fuel	Population vehicles	VMT miles/day	CVMT miles/day	EVMT miles/day	Trips trips/day	Fuel gas 1,000 gallons/day	Diesel gas 1,000 gallons/day	Miles per gallon	Gasoline miles per gallon	Diesel miles per gallon
Sacrament	2024	LDA	Aggregate	Aggregate	Gasoline	493200.1993	18074528.65	18074528.65	0	2269233.534	630.0875563	0.00	28.69	26.16	6.11
Sacrament	2024	LDT1	Aggregate	Aggregate	Gasoline	50226.44621	1595989.731	1595989.731	0	219342.9065	66.24563327	0.00	24.09		
Sacrament	2024	LDT2	Aggregate	Aggregate	Gasoline	232779.326	8714872.614	8714872.614	0	1079554.899	376.1530767	0.00	23.17		
Sacrament	2024	T7 Tractor	Aggregate	Aggregate	Diesel	974.1598058	75896.02217	75896.02217	0	14154.54198	0.00	12.42667686	6.11		

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

Source: EMFAC2021 (v1.0.1) Emissions Inventory
Region Type: County
Region: Sacramento
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed miles/hr	Fuel	Population vehicles	VMT miles/day	CVMT miles/day	EVMT miles/day	Trips trips/day	Fuel gas 1,000 gallons/day	Diesel gas 1,000 gallons/day	Miles per gallon	Gasoline miles per gallon	Diesel miles per gallon
Sacrament	2025	LDA	Aggregate	Aggregate	Gasoline	491398.2875	18017006.84	18017006.84	0	2259539.787	617.4841021	0.00	29.18	26.60	6.15
Sacrament	2025	LDT1	Aggregate	Aggregate	Gasoline	48785.93501	1547597.8	1547597.8	0	212712.1866	63.33573387	0.00	24.43		
Sacrament	2025	LDT2	Aggregate	Aggregate	Gasoline	237055.1324	8875175.116	8875175.116	0	1098484.37	375.8620765	0.00	23.61		
Sacrament	2025	T7 Tractor	Aggregate	Aggregate	Diesel	1028.071352	77318.93006	77318.93006	0	14937.87675	0.00	12.56836859	6.15		

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

Minor Project Health Effects Tool

Latitude	38.587036	**<-- Step 1: Input latitude (Please chose a value between 38.0 and 39.7)**
Longitude	-121.268507	**<-- Step 2: Input longitude (Please chose a value between -122.5 and -120.0)**

PM2.5 Health Endpoint	Age Range[1]	Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5] (Mean)	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3]	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory					
Emergency Room Visits, Asthma	0 - 99	0.94	0.87	0.0047%	18419
Hospital Admissions, Asthma	0 - 64	0.061	0.057	0.0031%	1846
Hospital Admissions, All Respiratory	65 - 99	0.34	0.30	0.0015%	19644
Cardiovascular					
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65 - 99	0.19	0.17	0.00071%	24037
Acute Myocardial Infarction, Nonfatal	18 - 24	0.000077	0.000071	0.0019%	4
Acute Myocardial Infarction, Nonfatal	25 - 44	0.0070	0.0066	0.0022%	308
Acute Myocardial Infarction, Nonfatal	45 - 54	0.018	0.017	0.0023%	741
Acute Myocardial Infarction, Nonfatal	55 - 64	0.029	0.028	0.0022%	1239
Acute Myocardial Infarction, Nonfatal	65 - 99	0.12	0.11	0.0022%	5052
Mortality					
Mortality, All Cause	30 - 99	2.2	2.0	0.0045%	44766

Ozone Health Endpoint	Age Range[1]	Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5] (Mean)	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3]	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory					
Hospital Admissions, All Respiratory	65 - 99	0.079	0.064	0.00032%	19644
Emergency Room Visits, Asthma	0 - 17	0.33	0.27	0.0046%	5859
Emergency Room Visits, Asthma	18 - 99	0.55	0.47	0.0037%	12560
Mortality					
Mortality, Non-Accidental	0 - 99	0.050	0.042	0.00014%	30386

1. Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.

2. Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or “background health incidence”) values. Health effects are shown for the Reduced Sacramento 4-km Modeling Domain and the 5-Air-District Region.

3. The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, the background incidence rates cover the 5-Air-District Region (estimated 2035 population of 3,271,451 persons). Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.

4. The total number of health incidences across the 5-Air-District Region is calculated based on the modeling data. The information is presented to assist in providing overall health context.

5. The technical specifications and map for the Reduced Sacramento 4-km Modeling Domain are included in Appendix A, Table A-1 and Appendix B, Figure B-2 of the *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District.*

Sac Metro Air District Minor Project Health Effects Tool, version 2, published June 2020

Appendix E

Noise Modeling

Attenuation Calculations for Stationary Noise Sources

KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

STEP 1: Identify the noise source and enter the reference noise level (dBA and distance).

STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.

STEP 3: Select the distance to the receiver.

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level (dBA)	@	distance (ft)	Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	noise level (dBA)	@	distance (ft)
				hard	12	5	0.00			
				hard	12	5	0.00			
HVAC	60.0	@	20	soft	12	5	0.60	34	@	200
				soft	12	5	0.60			
				soft	12	5	0.60			
				soft	12	5	0.60			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			

Notes:

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 12-3 and 12-4 of FTA 2006.

Computation of the ground factor is based on the equation presentd in Figure 6-23 on pg. 6-23 of FTA 2006, where the distance of the reference noise leve can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Sources:

Federal Transit Association (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Washington, D.C. Available: <http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf>. Accessed: September 24, 2010.

Construction Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	50	90.2
Residence 1	200	78.2
Office	140	81.3

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Excavator	85	1
Dozer	85	1
Backhoe	80	1
Grader	85	1

Ground Type	HARD
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Excavator	85.0
Dozer	85.0
Backhoe	80.0
Grader	85.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
90.2

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Construction Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	50	86.2
Residence 1	200	74.2
Office	140	77.3

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Excavator	85	0.4
Dozer	85	0.4
Backhoe	80	0.4
Grader	85	0.4

Ground Type	HARD
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Excavator	81.0
Dozer	81.0
Backhoe	76.0
Grader	81.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
86.2

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Distance Propagation Calculations for Stationary Sources of Ground Vibration

KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

STEP 1: Determine units in which to perform calculation.

— If vibration decibels (VdB), then use Table A and proceed to Steps 2A and 3A.

— If peak particle velocity (PPV), then use Table B and proceed to Steps 2B and 3B.

STEP 2A: Identify the vibration source and enter the reference vibration level (VdB) and distance.

STEP 3A: Select the distance to the receiver.

Table A. Propagation of vibration decibels (VdB) with distance

Noise Source/ID	Reference Noise Level			Attenuated Noise Level at Receptor		
	vibration level (VdB)	@	distance (ft)	vibration level (VdB)	@	distance (ft)
Roller	94	@	25	71.6	@	140

The Lv metric (VdB) is used to assess the likelihood for vibration to result in human annoyance.

STEP 2B: Identify the vibration source and enter the reference peak particle velocity (PPV) and distance.

STEP 3B: Select the distance to the receiver.

Table B. Propagation of peak particle velocity (PPV) with distance

Noise Source/ID	Reference Noise Level			Attenuated Noise Level at Receptor		
	vibration level (PPV)	@	distance (ft)	vibration level (PPV)	@	distance (ft)
Roller	0.210	@	25	0.016	@	140

The PPV metric (in/sec) is used for assessing the likelihood for the potential of structural damage.

Notes:

Computation of propagated vibration levels is based on the equations presented on pg. 185 of FTA 2018. Estimates of attenuated vibration levels do not account for reductions from intervening underground barriers or other underground structures of any type, or changes in soil type.

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment Manual. FTA Report N
https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-

Io. 0123. Washington, D.C. Accessed: December 20, 2020. Page Available:

Traffic Noise Spreadsheet Calculator

Project: **Residences at Capital Center**

Number	Name	Segment Description and Location From	To	Existing Conditions	Existing + Project Conditions	Δ Existing – Existing + Project	Cumulative Conditions	Cumulative +Project Conditions	Δ Cumulative – Cumulative + Project
Summary of Net Changes									
1	Zinfandel Dr	White Rock Rd	International Dr	72.9	72.9	0.0			
2	Zinfandel Dr	US-50 EB Ramps	White Rock Rd	75.3	75.4	0.1			
3	Zinfandel Dr	US-50 EB Ramps	US-50 WB Ramps	74.5	74.6	0.1			
4	Zinfandel Dr	Folsom Blvd	US-50 WB Ramps	73.4	73.5	0.0			
5	White Rock Rd	Zinfandel Dr	Kigore Rd	71.8	72.1	0.3			
6	White Rock Rd	Kilgore Rd	Sunrise Blvd	71.9	72.2	0.3			
7	Kilgore Rd	Folsom Blvd	White Rock Rd	68.4	68.4	0.0			
8	Kilgore Rd	White Rock Rd	International Dr	66.4	68.6	2.2			
9	White Rock Rd	Sunrise Blvd	Grant Line Rd	68.9	69.1	0.2			
10	Sunrise Blvd	White Rock Rd	Douglas Rd	76.3	76.3	0.0			
11	Sunrise Blvd	Folsom Blvd	White Rock Rd	77.8	77.9	0.1			
12	Sunrise Blvd	US-50 EB Ramps	Folsom Blvd	78.2	78.2	0.1			
13	Sunrise Blvd	US-50 WB Ramps	US-50 EB Ramps	76.7	76.8	0.1			
14	Sunrise Blvd	US-50 EB Ramps	Coloma	79.6	79.7	0.0			

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Traffic Noise Spreadsheet Calculator

Project: Residences at Capital Cei Existing Conditions

Noise Level Descriptor: Ldn
Site Conditions: Soft
Traffic Input: Peak
Traffic K-Factor: 10

	Segment Description and Location			Input											Output				
Number	Name	From	To	Peak Hour Volume	Speed (mph)	Distance to Directional Centerline, (feet)4 Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night	Ldn, (dBA)5,6,7	Distance to Contour, (feet)3 70 dBA	65 dBA	60 dBA	55 dBA
Existing Conditions																		
1	Zinfandel Dr	White Rock Rd	International Dr	28,910	35	80	127	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	72.9	158	340	732	1577
2	Zinfandel Dr	US-50 EB Ramps	White Rock Rd	46,520	35	73	133	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	75.3	222	479	1032	2223
3	Zinfandel Dr	US-50 EB Ramps	US-50 WB Ramps	42,770	35	83	123	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	74.5	203	437	940	2026
4	Zinfandel Dr	Folsom Blvd	US-50 WB Ramps	33,040	35	85	117	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	73.4	169	364	784	1689
5	White Rock Rd	Zinfandel Dr	Kigore Rd	10,990	45	80	125	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	71.8	132	284	611	1316
6	White Rock Rd	Kilgore Rd	Sunrise Blvd	11,170	45	80	125	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	71.9	133	287	618	1331
7	Kilgore Rd	Folsom Blvd	White Rock Rd	5,320	45	95	107	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	68.4	78	169	364	784
8	Kilgore Rd	White Rock Rd	International Dr	4,570	40	84	118	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	66.4	58	124	268	577
9	White Rock Rd	Sunrise Blvd	Grant Line Rd	5,790	45	80	130	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	68.9	86	186	401	864
10	Sunrise Blvd	White Rock Rd	Douglas Rd	26,780	45	70	120	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	76.3	242	522	1125	2423
11	Sunrise Blvd	Folsom Blvd	White Rock Rd	44,730	45	80	130	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	77.8	338	728	1568	3378
12	Sunrise Blvd	US-50 EB Ramps	Folsom Blvd	44,820	45	70	150	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	78.2	359	774	1667	3592
13	Sunrise Blvd	US-50 WB Ramps	US-50 EB Ramps	36,510	45	85	125	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	76.7	290	626	1348	2904
14	Sunrise Blvd	US-50 EB Ramps	Coloma	63,710	45	75	130	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	79.6	433	932	2008	4327
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Traffic Noise Spreadsheet Calculator

Project: Residences at Capital Cer Existing + Project Conditions

Noise Level Descriptor: Ldn
Site Conditions: Soft
Traffic Input: Peak
Traffic K-Factor: 10

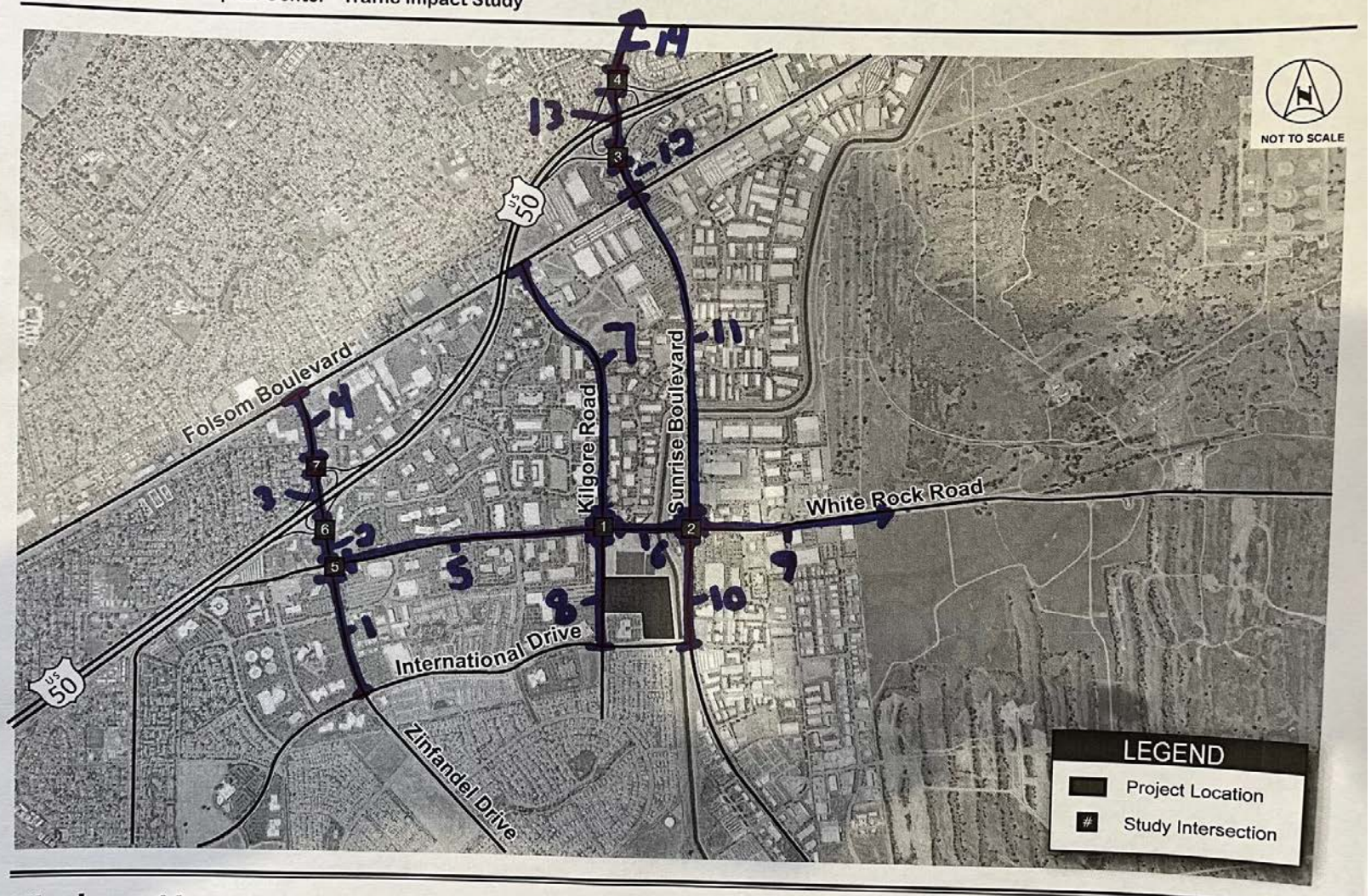
Segment Description and Location				Input										Output				
				Peak Hour Volume	Speed (mph)	Distance to Directional Centerline, (feet)4		Traffic Distribution Characteristics						Ldn, (dBA)5,6,7	Distance to Contour, (feet)3			
Number	Name	From	To			Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night		70 dBA	65 dBA	60 dBA	55 dBA
Existing + Project Conditions																		
1	Zinfandel Dr	White Rock Rd	International Dr	28,910	35	80	127	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	72.9	158	340	732	1577
2	Zinfandel Dr	US-50 EB Ramps	White Rock Rd	47,407	35	73	133	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	75.4	225	485	1045	2251
3	Zinfandel Dr	US-50 EB Ramps	US-50 WB Ramps	43,302	35	83	123	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	74.6	204	440	948	2043
4	Zinfandel Dr	Folsom Blvd	US-50 WB Ramps	33,217	35	85	117	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	73.5	170	365	787	1695
5	White Rock Rd	Zinfandel Dr	Kigore Rd	11,877	45	80	125	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	72.1	139	299	643	1386
6	White Rock Rd	Kilgore Rd	Sunrise Blvd	11,969	45	80	125	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	72.2	139	300	647	1393
7	Kilgore Rd	Folsom Blvd	White Rock Rd	5,320	45	95	107	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	68.4	78	169	364	784
8	Kilgore Rd	White Rock Rd	International Dr	7,528	40	84	118	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	68.6	81	173	374	805
9	White Rock Rd	Sunrise Blvd	Grant Line Rd	5,997	45	80	130	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	69.1	88	191	411	885
10	Sunrise Blvd	White Rock Rd	Douglas Rd	26,780	45	70	120	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	76.3	242	522	1125	2423
11	Sunrise Blvd	Folsom Blvd	White Rock Rd	45,322	45	80	130	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	77.9	341	734	1582	3407
12	Sunrise Blvd	US-50 EB Ramps	Folsom Blvd	45,412	45	70	150	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	78.2	362	781	1682	3624
13	Sunrise Blvd	US-50 WB Ramps	US-50 EB Ramps	36,998	45	85	125	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	76.8	293	631	1360	2930
14	Sunrise Blvd	US-50 EB Ramps	Coloma	64,095	45	75	130	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	79.7	434	936	2017	4345
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Citation #	Citations	
1	Caltrans Technical Noise Supplement. 2009 (November). Table (5-11), Pg 5-60.	Caltrans Technical Noise Supplement. 2013 (September). Table (4-2), Pg 4-17
2	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-26), Pg 5-60.	Caltrans Technical Noise Supplement. 2013 (September). Equation (4-5), Pg 4
3	Caltrans Technical Noise Supplement. 2009 (November). Equation (2-16), Pg 2-32.	FHWA 2004 TNM Version 2.5
4	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-11), Pg 5-47, 48.	FHWA 2004 TNM Version 2.5
5	Caltrans Technical Noise Supplement. 2009 (November). Equation (2-26), Pg 2-55, 56.	Caltrans Technical Noise Supplement. 2013 (September). Equation (2-23), Pg
6	Caltrans Technical Noise Supplement. 2009 (November). Equation (2-27), Pg 2-57.	Caltrans Technical Noise Supplement. 2013 (September). Equation (2-24), Pg
7	Caltrans Technical Noise Supplement. 2009 (November). Pg 2-53.	Caltrans Technical Noise Supplement. 2013 (September). Pg 2-57.
8	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-7), Pg 5-45.	FHWA 2004 TNM Version 2.5
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10	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-9), Pg 5-45.	FHWA 2004 TNM Version 2.5
11	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-13), Pg 5-49.	FHWA 2004 TNM Version 2.5
12	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-14), Pg 5-49.	FHWA 2004 TNM Version 2.5
13	Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (16), Pg 67	
14	Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (20), Pg 69	
15	Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (18), Pg 69	

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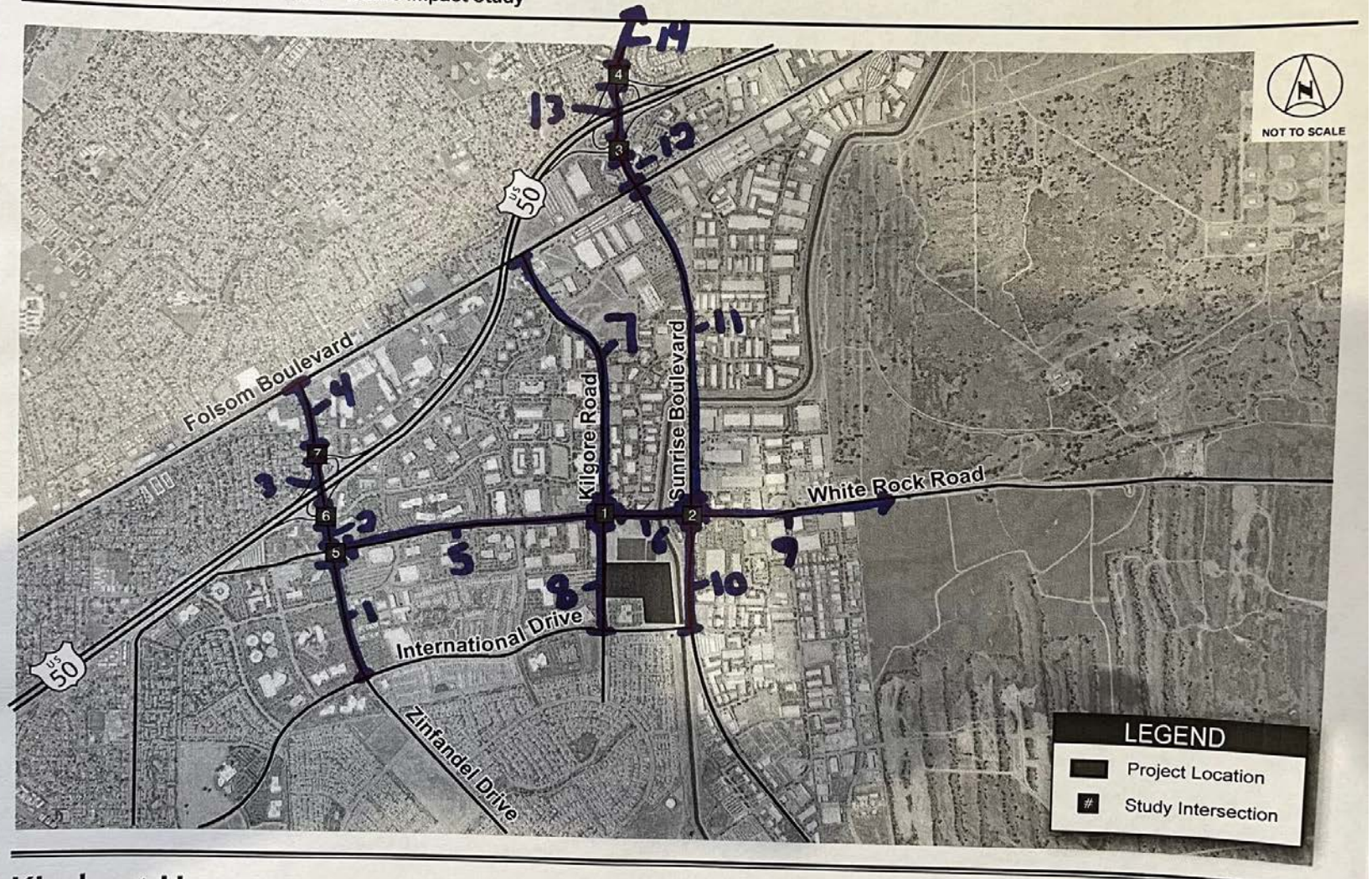


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Figure 1
Project Vicinity Map

Existing Volumes

Segment	From	To	Volume
1	White Rock Rd	International Dr	28910
2	US-50 EB Ramps	White Rock Rd	46520
3	US-50 EB Ramps	US-50 WB Ramps	42770
4	Folsom Blvd	US-50 WB Ramps	33040
5	Zinfandel Dr	Kigore Rd	10990
6	Kilgore Rd	Sunrise Blvd	11170
7	Folsom Blvd	White Rock Rd	5320
8	White Rock Rd	International Dr	4570
9	Sunrise Blvd	Grant Line Rd	5790
10	White Rock Rd	Douglas Rd	26780
11	Folsom Blvd	White Rock Rd	44730
12	US-50 EB Ramps	Folsom Blvd	44820
13	US-50 WB Ramps	US-50 EB Ramps	36510
14	US-50 EB Ramps	Coloma	63710



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Figure 1
Project Vicinity Map

Existing + Project Volumes

Segment	From	To	Volume
1	White Rock Rd	International Dr	28910
2	US-50 EB Ramps	White Rock Rd	47407
3	US-50 EB Ramps	US-50 WB Ramps	43302
4	Folsom Blvd	US-50 WB Ramps	33217
5	Zinfandel Dr	Kigore Rd	11877
6	Kilgore Rd	Sunrise Blvd	11969
7	Folsom Blvd	White Rock Rd	5320
8	White Rock Rd	International Dr	7528
9	Sunrise Blvd	Grant Line Rd	5997
10	White Rock Rd	Douglas Rd	26780
11	Folsom Blvd	White Rock Rd	45322
12	US-50 EB Ramps	Folsom Blvd	45412
13	US-50 WB Ramps	US-50 EB Ramps	36998
14	US-50 EB Ramps	Coloma	64095

Traffic Impact Study

Residences at Capital Center
City of Rancho Cordova, California

August 11, 2022

Prepared for:

Cole Partners Development Company



Prepared by:

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EXECUTIVE SUMMARY

This report documents the results of a traffic impact study completed for Residences at Capitol Center project (the "proposed project" or "project"). The proposed project will be located on the vacant parcel located at the northeast corner of the Kilgore Road intersection with Crawford Dive in Rancho Cordova, California. This study was performed in accordance with the standards established by the Circulation Element of the City of Rancho Cordova's General Plan.

The proposed project will include 417 multi-family units, of which 177 will be townhomes and 240 will be apartments. In addition, the project will include a commercial component that will cover up to 9,000 square-feet of floor space. Access to the project site will be provided via two full access driveways, one located on Crawford Drive and the other on Kilgore Road.

This analysis includes evaluation of the following transportation facilities:

1. Kilgore Rd @ White Rock Rd
2. Sunrise Blvd @ White Rock Rd
3. Sunrise Blvd @ US-50 EB Ramps
4. Sunrise Blvd @ US-50 WB Ramps
5. Zinfandel Dr @ White Rock Rd
6. Zinfandel Dr @ US-50 EB Ramps
7. Zinfandel Dr @ US-50 WB Ramps

This traffic impact analysis was conducted for the study facilities listed above for the following scenarios:

A. Existing (2022) Conditions
B. Opening Year (2024) plus Proposed Project Conditions
C. Cumulative (2040) Conditions
D. Cumulative (2040) plus Proposed Project Conditions

Significant findings of this study include:

- The proposed project is anticipated to generate 3,220 new daily trips, with 253 and 268 trips occurring during the AM and PM peak-hours, respectively.
    - Internal trip reduction to assess how the project's residential and proximate commercial component trips might interact was generated using the NCHRP 684 Trip Capture Estimation Tool[1]. This resulted in a reduction of 262 daily trips, 20 AM peak-hour trips, and 24 PM peak-hour trips.
    - The final net external Project trip generation is 2,958 daily trips, 233 AM peak-hour trips, and 244 PM peak-hour trips.
- The addition of the proposed project to the Opening Year and Cumulative scenarios does not result in deficiencies at any of the study intersections. All study intersections operate within the acceptable Level of Service (LOS) threshold established by the City of Rancho Cordova's General Plan.
- The addition of the proposed project to Opening Year and Cumulative scenarios does not result in significant queueing deficiencies at any of the US-50 off-ramps. Current ramp lengths are sufficient to accommodate vehicles without creating vehicle spillback into the traveled way of US-50 at all study intersection locations.

[1] *Trip Generation Handbook (3rd Edition)*, Institute of Transportation Engineers (ITE), August 2014

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INTRODUCTION

This report documents the results of a traffic impact study completed for the Residences at Capitol Center project (the "proposed project" or "project"). The proposed project will be located on the vacant parcel located at the northeast corner of the Kilgore Road intersection with Crawford Dive in Rancho Cordova, California. The purpose of this impact analysis is to identify potential environmental impacts to transportation facilities as required by the California Environmental Quality Act (CEQA). This study was performed in accordance with the standards established by the Circulation Element of the City of Rancho Cordova's General Plan[2].

PROJECT DESCRIPTION

The proposed project will include 417 multi-family units of which 177 will be townhomes and 240 will be apartments. In addition, the Project will include a commercial component that will cover up to 9,000 square-feet of floor space. Access to the project site will be provided via two full access driveways, one on Crawford Drive and one on Kilgore Road.

The project location, study intersections and study segments are depicted in **Figure 1.** The proposed project site plan is shown in **Figure 2**. **Figure 3** illustrates the existing study intersections facilities, traffic control, and lane configurations.

This traffic impact study was conducted for the following scenarios:

A. Existing (2022) Conditions
B. Opening Year (2024) plus Proposed Project Conditions
C. Cumulative (2040) Conditions
D. Cumulative (2040) plus Proposed Project Conditions

The following transportation facilities are included in this evaluation:

1. Kilgore Rd @ White Rock Rd
2. Sunrise Blvd @ White Rock Rd
3. Sunrise Blvd @ US-50 EB Ramps
4. Sunrise Blvd @ US-50 WB Ramps
5. Zinfandel Dr @ White Rock Rd
6. Zinfandel Dr @ US-50 EB Ramps
7. Zinfandel Dr @ US-50 WB Ramps

[2] *City of Rancho Cordova General Plan: Circulation Element, May 2015,* City of Rancho Cordova



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Figure 1
Project Vicinity Map

PROJECT SUMMARY

GROSS AREA	+/-22.9 ac
TOTAL UNITS	417 units
DENSITY	+/-18.3 du/ac
OPEN AIR COMMUNITY BEER GARDEN	0.72 ac
COMMERCIAL PARKING	55 spaces

TOWN-HOMES SUMMARY

TOTAL UNITS	177 units
GARAGES	354 spaces
SURFACE PARKING	85 spaces
TOTAL PARKING	439 spaces
RATIO	+/-2.48

APARTMENT SUMMARY

TOTAL UNITS	240 units
CARPORT	240 spaces
SURFACE PARKING	203 spaces
TOTAL PARKING	443 spaces
RATIO	+/- 1.85

1 New Pedestrian Connection Cross Walk

2 Promenade Entrance

3 Club House Entry

4 Townhomes Clubhouse
Leasing Office
+/-6,000 sf.
1 Story
Fitness
Pool, Spa

5 Open Air Community Beer Garden
+/-0.72 ac
+/-3,425 sf Building Coverage
+/-5,400 sf Outdoor Seating

6 Townhomes
+/-9.93 ac
17.82 du/ac
177 Units
Front loaded & Rear loaded
2.48 Parking Ratio

7 Open Space

8 Internal Pedestrian Connection Trail

9 Multi-Family Main Entry

10 Multi-Family
+/-8.71 ac
27.55 du/ac
240 units
24plex & 36plex
1.85 parking ratio

11 Multi-Family leasing office
Fitness
+/-6,000 sf.
2 story

12 Emergency Vehicular Access

13 Multi-Family
Bldg A
24plex
3 Story

14 Multi-Family
Bldg B
36 plex
3 Story



OVERALL SITE PLAN

0 60' 120' 240'
Scale: 1" = 60' (on 24x36 sheet)

GRUPE

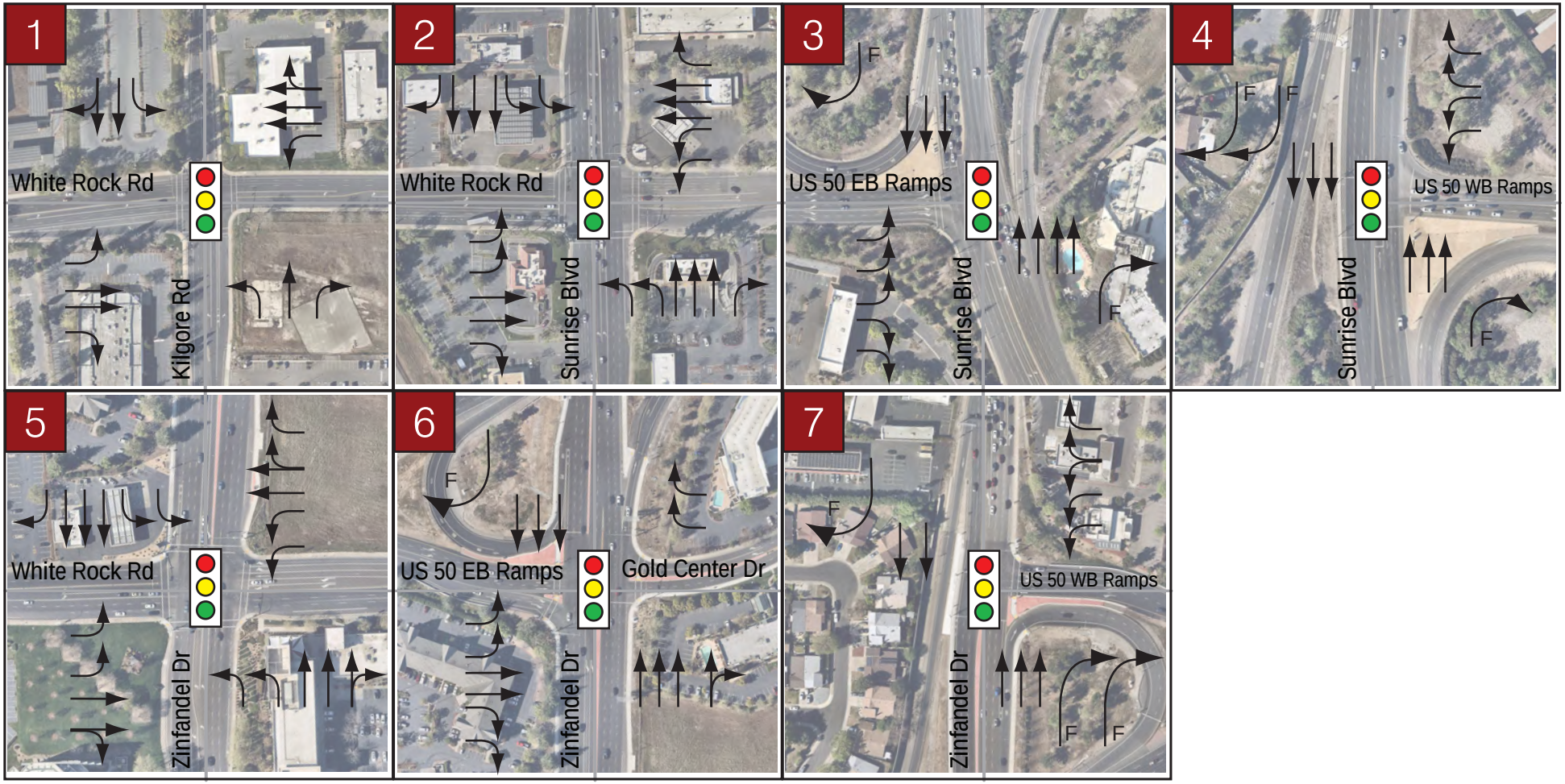
COLE PARTNERS DEVELOPMENT COMPANY

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OVERALL SITE PLAN
THE RESIDENCES AT CAPITAL CENTER
Rancho Cordova, CA

BSB DESIGN

The drawings presented are illustrative of character and design intent only, and are subject to change based upon final design considerations (i.e. applicable codes, structural, and MEP design requirements, unit plan / floor plan changes, etc.) © 2021 BSB Design, Inc.

November 19, 2021 | MR200458.00



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Figure 3
Study Intersections, Traffic Control, and Lane Geometry

PROJECT AREA ROADWAYS

The following are descriptions of primary roadways in the project vicinity:

US Route 50 (US-50) is an east-west freeway facility located approximately three quarters of a mile north of the proposed project. US-50 connects Rancho Cordova with Sacramento to the west and El Dorado County to the east. Primary access to the project site from US-50 is provided at the Sunrise Boulevard and Zinfandel Drive interchanges. US-50 carries approximately 124,000 vehicles per day[3] with five lanes in each direction proximate to these two interchanges.

Sunrise Boulevard is a north-south arterial east of the project site across the Folsom South Canal. It connects the project site to north Rancho Cordova and Placer County while providing access to US-50. Numerous commercial developments are located along Sunrise Boulevard both north and south of the project site.

Zinfandel Drive is a north-south arterial connecting the project site to US-50 as well as the commercial, industrial, and residential areas northwest of the project site.

White Rock Road is an east-west arterial connecting Sunrise Boulevard and Zinfandel Drive within the southern half of Rancho Cordova's city limits.

TRANSPORTATION IMPACT STUDY METHODOLOGY

This study was performed in accordance with the standards established by the Circulation Element of the City of Rancho Cordova's General Plan[4]. As the Project and associated study intersections fall within the City of Rancho Cordova, Level of Service (LOS) D will be used as the threshold for evaluating acceptable intersection operations consistent with the City's General Plan criteria.

Level of Service Definitions

Analysis of transportation facility significant environmental impacts is based on the concept of Level of Service (LOS). The LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity.

Intersection Analysis

Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual (HCM) 6th Edition* and appropriate traffic analysis software. The HCM includes procedures for analyzing side-street stop controlled (SSSC), all-way stop controlled (AWSC), and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for each minor street approach movement. The AWSC and signalized intersection procedure defines LOS as a function of average control delay for the intersection as a whole. Table 1 presents intersection LOS definitions as defined in the HCM.

[3] Caltrans Traffic Counts, 2020. http://www.dot.ca.gov/trafficops/census/
[4] *City of Rancho Cordova General Plan: Circulation Element, May 2015,* City of Rancho Cordova

Table 1 – Intersection Level of Service Criteria

Level of Service (LOS)	Unsignalized	Signalized
	Average Control Delay* (sec/veh)	Average Control Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Source: Highway Capacity Manual, 2010
* Applied to the worst lane/lane group(s) for SSSC

ASSESSMENT OF PROPOSED PROJECT

Proposed Project Trip Generation and Assignment

The number of trips anticipated to be generated by the proposed project in both Opening Year and Cumulative conditions was approximated using data included in the *Trip Generation Manual, 11th Edition,* published by the Institute of Transportation Engineers (ITE). ITE Land Use Code 220 (Multifamily Housing (Low-Rise)) was used to represent the project's townhome development component, while ITE Land Use Code 221 (Multifamily Housing (Mid-Rise)) was used to represent the project's apartment development component. ITE Land Use Code 932 (High-Turnover (Sit-Down) Restaurant) was used to represent the commercial component of the project. Regression equations provided by ITE were used to estimate the number of trips anticipated to be generated by the project's residential components while ITE's average rate was used to estimate the number of trips for the project's non-residential component as an equation was not available. Trips generated by the proposed project are presented in **Table 2**.

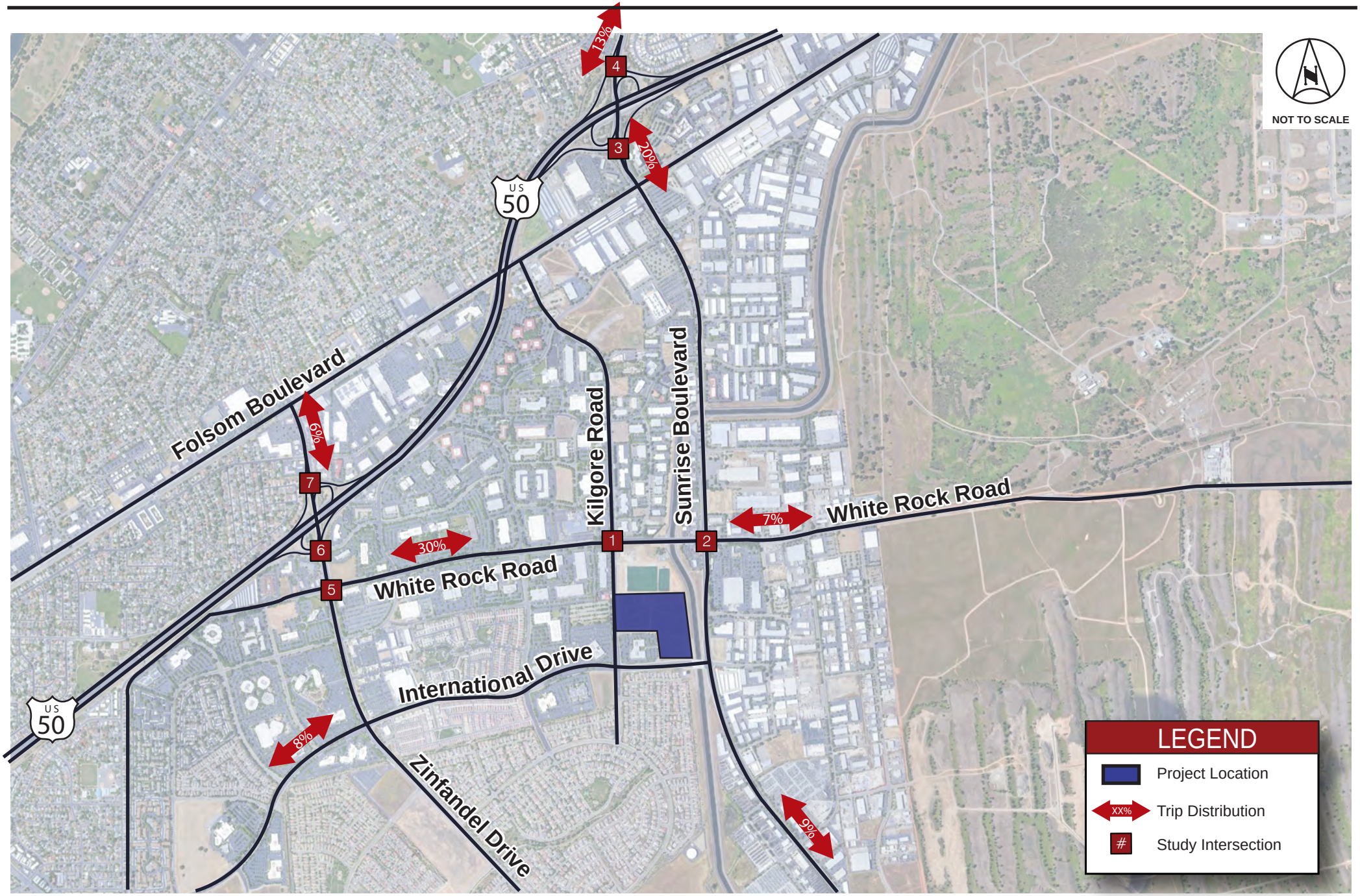
Table 2 – Proposed Project Trip Generation

ITE Land Use Code	Land Use	# Units/ ksf	Daily Trips	AM Peak-Hour			PM Peak-Hour		
				Total	In	Out	Total	In	Out
220	Multifamily Housing (Low-Rise)	177	1,210	78	19	59	97	61	36
221	Multifamily Housing (Mid-Rise)	240	1,098	94	22	72	94	57	37
932	High-Turnover (Sit-Down) Restaurant	9	911	81	45	36	77	47	30
Total Project Trips			**3,220**	**253**	**86**	**167**	**268**	**165**	**103**
Internal Capture (8% Daily/AM Peak-hour, 9% PM Peak-hour)			262	20	10	10	24	12	12
Net External Project Trips			***2,958***	***233***	***76***	***157***	***244***	***153***	***91***

As shown in **Table 2**, the proposed project is estimated to generate 3,220 new daily trips, with 253 and 268 trips occurring during the respective AM and PM peak-hours. Internal trip reduction to assess how the project's residential and commercial component trips might interact was generated using the NCHRP 684 Trip Capture Estimation Tool[5]. This resulted in a reduction of 262 daily trips, 20 AM peak-hour trips, and 24 PM peak-hour trips. The final net external Project trip generation is 2,958 daily trips, 233 AM peak-hour trips, and 244 PM peak-hour trips.

Project trip distribution was developed using the City of Rancho Cordova's travel demand model. The proposed project was added to the model and the socioeconomic characteristics of the population living in the development along Tower Park Drive, west of Prospect Park Drive, were used to develop the socioeconomic characteristics of the population assumed to occupy the proposed Project. Trip distribution percentages developed from the model run are illustrated in **Figure 4**.

[5] *Trip Generation Handbook (3rd Edition)*, Institute of Transportation Engineers (ITE), August 2014



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Figure 3
Project Trip Distribution and Study Facilities

LEVEL OF SERVICE (LOS) ANALYSIS

Table 3 and Table 4 summarize the peak-hour LOS results for each respective analysis scenario. Analysis worksheets are included in Appendix C to Appendix F. As the project and associated study intersections fall within the City of Rancho Cordova boundary, LOS D was used as the threshold for evaluating acceptable operations. Figure 5, Figure 6, Figure 7, Figure 8, and Figure 9 display intersection turning movement volumes used for each analysis scenario.

Table 3 – Existing (2022) and Opening Year (2024) plus Project Intersection LOS Analysis

ID	Intersection	Control	Peak Hour	Existing (2022)		Opening Year (2024) Plus Project	
				Delay (sec)	LOS	Delay (sec)	LOS
1	Kilgore Rd @ White Rock Rd	Signal	AM	15.6	B	15.8	B
			PM	16.8	B	16.6	B
2	Sunrise Blvd @ White Rock Rd	Signal	AM	23.1	C	23.7	C
			PM	37.5	D	37.3	D
3	Sunrise Blvd @ US-50 EB Ramps	Signal	AM	18.7	B	18.9	B
			PM	19.9	B	21.0	C
4	Sunrise Blvd @ US-50 WB Ramps	Signal	AM	9.9	A	10.5	B
			PM	11.9	B	13.0	B
5	Zinfandel Dr @ White Rock Rd	Signal	AM	26.3	C	28.9	C
			PM	30.3	C	31.3	C
6	Zinfandel Dr @ US-50 EB Ramps	Signal	AM	17.0	B	18.3	B
			PM	16.4	B	18.1	B
7	Zinfandel Dr @ US-50 WB Ramps	Signal	AM	13.8	B	14.8	B
			PM	9.0	A	8.9	A

Notes: **Bold** represents unacceptable operations.

Table 4 – Cumulative (2040) and Cumulative (2040) plus Project Intersection LOS Analysis

ID	Intersection	Control	Peak Hour	Cumulative (2040)		Cumulative (2040) Plus Project	
				Delay (sec)	LOS	Delay (sec)	LOS
1	Kilgore Rd @ White Rock Rd	Signal	AM	17.8	B	18.7	B
			PM	23.1	C	25.5	C
2	Sunrise Blvd @ White Rock Rd	Signal	AM	29.5	C	30.3	C
			PM	42.0	D	42.8	D
3	Sunrise Blvd @ US-50 EB Ramps	Signal	AM	18.9	B	18.8	B
			PM	20.4	C	20.7	C
4	Sunrise Blvd @ US-50 WB Ramps	Signal	AM	10.8	B	10.7	B
			PM	12.6	B	12.0	B
5	Zinfandel Dr @ White Rock Rd	Signal	AM	32.9	C	30.6	C
			PM	43.5	D	51.7	D
6	Zinfandel Dr @ US-50 EB Ramps	Signal	AM	21.7	C	23.0	C
			PM	20.2	C	22.7	C
7	Zinfandel Dr @ US-50 WB Ramps	Signal	AM	13.3	B	13.5	B
			PM	10.4	B	10.5	B

Notes: **Bold** represents unacceptable operations.

The LOS analysis summarized in the tables above show that all study intersections operate within the acceptable standard of LOS D under all analysis scenarios. Intersections analyzed using HCM 6th Edition methodology were also assessed using HCM 2000 methodology for comparison. The HCM 2000

methodology yielded comparable results to the HCM 6th edition. The HCM 2000 reports are included in the relevant appendices for all scenarios.

Peak-Hour Traffic Signal Warrant Evaluation

A planning level assessment of the need for traffic signalization was performed for the unsignalized project driveway at Kilgore Road. This evaluation was performed consistent with the peak-hour warrant methodologies noted in Section 4C of the *California Manual on Uniform Traffic Control Devices (CAMUTCD)*, dated March 30, 2021. A summary of the peak-hour warrant results is presented in Table 5. As shown in Table 5, the peak-hour signal warrant is not satisfied under all analysis scenarios. Detailed results of this analysis are presented in Appendix B.

Table 5 – Traffic Signal Warrant Analysis Results

Intersection	Scenario	Peak Hour	Signal Warranted?
Kilgore Road and Project Driveway	Opening Year Plus Project	AM	No
		PM	No
	Cumulative Year	AM	No
		PM	No
	Cumulative Year Plus Project	AM	No
		PM	No

Queuing Analysis Results

Ramp Queuing

Vehicle queuing was evaluated at each US-50 interchange off-ramp for the analysis scenarios as summarized in Table 6 using the 95th percentile queue as calculated using the SimTraffic software package. Analysis worksheets are provided in Appendix C to Appendix F for the respective analysis scenarios.

Table 6 presents the queuing analysis results at the US-50 interchange with Sunrise Boulevard (Study Intersections #3 and #4) and the US-50 interchange with Zinfandel Dr (Study Intersections #6 and #7). As shown in Table 6, the off-ramps have capacity to contain projected queues under all study scenarios.

Study Intersection Queuing

Table 7 presents queuing analysis results at the remaining non-US-50 interchange ramp project study intersections (Study Intersections #1, #2, and #5). Table 7 specifically summarizes left-turn movements to which the project is anticipated to add trips. As shown in Table 7, queuing exceeds the available storage for the westbound left movement at the Kilgore Road intersection with White Rock Road (Intersection #1) during the PM peak-hour for Cumulative plus Project conditions. While the Cumulative plus Project PM peak-hour conditions results in a notable increase in queue length beyond the no project condition, this can be reduced by reallocating signal time to more efficiently accommodate the needs to the westbound left movement.

Table 6 – US-50 Off-ramps @ Study Intersections Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
#3, Sunrise Blvd @ US-50 EB Off Ramp	**EBL**				
Existing (2022)		1730	300	1730	350
Opening Year (2024) plus Proposed Project			325		375
Cumulative (2040)			300		375
Cumulative (2040) plus Proposed Project			300		375
	EBR				
Existing (2022)		1730	127	1730	125
Opening Year (2024) plus Proposed Project			136		125
Cumulative (2040)			190		175
Cumulative (2040) plus Proposed Project			203		175
#4, Sunrise Blvd @ US-50 WB Off Ramp	**WBL**				
Existing (2022)		1580	125	1580	150
Opening Year (2024) plus Proposed Project			125		150
Cumulative (2040)			125		150
Cumulative (2040) plus Proposed Project			125		125
	WBR				
Existing (2022)		1580	125	1580	175
Opening Year (2024) plus Proposed Project			125		175
Cumulative (2040)			125		175
Cumulative (2040) plus Proposed Project			125		175
#6, Zinfandel Dr @ US-50 EB Off Ramp / Gold Center Dr	**EBL**				
Existing (2022)		1030	175	1030	300
Opening Year (2024) plus Proposed Project			200		325
Cumulative (2040)			200		325
Cumulative (2040) plus Proposed Project			175		325
	EBT				
Existing (2022)		1030	375	1030	100
Opening Year (2024) plus Proposed Project			400		150
Cumulative (2040)			625		350
Cumulative (2040) plus Proposed Project			650		550
	EBR				
Existing (2022)		1030	350	1030	250
Opening Year (2024) plus Proposed Project			375		300
Cumulative (2040)			375		350
Cumulative (2040) plus Proposed Project			375		375
#7, Zinfandel Dr @ US-50 WB Off Ramp	**WBL**				
Existing (2022)		1085	250	1085	175
Opening Year (2024) plus Proposed Project			250		175
Cumulative (2040)			250		200
Cumulative (2040) plus Proposed Project			250		200
	WBR				
Existing (2022)		1085	250	1085	175
Opening Year (2024) plus Proposed Project			250		175
Cumulative (2040)			250		200
Cumulative (2040) plus Proposed Project			250		200

Source: *Highway Capacity Manual (HCM) 2016* methodology per Synchro© v11/Simtraffic.
Notes: For approaches with dual turn lanes, the longest queue length is reported.
*95th Percentile Queue, shaded cell indicates queue exceeds storage by > 25' (one vehicle length)

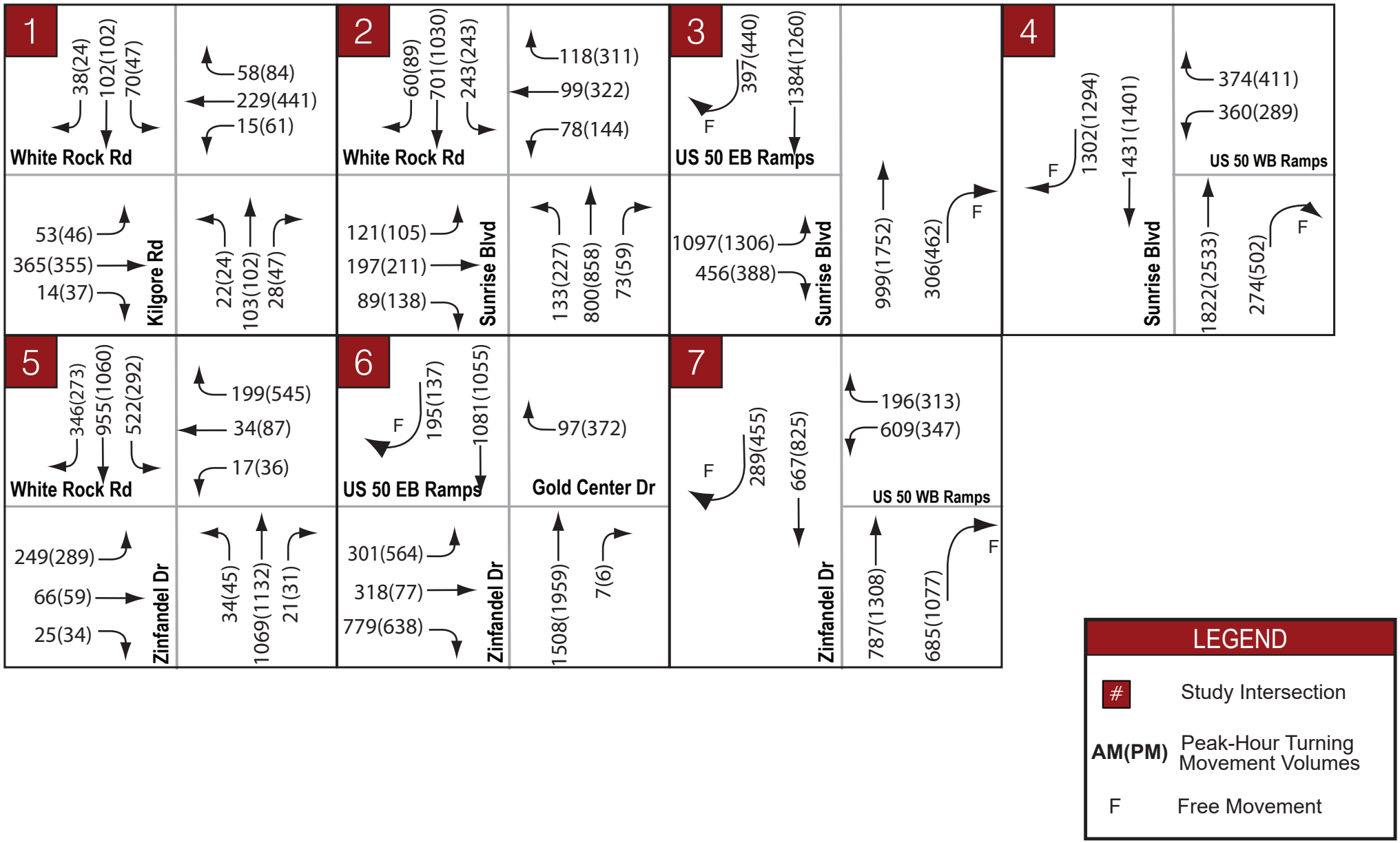
Table 7 – Study Intersection Queuing Analysis Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
#1, Kilgore Rd @ White Rock Rd	**NBL**				
Existing (2022)		190	25	190	50
Opening Year (2024) plus Proposed Project			75		75
Cumulative (2040)			75		100
Cumulative (2040) plus Proposed Project			125		150
	EBL				
Existing (2022)		310	50	310	50
Opening Year (2024) plus Proposed Project			75		75
Cumulative (2040)			100		100
Cumulative (2040) plus Proposed Project			100		125
	SBL				
Existing (2022)		140	75	140	50
Opening Year (2024) plus Proposed Project			75		50
Cumulative (2040)			75		75
Cumulative (2040) plus Proposed Project			100		75
	WBL				
Existing (2022)		210	25	210	75
Opening Year (2024) plus Proposed Project			50		100
Cumulative (2040)			100		225
Cumulative (2040) plus Proposed Project			125		275
#2, Sunrise Blvd @ White Rock Rd	**NBL**				
Existing (2022)		365	100	365	200
Opening Year (2024) plus Proposed Project			100		200
Cumulative (2040)			250		275
Cumulative (2040) plus Proposed Project			275		275
	EBL				
Existing (2022)		325	75	325	100
Opening Year (2024) plus Proposed Project			100		125
Cumulative (2040)			175		200
Cumulative (2040) plus Proposed Project			200		200
	SBL				
Existing (2022)		325	125	325	200
Opening Year (2024) plus Proposed Project			150		200
Cumulative (2040)			175		225
Cumulative (2040) plus Proposed Project			175		225
	WBL				
Existing (2022)		220	75	220	125
Opening Year (2024) plus Proposed Project			75		150
Cumulative (2040)			75		150
Cumulative (2040) plus Proposed Project			75		150

Source: *Highway Capacity Manual (HCM) 2016* methodology per Synchro© v11/Simtraffic.
Notes: For approaches with dual turn lanes, the longest queue length is reported.
*Minimal 95th Percentile Queue, shaded cell indicates queue exceeds storage by > 25' (one vehicle length)

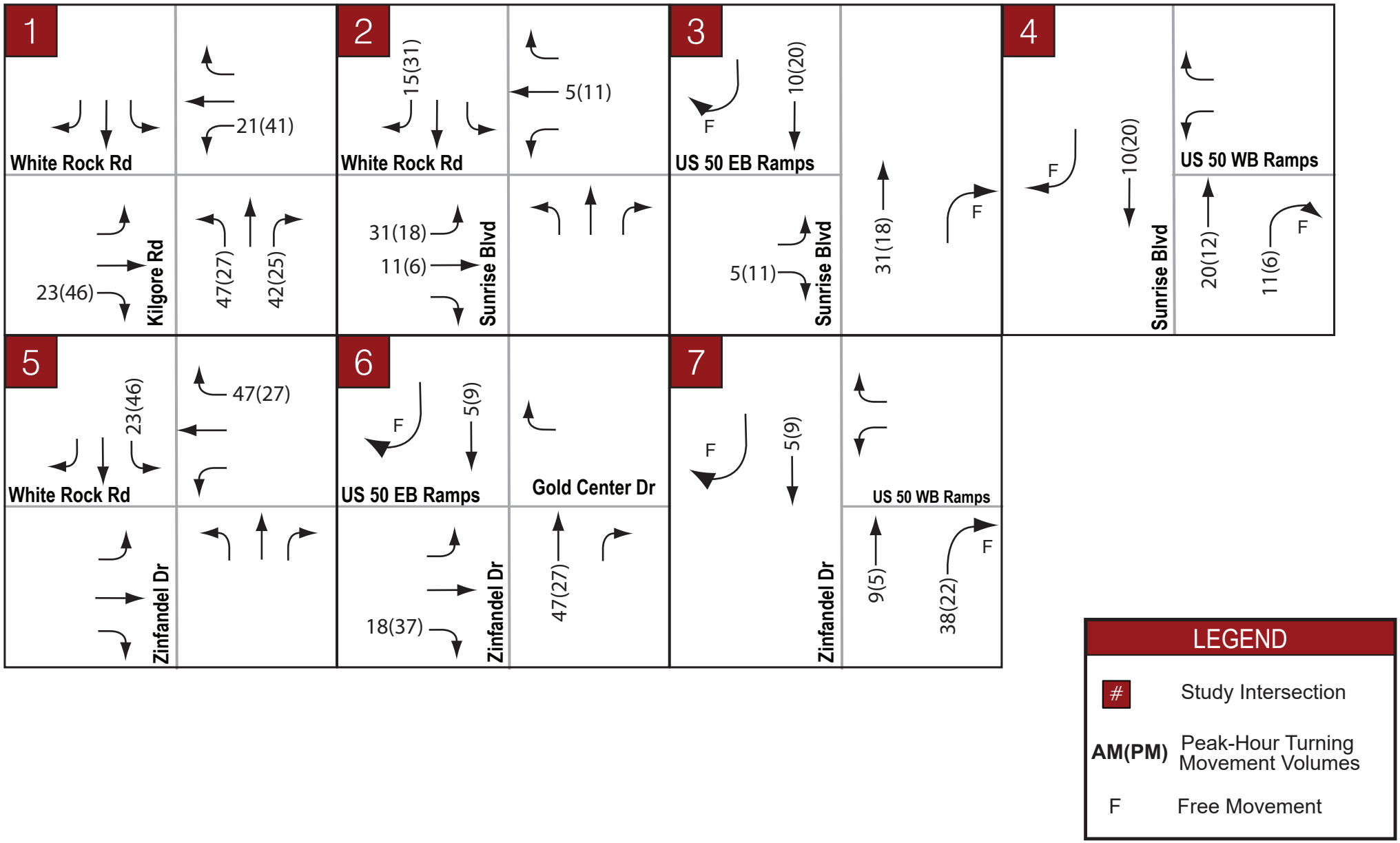
Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
#5, Zinfandel Dr @ White Rock Road	NBL				
Existing (2022)		180	100	180	150
Opening Year (2024) plus Proposed Project			125		150
Cumulative (2040)			150		200
Cumulative (2040) plus Proposed Project			125		200
	EBL				
Existing (2022)		350	200	350	250
Opening Year (2024) plus Proposed Project			225		250
Cumulative (2040)			250		250
Cumulative (2040) plus Proposed Project			200		275
	SBL				
Existing (2022)		485	275	485	200
Opening Year (2024) plus Proposed Project			300		225
Cumulative (2040)			300		375
Cumulative (2040) plus Proposed Project			300		475
	WBL				
Existing (2022)		325	75	325	75
Opening Year (2024) plus Proposed Project			50		75
Cumulative (2040)			100		150
Cumulative (2040) plus Proposed Project			100		150

Source: *Highway Capacity Manual (HCM) 2016* methodology per Synchro© v11/Simtraffic.
Notes: For approaches with dual turn lanes, the longest queue length is reported.
*Minimal 95th Percentile Queue, shaded cell indicates queue exceeds storage by > 25' (one vehicle length)



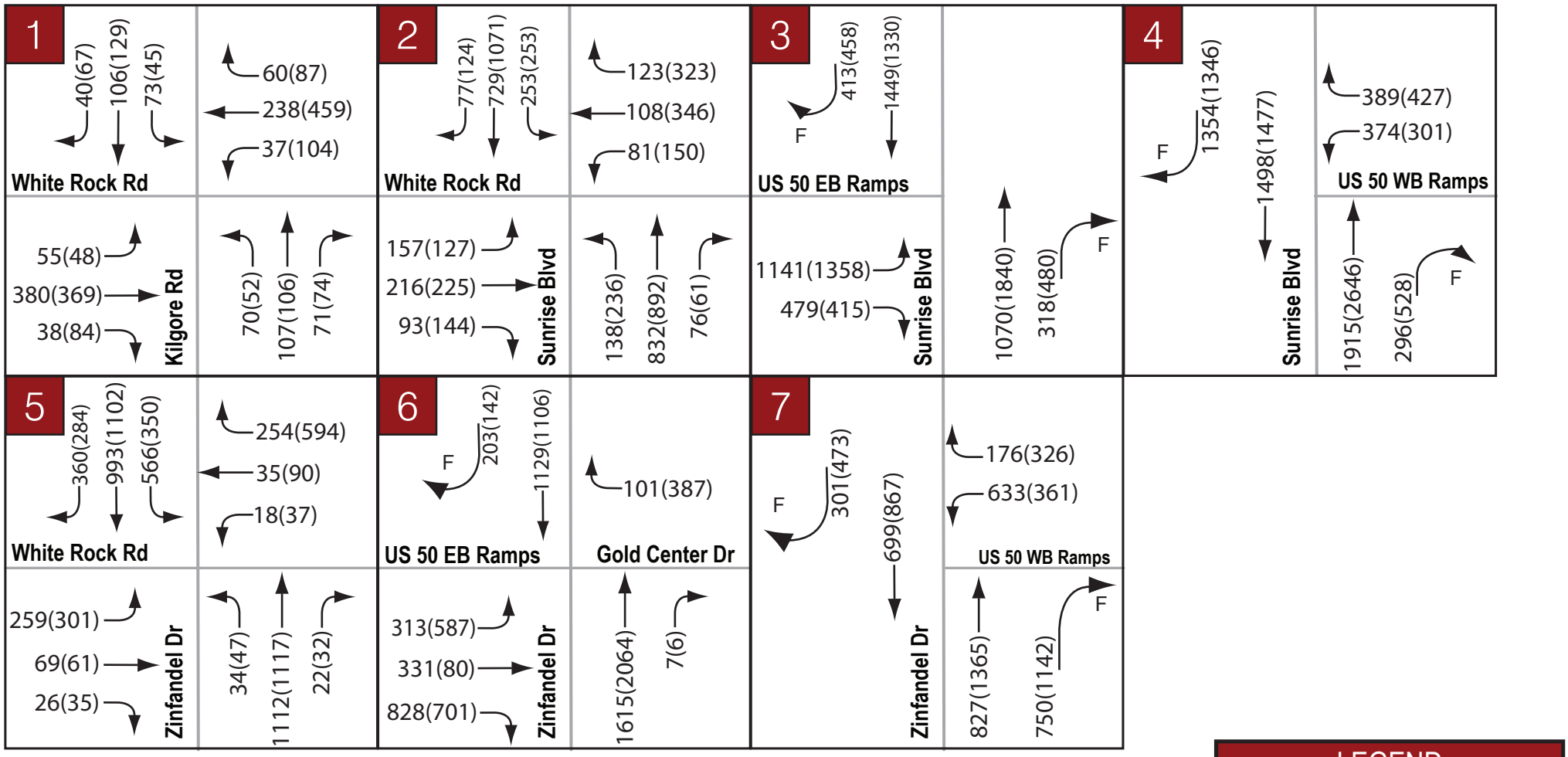
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Figure 5
Existing (2022) Peak-Hour Traffic Volumes



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Figure 6
Peak-Hour Project Trip Assignment



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Figure 7

Opening Year (2024) Plus Project Peak-Hour Traffic Volumes

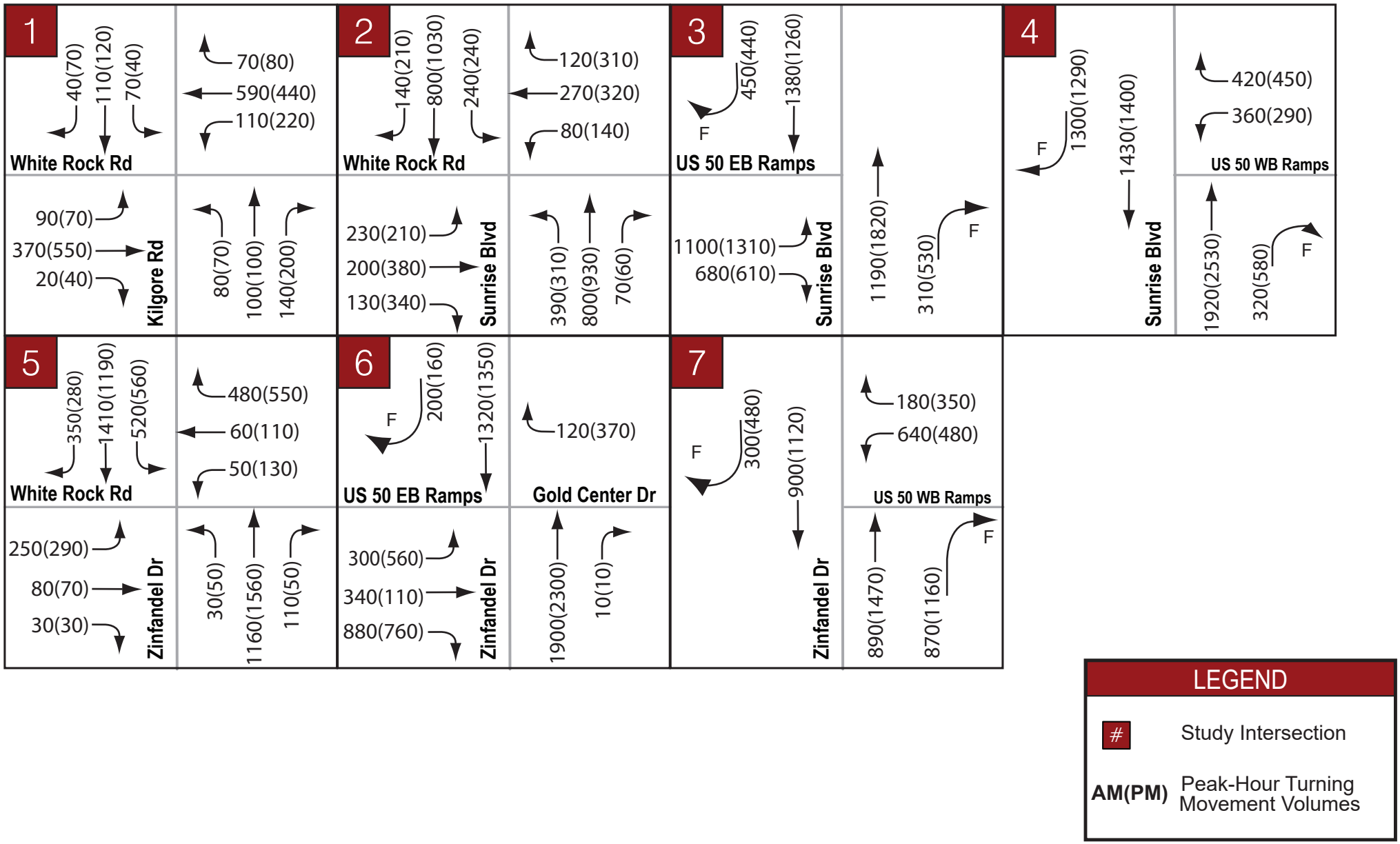
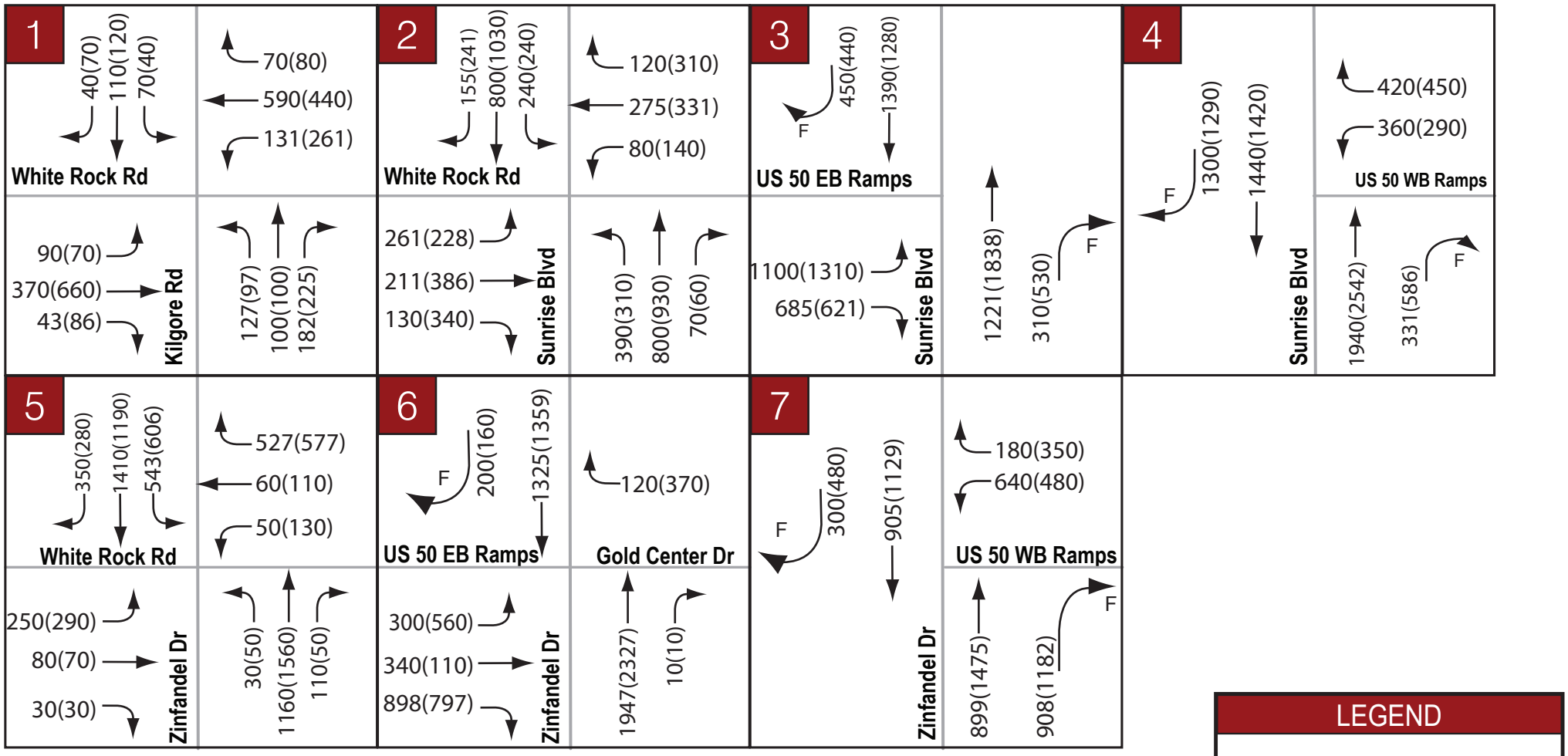


Figure 8
Cumulative (2040) Peak-Hour Traffic Volumes



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Figure 9
Cumulative (2040) Plus Project Peak-Hour Traffic Volumes

BICYCLE, PEDESTRIAN, AND TRANSIT EVALUATION

The applicability of a mid-block pedestrian crossing along Kilgore Road was evaluated using guidance found in the Federal Highway Administration (FHWA) "Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations"[6] report. Table 8 below presents recommended pedestrian crash countermeasures by roadway feature.

Table 8 – FHWA Pedestrian Crash Countermeasures

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	● 2 4 5 6	● 5 6 7 9	○ 5 6 ● 9	● 4 5 6	● 5 6 7 9	○ 5 6 ● 9	● 4 5 6 7 9	○ 5 6 7 9	○ 5 6 ● 9
3 lanes with raised median (1 lane in each direction)	● 2 3 4 5	● ○ 5 7 9	○ ○ 5 ● 9	○ 3 4 5 7 9	○ ○ 5 ● 9	○ ○ 5 ● 9	○ ○ 4 5 7 9	○ ○ 5 ● 9	○ ○ 5 ● 9
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	● 2 3 4 5 6 7 9	● ○ 5 6 7 9	○ ○ 5 6 9	○ 3 4 5 6 7 9	○ ○ 5 6 ● 9	○ ○ 5 6 9	○ ○ 4 5 6 7 9	○ ○ 5 6 9	○ ○ 5 6 9
4+ lanes with raised median (2 or more lanes in each direction)	● ○ 5 7 8 9	● ○ 5 7 8 9	○ ○ 5 8 ● 9	○ ○ 5 7 8 9	○ ○ 5 ● 8 ● 9	○ ○ 5 8 ● 9	○ ○ 5 ● 8 ● 9	○ ○ 5 8 ● 9	○ ○ 5 8 ● 9
4+ lanes w/o raised median (2 or more lanes in each direction)	● ○ 5 6 7 8 9	○ ○ 5 ● 6 7 8 9	○ ○ 5 ● 6 8 ● 9	○ ○ 5 ● 6 7 8 9	○ ○ 5 ● 6 ● 8 ● 9	○ ○ 5 ● 6 8 ● 9	○ ○ 5 ● 6 ● 8 ● 9	○ ○ 5 ● 6 8 ● 9	○ ○ 5 ● 6 8 ● 9

Given the set of conditions in a cell,

- # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.
- ● Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- ○ Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
2 Raised crosswalk
3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
4 In-Street Pedestrian Crossing sign
5 Curb extension
6 Pedestrian refuge island
7 Rectangular Rapid-Flashing Beacon (RRFB)**
8 Road Diet
9 Pedestrian Hybrid Beacon (PHB)**

Assuming that the PM peak-hour volume is 10% of the daily volume, the ADT on Kilgore Road is approximately 4,000 vehicles per day. Therefore, Kilgore Road has an ADT which falls in the range of less than 9,000 shown in Table 8, a posted speed limit of 40 MPH, and has two lanes in each direction with no median (4-lane undivided roadway). According to FHWA guidance, the following countermeasures should be considered, but are not required: Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) lines, a Pedestrian refuge island, and a Pedestrian Hybrid Beacon (PHB). Crosswalk visibility enhancements should be applied in conjunction with these appropriate countermeasures.

Kilgore Road has Class II bike lanes and pedestrian facilities (sidewalks) in both directions. Kilgore Road is also is part of the regional bike trail system, as described in the 2016 Rancho Cordova Bicycle Master Plan[7].

[6] *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, July 2018,* USDOT FHWA
[7] *Bicycle Master Plan, April 2016,* City of Rancho Cordova

The addition of the previously mentioned mid-block crossing elements to Kilgore Road would provide a more complete bike and pedestrian network and would facilitate travel to and from the project site. White Rock Road does not currently have bike lanes between Zinfandel Drive and Sunrise Boulevard, though it does have pedestrian facilities and crosswalks at the major intersections. The segment of White Rock Road immediately north of the project site has been identified in the City's Bicycle Master Plan as a location to implement Class II Bike lanes in the future. Pedestrian facilities and Class II bike lanes are present in both directions south of the project site along International Drive.

Residents at the project site will have access to Sacramento Regional Transit (SacRT) Rancho CordoVan service along Kilgore Road. This route is intended to connect riders with Zinfandel Station on the SacRT light rail Gold line, which provides service to both Sacramento and Folsom in either direction. Additional SacRT bus services within the area serve similar purposes in connecting riders with the light rail Gold line.

SITE PLAN, ACCESS, AND CIRCULATION EVALUATION

Based on the project's site plan depicted in Figure 2, the proposed project is to be served by several drive aisles providing access to buildings and parking. Access to the project's two different residential component types is provided via two separate gated entrances from side streets off of Kilgore Road. As both entrances are set back from Kilgore Road, minimal turn movement/access conflicts are anticipated for the analysis scenarios. Access to the project's commercial component is provided via a dedicated driveway on the northern edge of the site connecting directly to Kilgore Road. Three emergency vehicle access points are provided for the residential components. The project's residential site layout is anticipated to mainly serve personal vehicles and operate effectively.

DEFICIENCIES AND IMPROVEMENTS

Intersection LOS

As reflected in Table 3 and Table 4 all study intersections operate within the acceptable standard of LOS D under all analysis scenarios.

Ramp Queuing

As reflected in Table 6, the study intersection off-ramps have capacity to contain projected queues under all study scenarios.

Intersection Queuing

As reflected in Table 7, queuing exceeds the available storage for the westbound left movement at the Kilgore Road intersection with White Rock Road (Intersection #1) in AM peak-hour for Cumulative plus Project conditions and the PM peak-hour for both Cumulative and Cumulative plus Project conditions. While the Cumulative plus Project PM peak-hour conditions results in a notable increase in queue length beyond the no project condition, this can be reduced by reallocating signal time to more efficiently accommodate the needs to the westbound left movement.

OTHER CONSIDERATIONS

As a tenant has not yet been identified for the Restaurant component of the proposed project, an additional trip generation scenario was developed using ITE Land Use 930 (Fast Casual Restaurant) to more conservatively account for PM Peak-Hour trips. The alternative trip generation is presented in Table 9.

Table 9 – Alternative Project Trip Generation

ITE Land Use Code	Land Use	# Units/ ksf	Daily Trips	AM Peak-Hour			PM Peak-Hour		
				Total	In	Out	Total	In	Out
220	Multifamily Housing (Low-Rise)	177	1,210	78	19	59	97	61	36
221	Multifamily Housing (Mid-Rise)	240	1,098	94	22	72	94	57	37
930	Fast Casual Restaurant	9	911	81	45	36	107	59	48
Total Project Trips			**3,220**	**253**	**86**	**167**	**298**	**177**	**121**
Internal Capture (8% Daily/AM Peak-hour, 9% PM Peak-hour)			262	20	10	10	29	13	16
Net External Project Trips			***2,958***	***233***	***76***	***157***	***269***	***164***	***105***

When compared to the original trip generation developed in Table 2 and accounting for a similar proportion of internal capture between project land uses, the alternative trip generation results in a net increase of 25 trips during the PM Peak-Hour compared to the original trip generation. The alternative project trips were then distributed and assigned using the same percentages as the original trip generation. The ensuing analysis showed that the alternative PM project trip generation resulted comparable projected 95th percentile queues at the Kilgore Road intersection with White Rock Road (Intersection #1) with all study intersections operating within the acceptable LOS threshold, as found for the original project trip generation. The recommended improvement for the original trip generation at Intersection #1 (redistributing signal timing to better accommodate westbound left-turns) is suitable as an improvement for the alternative trip generation as well. All signals

CONCLUSIONS

Significant findings of this study include:

- The proposed project is anticipated to generate 3,220 new daily trips, with 253 and 268 trips occurring during the AM and PM peak-hours respectively.
    - Internal trip reduction to assess how the Project's residential and proximate commercial component trips might interact was generated using the NCHRP 684 Trip Capture Estimation Tool[8]. This resulted in a reduction of 262 daily trips, 20 AM peak-hour trips, and 24 PM peak-hour trips.
    - The final net external Project trip generation is 2,958 daily trips, 233 AM peak-hour trips, and 244 PM peak-hour trips.
- The addition of the proposed project to the Opening Year and Cumulative scenarios does not result in deficiencies at any of the study intersections. All study intersections operate within the acceptable Level of Service (LOS) threshold established by the City of Rancho Cordova's General Plan.
- The addition of the proposed project to Opening Year and Cumulative scenarios does not result in significant queueing deficiencies at any of the US-50 off-ramps. Current ramp lengths are sufficient to accommodate vehicles without creating vehicle spillback into the traveled way of US-50 at all study intersection locations.

[8] *Trip Generation Handbook (3rd Edition)*, Institute of Transportation Engineers (ITE), August 2014

Appendix A

Traffic Count Data Sheets

National Data & Surveying Services Intersection Turning Movement Count

Location: Kilgore Rd & White Rock Rd
City: Rancho Cordova
Control: Signalized

Project ID: 22-070003-001
Date: 1/11/2022

Data - Totals

NS/EW Streets:	Kilgore Rd				Kilgore Rd				White Rock Rd				White Rock Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	1	2	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	2	4	4	0	1	2	4	0	4	69	1	0	4	34	5	0	134
6:15 AM	0	3	5	0	8	6	3	0	2	87	0	0	6	40	1	0	161
6:30 AM	4	2	2	0	7	13	3	0	4	90	4	0	12	55	4	0	200
6:45 AM	3	15	7	0	13	13	4	0	9	122	11	0	5	68	9	0	279
7:00 AM	7	23	7	0	13	9	3	0	10	71	3	0	9	49	8	0	212
7:15 AM	6	13	10	0	9	21	6	0	9	74	3	0	2	45	12	0	210
7:30 AM	8	22	11	0	11	14	10	0	5	80	5	0	3	66	17	0	252
7:45 AM	7	35	5	0	19	23	8	0	20	97	3	0	5	61	21	0	304
8:00 AM	6	27	3	0	29	32	9	0	18	85	5	0	3	41	10	0	268
8:15 AM	1	19	9	0	11	33	11	0	10	103	1	0	4	61	10	0	273
8:30 AM	2	10	9	0	14	23	7	0	8	75	4	2	5	53	4	0	216
8:45 AM	3	17	10	0	5	13	6	0	9	78	3	2	7	67	8	0	228
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	49	190	82	0	140	202	74	0	108	1031	43	4	65	640	109	0	2737
APPROACH %'s :	15.26%	59.19%	25.55%	0.00%	33.65%	48.56%	17.79%	0.00%	9.11%	86.93%	3.63%	0.34%	7.99%	78.62%	13.39%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	22	103	28	0	70	102	38	0	53	365	14	0	15	229	58	0	1097
PEAK HR FACTOR :	0.688	0.736	0.636	0.000	0.603	0.773	0.864	0.000	0.663	0.886	0.700	0.000	0.750	0.867	0.690	0.000	0.902
	0.814				0.750				0.900				0.868				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	1	2	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	3	21	10	0	9	27	8	0	13	96	2	1	7	110	24	0	331
3:15 PM	4	23	6	0	13	31	6	0	8	82	2	0	3	99	22	0	299
3:30 PM	7	13	4	0	19	30	17	0	9	80	6	0	5	171	19	0	380
3:45 PM	10	25	7	0	13	17	8	0	8	99	6	0	5	111	21	0	330
4:00 PM	4	20	4	0	21	20	18	0	8	78	3	1	12	121	11	0	321
4:15 PM	2	24	8	0	17	26	12	0	5	89	2	0	4	97	14	0	300
4:30 PM	2	23	9	0	13	36	31	0	9	89	6	1	8	121	23	0	371
4:45 PM	7	23	7	0	7	29	9	0	6	79	13	1	21	97	14	0	313
5:00 PM	7	27	18	0	17	35	15	0	17	118	11	1	16	111	24	0	417
5:15 PM	8	29	13	0	6	24	9	0	11	69	7	0	16	112	23	0	327
5:30 PM	5	17	8	0	8	8	7	0	4	64	9	0	13	99	15	0	257
5:45 PM	3	11	5	0	7	20	13	0	5	54	10	2	14	96	9	0	249
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	62	256	99	0	150	303	153	0	103	997	77	7	124	1345	219	0	3895
APPROACH %'s :	14.87%	61.39%	23.74%	0.00%	24.75%	50.00%	25.25%	0.00%	8.70%	84.21%	6.50%	0.59%	7.35%	79.68%	12.97%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	24	102	47	0	43	124	64	0	43	355	37	3	61	441	84	0	1428
PEAK HR FACTOR :	0.750	0.879	0.653	0.000	0.632	0.861	0.516	0.000	0.632	0.752	0.712	0.750	0.726	0.911	0.875	0.000	0.856
	0.832				0.722				0.745				0.964				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sunrise Blvd & White Rock Rd
City: Rancho Cordova
Control: Signalized

Project ID: 22-070003-002
Date: 1/11/2022

Data - Totals

NS/EW Streets:	Sunrise Blvd				Sunrise Blvd				White Rock Rd				White Rock Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	2	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	14	83	15	4	36	88	10	3	14	61	3	1	4	20	17	0	373
6:15 AM	12	89	12	5	53	110	8	2	14	79	5	2	20	31	37	0	479
6:30 AM	14	154	12	4	66	152	17	1	14	69	17	4	10	29	30	0	593
6:45 AM	13	138	25	5	66	153	15	0	25	96	18	7	12	59	34	0	666
7:00 AM	23	175	14	6	50	119	9	5	14	47	15	10	6	21	33	1	548
7:15 AM	13	171	13	7	38	122	8	6	26	46	12	7	15	35	33	0	552
7:30 AM	40	188	16	8	29	135	11	8	30	38	16	8	10	36	30	0	603
7:45 AM	46	204	15	9	41	143	16	4	25	67	23	6	14	23	22	1	659
8:00 AM	18	208	19	3	31	132	13	4	27	55	24	5	21	20	20	1	601
8:15 AM	39	189	22	6	52	153	8	8	27	69	16	8	21	23	25	1	667
8:30 AM	27	185	15	9	82	227	23	7	18	28	26	8	17	24	38	1	735
8:45 AM	26	218	17	5	54	189	16	5	21	45	23	7	16	32	35	0	709
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	285	2002	195	71	598	1723	154	53	255	700	198	73	166	353	354	5	7185
APPROACH %'s :	11.16%	78.42%	7.64%	2.78%	23.66%	68.16%	6.09%	2.10%	20.80%	57.10%	16.15%	5.95%	18.91%	40.21%	40.32%	0.57%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	110	800	73	23	219	701	60	24	93	197	89	28	75	99	118	3	2712
PEAK HR FACTOR :	0.705	0.917	0.830	0.639	0.668	0.772	0.652	0.750	0.861	0.714	0.856	0.875	0.893	0.773	0.776	0.750	0.922
	0.945				0.740				0.848				0.889				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	2	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	38	223	7	21	67	234	16	2	18	52	33	2	41	77	71	0	902
3:15 PM	24	167	13	17	55	207	17	4	28	68	20	7	46	76	64	2	815
3:30 PM	49	236	18	22	60	236	21	7	21	45	34	7	29	114	104	0	1003
3:45 PM	28	214	16	15	47	259	29	7	19	63	32	3	36	82	65	0	915
4:00 PM	46	209	15	20	59	283	21	5	20	51	39	1	39	73	82	0	963
4:15 PM	29	199	10	18	49	252	18	9	29	52	33	5	40	53	60	0	856
4:30 PM	52	208	14	15	45	239	28	7	30	52	31	2	49	86	72	0	930
4:45 PM	33	224	10	12	53	224	28	5	24	37	16	7	37	61	62	0	833
5:00 PM	54	239	17	15	55	254	36	9	40	77	39	8	50	69	73	0	1035
5:15 PM	47	247	8	13	35	265	31	9	30	34	16	3	26	58	55	0	877
5:30 PM	32	202	10	12	35	212	23	4	16	47	15	7	42	52	48	0	757
5:45 PM	35	191	10	11	60	180	24	9	17	37	17	3	33	67	47	0	741
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	467	2559	148	191	620	2845	292	77	292	615	325	55	468	868	803	2	10627
APPROACH %'s :	13.88%	76.05%	4.40%	5.68%	16.17%	74.20%	7.62%	2.01%	22.69%	47.79%	25.25%	4.27%	21.86%	40.54%	37.51%	0.09%	
PEAK HR :	03:30 PM - 04:30 PM																TOTAL
PEAK HR VOL :	152	858	59	75	215	1030	89	28	89	211	138	16	144	322	311	0	3737
PEAK HR FACTOR :	0.776	0.909	0.819	0.852	0.896	0.910	0.767	0.778	0.767	0.837	0.885	0.571	0.900	0.706	0.748	0.000	0.931
	0.880				0.925				0.954				0.786				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sunrise Blvd & US-50 EB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 22-070003-003
Date: 1/11/2022

Data - Totals

NS/EW Streets:	Sunrise Blvd				Sunrise Blvd				US-50 EB Ramps				US-50 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	4	2	0	0	3	2	0	3	0	2	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	76	28	0	0	231	30	0	100	0	72	0	0	0	0	0	537
6:15 AM	0	115	44	0	0	260	55	0	135	0	107	0	0	0	0	0	716
6:30 AM	0	162	60	0	0	320	79	0	166	0	113	0	0	0	0	0	900
6:45 AM	0	160	63	0	0	431	69	0	143	0	182	0	0	0	0	0	1048
7:00 AM	0	188	70	0	0	304	81	0	176	0	116	0	0	0	0	0	935
7:15 AM	0	204	55	0	0	316	84	0	228	0	104	0	0	0	0	0	991
7:30 AM	0	233	78	0	0	248	100	0	232	0	130	0	0	0	0	0	1021
7:45 AM	0	286	77	0	0	253	76	0	294	0	122	0	0	0	0	0	1108
8:00 AM	0	233	84	0	0	270	78	0	296	0	133	0	0	0	0	0	1094
8:15 AM	0	216	66	0	0	314	109	0	301	0	99	0	0	0	0	0	1105
8:30 AM	0	316	77	0	0	435	127	0	239	0	126	0	0	0	0	0	1320
8:45 AM	0	234	79	0	0	365	83	0	261	0	98	0	0	0	0	0	1120
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2423	781	0	0	3747	971	0	2571	0	1402	0	0	0	0	0	11895
APPROACH %'s :	0.00%	75.62%	24.38%	0.00%	0.00%	79.42%	20.58%	0.00%	64.71%	0.00%	35.29%	0.00%					
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	999	306	0	0	1384	397	0	1097	0	456	0	0	0	0	0	4639
PEAK HR FACTOR :	0.000	0.790	0.911	0.000	0.000	0.795	0.781	0.000	0.911	0.000	0.857	0.000	0.000	0.000	0.000	0.000	0.879
	0.830				0.792				0.905								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	4	2	0	0	3	2	0	3	0	2	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	0	414	122	0	0	287	112	0	370	0	81	0	0	0	0	0	1386
3:15 PM	0	371	98	0	0	308	130	0	325	0	97	0	0	0	0	0	1329
3:30 PM	0	477	109	0	0	301	102	0	351	0	102	0	0	0	0	0	1442
3:45 PM	0	425	117	0	0	330	97	0	307	0	103	0	0	0	0	0	1379
4:00 PM	0	479	138	0	0	321	111	0	323	0	86	0	0	0	0	0	1458
4:15 PM	0	369	101	0	0	305	78	0	290	0	75	0	0	0	0	0	1218
4:30 PM	0	459	108	0	0	295	97	0	320	0	81	0	0	0	0	0	1360
4:45 PM	0	350	92	0	0	265	77	0	347	0	83	0	0	0	0	0	1214
5:00 PM	0	479	109	0	0	316	88	0	323	0	56	0	0	0	0	0	1371
5:15 PM	0	436	101	0	0	275	95	0	325	0	79	0	0	0	0	0	1311
5:30 PM	0	332	106	0	0	260	113	0	261	0	68	0	0	0	0	0	1140
5:45 PM	0	318	87	0	0	273	77	0	251	0	67	0	0	0	0	0	1073
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4909	1288	0	0	3536	1177	0	3793	0	978	0	0	0	0	0	15681
APPROACH %'s :	0.00%	79.22%	20.78%	0.00%	0.00%	75.03%	24.97%	0.00%	79.50%	0.00%	20.50%	0.00%					
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	0	1752	462	0	0	1260	440	0	1306	0	388	0	0	0	0	0	5608
PEAK HR FACTOR :	0.000	0.914	0.837	0.000	0.000	0.955	0.846	0.000	0.930	0.000	0.942	0.000	0.000	0.000	0.000	0.000	0.962
	0.897				0.970				0.935								

National Data & Surveying Services Intersection Turning Movement Count

Location: Sunrise Blvd & US-50 WB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 22-070003-004
Date: 1/11/2022

Data - Totals

NS/EW Streets:	Sunrise Blvd				Sunrise Blvd				US-50 WB Ramps				US-50 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	2	0	0	3	2	0	0	0	0	0	2	0	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	150	15	0	0	209	226	0	0	0	0	0	62	0	27	0	689
6:15 AM	0	232	28	0	0	259	259	0	0	0	0	0	50	0	39	0	867
6:30 AM	0	267	45	0	0	316	291	0	0	0	0	0	79	0	47	0	1045
6:45 AM	0	265	53	0	0	427	352	0	0	0	0	0	86	0	51	0	1234
7:00 AM	0	310	47	0	0	310	323	0	0	0	0	0	68	0	55	0	1113
7:15 AM	0	362	62	0	0	337	363	0	0	0	0	0	81	0	86	0	1291
7:30 AM	0	406	64	0	0	271	413	0	0	0	0	0	72	0	86	0	1312
7:45 AM	0	534	53	0	0	261	322	0	0	0	0	0	54	0	110	0	1334
8:00 AM	0	463	61	0	0	304	356	0	0	0	0	0	54	0	132	0	1370
8:15 AM	0	450	74	0	0	339	309	0	0	0	0	0	96	0	84	0	1352
8:30 AM	0	474	73	0	0	444	337	0	0	0	0	0	100	0	72	0	1500
8:45 AM	0	435	66	0	0	344	300	0	0	0	0	0	110	0	86	0	1341
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4348	641	0	0	3821	3851	0	0	0	0	0	912	0	875	0	14448
APPROACH %'s :	0.00%	87.15%	12.85%	0.00%	0.00%	49.80%	50.20%	0.00%					51.04%	0.00%	48.96%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	1822	274	0	0	1431	1302	0	0	0	0	0	360	0	374	0	5563
PEAK HR FACTOR :	0.000	0.961	0.926	0.000	0.000	0.806	0.914	0.000	0.000	0.000	0.000	0.000	0.818	0.000	0.708	0.000	0.927
		0.958				0.875								0.936			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	2	0	0	3	2	0	0	0	0	0	2	0	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	0	661	132	0	0	335	325	0	0	0	0	0	60	0	101	0	1614
3:15 PM	0	581	102	0	0	348	335	0	0	0	0	0	93	0	106	0	1565
3:30 PM	0	677	160	0	0	348	350	0	0	0	0	0	53	0	110	0	1698
3:45 PM	0	614	108	0	0	370	284	0	0	0	0	0	83	0	94	0	1553
4:00 PM	0	666	122	0	0	338	297	0	0	0	0	0	81	0	108	0	1612
4:15 PM	0	597	87	0	0	302	286	0	0	0	0	0	67	0	86	0	1425
4:30 PM	0	622	124	0	0	303	309	0	0	0	0	0	92	0	101	0	1551
4:45 PM	0	625	100	0	0	285	281	0	0	0	0	0	65	0	93	0	1449
5:00 PM	0	649	133	0	0	328	368	0	0	0	0	0	66	0	95	0	1639
5:15 PM	0	672	105	0	0	319	335	0	0	0	0	0	64	0	109	0	1604
5:30 PM	0	536	67	0	0	307	291	0	0	0	0	0	53	0	73	0	1327
5:45 PM	0	477	80	0	0	286	279	0	0	0	0	0	70	0	95	0	1287
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	7377	1320	0	0	3869	3740	0	0	0	0	0	847	0	1171	0	18324
APPROACH %'s :	0.00%	84.82%	15.18%	0.00%	0.00%	50.85%	49.15%	0.00%					41.97%	0.00%	58.03%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	2533	502	0	0	1401	1294	0	0	0	0	0	289	0	411	0	6430
PEAK HR FACTOR :	0.000	0.935	0.784	0.000	0.000	0.947	0.924	0.000	0.000	0.000	0.000	0.000	0.777	0.000	0.934	0.000	0.947
		0.907				0.965								0.879			

National Data & Surveying Services Intersection Turning Movement Count

Location: Zinfandel Dr & White Rock Rd
City: Rancho Cordova
Control: Signalized

Project ID: 22-070003-005
Date: 1/11/2022

Data - Totals

NS/EW Streets:	Zinfandel Dr				Zinfandel Dr				White Rock Rd				White Rock Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	0	0	2	3	1	0	2	3	0	0	2	1	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	5	75	1	0	82	80	11	0	25	6	4	3	1	6	29	0	328
6:15 AM	3	113	1	0	70	104	23	0	28	9	9	4	1	2	35	0	402
6:30 AM	7	134	1	0	102	130	35	1	38	13	3	0	1	3	46	0	514
6:45 AM	4	161	5	0	124	140	55	0	21	16	6	2	4	4	63	0	605
7:00 AM	5	141	2	0	68	118	43	0	35	6	6	2	2	7	52	0	487
7:15 AM	4	235	4	0	98	167	88	0	28	10	8	0	1	10	45	0	698
7:30 AM	10	281	6	0	129	198	79	0	56	13	7	2	7	8	63	0	859
7:45 AM	10	272	6	0	164	247	87	1	73	23	6	2	3	13	47	0	954
8:00 AM	6	286	2	0	115	264	93	1	66	10	3	1	4	8	44	1	904
8:15 AM	8	230	7	0	111	246	87	1	48	20	9	1	2	5	45	0	820
8:30 AM	9	184	0	0	97	207	69	0	44	10	8	1	8	4	34	0	675
8:45 AM	9	166	3	0	97	211	55	0	36	16	6	4	6	13	52	1	675
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	80	2278	38	0	1257	2112	725	4	498	152	75	22	40	83	555	2	7921
APPROACH %'s :	3.34%	95.08%	1.59%	0.00%	30.67%	51.54%	17.69%	0.10%	66.67%	20.35%	10.04%	2.95%	5.88%	12.21%	81.62%	0.29%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	34	1069	21	0	519	955	346	3	243	66	25	6	16	34	199	1	3537
PEAK HR FACTOR :	0.850	0.934	0.750	0.000	0.791	0.904	0.930	0.750	0.832	0.717	0.694	0.750	0.571	0.654	0.790	0.250	0.927
	0.946				0.913				0.817				0.801				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	0	0	2	3	1	0	2	3	0	0	2	1	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	9	310	9	1	61	253	62	1	53	8	9	5	2	14	110	0	907
3:15 PM	10	299	6	1	77	260	55	0	59	13	8	2	9	13	99	1	912
3:30 PM	15	271	9	1	62	255	59	0	77	17	7	2	7	17	186	0	985
3:45 PM	9	265	2	0	77	277	70	0	66	15	11	1	8	18	107	0	926
4:00 PM	10	238	6	2	78	251	62	1	87	22	12	2	3	17	141	0	932
4:15 PM	10	264	9	1	73	263	58	0	74	10	8	0	5	18	101	0	894
4:30 PM	14	326	8	0	80	259	56	0	72	9	7	3	12	14	119	1	980
4:45 PM	11	249	11	0	75	281	80	2	62	16	7	1	7	23	112	0	937
5:00 PM	11	283	5	2	92	246	71	0	92	18	10	2	6	28	204	0	1070
5:15 PM	6	274	7	1	43	274	66	0	55	16	10	2	9	22	110	1	896
5:30 PM	8	224	5	0	68	263	56	2	63	22	7	4	6	16	106	0	850
5:45 PM	10	206	9	0	69	257	57	1	50	9	3	6	5	14	93	1	790
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	123	3209	86	9	855	3139	752	7	810	175	99	30	79	214	1488	4	11079
APPROACH %'s :	3.59%	93.64%	2.51%	0.26%	17.99%	66.04%	15.82%	0.15%	72.71%	15.71%	8.89%	2.69%	4.43%	11.99%	83.36%	0.22%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	42	1132	31	3	290	1060	273	2	281	59	34	8	34	87	545	2	3883
PEAK HR FACTOR :	0.750	0.868	0.705	0.375	0.788	0.943	0.853	0.250	0.764	0.819	0.850	0.667	0.708	0.777	0.668	0.500	0.907
	0.868				0.928				0.783				0.702				

National Data & Surveying Services Intersection Turning Movement Count

Location: Zinfandel Dr & US-50 EB Ramps/Gold Center Dr
City: Rancho Cordova
Control: Signalized

Project ID: 22-070003-006
Date: 1/11/2022

Data - Totals

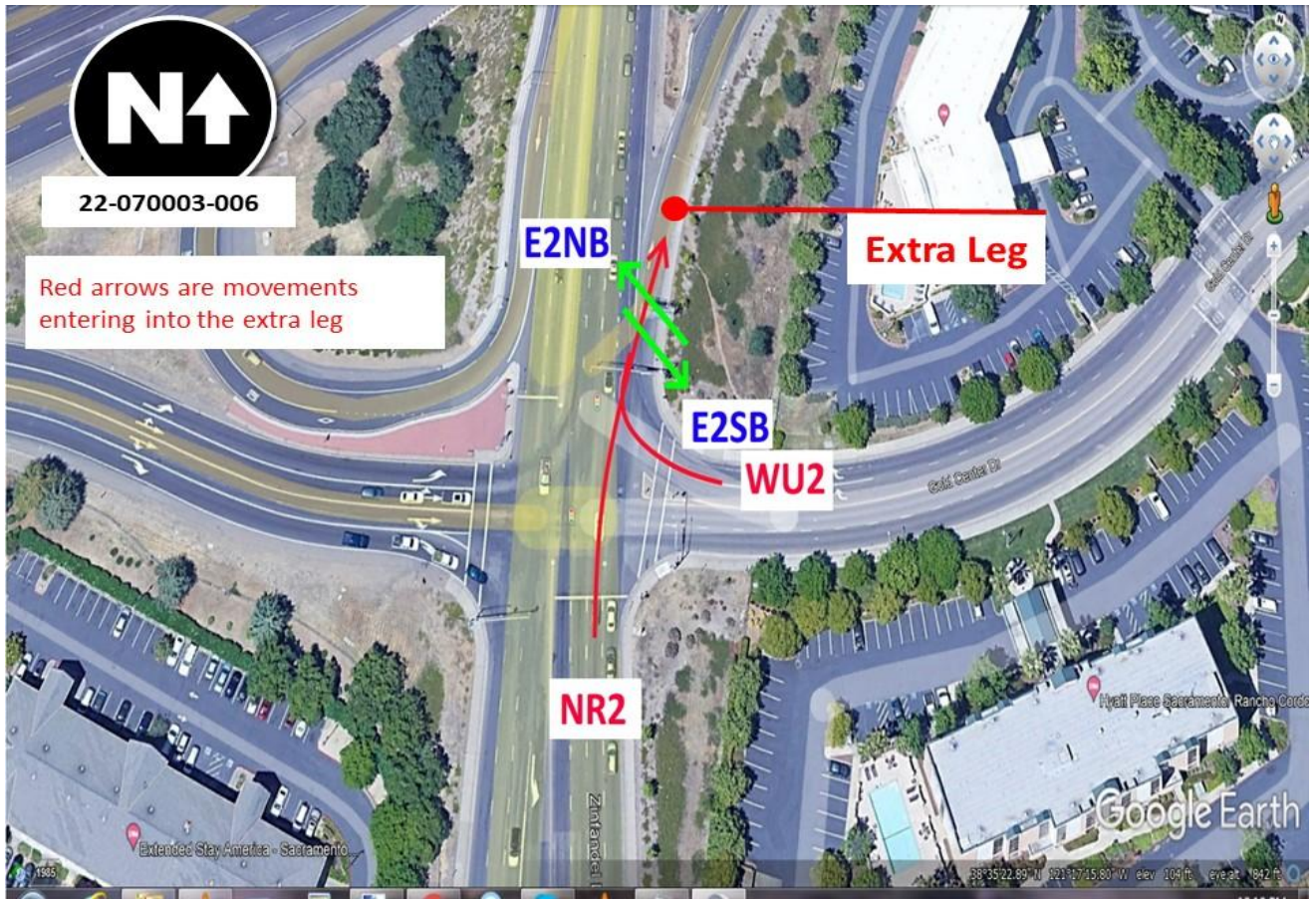
NS/EW Streets:	Zinfandel Dr					Zinfandel Dr				US-50 EB Ramps/Gold Center Dr				US-50 EB Ramps/Gold Center Dr					
AM	NORTHBOUND					SOUTHBOUND				EASTBOUND				WESTBOUND					
	0	4	0	0	0	0	3	1	0	2	2	2	0	0	0	2	0	0	
	NL	NT	NR	NU	NR2	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	WU2	TOTAL
6:00 AM	0	98	4	0	25	0	50	14	0	17	27	117	0	0	0	13	0	2	367
6:15 AM	0	126	1	0	44	0	81	23	0	29	40	132	0	0	0	14	0	1	491
6:30 AM	0	169	2	0	53	0	97	30	0	24	28	164	0	0	0	7	0	2	576
6:45 AM	0	182	2	0	57	0	127	31	0	32	72	190	0	0	0	16	0	0	709
7:00 AM	0	179	0	0	54	0	117	35	0	47	54	119	0	0	0	10	0	5	620
7:15 AM	0	230	0	0	72	0	168	31	0	62	63	189	0	0	0	13	0	6	834
7:30 AM	0	295	1	0	109	0	226	53	0	56	59	198	0	0	0	19	0	4	1020
7:45 AM	0	299	3	0	85	0	274	49	0	87	112	220	0	0	0	24	0	5	1158
8:00 AM	0	289	2	0	112	0	301	46	0	83	77	189	0	0	0	17	0	5	1121
8:15 AM	0	216	1	0	103	0	280	47	0	75	70	172	0	0	0	17	0	6	987
8:30 AM	0	187	1	0	77	0	233	25	0	58	46	150	0	0	0	22	0	5	804
8:45 AM	0	191	4	0	61	0	200	22	0	93	58	161	0	0	0	19	0	4	813
	NL	NT	NR	NU	NR2	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	WU2	TOTAL
TOTAL VOLUMES :	0	2461	21	0	852	0	2154	406	0	663	706	2001	0	0	0	191	0	45	9500
APPROACH %'s :	0.00%	73.82%	0.63%	0.00%	25.55%	0.00%	84.14%	15.86%	0.00%	19.67%	20.95%	59.38%	0.00%	0.00%	0.00%	80.93%	0.00%	19.07%	
PEAK HR :	07:30 AM - 08:30 AM																		TOTAL
PEAK HR VOL :	0	1099	7	0	409	0	1081	195	0	301	318	779	0	0	0	77	0	20	4286
PEAK HR FACTOR :	0.000	0.919	0.583	0.000	0.913	0.000	0.898	0.920	0.000	0.865	0.710	0.885	0.000	0.000	0.000	0.802	0.000	0.833	0.925
			0.935				0.919					0.834				0.836			

PM	NORTHBOUND					SOUTHBOUND				EASTBOUND				WESTBOUND					
	0	4	0	0	0	0	3	1	0	2	2	2	0	0	0	2	0	0	
	NL	NT	NR	NU	NR2	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	WU2	TOTAL
3:00 PM	0	350	0	0	111	0	242	44	0	127	31	150	0	0	0	38	0	6	1099
3:15 PM	0	337	4	0	128	0	248	47	0	119	23	146	0	0	0	42	0	9	1103
3:30 PM	0	415	5	0	110	0	251	41	0	127	18	130	0	0	0	74	0	11	1182
3:45 PM	0	360	1	0	82	0	297	37	0	131	21	150	0	0	0	37	0	5	1121
4:00 PM	0	336	2	0	114	0	232	42	0	134	21	151	0	0	0	80	0	14	1126
4:15 PM	0	355	1	0	89	0	258	35	0	162	15	158	0	0	0	55	0	10	1138
4:30 PM	0	389	2	0	132	0	243	37	0	116	17	151	0	0	0	77	0	13	1177
4:45 PM	0	330	2	0	90	0	294	28	0	155	22	159	0	0	0	46	0	12	1138
5:00 PM	0	436	1	0	138	0	260	37	0	131	23	170	0	0	0	132	0	27	1355
5:15 PM	0	352	1	0	95	0	232	33	0	137	17	143	0	0	0	55	0	20	1085
5:30 PM	0	301	2	0	84	0	253	42	0	139	26	142	0	0	0	37	0	14	1040
5:45 PM	0	281	1	0	75	0	249	31	0	104	13	144	0	0	0	30	0	9	937
	NL	NT	NR	NU	NR2	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	WU2	TOTAL
TOTAL VOLUMES :	0	4242	22	0	1248	0	3059	454	0	1582	247	1794	0	0	0	703	0	150	13501
APPROACH %'s :	0.00%	76.96%	0.40%	0.00%	22.64%	0.00%	87.08%	12.92%	0.00%	43.67%	6.82%	49.52%	0.00%	0.00%	0.00%	82.42%	0.00%	17.58%	
PEAK HR :	04:15 PM - 05:15 PM																		TOTAL
PEAK HR VOL :	0	1510	6	0	449	0	1055	137	0	564	77	638	0	0	0	310	0	62	4808
PEAK HR FACTOR :	0.000	0.866	0.750	0.000	0.813	0.000	0.897	0.926	0.000	0.870	0.837	0.938	0.000	0.000	0.000	0.587	0.000	0.574	0.887
			0.854				0.925					0.952				0.585			

National Data & Surveying Services

Intersection Turning Movement Count

Explanation for extra leg movements	
Movements entering the extra leg	
NR2	Movements coming from NB on Zinfandel Dr entering into the Extra Leg (US50-EB Ramps)
WU2	Movements coming from WB on Gold Center Drive entering into the Extra Leg (US50-EB Ramps)



National Data & Surveying Services Intersection Turning Movement Count

Location: Zinfandel Dr & US-50 WB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 22-070003-007
Date: 1/11/2022

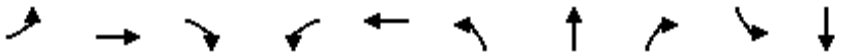
Data - Totals

NS/EW Streets:	Zinfandel Dr				Zinfandel Dr				US-50 WB Ramps				US-50 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	2	1	0	0	0	0	0	2.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	41	89	0	0	39	52	0	0	0	0	0	26	0	9	0	256
6:15 AM	0	52	114	0	0	52	56	0	0	0	0	0	51	0	14	0	339
6:30 AM	0	59	143	0	0	61	62	0	0	0	0	0	74	0	18	0	417
6:45 AM	0	89	136	0	0	84	56	0	0	0	0	0	67	0	21	0	453
7:00 AM	0	105	136	0	0	106	63	0	0	0	0	0	58	0	22	0	490
7:15 AM	0	131	166	0	0	94	77	0	0	0	0	0	95	0	41	0	604
7:30 AM	0	166	208	0	0	157	100	0	0	0	0	0	124	0	41	0	796
7:45 AM	0	238	165	0	0	152	63	0	0	0	0	0	166	0	56	0	840
8:00 AM	0	212	180	0	0	193	56	0	0	0	0	0	162	0	45	0	848
8:15 AM	0	171	132	0	0	165	70	0	0	0	0	0	157	0	27	0	722
8:30 AM	0	145	131	0	0	140	95	0	0	0	0	0	115	0	48	0	674
8:45 AM	0	170	130	0	0	108	67	0	0	0	0	0	117	0	60	0	652
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1579	1730	0	0	1351	817	0	0	0	0	0	1212	0	402	0	7091
APPROACH %'s :	0.00%	47.72%	52.28%	0.00%	0.00%	62.32%	37.68%	0.00%					75.09%	0.00%	24.91%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	787	685	0	0	667	289	0	0	0	0	0	609	0	169	0	3206
PEAK HR FACTOR :	0.000	0.827	0.823	0.000	0.000	0.864	0.723	0.000	0.000	0.000	0.000	0.000	0.917	0.000	0.754	0.000	0.945
		0.913				0.930								0.876			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	2	1	0	0	0	0	0	2.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	0	290	227	0	0	221	98	0	0	0	0	0	73	0	72	0	981
3:15 PM	0	288	204	0	0	202	99	0	0	0	0	0	89	0	62	0	944
3:30 PM	0	312	299	0	0	212	119	0	0	0	0	0	77	0	74	0	1093
3:45 PM	0	336	199	0	0	228	123	0	0	0	0	0	111	0	92	0	1089
4:00 PM	0	301	244	0	0	205	119	0	0	0	0	0	86	0	67	0	1022
4:15 PM	0	335	246	0	0	192	102	0	0	0	0	0	78	0	79	0	1032
4:30 PM	0	317	259	0	0	206	116	0	0	0	0	0	77	0	74	0	1049
4:45 PM	0	340	196	0	0	225	117	0	0	0	0	0	103	0	83	0	1064
5:00 PM	0	316	376	0	0	202	120	0	0	0	0	0	89	0	77	0	1180
5:15 PM	0	321	230	0	0	180	96	0	0	0	0	0	91	0	88	0	1006
5:30 PM	0	276	196	0	0	205	105	0	0	0	0	0	91	0	71	0	944
5:45 PM	0	266	154	0	0	192	99	0	0	0	0	0	79	0	70	0	860
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3698	2830	0	0	2470	1313	0	0	0	0	0	1044	0	909	0	12264
APPROACH %'s :	0.00%	56.65%	43.35%	0.00%	0.00%	65.29%	34.71%	0.00%					53.46%	0.00%	46.54%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	1308	1077	0	0	825	455	0	0	0	0	0	347	0	313	0	4325
PEAK HR FACTOR :	0.000	0.962	0.716	0.000	0.000	0.917	0.948	0.000	0.000	0.000	0.000	0.000	0.842	0.000	0.943	0.000	0.916
		0.862				0.936								0.887			

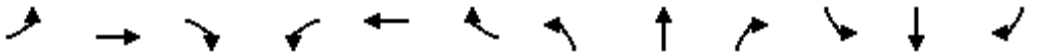
Appendix B

Analysis Worksheets for Existing (2022) Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	59	406	16	17	330	27	127	35	93	187
v/c Ratio	0.29	0.39	0.03	0.12	0.36	0.10	0.43	0.10	0.37	0.37
Control Delay	25.5	14.8	0.1	25.7	17.6	20.0	24.1	0.6	24.8	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	14.8	0.1	25.7	17.6	20.0	24.1	0.6	24.8	19.5
Queue Length 50th (ft)	15	37	0	4	26	6	32	0	24	21
Queue Length 95th (ft)	49	103	0	22	55	23	75	0	55	43
Internal Link Dist (ft)		445			491		394			408
Turn Bay Length (ft)	310		375	210		190		290	140	
Base Capacity (vph)	1057	3539	1583	1424	4933	1526	1606	1378	1526	2930
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	0.06	0.11	0.01	0.01	0.07	0.02	0.08	0.03	0.06	0.06

Intersection Summary



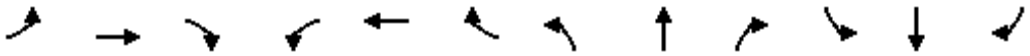
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	365	14	15	229	58	22	103	28	70	102	38
Future Volume (veh/h)	53	365	14	15	229	58	22	103	28	70	102	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	406	16	17	263	67	27	127	35	93	136	51
Peak Hour Factor	0.90	0.90	0.90	0.87	0.87	0.87	0.81	0.81	0.81	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	787	351	23	755	183	186	195	165	185	265	96
Arrive On Green	0.04	0.22	0.22	0.01	0.18	0.18	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1781	3554	1585	1781	4100	995	1781	1870	1585	1781	2560	921
Grp Volume(v), veh/h	59	406	16	17	216	114	27	127	35	93	93	94
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1691	1781	1870	1585	1781	1777	1705
Q Serve(g_s), s	1.3	3.8	0.3	0.4	2.1	2.2	0.5	2.5	0.8	1.9	1.9	2.0
Cycle Q Clear(g_c), s	1.3	3.8	0.3	0.4	2.1	2.2	0.5	2.5	0.8	1.9	1.9	2.0
Prop In Lane	1.00		1.00	1.00		0.59	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	71	787	351	23	627	311	186	195	165	185	184	177
V/C Ratio(X)	0.83	0.52	0.05	0.74	0.34	0.37	0.15	0.65	0.21	0.50	0.50	0.53
Avail Cap(c_a), veh/h	1171	6544	2919	1640	6268	3114	1874	1968	1668	1874	1870	1794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	13.0	11.6	18.7	13.5	13.6	15.5	16.4	15.6	16.1	16.1	16.2
Incr Delay (d2), s/veh	9.0	0.2	0.0	15.4	0.1	0.3	0.1	1.4	0.2	0.8	0.8	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.2	0.1	0.2	0.7	0.7	0.2	1.0	0.2	0.7	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.2	13.2	11.7	34.1	13.6	13.8	15.6	17.7	15.8	16.9	16.9	17.1
LnGrp LOS	C	B	B	C	B	B	B	B	B	B	B	B
Approach Vol, veh/h		481			347			189			280	
Approach Delay, s/veh		14.9			14.7			17.1			17.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	12.2		9.4	5.6	13.6		9.4				
Change Period (Y+Rc), s	5.5	* 5.2		5.5	* 5.1	* 5.2		5.4				
Max Green Setting (Gmax), s	25.0	* 70		40.0	* 35	* 70		40.0				
Max Q Clear Time (g_c+I1), s	3.3	4.2		4.0	2.4	5.8		4.5				
Green Ext Time (p_c), s	0.0	0.4		0.2	0.0	0.6		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		15.6
HCM 6th LOS		B

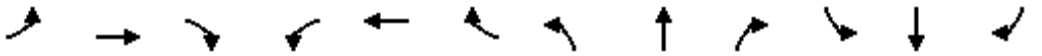
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	142	232	105	88	111	133	141	851	78	328	947	81
v/c Ratio	0.45	0.44	0.32	0.35	0.17	0.41	0.45	0.48	0.13	0.63	0.46	0.12
Control Delay	43.9	37.8	11.1	44.9	36.3	11.7	43.9	22.6	4.9	40.8	18.9	4.2
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	43.9	37.8	11.1	44.9	36.3	11.7	43.9	22.6	4.9	40.8	18.9	4.2
Queue Length 50th (ft)	36	57	0	22	19	0	36	122	0	82	124	0
Queue Length 95th (ft)	75	109	41	55	43	52	79	195	27	124	152	15
Internal Link Dist (ft)		802			424			689			453	
Turn Bay Length (ft)	265		600	205		185	278		170	251		175
Base Capacity (vph)	1053	1737	830	1053	2509	848	1053	4303	1352	1053	4294	1350
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	0.13	0.13	0.08	0.04	0.16	0.13	0.20	0.06	0.31	0.22	0.06

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	197	89	78	99	118	133	800	73	243	701	60
Future Volume (veh/h)	121	197	89	78	99	118	133	800	73	243	701	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	142	232	105	88	111	133	141	851	78	328	947	81
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.94	0.94	0.94	0.74	0.74	0.74
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	593	265	152	748	232	221	1860	578	420	2154	669
Arrive On Green	0.06	0.17	0.17	0.04	0.15	0.15	0.06	0.36	0.36	0.12	0.42	0.42
Sat Flow, veh/h	3456	3554	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	142	232	105	88	111	133	141	851	78	328	947	81
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	3.0	4.4	4.4	1.9	1.4	5.9	3.0	9.6	2.5	6.9	9.9	2.3
Cycle Q Clear(g_c), s	3.0	4.4	4.4	1.9	1.4	5.9	3.0	9.6	2.5	6.9	9.9	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	222	593	265	152	748	232	221	1860	578	420	2154	669
V/C Ratio(X)	0.64	0.39	0.40	0.58	0.15	0.57	0.64	0.46	0.14	0.78	0.44	0.12
Avail Cap(c_a), veh/h	1149	1891	843	1149	2717	843	1149	4754	1476	1149	4754	1476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	27.9	27.9	35.3	28.0	29.9	34.3	18.2	16.0	32.1	15.4	13.2
Incr Delay (d2), s/veh	1.1	0.2	0.4	1.3	0.3	7.4	1.1	0.4	0.2	1.2	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.8	1.7	0.8	0.6	2.6	1.3	3.6	0.9	2.9	3.6	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	28.1	28.3	36.6	28.3	37.3	35.5	18.6	16.2	33.3	15.7	13.4
LnGrp LOS	D	C	C	D	C	D	D	B	B	C	B	B
Approach Vol, veh/h		479			332			1070			1356	
Approach Delay, s/veh		30.3			34.1			20.6			19.8	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	37.5	10.3	17.0	14.6	33.2	8.8	18.5
Change Period (Y+Rc), s	5.5	* 5.8	5.5	* 6	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	25.0	* 70	25.0	* 40	25.0	* 70	25.0	40.0
Max Q Clear Time (g_c+I1), s	5.0	11.9	5.0	7.9	8.9	11.6	3.9	6.4
Green Ext Time (p_c), s	0.1	18.3	0.1	3.1	0.2	15.8	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	23.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

SimTraffic Simulation Summary

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	12005	12071	11942	12106	12037	12006	12063
Vehs Exited	12038	12057	11910	12024	11992	11983	12102
Starting Vehs	343	303	302	314	292	303	350
Ending Vehs	310	317	334	396	337	326	311
Travel Distance (mi)	6302	6324	6220	6260	6257	6270	6300
Travel Time (hr)	341.9	335.4	332.9	337.8	331.1	334.7	334.4
Total Delay (hr)	113.1	106.5	107.2	110.6	104.5	107.2	105.8
Total Stops	10323	9942	9841	10011	9615	9799	9947
Fuel Used (gal)	251.5	250.0	246.4	249.3	247.4	249.6	250.2

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	11963	12009	12041	12026
Vehs Exited	11985	11963	12024	12008
Starting Vehs	318	297	312	311
Ending Vehs	296	343	329	332
Travel Distance (mi)	6265	6263	6286	6275
Travel Time (hr)	331.7	336.5	338.2	335.5
Total Delay (hr)	104.3	108.6	110.0	107.8
Total Stops	9859	9827	10035	9915
Fuel Used (gal)	247.2	248.4	250.0	249.0

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

SimTraffic Simulation Summary

Interval #1 Information

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2867	2943	2879	2937	2803	2888	2967
Vehs Exited	2894	2891	2877	2910	2778	2871	2948
Starting Vehs	343	303	302	314	292	303	350
Ending Vehs	316	355	304	341	317	320	369
Travel Distance (mi)	1521	1542	1541	1525	1463	1516	1566
Travel Time (hr)	80.6	81.1	80.9	79.3	75.3	78.3	82.4
Total Delay (hr)	25.4	25.0	25.2	24.3	22.1	23.3	25.6
Total Stops	2452	2361	2402	2290	2206	2263	2451
Fuel Used (gal)	60.5	60.7	60.7	60.2	57.3	59.4	62.0

Interval #1 Information

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2835	2821	2939	2885
Vehs Exited	2819	2831	2920	2874
Starting Vehs	318	297	312	311
Ending Vehs	334	287	331	325
Travel Distance (mi)	1516	1498	1539	1523
Travel Time (hr)	79.5	79.0	82.1	79.9
Total Delay (hr)	24.6	24.4	26.1	24.6
Total Stops	2393	2286	2471	2355
Fuel Used (gal)	59.6	58.9	61.1	60.0

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3346	3308	3289	3335	3413	3442	3308
Vehs Exited	3279	3278	3261	3258	3320	3378	3291
Starting Vehs	316	355	304	341	317	320	369
Ending Vehs	383	385	332	418	410	384	386
Travel Distance (mi)	1681	1676	1632	1656	1700	1733	1664
Travel Time (hr)	91.9	89.4	90.6	94.0	95.0	96.6	91.1
Total Delay (hr)	31.0	28.8	31.3	33.6	33.2	33.8	30.7
Total Stops	2793	2583	2677	2917	2765	2871	2772
Fuel Used (gal)	67.1	66.7	65.7	67.3	69.0	70.9	67.2

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3315	3293	3327	3337
Vehs Exited	3338	3214	3248	3284
Starting Vehs	334	287	331	325
Ending Vehs	311	366	410	378
Travel Distance (mi)	1670	1640	1660	1671
Travel Time (hr)	91.3	88.9	92.0	92.1
Total Delay (hr)	30.7	29.2	31.6	31.4
Total Stops	2804	2560	2823	2754
Fuel Used (gal)	66.9	65.1	66.8	67.3

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2875	2855	2812	2835	2929	2799	2858
Vehs Exited	2959	2923	2842	2924	3003	2849	2897
Starting Vehs	383	385	332	418	410	384	386
Ending Vehs	299	317	302	329	336	334	347
Travel Distance (mi)	1543	1543	1485	1513	1575	1499	1516
Travel Time (hr)	87.4	83.3	78.0	79.9	82.6	79.3	79.8
Total Delay (hr)	31.3	27.6	24.0	25.1	25.7	24.9	24.7
Total Stops	2696	2572	2313	2314	2357	2350	2337
Fuel Used (gal)	62.8	61.1	58.4	59.7	61.8	59.0	59.9

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2907	2939	2845	2864
Vehs Exited	2879	2996	2980	2926
Starting Vehs	311	366	410	378
Ending Vehs	339	309	275	317
Travel Distance (mi)	1533	1563	1542	1531
Travel Time (hr)	79.6	85.0	83.7	81.9
Total Delay (hr)	24.0	28.2	27.7	26.3
Total Stops	2328	2549	2443	2425
Fuel Used (gal)	59.7	62.5	61.8	60.7

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2917	2965	2962	2999	2892	2877	2930
Vehs Exited	2906	2965	2930	2932	2891	2885	2966
Starting Vehs	299	317	302	329	336	334	347
Ending Vehs	310	317	334	396	337	326	311
Travel Distance (mi)	1557	1563	1562	1566	1519	1522	1554
Travel Time (hr)	82.0	81.7	83.4	84.5	78.3	80.5	81.1
Total Delay (hr)	25.4	25.2	26.7	27.6	23.5	25.2	24.7
Total Stops	2382	2426	2449	2490	2287	2315	2387
Fuel Used (gal)	61.1	61.4	61.6	62.2	59.3	60.3	61.1

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2906	2956	2930	2933
Vehs Exited	2949	2922	2876	2920
Starting Vehs	339	309	275	317
Ending Vehs	296	343	329	332
Travel Distance (mi)	1545	1561	1545	1549
Travel Time (hr)	81.3	83.5	80.4	81.7
Total Delay (hr)	25.0	26.8	24.6	25.5
Total Stops	2334	2432	2298	2381
Fuel Used (gal)	61.0	61.9	60.3	61.0

3: Sunrise Blvd & US50 EB Ramps Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Delay (hr)	11.9	1.8	3.1	4.6	21.5
Total Del/Veh (s)	37.0	14.1	10.8	11.3	18.7
Stop Delay (hr)	10.3	1.7	2.4	3.2	17.6
Stop Del/Veh (s)	31.9	12.8	8.3	7.9	15.3

4: US50 WB Ramps & Sunrise Blvd Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0
Total Delay (hr)	1.6	1.6	4.6	3.5	11.4
Total Del/Veh (s)	15.7	15.0	8.9	8.5	9.9
Stop Delay (hr)	1.3	1.4	2.4	1.9	6.9
Stop Del/Veh (s)	12.1	12.8	4.5	4.5	6.0

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	3.7	0.1	0.1	2.4	0.2	0.4	0.0	0.0	0.0
Total Delay (hr)	4.0	0.8	0.1	0.3	0.6	0.7	0.6	6.6	0.1	8.6	4.2	0.7
Total Del/Veh (s)	53.4	43.3	10.0	59.5	60.6	12.2	65.1	21.4	16.4	56.4	14.5	7.5
Stop Delay (hr)	3.7	0.8	0.1	0.3	0.6	0.7	0.6	5.0	0.1	7.6	2.9	0.4
Stop Del/Veh (s)	49.8	39.1	10.0	56.3	54.1	11.0	60.9	16.3	13.5	49.5	10.0	3.5

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	27.4
Total Del/Veh (s)	26.3
Stop Delay (hr)	22.5
Stop Del/Veh (s)	21.7

6: US50 EB Ramps & Zinfandel Dr Performance by movement

Movement	EBL	EBT	EBR	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	2.7	2.8	2.9	0.0	7.3	0.0	4.3	20.1
Total Del/Veh (s)	31.3	29.0	12.8	1.4	16.8	15.5	14.0	17.0
Stop Delay (hr)	2.5	2.5	2.1	0.0	5.0	0.0	3.6	15.8
Stop Del/Veh (s)	29.2	26.6	9.1	0.1	11.4	10.8	11.7	13.3

7: US50 WB Ramps Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.4	0.2	0.0	0.0	0.1
Total Delay (hr)	6.4	0.5	1.1	0.9	8.9
Total Del/Veh (s)	36.0	9.3	4.8	4.8	13.8
Stop Delay (hr)	5.8	0.3	0.7	0.6	7.4
Stop Del/Veh (s)	32.3	6.6	3.2	3.1	11.5

Queuing and Blocking Report

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	EB	EB	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	R	R	T	T	T	T	T	T	T
Maximum Queue (ft)	290	305	307	148	148	280	138	116	39	262	240	246
Average Queue (ft)	206	219	226	76	78	182	63	47	6	144	140	134
95th Queue (ft)	277	291	300	124	127	272	120	95	28	224	225	216
Link Distance (ft)	1013	1013	1013	1013		54	54	54	54	204	204	204
Upstream Blk Time (%)						29	14	10	0	1	1	1
Queuing Penalty (veh)						73	35	25	0	7	5	5
Storage Bay Dist (ft)					510							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 4: US50 WB Ramps & Sunrise Blvd

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	T	T	T	T	T	T
Maximum Queue (ft)	111	131	113	119	244	254	267	166	162	179
Average Queue (ft)	53	74	59	61	126	128	126	83	97	106
95th Queue (ft)	97	113	96	101	203	211	212	128	146	164
Link Distance (ft)		2272	2272		243	243	243	377	377	377
Upstream Blk Time (%)					0	0	0			
Queuing Penalty (veh)					1	1	2			
Storage Bay Dist (ft)	416			250						
Storage Blk Time (%)										
Queuing Penalty (veh)										

Queuing and Blocking Report

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	TR	R	L	L
Maximum Queue (ft)	207	212	119	47	62	2	46	84	119	101	32	148
Average Queue (ft)	88	123	25	18	19	0	14	31	61	21	2	38
95th Queue (ft)	165	185	70	42	47	2	38	68	102	66	15	98
Link Distance (ft)			411	411				351	351	351		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	263	263			167	237	237				143	143
Storage Blk Time (%)												0
Queuing Penalty (veh)												0

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	TR	L	L	T	T	T	R
Maximum Queue (ft)	264	279	295	285	302	173	183	190	138
Average Queue (ft)	158	167	168	177	189	64	84	95	42
95th Queue (ft)	239	247	257	261	273	143	158	168	100
Link Distance (ft)	391	391	391	488	488	488	488	488	488
Upstream Blk Time (%)		0	0						
Queuing Penalty (veh)		0	0						
Storage Bay Dist (ft)									
Storage Blk Time (%)	11								
Queuing Penalty (veh)	4								

Queuing and Blocking Report

Intersection: 6: US50 EB Ramps & Zinfandel Dr

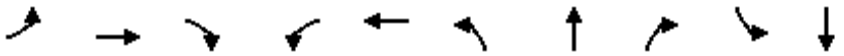
Movement	EB	EB	EB	EB	EB	EB	B14	B14	WB	WB	NB	NB
Directions Served	L	L	T	T	R	R	T	T	R	R	T	T
Maximum Queue (ft)	145	195	193	498	300	250	157	314	47	33	264	273
Average Queue (ft)	61	93	90	141	174	81	8	23	3	1	117	138
95th Queue (ft)	119	161	158	351	334	264	153	226	22	15	233	257
Link Distance (ft)	440	440	440	440			1753	1753	568	568	488	488
Upstream Blk Time (%)				2								
Queuing Penalty (veh)				0								
Storage Bay Dist (ft)					200	200						
Storage Blk Time (%)				0	12	0						
Queuing Penalty (veh)				0	21	1						

Intersection: 6: US50 EB Ramps & Zinfandel Dr

Movement	NB	NB	SB	SB	SB
Directions Served	T	TR	T	T	T
Maximum Queue (ft)	297	299	188	174	162
Average Queue (ft)	152	155	130	103	113
95th Queue (ft)	271	272	209	184	191
Link Distance (ft)	488	488	50	50	50
Upstream Blk Time (%)			26	22	24
Queuing Penalty (veh)			95	82	90
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

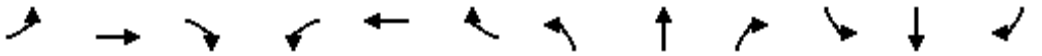
Intersection: 7: US50 WB Ramps

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	LR	R	T	T	T	T	T
Maximum Queue (ft)	196	226	298	210	162	164	125	140	150
Average Queue (ft)	107	126	161	72	59	58	51	68	65
95th Queue (ft)	172	192	242	176	129	135	111	121	130
Link Distance (ft)		1501	1501		101	101	101	129	129
Upstream Blk Time (%)					2	2	1	0	0
Queuing Penalty (veh)					4	4	3	1	1
Storage Bay Dist (ft)	185			185					
Storage Blk Time (%)	0	0	5	0					
Queuing Penalty (veh)	0	1	4	0					



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	62	480	50	64	547	29	123	57	60	261
v/c Ratio	0.34	0.57	0.11	0.34	0.49	0.11	0.45	0.18	0.23	0.49
Control Delay	31.2	22.6	1.7	31.1	20.4	24.3	29.5	3.7	25.7	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	22.6	1.7	31.1	20.4	24.3	29.5	3.7	25.7	23.1
Queue Length 50th (ft)	19	72	0	20	54	8	37	0	17	34
Queue Length 95th (ft)	48	111	0	61	102	29	87	9	43	61
Internal Link Dist (ft)		445			491		394			408
Turn Bay Length (ft)	310		375	210		190		290	140	
Base Capacity (vph)	886	3524	1577	1219	4963	1343	1414	1225	1343	2559
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	0.07	0.14	0.03	0.05	0.11	0.02	0.09	0.05	0.04	0.10

Intersection Summary



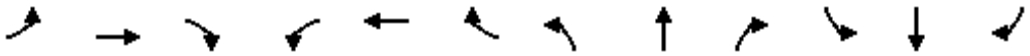
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	355	37	61	441	84	24	102	47	43	124	64
Future Volume (veh/h)	46	355	37	61	441	84	24	102	47	43	124	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	480	50	64	459	88	29	123	57	60	172	89
Peak Hour Factor	0.74	0.74	0.74	0.96	0.96	0.96	0.83	0.83	0.83	0.72	0.72	0.72
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	75	685	306	78	796	149	186	195	165	226	292	144
Arrive On Green	0.04	0.19	0.19	0.04	0.18	0.18	0.10	0.10	0.10	0.13	0.13	0.13
Sat Flow, veh/h	1781	3554	1585	1781	4320	808	1781	1870	1585	1781	2304	1138
Grp Volume(v), veh/h	62	480	50	64	359	188	29	123	57	60	131	130
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1725	1781	1870	1585	1781	1777	1665
Q Serve(g_s), s	1.4	5.0	1.0	1.4	3.8	4.0	0.6	2.5	1.3	1.2	2.8	3.0
Cycle Q Clear(g_c), s	1.4	5.0	1.0	1.4	3.8	4.0	0.6	2.5	1.3	1.2	2.8	3.0
Prop In Lane	1.00		1.00	1.00		0.47	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	75	685	306	78	627	318	186	195	165	226	225	211
V/C Ratio(X)	0.82	0.70	0.16	0.82	0.57	0.59	0.16	0.63	0.34	0.27	0.58	0.62
Avail Cap(c_a), veh/h	1118	6245	2785	1565	5982	3031	1789	1878	1592	1789	1784	1672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.9	15.0	13.4	18.9	14.8	14.9	16.2	17.1	16.6	15.7	16.4	16.5
Incr Delay (d2), s/veh	8.2	0.5	0.1	7.8	0.3	0.7	0.1	1.2	0.5	0.2	0.9	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	0.3	0.7	1.3	1.3	0.2	1.0	0.4	0.4	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.1	15.5	13.5	26.7	15.1	15.5	16.4	18.3	17.0	15.9	17.3	17.6
LnGrp LOS	C	B	B	C	B	B	B	B	B	B	B	B
Approach Vol, veh/h		592			611			209			321	
Approach Delay, s/veh		16.5			16.5			17.7			17.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	12.5		10.6	6.8	12.9		9.6				
Change Period (Y+Rc), s	5.5	* 5.2		5.5	* 5.1	* 5.2		5.4				
Max Green Setting (Gmax), s	25.0	* 70		40.0	* 35	* 70		40.0				
Max Q Clear Time (g_c+I1), s	3.4	6.0		5.0	3.4	7.0		4.5				
Green Ext Time (p_c), s	0.0	0.7		0.3	0.0	0.7		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		16.8
HCM 6th LOS		B

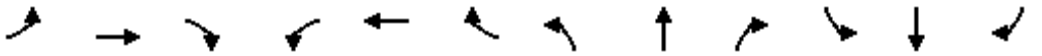
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	111	222	145	182	408	394	258	975	67	261	1108	96
v/c Ratio	0.49	0.31	0.34	0.60	0.36	0.65	0.67	0.48	0.10	0.67	0.55	0.14
Control Delay	66.7	44.6	9.6	64.8	41.6	14.7	62.8	28.1	3.6	62.8	29.3	7.5
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
Total Delay	66.7	44.6	9.6	64.8	41.6	14.7	62.8	28.1	3.6	62.8	29.3	7.5
Queue Length 50th (ft)	41	74	0	67	93	40	95	193	0	96	227	5
Queue Length 95th (ft)	94	147	61	122	146	99	182	304	19	189	364	46
Internal Link Dist (ft)		802			424			689			453	
Turn Bay Length (ft)	265		600	205		185	278		170	251		175
Base Capacity (vph)	761	1256	655	761	1814	774	761	3168	1018	761	3159	1015
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	0.18	0.22	0.24	0.22	0.51	0.34	0.31	0.07	0.34	0.35	0.09

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	211	138	144	322	311	227	858	59	243	1030	89
Future Volume (veh/h)	105	211	138	144	322	311	227	858	59	243	1030	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	111	222	145	182	408	394	258	975	67	261	1108	96
Peak Hour Factor	0.95	0.95	0.95	0.79	0.79	0.79	0.88	0.88	0.88	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	987	440	240	1528	474	316	1885	585	319	1889	586
Arrive On Green	0.05	0.28	0.28	0.07	0.30	0.30	0.09	0.37	0.37	0.09	0.37	0.37
Sat Flow, veh/h	3456	3554	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	111	222	145	182	408	394	258	975	67	261	1108	96
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	3.8	5.7	8.7	6.2	7.2	27.6	8.7	17.7	3.3	8.8	20.8	4.8
Cycle Q Clear(g_c), s	3.8	5.7	8.7	6.2	7.2	27.6	8.7	17.7	3.3	8.8	20.8	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	165	987	440	240	1528	474	316	1885	585	319	1889	586
V/C Ratio(X)	0.67	0.23	0.33	0.76	0.27	0.83	0.82	0.52	0.11	0.82	0.59	0.16
Avail Cap(c_a), veh/h	726	1195	533	726	1717	533	726	3004	933	726	3004	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.7	33.1	34.2	54.4	31.7	38.9	53.1	29.3	24.7	53.0	30.2	25.1
Incr Delay (d2), s/veh	1.8	0.0	0.2	1.9	0.3	13.7	2.0	0.5	0.2	2.0	0.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.5	3.4	2.7	3.0	12.4	3.9	7.3	1.3	3.9	8.6	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.5	33.2	34.3	56.3	32.1	52.5	55.0	29.7	24.9	55.0	30.8	25.4
LnGrp LOS	E	C	C	E	C	D	E	C	C	D	C	C
Approach Vol, veh/h		478			984			1300			1465	
Approach Delay, s/veh		39.2			44.7			34.5			34.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	49.8	11.2	41.6	16.5	49.7	13.7	39.0
Change Period (Y+Rc), s	5.5	* 5.8	5.5	* 6	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	25.0	* 70	25.0	* 40	25.0	* 70	25.0	40.0
Max Q Clear Time (g_c+I1), s	10.7	22.8	5.8	29.6	10.8	19.7	8.2	10.7
Green Ext Time (p_c), s	0.2	21.2	0.1	6.0	0.2	18.1	0.1	0.6

Intersection Summary	
HCM 6th Ctrl Delay	37.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

SimTraffic Simulation Summary

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:05	3:05	3:05	3:05	3:05	3:05	3:05
End Time	4:15	4:15	4:15	4:15	4:15	4:15	4:15
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	13663	13759	13759	13672	13598	13699	13787
Vehs Exited	13655	13793	13788	13683	13563	13698	13726
Starting Vehs	348	375	380	404	343	379	337
Ending Vehs	356	341	351	393	378	380	398
Travel Distance (mi)	7150	7220	7214	7114	7120	7164	7198
Travel Time (hr)	390.0	398.3	392.7	389.0	391.4	395.1	395.5
Total Delay (hr)	129.7	134.8	129.7	129.6	131.6	134.0	133.3
Total Stops	11611	11930	11624	11878	11633	11995	11848
Fuel Used (gal)	287.8	293.4	290.8	288.0	288.9	290.1	291.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:05	3:05	3:05	3:05
End Time	4:15	4:15	4:15	4:15
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	13711	13741	13796	13720
Vehs Exited	13737	13738	13827	13723
Starting Vehs	386	378	374	367
Ending Vehs	360	381	343	369
Travel Distance (mi)	7187	7221	7224	7181
Travel Time (hr)	390.3	397.1	397.9	393.7
Total Delay (hr)	128.7	133.9	134.7	132.0
Total Stops	11737	11928	11903	11807
Fuel Used (gal)	289.7	292.5	293.0	290.6

Interval #0 Information Seeding

Start Time	3:05
End Time	3:15
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

SimTraffic Simulation Summary

Interval #1 Information

Start Time	3:15
End Time	3:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3293	3347	3256	3245	3206	3270	3424
Vehs Exited	3249	3333	3272	3304	3182	3288	3371
Starting Vehs	348	375	380	404	343	379	337
Ending Vehs	392	389	364	345	367	361	390
Travel Distance (mi)	1743	1762	1730	1741	1710	1730	1811
Travel Time (hr)	96.2	95.9	91.6	92.8	90.9	91.8	99.1
Total Delay (hr)	32.7	31.8	28.8	29.3	28.5	28.6	33.1
Total Stops	2970	2869	2738	2797	2696	2722	2984
Fuel Used (gal)	70.7	71.6	69.3	69.5	68.1	68.9	73.0

Interval #1 Information

Start Time	3:15
End Time	3:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3335	3334	3336	3304
Vehs Exited	3315	3345	3313	3297
Starting Vehs	386	378	374	367
Ending Vehs	406	367	397	380
Travel Distance (mi)	1776	1773	1765	1754
Travel Time (hr)	96.2	96.2	93.7	94.4
Total Delay (hr)	31.7	31.5	29.4	30.5
Total Stops	2942	2852	2811	2838
Fuel Used (gal)	71.7	71.4	70.3	70.5

Interval #2 Information

Start Time	3:30
End Time	3:45
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3767	3832	3728	3787	3790	3778	3693
Vehs Exited	3765	3746	3670	3649	3731	3719	3659
Starting Vehs	392	389	364	345	367	361	390
Ending Vehs	394	475	422	483	426	420	424
Travel Distance (mi)	1890	1918	1881	1871	1910	1900	1856
Travel Time (hr)	105.6	108.8	105.3	104.1	110.5	109.7	103.0
Total Delay (hr)	36.8	38.8	36.7	35.8	40.6	40.2	35.4
Total Stops	3196	3297	3141	3110	3258	3365	3102
Fuel Used (gal)	77.1	78.7	76.4	76.8	79.4	78.5	75.2

Interval #2 Information

Start Time	3:30
End Time	3:45
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3767	3811	3807	3776
Vehs Exited	3752	3747	3725	3718
Starting Vehs	406	367	397	380
Ending Vehs	421	431	479	439
Travel Distance (mi)	1900	1927	1899	1895
Travel Time (hr)	106.0	111.5	110.6	107.5
Total Delay (hr)	36.9	41.4	41.4	38.4
Total Stops	3208	3414	3308	3242
Fuel Used (gal)	77.8	79.9	79.0	77.9

Interval #3 Information

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3318	3318	3383	3297	3321	3383	3356
Vehs Exited	3361	3436	3430	3365	3370	3418	3382
Starting Vehs	394	475	422	483	426	420	424
Ending Vehs	351	357	375	415	377	385	398
Travel Distance (mi)	1776	1802	1811	1742	1781	1793	1770
Travel Time (hr)	95.3	100.8	97.9	95.1	96.8	98.7	97.8
Total Delay (hr)	30.5	34.8	32.0	31.5	32.2	33.5	33.2
Total Stops	2802	2978	2805	2930	2843	2955	2926
Fuel Used (gal)	70.9	73.5	72.7	70.5	71.8	72.5	72.0

Interval #3 Information

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3265	3332	3346	3331
Vehs Exited	3362	3369	3467	3396
Starting Vehs	421	431	479	439
Ending Vehs	324	394	358	370
Travel Distance (mi)	1760	1786	1809	1783
Travel Time (hr)	93.4	96.7	99.4	97.2
Total Delay (hr)	29.4	31.7	33.7	32.2
Total Stops	2730	2885	2980	2883
Fuel Used (gal)	70.1	71.7	73.5	71.9

Interval #4 Information Recording

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3285	3262	3392	3343	3281	3268	3314
Vehs Exited	3280	3278	3416	3365	3280	3273	3314
Starting Vehs	351	357	375	415	377	385	398
Ending Vehs	356	341	351	393	378	380	398
Travel Distance (mi)	1740	1739	1792	1760	1720	1741	1761
Travel Time (hr)	92.9	92.8	97.8	97.0	93.1	94.8	95.7
Total Delay (hr)	29.6	29.5	32.3	33.0	30.3	31.7	31.6
Total Stops	2643	2786	2940	3041	2836	2953	2836
Fuel Used (gal)	69.1	69.5	72.4	71.2	69.6	70.2	71.0

Interval #4 Information Recording

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3344	3264	3307	3304
Vehs Exited	3308	3277	3322	3309
Starting Vehs	324	394	358	370
Ending Vehs	360	381	343	369
Travel Distance (mi)	1751	1735	1752	1749
Travel Time (hr)	94.7	92.6	94.1	94.6
Total Delay (hr)	30.7	29.4	30.2	30.8
Total Stops	2857	2777	2804	2846
Fuel Used (gal)	70.1	69.5	70.2	70.3

3: Sunrise Blvd & US50 EB Ramps Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	14.1	1.2	7.0	4.4	26.8
Total Del/Veh (s)	38.1	11.1	13.9	12.3	19.9
Stop Delay (hr)	12.0	1.1	5.2	3.3	21.6
Stop Del/Veh (s)	32.2	10.0	10.4	9.0	16.0

4: US50 WB Ramps & Sunrise Blvd Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0
Total Delay (hr)	1.9	3.0	7.7	3.2	15.9
Total Del/Veh (s)	23.0	24.5	10.7	7.9	11.9
Stop Delay (hr)	1.7	2.7	3.8	1.8	9.8
Stop Del/Veh (s)	19.5	21.5	5.3	4.3	7.4

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	3.0	0.2	0.2	2.5	0.4	0.7	0.0	0.0	0.0
Total Delay (hr)	5.2	0.8	0.1	0.7	1.5	3.9	0.9	8.9	0.2	5.1	6.9	0.6
Total Del/Veh (s)	58.6	42.4	10.8	62.7	54.4	23.3	70.9	27.4	23.0	61.1	21.8	7.5
Stop Delay (hr)	4.8	0.7	0.1	0.6	1.3	3.4	0.8	6.9	0.2	4.7	5.2	0.3
Stop Del/Veh (s)	54.4	38.3	10.7	59.1	47.4	20.1	66.4	21.1	18.3	55.8	16.4	4.1

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.2
Total Delay (hr)	34.8
Total Del/Veh (s)	30.3
Stop Delay (hr)	29.0
Stop Del/Veh (s)	25.2

6: US50 EB Ramps & Zinfandel Dr Performance by movement

Movement	EBL	EBT	EBR	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay (hr)	5.8	0.6	1.2	1.4	9.9	0.0	3.7	22.5
Total Del/Veh (s)	35.6	28.2	6.7	10.9	17.0	11.6	12.3	16.4
Stop Delay (hr)	5.2	0.6	0.7	1.0	6.3	0.0	3.0	16.8
Stop Del/Veh (s)	32.2	26.6	4.1	7.8	10.7	7.5	10.2	12.3

7: US50 WB Ramps Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.3	0.2	0.0	0.0	0.1
Total Delay (hr)	3.7	1.1	1.6	0.8	7.2
Total Del/Veh (s)	36.3	12.5	4.2	3.4	9.0
Stop Delay (hr)	3.4	0.9	0.9	0.5	5.7
Stop Del/Veh (s)	33.5	10.2	2.5	1.9	7.1

Queuing and Blocking Report

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	EB	EB	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	R	R	T	T	T	T	T	T	T
Maximum Queue (ft)	344	366	366	116	129	302	256	239	63	249	248	221
Average Queue (ft)	239	256	261	58	63	267	145	130	19	144	137	127
95th Queue (ft)	321	342	345	97	103	321	233	217	51	223	216	198
Link Distance (ft)	1013	1013	1013	1013		54	54	54	54	204	204	204
Upstream Blk Time (%)						34	28	25	2	1	1	0
Queuing Penalty (veh)						151	125	114	9	5	3	2
Storage Bay Dist (ft)					510							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 4: US50 WB Ramps & Sunrise Blvd

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	T	T	T	T	T	T
Maximum Queue (ft)	128	147	171	178	340	335	313	154	178	195
Average Queue (ft)	57	82	92	94	183	185	183	83	99	110
95th Queue (ft)	105	129	151	151	285	289	286	131	154	173
Link Distance (ft)		2272	2272		243	243	243	377	377	377
Upstream Blk Time (%)					2	2	2			
Queuing Penalty (veh)					13	14	16			
Storage Bay Dist (ft)	416			250						
Storage Blk Time (%)										
Queuing Penalty (veh)										

Queuing and Blocking Report

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	TR	R	L	L
Maximum Queue (ft)	253	269	266	54	73	15	86	179	300	284	48	167
Average Queue (ft)	115	156	34	17	20	1	32	71	151	136	6	52
95th Queue (ft)	218	236	131	42	53	14	72	138	241	235	29	126
Link Distance (ft)			411	411				351	351	351		
Upstream Blk Time (%)			0						0	0		
Queuing Penalty (veh)			0						0	0		
Storage Bay Dist (ft)	263	263			167	237	237				143	143
Storage Blk Time (%)	0	1	0		0			0				0
Queuing Penalty (veh)	0	0	0		0			0				0

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	TR	L	L	T	T	T	R
Maximum Queue (ft)	318	351	395	200	210	254	258	264	132
Average Queue (ft)	178	212	240	106	117	116	134	144	37
95th Queue (ft)	284	327	372	170	181	218	227	232	95
Link Distance (ft)	391	391	391	488	488	488	488	488	488
Upstream Blk Time (%)	0	0	1						
Queuing Penalty (veh)	0	0	0						
Storage Bay Dist (ft)									
Storage Blk Time (%)	13								
Queuing Penalty (veh)	6								

Queuing and Blocking Report

Intersection: 6: US50 EB Ramps & Zinfandel Dr

Movement	EB	EB	EB	EB	EB	EB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	T	R	R	R	R	T	T	T	TR
Maximum Queue (ft)	234	326	61	123	268	235	199	200	291	330	359	408
Average Queue (ft)	119	194	26	20	98	22	92	70	137	179	197	222
95th Queue (ft)	203	287	54	77	238	128	176	156	255	307	328	365
Link Distance (ft)	440	440	440	440			568	568	488	488	488	488
Upstream Blk Time (%)											0	0
Queuing Penalty (veh)											0	0
Storage Bay Dist (ft)					200	200						
Storage Blk Time (%)					2	0						
Queuing Penalty (veh)					1	0						

Intersection: 6: US50 EB Ramps & Zinfandel Dr

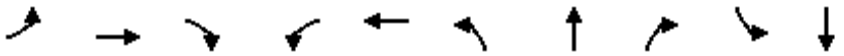
Movement	SB	SB	SB
Directions Served	T	T	T
Maximum Queue (ft)	184	170	167
Average Queue (ft)	114	100	105
95th Queue (ft)	183	170	178
Link Distance (ft)	50	50	50
Upstream Blk Time (%)	23	23	23
Queuing Penalty (veh)	82	83	83
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: US50 WB Ramps

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	LR	R	T	T	T	T	T
Maximum Queue (ft)	114	129	169	151	182	183	152	152	152
Average Queue (ft)	56	80	106	69	77	82	70	64	60
95th Queue (ft)	97	121	154	115	156	157	133	121	125
Link Distance (ft)		1501	1501		101	101	101	129	129
Upstream Blk Time (%)					3	3	2	0	0
Queuing Penalty (veh)					13	12	7	1	1
Storage Bay Dist (ft)	185			185					
Storage Blk Time (%)			0	0					
Queuing Penalty (veh)			0	0					

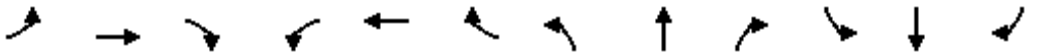
Appendix C

Analysis Worksheets for
Opening Year (2024) plus Proposed Project Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	413	41	40	324	76	116	77	79	158
v/c Ratio	0.30	0.50	0.09	0.23	0.32	0.28	0.41	0.24	0.34	0.34
Control Delay	26.0	19.1	0.9	26.1	16.5	22.7	24.7	6.4	25.4	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	19.1	0.9	26.1	16.5	22.7	24.7	6.4	25.4	20.2
Queue Length 50th (ft)	16	53	0	10	26	19	29	0	20	17
Queue Length 95th (ft)	51	106	3	39	55	57	80	23	61	47
Internal Link Dist (ft)		445			491		394			408
Turn Bay Length (ft)	310		375	210		190		290	140	
Base Capacity (vph)	1053	3539	1583	1413	4933	1514	1593	1368	1514	2906
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	0.06	0.12	0.03	0.03	0.07	0.05	0.07	0.06	0.05	0.05

Intersection Summary



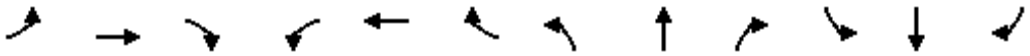
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	380	38	37	238	60	70	107	71	73	106	40
Future Volume (veh/h)	55	380	38	37	238	60	70	107	71	73	106	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	413	41	40	259	65	76	116	77	79	115	43
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	745	332	49	764	183	192	201	171	165	238	85
Arrive On Green	0.04	0.21	0.21	0.03	0.19	0.19	0.11	0.11	0.11	0.09	0.09	0.09
Sat Flow, veh/h	1781	3554	1585	1781	4114	984	1781	1870	1585	1781	2564	918
Grp Volume(v), veh/h	60	413	41	40	212	112	76	116	77	79	78	80
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1693	1781	1870	1585	1781	1777	1705
Q Serve(g_s), s	1.3	3.9	0.8	0.8	2.0	2.2	1.5	2.2	1.7	1.6	1.6	1.7
Cycle Q Clear(g_c), s	1.3	3.9	0.8	0.8	2.0	2.2	1.5	2.2	1.7	1.6	1.6	1.7
Prop In Lane	1.00		1.00	1.00		0.58	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	72	745	332	49	632	315	192	201	171	165	165	158
V/C Ratio(X)	0.83	0.55	0.12	0.82	0.34	0.36	0.40	0.58	0.45	0.48	0.47	0.51
Avail Cap(c_a), veh/h	1182	6603	2945	1655	6325	3146	1891	1986	1683	1891	1887	1810
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	13.3	12.1	18.2	13.3	13.4	15.7	16.0	15.8	16.2	16.2	16.3
Incr Delay (d2), s/veh	8.9	0.2	0.1	12.1	0.1	0.3	0.5	1.0	0.7	0.8	0.8	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.3	0.2	0.5	0.6	0.7	0.5	0.9	0.6	0.6	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.8	13.6	12.1	30.3	13.4	13.6	16.2	17.0	16.5	17.0	17.0	17.2
LnGrp LOS	C	B	B	C	B	B	B	B	B	B	B	B
Approach Vol, veh/h		514			364			269			237	
Approach Delay, s/veh		15.0			15.3			16.6			17.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	12.2		9.0	6.1	13.1		9.5				
Change Period (Y+Rc), s	5.5	* 5.2		5.5	* 5.1	* 5.2		5.4				
Max Green Setting (Gmax), s	25.0	* 70		40.0	* 35	* 70		40.0				
Max Q Clear Time (g_c+I1), s	3.3	4.2		3.7	2.8	5.9		4.2				
Green Ext Time (p_c), s	0.0	0.4		0.1	0.0	0.6		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		15.8
HCM 6th LOS		B

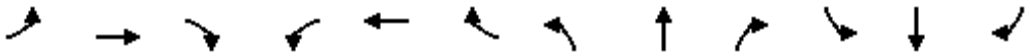
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	171	235	101	88	117	134	150	904	83	275	792	84
v/c Ratio	0.50	0.42	0.30	0.36	0.17	0.41	0.47	0.48	0.13	0.60	0.38	0.12
Control Delay	44.9	37.6	10.9	46.6	37.4	11.8	45.3	22.3	5.2	43.1	18.8	4.5
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
Total Delay	44.9	37.6	10.9	46.6	37.4	11.8	45.3	22.3	5.2	43.1	18.8	4.5
Queue Length 50th (ft)	44	59	0	23	20	0	39	131	0	70	104	0
Queue Length 95th (ft)	95	119	48	57	46	56	86	208	30	138	165	28
Internal Link Dist (ft)		802			424			689			453	
Turn Bay Length (ft)	265		600	205		185	278		170	251		175
Base Capacity (vph)	1022	1686	807	1022	2435	828	1022	4198	1321	1022	4189	1319
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	0.14	0.13	0.09	0.05	0.16	0.15	0.22	0.06	0.27	0.19	0.06

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	216	93	81	108	123	138	832	76	253	729	77
Future Volume (veh/h)	157	216	93	81	108	123	138	832	76	253	729	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	171	235	101	88	117	134	150	904	83	275	792	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	626	279	151	748	232	230	1944	604	364	2141	665
Arrive On Green	0.07	0.18	0.18	0.04	0.15	0.15	0.07	0.38	0.38	0.11	0.42	0.42
Sat Flow, veh/h	3456	3554	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	171	235	101	88	117	134	150	904	83	275	792	84
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	3.7	4.5	4.3	1.9	1.6	6.1	3.3	10.3	2.7	6.0	8.3	2.5
Cycle Q Clear(g_c), s	3.7	4.5	4.3	1.9	1.6	6.1	3.3	10.3	2.7	6.0	8.3	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	254	626	279	151	748	232	230	1944	604	364	2141	665
V/C Ratio(X)	0.67	0.38	0.36	0.58	0.16	0.58	0.65	0.46	0.14	0.76	0.37	0.13
Avail Cap(c_a), veh/h	1114	1833	818	1114	2634	818	1114	4610	1431	1114	4610	1431
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	28.2	28.1	36.4	28.9	30.9	35.3	18.1	15.7	33.7	15.5	13.8
Incr Delay (d2), s/veh	1.2	0.1	0.3	1.3	0.3	7.6	1.2	0.4	0.2	1.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.9	1.6	0.8	0.6	2.8	1.4	3.9	0.9	2.5	3.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	28.3	28.4	37.7	29.2	38.4	36.5	18.4	15.9	34.9	15.7	14.0
LnGrp LOS	D	C	C	D	C	D	D	B	B	C	B	B
Approach Vol, veh/h		507			339			1137			1151	
Approach Delay, s/veh		31.0			35.1			20.6			20.2	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	38.3	11.2	17.4	13.7	35.3	8.9	19.7
Change Period (Y+Rc), s	5.5	* 5.8	5.5	* 6	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	25.0	* 70	25.0	* 40	25.0	* 70	25.0	40.0
Max Q Clear Time (g_c+I1), s	5.3	10.3	5.7	8.1	8.0	12.3	3.9	6.5
Green Ext Time (p_c), s	0.1	14.5	0.1	3.2	0.2	17.2	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	23.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

SimTraffic Simulation Summary

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	11999	12030	12213	12009	12199	12089	12215
Vehs Exited	12111	12069	12201	11981	12220	12089	12233
Starting Vehs	390	416	368	363	353	376	383
Ending Vehs	278	377	380	391	332	376	365
Travel Distance (mi)	6576	6579	6664	6534	6645	6617	6678
Travel Time (hr)	358.0	360.3	363.0	353.1	360.3	365.1	365.4
Total Delay (hr)	118.2	120.6	120.3	114.5	117.9	123.9	121.8
Total Stops	10899	11023	11034	10462	11023	11172	11091
Fuel Used (gal)	262.6	264.0	267.4	260.0	265.4	266.6	267.9

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	12034	12141	12008	12095
Vehs Exited	12035	12123	12049	12112
Starting Vehs	345	360	377	373
Ending Vehs	344	378	336	357
Travel Distance (mi)	6594	6666	6536	6609
Travel Time (hr)	362.0	359.9	357.0	360.4
Total Delay (hr)	121.9	117.2	118.4	119.5
Total Stops	10987	10813	10830	10931
Fuel Used (gal)	264.6	265.6	261.2	264.5

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

SimTraffic Simulation Summary

Interval #1 Information

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2903	2988	2938	2878	2952	2930	3052
Vehs Exited	2936	3033	2959	2913	2950	2953	3086
Starting Vehs	390	416	368	363	353	376	383
Ending Vehs	357	371	347	328	355	353	349
Travel Distance (mi)	1600	1636	1611	1578	1603	1612	1669
Travel Time (hr)	88.3	89.1	84.9	82.5	87.5	87.8	90.1
Total Delay (hr)	30.0	29.5	26.5	25.1	28.8	29.1	29.4
Total Stops	2733	2678	2494	2393	2675	2621	2695
Fuel Used (gal)	64.2	65.9	63.5	62.0	64.0	64.6	67.0

Interval #1 Information

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2965	2959	2947	2950
Vehs Exited	2986	3015	3003	2982
Starting Vehs	345	360	377	373
Ending Vehs	324	304	321	344
Travel Distance (mi)	1640	1636	1620	1620
Travel Time (hr)	90.4	88.6	89.7	87.9
Total Delay (hr)	31.0	29.0	30.5	28.9
Total Stops	2906	2594	2698	2644
Fuel Used (gal)	65.8	65.4	65.2	64.8

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3247	3155	3224	3174	3296	3228	3151
Vehs Exited	3261	3178	3189	3126	3261	3176	3131
Starting Vehs	357	371	347	328	355	353	349
Ending Vehs	343	348	382	376	390	405	369
Travel Distance (mi)	1763	1723	1755	1711	1783	1742	1708
Travel Time (hr)	95.9	96.4	97.9	94.3	97.7	97.3	97.4
Total Delay (hr)	31.6	33.6	33.9	32.0	32.6	33.8	35.2
Total Stops	2872	2967	2964	2761	3020	2906	3147
Fuel Used (gal)	70.5	70.0	70.8	68.9	71.9	70.3	69.8

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3160	3205	3155	3199
Vehs Exited	3101	3091	3067	3156
Starting Vehs	324	304	321	344
Ending Vehs	383	418	409	379
Travel Distance (mi)	1725	1743	1693	1735
Travel Time (hr)	95.2	95.5	92.4	96.0
Total Delay (hr)	32.3	32.1	30.6	32.8
Total Stops	2900	2950	2763	2924
Fuel Used (gal)	69.2	69.7	67.4	69.8

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2927	2904	2985	2963	3031	2941	3019
Vehs Exited	2939	2882	2994	2994	3060	3054	3010
Starting Vehs	343	348	382	376	390	405	369
Ending Vehs	331	370	373	345	361	292	378
Travel Distance (mi)	1624	1588	1626	1617	1664	1641	1670
Travel Time (hr)	88.0	85.5	87.4	87.5	89.5	89.7	90.9
Total Delay (hr)	28.7	27.6	28.0	28.2	29.0	29.8	30.0
Total Stops	2669	2598	2669	2665	2722	2720	2711
Fuel Used (gal)	64.5	62.8	65.1	64.5	66.1	65.9	66.7

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2953	2945	2952	2962
Vehs Exited	2988	2996	2997	2992
Starting Vehs	383	418	409	379
Ending Vehs	348	367	364	354
Travel Distance (mi)	1615	1626	1622	1629
Travel Time (hr)	86.1	86.0	87.3	87.8
Total Delay (hr)	27.3	26.7	28.0	28.3
Total Stops	2497	2446	2615	2627
Fuel Used (gal)	64.2	63.9	64.4	64.8

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2922	2983	3066	2994	2920	2990	2993
Vehs Exited	2975	2976	3059	2948	2949	2906	3006
Starting Vehs	331	370	373	345	361	292	378
Ending Vehs	278	377	380	391	332	376	365
Travel Distance (mi)	1590	1631	1672	1628	1594	1622	1631
Travel Time (hr)	85.8	89.3	92.8	88.7	85.6	90.3	86.9
Total Delay (hr)	27.9	30.0	31.8	29.3	27.4	31.2	27.3
Total Stops	2625	2780	2907	2643	2606	2925	2538
Fuel Used (gal)	63.3	65.3	67.8	64.6	63.4	65.8	64.5

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2956	3032	2954	2980
Vehs Exited	2960	3021	2982	2976
Starting Vehs	348	367	364	354
Ending Vehs	344	378	336	357
Travel Distance (mi)	1614	1661	1601	1624
Travel Time (hr)	90.2	89.8	87.7	88.7
Total Delay (hr)	31.3	29.4	29.3	29.5
Total Stops	2684	2823	2754	2727
Fuel Used (gal)	65.3	66.5	64.3	65.1

3: Sunrise Blvd & US50 EB Ramps Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	12.2	2.1	3.3	4.6	22.2
Total Del/Veh (s)	37.4	15.0	11.0	11.3	18.9
Stop Delay (hr)	10.5	1.9	2.5	3.2	18.2
Stop Del/Veh (s)	32.3	13.6	8.4	7.9	15.5

4: US50 WB Ramps & Sunrise Blvd Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0
Total Delay (hr)	1.8	1.9	5.0	3.7	12.4
Total Del/Veh (s)	16.9	16.7	9.3	8.7	10.5
Stop Delay (hr)	1.4	1.6	2.5	2.0	7.5
Stop Del/Veh (s)	13.1	14.2	4.7	4.6	6.3

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	3.5	0.1	0.2	2.4	0.3	0.5	0.0	0.0	0.0
Total Delay (hr)	4.1	0.9	0.1	0.3	0.7	1.1	0.8	8.0	0.2	9.4	5.0	0.9
Total Del/Veh (s)	56.5	46.2	10.7	64.4	61.2	14.9	66.8	25.5	24.6	57.9	16.5	8.6
Stop Delay (hr)	3.8	0.9	0.1	0.3	0.6	1.0	0.7	6.1	0.1	8.3	3.5	0.5
Stop Del/Veh (s)	52.6	41.9	10.6	61.3	54.9	13.6	62.6	19.3	20.2	50.8	11.6	4.4

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.1
Total Delay (hr)	31.5
Total Del/Veh (s)	28.9
Stop Delay (hr)	25.8
Stop Del/Veh (s)	23.7

6: US50 EB Ramps & Zinfandel Dr Performance by movement

Movement	EBL	EBT	EBR	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	2.7	2.8	3.4	0.0	8.7	0.0	5.0	22.6
Total Del/Veh (s)	30.2	29.0	14.4	1.6	19.1	14.8	15.3	18.3
Stop Delay (hr)	2.5	2.6	2.5	0.0	5.8	0.0	4.2	17.5
Stop Del/Veh (s)	28.0	26.6	10.5	0.3	12.7	9.2	12.9	14.2

7: US50 WB Ramps Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.4	0.3	0.0	0.0	0.1
Total Delay (hr)	7.1	0.5	1.3	1.1	10.0
Total Del/Veh (s)	37.7	10.0	5.4	5.3	14.8
Stop Delay (hr)	6.4	0.4	0.9	0.7	8.3
Stop Del/Veh (s)	33.7	6.9	3.8	3.5	12.3

Queuing and Blocking Report

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	EB	EB	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	R	R	T	T	T	T	T	T	T
Maximum Queue (ft)	311	324	337	148	160	289	146	132	37	241	252	232
Average Queue (ft)	211	224	232	80	85	188	66	53	5	141	137	131
95th Queue (ft)	284	302	308	131	136	284	127	110	25	222	223	214
Link Distance (ft)	1013	1013	1013	1013		54	54	54	54	204	204	204
Upstream Blk Time (%)						29	14	10	0	1	1	1
Queuing Penalty (veh)						80	39	28	0	6	4	4
Storage Bay Dist (ft)					510							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 4: US50 WB Ramps & Sunrise Blvd

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	T	T	T	T	T	T
Maximum Queue (ft)	111	144	131	135	233	258	257	160	186	192
Average Queue (ft)	57	79	66	71	135	137	138	88	102	111
95th Queue (ft)	97	122	107	116	207	216	219	137	159	167
Link Distance (ft)		2272	2272		243	243	243	377	377	377
Upstream Blk Time (%)					0	0	0			
Queuing Penalty (veh)					1	1	2			
Storage Bay Dist (ft)	416			250						
Storage Blk Time (%)										
Queuing Penalty (veh)										

Queuing and Blocking Report

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	TR	R	L	L
Maximum Queue (ft)	225	232	127	52	65	6	63	85	122	124	51	164
Average Queue (ft)	78	139	27	20	18	0	15	31	66	40	5	46
95th Queue (ft)	165	215	75	45	46	4	46	69	112	93	31	113
Link Distance (ft)			411	411				351	351	351		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	263	263			167	237	237				143	143
Storage Blk Time (%)	0	0										0
Queuing Penalty (veh)	0	0										0

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	TR	L	L	T	T	T	R
Maximum Queue (ft)	268	336	380	304	311	189	202	217	179
Average Queue (ft)	156	207	234	198	211	80	100	115	53
95th Queue (ft)	240	307	338	287	296	169	181	194	129
Link Distance (ft)	391	391	391	488	488	488	488	488	488
Upstream Blk Time (%)		0	0						
Queuing Penalty (veh)		0	0						
Storage Bay Dist (ft)									
Storage Blk Time (%)	9								
Queuing Penalty (veh)	3								

Queuing and Blocking Report

Intersection: 6: US50 EB Ramps & Zinfandel Dr

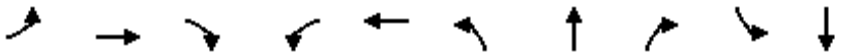
Movement	EB	EB	EB	EB	EB	EB	B14	B14	WB	WB	NB	NB
Directions Served	L	L	T	T	R	R	T	T	R	R	T	T
Maximum Queue (ft)	126	218	166	448	300	250	10	124	57	52	243	293
Average Queue (ft)	47	108	91	160	202	118	0	9	6	4	113	152
95th Queue (ft)	98	188	144	387	351	311	8	117	33	27	218	271
Link Distance (ft)	440	440	440	440			1753	1753	568	568	488	488
Upstream Blk Time (%)				1								
Queuing Penalty (veh)				0								
Storage Bay Dist (ft)					200	200						
Storage Blk Time (%)					16	1						
Queuing Penalty (veh)					27	1						

Intersection: 6: US50 EB Ramps & Zinfandel Dr

Movement	NB	NB	SB	SB	SB
Directions Served	T	TR	T	T	T
Maximum Queue (ft)	310	390	190	175	166
Average Queue (ft)	179	220	144	115	120
95th Queue (ft)	292	363	219	195	194
Link Distance (ft)	488	488	50	50	50
Upstream Blk Time (%)			29	26	28
Queuing Penalty (veh)			110	99	106
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

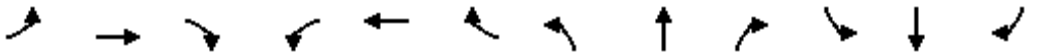
Intersection: 7: US50 WB Ramps

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	LR	R	T	T	T	T	T
Maximum Queue (ft)	195	258	298	210	175	180	146	164	146
Average Queue (ft)	118	137	169	87	65	64	53	77	75
95th Queue (ft)	182	212	249	202	145	147	123	135	133
Link Distance (ft)		1501	1501		101	101	101	129	129
Upstream Blk Time (%)					3	2	1	1	0
Queuing Penalty (veh)					8	7	4	2	2
Storage Bay Dist (ft)	185			185					
Storage Blk Time (%)	0	1	6	0					
Queuing Penalty (veh)	1	2	5	0					



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	52	401	91	113	594	57	115	80	49	213
v/c Ratio	0.31	0.56	0.23	0.46	0.38	0.24	0.45	0.27	0.22	0.47
Control Delay	31.0	23.6	6.6	29.9	16.9	25.6	29.5	7.4	26.5	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	23.6	6.6	29.9	16.9	25.6	29.5	7.4	26.5	22.9
Queue Length 50th (ft)	16	58	0	33	56	16	33	0	14	26
Queue Length 95th (ft)	52	119	30	88	104	51	90	27	48	66
Internal Link Dist (ft)		445			491		394			408
Turn Bay Length (ft)	310		375	210		190		290	140	
Base Capacity (vph)	852	3539	1583	1193	4963	1363	1435	1241	1363	2597
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	0.06	0.11	0.06	0.09	0.12	0.04	0.08	0.06	0.04	0.08

Intersection Summary



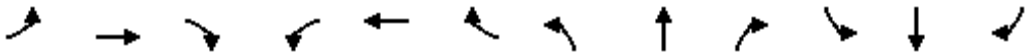
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	369	84	104	459	87	52	106	74	45	129	67
Future Volume (veh/h)	48	369	84	104	459	87	52	106	74	45	129	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	52	401	91	113	499	95	57	115	80	49	140	73
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	622	277	144	912	170	186	195	165	196	253	125
Arrive On Green	0.03	0.18	0.18	0.08	0.21	0.21	0.10	0.10	0.10	0.11	0.11	0.11
Sat Flow, veh/h	1781	3554	1585	1781	4324	806	1781	1870	1585	1781	2303	1139
Grp Volume(v), veh/h	52	401	91	113	391	203	57	115	80	49	106	107
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1725	1781	1870	1585	1781	1777	1665
Q Serve(g_s), s	1.2	4.2	2.0	2.5	4.1	4.2	1.2	2.3	1.9	1.0	2.3	2.4
Cycle Q Clear(g_c), s	1.2	4.2	2.0	2.5	4.1	4.2	1.2	2.3	1.9	1.0	2.3	2.4
Prop In Lane	1.00		1.00	1.00		0.47	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	62	622	277	144	718	364	186	195	165	196	195	183
V/C Ratio(X)	0.84	0.64	0.33	0.79	0.54	0.56	0.31	0.59	0.48	0.25	0.54	0.58
Avail Cap(c_a), veh/h	1114	6221	2775	1559	5959	3020	1782	1871	1586	1782	1777	1666
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	15.3	14.4	18.0	14.1	14.1	16.6	17.1	16.9	16.3	16.9	16.9
Incr Delay (d2), s/veh	10.6	0.4	0.3	3.5	0.2	0.5	0.3	1.1	0.8	0.2	0.9	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.5	0.6	1.0	1.3	1.4	0.4	0.9	0.6	0.4	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.8	15.8	14.7	21.6	14.3	14.6	16.9	18.1	17.7	16.5	17.7	18.0
LnGrp LOS	C	B	B	C	B	B	B	B	B	B	B	B
Approach Vol, veh/h		544			707			252			262	
Approach Delay, s/veh		16.9			15.6			17.7			17.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	13.6		9.9	8.3	12.2		9.6				
Change Period (Y+Rc), s	5.5	* 5.2		5.5	* 5.1	* 5.2		5.4				
Max Green Setting (Gmax), s	25.0	* 70		40.0	* 35	* 70		40.0				
Max Q Clear Time (g_c+I1), s	3.2	6.2		4.4	4.5	6.2		4.3				
Green Ext Time (p_c), s	0.0	0.8		0.2	0.0	0.5		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		16.6
HCM 6th LOS		B

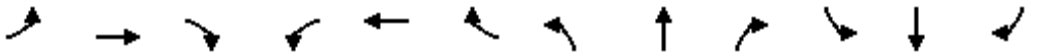
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	138	245	157	163	376	351	257	970	66	275	1164	135
v/c Ratio	0.54	0.36	0.36	0.58	0.37	0.62	0.67	0.46	0.09	0.68	0.55	0.19
Control Delay	67.7	46.7	9.7	67.1	44.8	13.5	64.5	27.4	3.3	64.1	28.6	11.0
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	67.7	46.7	9.7	67.1	44.8	13.5	64.5	27.4	3.3	64.1	28.6	11.0
Queue Length 50th (ft)	53	86	0	62	92	26	98	191	0	105	239	23
Queue Length 95th (ft)	113	161	64	128	159	140	187	311	20	198	383	79
Internal Link Dist (ft)		802			424			689			453	
Turn Bay Length (ft)	265		600	205		185	278		170	251		175
Base Capacity (vph)	738	1218	647	738	1759	750	738	3072	989	738	3063	987
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	0.19	0.20	0.24	0.22	0.21	0.47	0.35	0.32	0.07	0.37	0.38	0.14

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	225	144	150	346	323	236	892	61	253	1071	124
Future Volume (veh/h)	127	225	144	150	346	323	236	892	61	253	1071	124
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	138	245	157	163	376	351	257	970	66	275	1164	135
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	193	957	427	219	1414	439	314	1951	606	332	1978	614
Arrive On Green	0.06	0.27	0.27	0.06	0.28	0.28	0.09	0.38	0.38	0.10	0.39	0.39
Sat Flow, veh/h	3456	3554	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	138	245	157	163	376	351	257	970	66	275	1164	135
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	4.7	6.5	9.7	5.6	6.9	24.8	8.8	17.5	3.2	9.4	21.8	6.9
Cycle Q Clear(g_c), s	4.7	6.5	9.7	5.6	6.9	24.8	8.8	17.5	3.2	9.4	21.8	6.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	193	957	427	219	1414	439	314	1951	606	332	1978	614
V/C Ratio(X)	0.71	0.26	0.37	0.74	0.27	0.80	0.82	0.50	0.11	0.83	0.59	0.22
Avail Cap(c_a), veh/h	716	1178	525	716	1693	525	716	2962	919	716	2962	919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.0	34.6	35.8	55.5	34.1	40.5	53.9	28.4	24.0	53.6	29.3	24.8
Incr Delay (d2), s/veh	1.8	0.1	0.2	1.9	0.3	12.0	2.0	0.4	0.2	2.0	0.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	2.8	3.8	2.5	2.9	11.1	3.9	7.2	1.3	4.2	9.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.8	34.6	35.9	57.4	34.4	52.5	55.9	28.8	24.2	55.6	29.9	25.1
LnGrp LOS	E	C	D	E	C	D	E	C	C	E	C	C
Approach Vol, veh/h		540			890			1293			1574	
Approach Delay, s/veh		41.0			45.8			34.0			34.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.5	52.5	12.3	39.4	17.1	51.9	13.2	38.5
Change Period (Y+Rc), s	5.5	* 5.8	5.5	* 6	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	25.0	* 70	25.0	* 40	25.0	* 70	25.0	40.0
Max Q Clear Time (g_c+I1), s	10.8	23.8	6.7	26.8	11.4	19.5	7.6	11.7
Green Ext Time (p_c), s	0.2	22.9	0.1	6.6	0.2	18.0	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	37.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

SimTraffic Simulation Summary

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:05	3:05	3:05	3:05	3:05	3:05	3:05
End Time	4:15	4:15	4:15	4:15	4:15	4:15	4:15
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	14090	14110	14194	14186	14044	14259	14197
Vehs Exited	14046	14150	14148	14138	13977	14268	14156
Starting Vehs	377	393	377	379	374	405	394
Ending Vehs	421	353	423	427	441	396	435
Travel Distance (mi)	7458	7519	7517	7524	7451	7580	7496
Travel Time (hr)	417.0	423.1	415.7	417.8	411.7	428.8	418.8
Total Delay (hr)	145.1	149.5	142.0	143.6	140.9	152.4	145.4
Total Stops	12461	12671	12428	12210	12248	13020	12601
Fuel Used (gal)	303.9	308.2	305.0	305.4	302.8	310.7	306.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:05	3:05	3:05	3:05
End Time	4:15	4:15	4:15	4:15
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	14084	14310	14063	14152
Vehs Exited	14080	14340	14058	14138
Starting Vehs	409	397	407	391
Ending Vehs	413	367	412	410
Travel Distance (mi)	7506	7620	7471	7514
Travel Time (hr)	423.1	427.3	417.2	420.1
Total Delay (hr)	149.6	149.3	144.6	146.2
Total Stops	12706	12671	12454	12544
Fuel Used (gal)	306.3	311.4	304.9	306.5

Interval #0 Information Seeding

Start Time	3:05
End Time	3:15
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

SimTraffic Simulation Summary

Interval #1 Information

Start Time	3:15
End Time	3:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3386	3562	3508	3445	3358	3434	3471
Vehs Exited	3358	3515	3505	3445	3323	3453	3416
Starting Vehs	377	393	377	379	374	405	394
Ending Vehs	405	440	380	379	409	386	449
Travel Distance (mi)	1794	1897	1867	1827	1763	1831	1831
Travel Time (hr)	100.1	107.6	103.3	97.5	96.7	100.6	99.7
Total Delay (hr)	34.8	38.6	35.5	31.1	32.5	33.8	33.0
Total Stops	3076	3218	3048	2829	2877	3059	3056
Fuel Used (gal)	73.2	78.2	75.7	73.3	71.5	74.8	73.9

Interval #1 Information

Start Time	3:15
End Time	3:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3435	3594	3456	3467
Vehs Exited	3435	3573	3468	3450
Starting Vehs	409	397	407	391
Ending Vehs	409	418	395	406
Travel Distance (mi)	1830	1902	1841	1838
Travel Time (hr)	100.8	104.8	100.5	101.2
Total Delay (hr)	34.1	35.4	33.3	34.2
Total Stops	2935	3165	2935	3021
Fuel Used (gal)	74.1	76.8	74.6	74.6

Interval #2 Information

Start Time	3:30
End Time	3:45
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3734	3631	3603	3743	3815	3799	3787
Vehs Exited	3715	3632	3549	3640	3748	3751	3731
Starting Vehs	405	440	380	379	409	386	449
Ending Vehs	424	439	434	482	476	434	505
Travel Distance (mi)	1968	1932	1896	1936	2014	2001	1980
Travel Time (hr)	112.7	108.2	105.1	107.8	113.6	117.4	114.6
Total Delay (hr)	41.0	37.8	36.1	37.0	40.3	44.2	42.5
Total Stops	3413	3200	3206	3049	3325	3563	3462
Fuel Used (gal)	80.8	78.8	77.0	78.3	82.2	82.9	81.9

Interval #2 Information

Start Time	3:30
End Time	3:45
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3702	3819	3842	3747
Vehs Exited	3652	3789	3735	3695
Starting Vehs	409	418	395	406
Ending Vehs	459	448	502	461
Travel Distance (mi)	1966	2033	2008	1973
Travel Time (hr)	113.7	117.6	118.6	112.9
Total Delay (hr)	42.1	43.7	45.4	41.0
Total Stops	3447	3397	3638	3365
Fuel Used (gal)	80.9	84.4	83.5	81.1

Interval #3 Information

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3437	3496	3547	3478	3451	3476	3395
Vehs Exited	3467	3451	3555	3546	3503	3455	3458
Starting Vehs	424	439	434	482	476	434	505
Ending Vehs	394	484	426	414	424	455	442
Travel Distance (mi)	1829	1847	1888	1879	1873	1847	1806
Travel Time (hr)	100.6	105.4	105.1	107.1	103.3	102.9	99.0
Total Delay (hr)	33.8	38.0	36.2	38.6	35.3	35.7	33.1
Total Stops	2978	3161	3111	3199	3120	3169	2879
Fuel Used (gal)	74.3	76.0	76.6	77.3	76.2	74.9	73.4

Interval #3 Information

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3477	3380	3330	3446
Vehs Exited	3507	3408	3454	3480
Starting Vehs	459	448	502	461
Ending Vehs	429	420	378	426
Travel Distance (mi)	1850	1803	1812	1844
Travel Time (hr)	101.4	99.0	97.8	102.1
Total Delay (hr)	34.1	32.9	31.7	35.0
Total Stops	2977	2935	2844	3038
Fuel Used (gal)	74.7	72.7	73.1	74.9

Interval #4 Information Recording

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3533	3421	3536	3520	3420	3550	3544
Vehs Exited	3506	3552	3539	3507	3403	3609	3551
Starting Vehs	394	484	426	414	424	455	442
Ending Vehs	421	353	423	427	441	396	435
Travel Distance (mi)	1867	1842	1867	1881	1801	1900	1879
Travel Time (hr)	103.6	101.9	102.3	105.5	98.1	108.0	105.5
Total Delay (hr)	35.5	35.0	34.3	36.8	32.8	38.7	36.8
Total Stops	2994	3092	3063	3133	2926	3229	3204
Fuel Used (gal)	75.5	75.2	75.8	76.5	72.9	78.1	76.8

Interval #4 Information Recording

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3470	3517	3435	3495
Vehs Exited	3486	3570	3401	3512
Starting Vehs	429	420	378	426
Ending Vehs	413	367	412	410
Travel Distance (mi)	1860	1882	1810	1859
Travel Time (hr)	107.4	106.0	100.3	103.9
Total Delay (hr)	39.3	37.2	34.2	36.1
Total Stops	3347	3174	3037	3116
Fuel Used (gal)	76.7	77.5	73.6	75.9

3: Sunrise Blvd & US50 EB Ramps Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	15.8	1.5	7.8	4.9	29.9
Total Del/Veh (s)	39.7	12.3	14.8	12.9	21.0
Stop Delay (hr)	13.3	1.3	5.8	3.6	24.0
Stop Del/Veh (s)	33.4	11.1	11.1	9.4	16.9

4: US50 WB Ramps & Sunrise Blvd Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0
Total Delay (hr)	2.3	3.3	9.0	3.5	18.1
Total Del/Veh (s)	25.5	26.3	11.9	8.2	13.0
Stop Delay (hr)	2.0	2.9	4.5	2.0	11.3
Stop Del/Veh (s)	21.8	23.1	5.9	4.7	8.1

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	2.9	0.1	0.3	2.4	0.4	0.5	0.0	0.0	0.0
Total Delay (hr)	5.1	0.7	0.1	0.7	1.4	4.0	0.9	9.9	0.3	6.1	7.6	0.7
Total Del/Veh (s)	61.3	42.5	11.6	65.2	52.3	23.2	68.4	29.4	29.6	61.2	22.5	8.2
Stop Delay (hr)	4.8	0.6	0.1	0.7	1.2	3.5	0.8	7.7	0.3	5.6	5.7	0.4
Stop Del/Veh (s)	57.0	38.6	11.5	61.7	45.6	20.0	63.6	22.8	24.8	55.6	16.9	4.5

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.2
Total Delay (hr)	37.5
Total Del/Veh (s)	31.3
Stop Delay (hr)	31.2
Stop Del/Veh (s)	26.0

6: US50 EB Ramps & Zinfandel Dr Performance by movement

Movement	EBL	EBT	EBR	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay (hr)	5.9	0.6	1.7	1.0	11.8	0.0	4.4	25.4
Total Del/Veh (s)	35.1	27.2	8.8	8.8	19.9	20.7	14.0	18.1
Stop Delay (hr)	5.3	0.6	1.1	0.7	7.7	0.0	3.7	19.1
Stop Del/Veh (s)	31.6	25.6	5.8	6.3	13.0	14.5	11.6	13.6

7: US50 WB Ramps Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.3	0.2	0.0	0.0	0.1
Total Delay (hr)	3.8	1.2	1.6	0.9	7.4
Total Del/Veh (s)	36.0	12.7	4.0	3.5	8.9
Stop Delay (hr)	3.5	1.0	0.9	0.5	5.8
Stop Del/Veh (s)	33.1	10.5	2.3	1.9	7.0

Queuing and Blocking Report

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	EB	EB	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	R	R	T	T	T	T	T	T	T
Maximum Queue (ft)	384	409	411	132	131	300	274	274	83	261	268	228
Average Queue (ft)	259	277	286	65	69	272	164	145	18	153	149	137
95th Queue (ft)	345	363	374	110	112	318	257	243	58	233	233	215
Link Distance (ft)	1013	1013	1013	1013		54	54	54	54	204	204	204
Upstream Blk Time (%)						35	29	28	3	1	1	1
Queuing Penalty (veh)						165	137	133	15	6	5	3
Storage Bay Dist (ft)					510							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 4: US50 WB Ramps & Sunrise Blvd

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	T	T	T	T	T	T
Maximum Queue (ft)	153	160	188	188	346	348	370	187	208	219
Average Queue (ft)	65	88	101	99	204	210	208	94	106	117
95th Queue (ft)	120	135	164	160	316	327	327	152	169	186
Link Distance (ft)		2272	2272		243	243	243	377	377	377
Upstream Blk Time (%)					3	3	4			
Queuing Penalty (veh)					27	29	33			
Storage Bay Dist (ft)	416			250						
Storage Blk Time (%)										
Queuing Penalty (veh)										

Queuing and Blocking Report

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	TR	R	L	L
Maximum Queue (ft)	234	258	225	54	86	19	83	157	275	245	46	167
Average Queue (ft)	111	156	35	16	21	1	32	63	154	142	7	54
95th Queue (ft)	211	241	142	42	56	9	72	123	231	223	31	131
Link Distance (ft)			411	411				351	351	351		
Upstream Blk Time (%)			0						0			
Queuing Penalty (veh)			0						0			
Storage Bay Dist (ft)	263	263			167	237	237				143	143
Storage Blk Time (%)	0	1	0									0
Queuing Penalty (veh)	0	0	0									0

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	TR	L	L	T	T	T	R
Maximum Queue (ft)	345	383	410	217	236	268	291	298	144
Average Queue (ft)	195	238	267	126	139	128	146	157	43
95th Queue (ft)	302	348	386	192	208	227	244	253	108
Link Distance (ft)	391	391	391	488	488	488	488	488	488
Upstream Blk Time (%)	0	0	1						
Queuing Penalty (veh)	0	0	0						
Storage Bay Dist (ft)									
Storage Blk Time (%)	15								
Queuing Penalty (veh)	7								

Queuing and Blocking Report

Intersection: 6: US50 EB Ramps & Zinfandel Dr

Movement	EB	EB	EB	EB	EB	EB	B14	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	R	T	R	R	T	T	T
Maximum Queue (ft)	287	362	69	239	289	240	12	169	164	338	380	439
Average Queue (ft)	120	208	26	28	126	47	0	80	56	159	199	221
95th Queue (ft)	214	314	58	142	284	192	10	152	125	282	332	364
Link Distance (ft)	440	440	440	440			1753	568	568	488	488	488
Upstream Blk Time (%)		0		0							0	0
Queuing Penalty (veh)		0		0							0	0
Storage Bay Dist (ft)					200	200						
Storage Blk Time (%)					5	0						
Queuing Penalty (veh)					2	0						

Intersection: 6: US50 EB Ramps & Zinfandel Dr

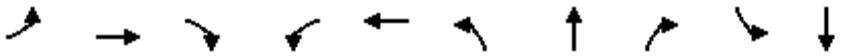
Movement	NB	SB	SB	SB
Directions Served	TR	T	T	T
Maximum Queue (ft)	447	185	174	168
Average Queue (ft)	249	131	115	119
95th Queue (ft)	399	199	184	188
Link Distance (ft)	488	50	50	50
Upstream Blk Time (%)	0	27	27	26
Queuing Penalty (veh)	0	100	100	97
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: US50 WB Ramps

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	LR	R	T	T	T	T	T
Maximum Queue (ft)	133	164	186	155	187	176	144	172	153
Average Queue (ft)	61	87	108	71	79	78	68	67	64
95th Queue (ft)	106	134	161	124	154	148	127	130	128
Link Distance (ft)		1501	1501		101	101	101	129	129
Upstream Blk Time (%)					3	2	1	0	0
Queuing Penalty (veh)					13	9	6	2	2
Storage Bay Dist (ft)	185			185					
Storage Blk Time (%)	0	0	0	0					
Queuing Penalty (veh)	0	0	0	0					

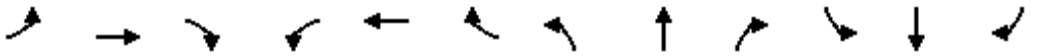
Appendix D

Analysis Worksheets for Cumulative Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	98	402	22	120	717	87	109	152	76	163
v/c Ratio	0.44	0.49	0.05	0.48	0.62	0.38	0.45	0.45	0.38	0.41
Control Delay	31.5	21.9	0.2	30.8	22.2	29.4	30.8	10.2	31.4	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	21.9	0.2	30.8	22.2	29.4	30.8	10.2	31.4	25.2
Queue Length 50th (ft)	30	58	0	36	74	26	33	0	23	22
Queue Length 95th (ft)	83	120	0	95	135	74	89	47	69	57
Internal Link Dist (ft)		445			491		394			408
Turn Bay Length (ft)	310		375	210		190		290	140	
Base Capacity (vph)	819	3516	1573	1147	5004	1311	1380	1212	1311	2523
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	0.12	0.11	0.01	0.10	0.14	0.07	0.08	0.13	0.06	0.06

Intersection Summary



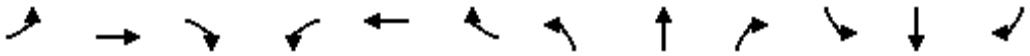
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	370	20	110	590	70	80	100	140	70	110	40
Future Volume (veh/h)	90	370	20	110	590	70	80	100	140	70	110	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	402	22	120	641	76	87	109	152	76	120	43
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	682	304	153	921	108	246	258	219	161	234	81
Arrive On Green	0.07	0.19	0.19	0.09	0.20	0.20	0.14	0.14	0.14	0.09	0.09	0.09
Sat Flow, veh/h	1781	3554	1585	1781	4633	544	1781	1870	1585	1781	2595	892
Grp Volume(v), veh/h	98	402	22	120	469	248	87	109	152	76	81	82
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1772	1781	1870	1585	1781	1777	1710
Q Serve(g_s), s	2.3	4.4	0.5	2.8	5.5	5.6	1.9	2.3	3.9	1.7	1.9	2.0
Cycle Q Clear(g_c), s	2.3	4.4	0.5	2.8	5.5	5.6	1.9	2.3	3.9	1.7	1.9	2.0
Prop In Lane	1.00		1.00	1.00		0.31	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	124	682	304	153	677	353	246	258	219	161	161	155
V/C Ratio(X)	0.79	0.59	0.07	0.78	0.69	0.70	0.35	0.42	0.70	0.47	0.50	0.53
Avail Cap(c_a), veh/h	1037	5794	2584	1452	5550	2890	1660	1743	1477	1660	1655	1593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.7	15.8	14.2	19.2	16.0	16.0	16.8	16.9	17.6	18.6	18.6	18.7
Incr Delay (d2), s/veh	4.1	0.3	0.0	3.3	0.5	1.0	0.3	0.4	1.5	0.8	0.9	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.6	0.2	1.2	1.9	2.0	0.7	0.9	1.3	0.7	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.8	16.1	14.3	22.5	16.5	17.0	17.1	17.3	19.1	19.4	19.5	19.7
LnGrp LOS	C	B	B	C	B	B	B	B	B	B	B	B
Approach Vol, veh/h		522			837			348			239	
Approach Delay, s/veh		17.5			17.5			18.1			19.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	13.7		9.4	8.8	13.4		11.3				
Change Period (Y+Rc), s	5.5	* 5.2		5.5	* 5.1	* 5.2		5.4				
Max Green Setting (Gmax), s	25.0	* 70		40.0	* 35	* 70		40.0				
Max Q Clear Time (g_c+I1), s	4.3	7.6		4.0	4.8	6.4		5.9				
Green Ext Time (p_c), s	0.0	1.0		0.1	0.0	0.6		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		17.8
HCM 6th LOS		B

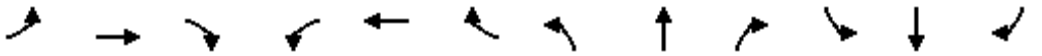
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	250	217	141	87	293	130	424	870	76	261	870	152
v/c Ratio	0.64	0.29	0.32	0.41	0.36	0.36	0.70	0.44	0.11	0.65	0.52	0.25
Control Delay	56.1	39.0	8.8	59.8	44.0	11.2	50.1	25.1	4.7	55.8	30.7	9.1
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	56.1	39.0	8.8	59.8	44.0	11.2	50.1	25.1	4.7	55.8	30.7	9.1
Queue Length 50th (ft)	84	65	0	29	65	0	139	154	0	88	173	14
Queue Length 95th (ft)	156	124	56	68	118	58	243	239	27	162	261	66
Internal Link Dist (ft)		802			424			689			453	
Turn Bay Length (ft)	265		600	205		185	278		170	251		175
Base Capacity (vph)	829	1367	698	829	1975	694	829	3449	1100	829	3439	1110
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	0.30	0.16	0.20	0.10	0.15	0.19	0.51	0.25	0.07	0.31	0.25	0.14

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	200	130	80	270	120	390	800	70	240	800	140
Future Volume (veh/h)	230	200	130	80	270	120	390	800	70	240	800	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	250	217	141	87	293	130	424	870	76	261	870	152
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	326	771	344	145	842	261	500	2007	623	337	1766	548
Arrive On Green	0.09	0.22	0.22	0.04	0.16	0.16	0.14	0.39	0.39	0.10	0.35	0.35
Sat Flow, veh/h	3456	3554	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	250	217	141	87	293	130	424	870	76	261	870	152
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	6.4	4.6	7.0	2.3	4.6	6.8	10.9	11.3	2.8	6.7	12.2	6.3
Cycle Q Clear(g_c), s	6.4	4.6	7.0	2.3	4.6	6.8	10.9	11.3	2.8	6.7	12.2	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	326	771	344	145	842	261	500	2007	623	337	1766	548
V/C Ratio(X)	0.77	0.28	0.41	0.60	0.35	0.50	0.85	0.43	0.12	0.78	0.49	0.28
Avail Cap(c_a), veh/h	949	1562	697	949	2244	697	949	3927	1219	949	3927	1219
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.2	29.7	30.6	42.8	33.7	34.6	38.0	20.2	17.6	40.1	23.5	21.5
Incr Delay (d2), s/veh	1.4	0.1	0.3	1.5	0.8	5.0	1.6	0.3	0.2	1.5	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.0	2.6	1.0	2.0	2.9	4.6	4.4	1.0	2.9	4.8	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.7	29.8	30.9	44.3	34.5	39.5	39.5	20.5	17.8	41.6	23.9	22.1
LnGrp LOS	D	C	C	D	C	D	D	C	B	D	C	C
Approach Vol, veh/h		608			510			1370			1283	
Approach Delay, s/veh		34.9			37.5			26.2			27.3	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.7	37.3	14.1	21.0	14.4	41.6	9.3	25.8
Change Period (Y+Rc), s	5.5	* 5.8	5.5	* 6	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	25.0	* 70	25.0	* 40	25.0	* 70	25.0	40.0
Max Q Clear Time (g_c+I1), s	12.9	14.2	8.4	8.8	8.7	13.3	4.3	9.0
Green Ext Time (p_c), s	0.3	17.2	0.2	6.2	0.2	16.2	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	29.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

SimTraffic Simulation Summary

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	13083	13230	13264	13153	13220	13221	13239
Vehs Exited	13105	13327	13217	13151	13202	13240	13232
Starting Vehs	412	441	356	444	424	364	420
Ending Vehs	390	344	403	446	442	345	427
Travel Distance (mi)	6977	7064	7030	7029	7046	7063	7038
Travel Time (hr)	405.7	403.1	407.6	406.1	423.9	399.3	398.5
Total Delay (hr)	151.8	146.1	152.3	149.9	167.6	142.2	142.8
Total Stops	12769	12666	13155	12805	14202	12451	12546
Fuel Used (gal)	287.3	290.0	290.3	290.1	294.1	288.4	287.8

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	12838	13130	13019	13137
Vehs Exited	12821	13092	13082	13146
Starting Vehs	403	387	414	408
Ending Vehs	420	425	351	397
Travel Distance (mi)	6846	6990	6923	7001
Travel Time (hr)	386.9	405.9	390.0	402.7
Total Delay (hr)	138.2	151.9	138.0	148.1
Total Stops	12119	13173	12140	12801
Fuel Used (gal)	279.3	289.2	282.1	287.9

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

SimTraffic Simulation Summary

Interval #1 Information

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3185	3242	3253	3141	3187	3204	3247
Vehs Exited	3266	3317	3230	3251	3216	3202	3283
Starting Vehs	412	441	356	444	424	364	420
Ending Vehs	331	366	379	334	395	366	384
Travel Distance (mi)	1715	1733	1734	1706	1702	1707	1740
Travel Time (hr)	97.0	98.4	101.6	97.6	98.0	94.4	94.9
Total Delay (hr)	34.5	35.2	38.7	35.4	36.3	32.3	31.8
Total Stops	2982	3116	3299	3145	3295	2907	2878
Fuel Used (gal)	70.2	71.4	72.0	70.4	69.9	68.9	70.3

Interval #1 Information

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3227	3210	3215	3208
Vehs Exited	3241	3183	3236	3242
Starting Vehs	403	387	414	408
Ending Vehs	389	414	393	377
Travel Distance (mi)	1739	1700	1723	1720
Travel Time (hr)	97.8	99.0	97.3	97.6
Total Delay (hr)	34.7	37.0	34.8	35.1
Total Stops	2982	3157	2998	3075
Fuel Used (gal)	70.7	70.3	69.8	70.4

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3533	3567	3389	3508	3511	3510	3489
Vehs Exited	3424	3514	3360	3408	3422	3466	3446
Starting Vehs	331	366	379	334	395	366	384
Ending Vehs	440	419	408	434	484	410	427
Travel Distance (mi)	1845	1911	1783	1843	1850	1862	1840
Travel Time (hr)	110.9	111.9	103.0	109.7	114.6	105.8	104.1
Total Delay (hr)	43.6	42.5	38.3	42.6	47.5	38.1	37.2
Total Stops	3604	3501	3330	3507	3816	3262	3269
Fuel Used (gal)	76.7	79.3	73.1	76.5	78.2	76.0	75.2

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3305	3403	3418	3462
Vehs Exited	3299	3374	3380	3407
Starting Vehs	389	414	393	377
Ending Vehs	395	443	431	426
Travel Distance (mi)	1764	1801	1804	1830
Travel Time (hr)	105.8	104.2	102.4	107.3
Total Delay (hr)	41.9	38.9	36.6	40.7
Total Stops	3466	3389	3185	3430
Fuel Used (gal)	73.7	74.6	73.9	75.7

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3178	3180	3334	3203	3250	3293	3302
Vehs Exited	3221	3244	3315	3275	3323	3302	3291
Starting Vehs	440	419	408	434	484	410	427
Ending Vehs	397	355	427	362	411	401	438
Travel Distance (mi)	1726	1719	1770	1740	1756	1751	1759
Travel Time (hr)	101.9	97.1	104.4	98.9	107.4	101.4	99.6
Total Delay (hr)	39.4	34.3	40.0	35.6	43.4	37.6	35.4
Total Stops	3232	2999	3505	3022	3713	3351	3157
Fuel Used (gal)	71.5	69.9	73.5	71.8	74.2	72.3	72.1

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3155	3193	3264	3234
Vehs Exited	3230	3250	3289	3274
Starting Vehs	395	443	431	426
Ending Vehs	320	386	406	386
Travel Distance (mi)	1696	1722	1733	1737
Travel Time (hr)	92.4	100.7	98.4	100.2
Total Delay (hr)	30.7	38.2	35.2	37.0
Total Stops	2826	3396	3101	3230
Fuel Used (gal)	68.5	71.5	70.9	71.6

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3187	3241	3288	3301	3272	3214	3201
Vehs Exited	3194	3252	3312	3217	3241	3270	3212
Starting Vehs	397	355	427	362	411	401	438
Ending Vehs	390	344	403	446	442	345	427
Travel Distance (mi)	1691	1701	1743	1740	1737	1743	1699
Travel Time (hr)	95.9	95.8	98.6	99.9	103.9	97.6	99.9
Total Delay (hr)	34.4	34.1	35.3	36.3	40.4	34.2	38.3
Total Stops	2951	3050	3021	3131	3378	2931	3242
Fuel Used (gal)	69.0	69.4	71.7	71.3	71.8	71.2	70.2

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3151	3324	3122	3227
Vehs Exited	3051	3285	3177	3222
Starting Vehs	320	386	406	386
Ending Vehs	420	425	351	397
Travel Distance (mi)	1648	1767	1663	1713
Travel Time (hr)	90.9	102.0	91.8	97.6
Total Delay (hr)	31.0	37.8	31.5	35.3
Total Stops	2845	3231	2856	3060
Fuel Used (gal)	66.4	72.9	67.4	70.1

3: Sunrise Blvd & US50 EB Ramps Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	11.6	3.6	3.9	4.5	23.5
Total Del/Veh (s)	36.3	18.1	11.4	11.6	18.9
Stop Delay (hr)	10.0	3.2	2.9	3.2	19.3
Stop Del/Veh (s)	31.4	15.9	8.7	8.1	15.5

4: US50 WB Ramps & Sunrise Blvd Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0
Total Delay (hr)	1.7	2.0	5.4	3.7	12.8
Total Del/Veh (s)	16.7	16.5	9.8	9.0	10.8
Stop Delay (hr)	1.4	1.7	2.8	2.0	7.9
Stop Del/Veh (s)	13.1	13.9	5.1	5.0	6.7

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	3.1	0.1	0.2	2.9	1.0	1.1	0.0	0.0	0.0
Total Delay (hr)	4.4	1.1	0.1	1.0	1.1	3.0	0.7	11.9	1.3	9.8	8.1	0.8
Total Del/Veh (s)	60.4	45.2	14.5	64.6	59.3	21.8	74.8	35.6	39.0	64.8	19.8	7.8
Stop Delay (hr)	4.1	1.0	0.1	1.0	1.0	2.6	0.6	9.1	1.0	8.8	5.7	0.4
Stop Del/Veh (s)	56.4	41.0	14.4	61.0	52.8	19.2	70.1	27.3	32.3	57.9	14.0	3.6

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	All
Denied Delay (hr)	0.5
Denied Del/Veh (s)	0.4
Total Delay (hr)	43.2
Total Del/Veh (s)	32.9
Stop Delay (hr)	35.4
Stop Del/Veh (s)	27.0

6: US50 EB Ramps & Zinfandel Dr Performance by movement

Movement	EBL	EBT	EBR	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	2.8	2.8	6.5	0.1	11.5	0.1	6.4	30.3
Total Del/Veh (s)	31.6	29.1	25.8	2.8	21.2	27.0	17.0	21.7
Stop Delay (hr)	2.6	2.6	5.1	0.0	7.7	0.1	5.4	23.6
Stop Del/Veh (s)	29.2	26.5	20.4	1.4	14.2	20.8	14.3	16.9

7: US50 WB Ramps Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.3	0.2	0.0	0.0	0.1
Total Delay (hr)	6.8	0.5	1.3	1.3	9.9
Total Del/Veh (s)	36.6	9.7	5.1	5.2	13.3
Stop Delay (hr)	6.1	0.3	0.9	0.8	8.1
Stop Del/Veh (s)	32.8	6.8	3.5	3.3	10.9

Queuing and Blocking Report

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	EB	EB	EB	EB	EB	B33	NB	NB	NB	NB	SB	SB
Directions Served	L	L	L	R	R	T	T	T	T	T	T	T
Maximum Queue (ft)	281	293	308	207	213	118	289	180	151	45	273	260
Average Queue (ft)	200	216	223	115	121	4	214	79	66	6	150	143
95th Queue (ft)	265	282	294	182	190	86	303	141	123	27	236	229
Link Distance (ft)	1013	1013	1013	1013		611	54	54	54	54	204	204
Upstream Blk Time (%)						0	30	17	13	0	1	1
Queuing Penalty (veh)						0	91	52	40	1	7	4
Storage Bay Dist (ft)					510							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	SB
Directions Served	T
Maximum Queue (ft)	223
Average Queue (ft)	133
95th Queue (ft)	210
Link Distance (ft)	204
Upstream Blk Time (%)	1
Queuing Penalty (veh)	3
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: US50 WB Ramps & Sunrise Blvd

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	T	T	T	T	T	T
Maximum Queue (ft)	114	140	160	148	244	243	255	165	179	202
Average Queue (ft)	54	77	71	73	140	140	143	87	101	115
95th Queue (ft)	94	119	120	119	213	216	223	138	154	175
Link Distance (ft)		2272	2272		243	243	243	377	377	377
Upstream Blk Time (%)					0	0	0			
Queuing Penalty (veh)					1	1	2			
Storage Bay Dist (ft)	416			250						
Storage Blk Time (%)										
Queuing Penalty (veh)										

Queuing and Blocking Report

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	TR	R	L	L
Maximum Queue (ft)	234	248	204	66	71	84	93	120	208	199	28	168
Average Queue (ft)	90	148	38	23	21	5	45	49	123	108	2	52
95th Queue (ft)	196	227	127	53	51	40	87	98	186	190	16	140
Link Distance (ft)			411	411				351	351	351		
Upstream Blk Time (%)			0									
Queuing Penalty (veh)			0									
Storage Bay Dist (ft)	263	263			167	237	237				143	143
Storage Blk Time (%)	0	1	0									0
Queuing Penalty (veh)	0	0	0									1

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	TR	L	L	T	T	T	R
Maximum Queue (ft)	347	397	420	309	321	284	305	313	138
Average Queue (ft)	200	287	337	198	212	137	157	168	41
95th Queue (ft)	314	404	457	282	295	250	268	274	102
Link Distance (ft)	391	391	391	488	488	488	488	488	488
Upstream Blk Time (%)	0	0	8						
Queuing Penalty (veh)	0	0	0						
Storage Bay Dist (ft)									
Storage Blk Time (%)	15								
Queuing Penalty (veh)	5								

Queuing and Blocking Report

Intersection: 6: US50 EB Ramps & Zinfandel Dr

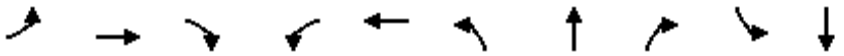
Movement	EB	EB	EB	EB	EB	EB	B14	B14	WB	WB	NB	NB
Directions Served	L	L	T	T	R	R	T	T	R	R	T	T
Maximum Queue (ft)	123	213	171	524	300	250	789	1105	79	66	286	335
Average Queue (ft)	45	114	94	321	265	187	115	234	13	9	138	181
95th Queue (ft)	99	191	149	622	368	357	643	884	55	42	251	305
Link Distance (ft)	440	440	440	440			1753	1753	568	568	488	488
Upstream Blk Time (%)				10			0	0				
Queuing Penalty (veh)				0			0	0				
Storage Bay Dist (ft)					200	200						
Storage Blk Time (%)				0	35	2						
Queuing Penalty (veh)				0	61	3						

Intersection: 6: US50 EB Ramps & Zinfandel Dr

Movement	NB	NB	SB	SB	SB
Directions Served	T	TR	T	T	T
Maximum Queue (ft)	402	438	193	186	161
Average Queue (ft)	208	260	163	146	141
95th Queue (ft)	335	412	212	202	190
Link Distance (ft)	488	488	50	50	50
Upstream Blk Time (%)	0	0	34	33	33
Queuing Penalty (veh)	0	1	151	147	149
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: US50 WB Ramps

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	LR	R	T	T	T	T	T
Maximum Queue (ft)	179	210	268	210	178	176	136	177	184
Average Queue (ft)	106	132	162	73	67	68	57	90	89
95th Queue (ft)	164	191	231	176	145	146	120	154	160
Link Distance (ft)		1501	1501		101	101	101	129	129
Upstream Blk Time (%)					3	2	1	1	1
Queuing Penalty (veh)					8	7	4	5	6
Storage Bay Dist (ft)	185			185					
Storage Blk Time (%)	0	0	4	0					
Queuing Penalty (veh)	0	1	3	0					



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	76	717	43	239	565	76	109	217	43	206
v/c Ratio	0.46	0.71	0.08	0.63	0.26	0.37	0.50	0.58	0.24	0.54
Control Delay	47.0	30.1	0.3	37.7	15.5	41.5	45.0	12.6	41.0	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.0	30.1	0.3	37.7	15.5	41.5	45.0	12.6	41.0	33.0
Queue Length 50th (ft)	35	157	0	103	61	34	49	0	19	36
Queue Length 95th (ft)	95	285	0	222	110	93	123	67	61	89
Internal Link Dist (ft)		445			491		394			408
Turn Bay Length (ft)	310		375	210		190		290	140	
Base Capacity (vph)	599	3095	1397	838	4614	958	1008	956	958	1835
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	0.13	0.23	0.03	0.29	0.12	0.08	0.11	0.23	0.04	0.11

Intersection Summary

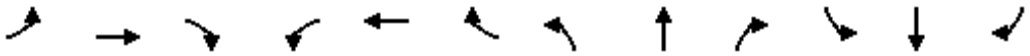
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	660	40	220	440	80	70	100	200	40	120	70
Future Volume (veh/h)	70	660	40	220	440	80	70	100	200	40	120	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	717	43	239	478	87	76	109	217	43	130	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	855	381	286	1483	264	295	310	263	168	208	115
Arrive On Green	0.05	0.24	0.24	0.16	0.34	0.34	0.17	0.17	0.17	0.09	0.09	0.09
Sat Flow, veh/h	1781	3554	1585	1781	4359	776	1781	1870	1585	1781	2211	1217
Grp Volume(v), veh/h	76	717	43	239	371	194	76	109	217	43	103	103
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1731	1781	1870	1585	1781	1777	1651
Q Serve(g_s), s	2.6	12.0	1.3	8.1	5.0	5.2	2.3	3.2	8.3	1.4	3.5	3.8
Cycle Q Clear(g_c), s	2.6	12.0	1.3	8.1	5.0	5.2	2.3	3.2	8.3	1.4	3.5	3.8
Prop In Lane	1.00		1.00	1.00		0.45	1.00		1.00	1.00		0.74
Lane Grp Cap(c), veh/h	97	855	381	286	1158	589	295	310	263	168	168	156
V/C Ratio(X)	0.78	0.84	0.11	0.84	0.32	0.33	0.26	0.35	0.83	0.26	0.61	0.66
Avail Cap(c_a), veh/h	712	3977	1774	997	3810	1937	1139	1196	1014	1139	1136	1056
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.2	22.6	18.5	25.5	15.3	15.3	22.7	23.1	25.2	26.3	27.2	27.4
Incr Delay (d2), s/veh	5.1	0.9	0.0	2.5	0.1	0.1	0.2	0.3	2.5	0.3	1.4	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.7	0.5	3.4	1.8	1.9	0.9	1.4	3.1	0.6	1.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.3	23.5	18.6	28.0	15.3	15.5	22.9	23.4	27.7	26.6	28.6	29.2
LnGrp LOS	C	C	B	C	B	B	C	C	C	C	C	C
Approach Vol, veh/h		836			804			402			249	
Approach Delay, s/veh		24.2			19.1			25.6			28.5	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	26.5		11.4	15.1	20.3		15.8				
Change Period (Y+Rc), s	5.5	* 5.2		5.5	* 5.1	* 5.2		5.4				
Max Green Setting (Gmax), s	25.0	* 70		40.0	* 35	* 70		40.0				
Max Q Clear Time (g_c+I1), s	4.6	7.2		5.8	10.1	14.0		10.3				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.1	1.0		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		23.1
HCM 6th LOS		C

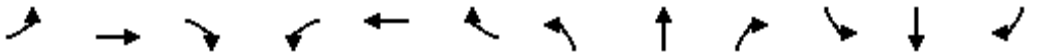
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	228	413	370	152	348	337	337	1011	65	261	1120	228
v/c Ratio	0.67	0.56	0.66	0.59	0.37	0.66	0.75	0.47	0.09	0.70	0.55	0.32
Control Delay	71.5	51.9	18.2	73.9	50.2	19.0	69.3	28.7	3.2	70.8	32.2	12.6
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	51.9	18.2	73.9	50.2	19.0	69.3	28.7	3.2	70.8	32.2	12.6
Queue Length 50th (ft)	96	166	56	64	95	49	142	214	0	110	256	44
Queue Length 95th (ft)	181	274	194	130	160	179	253	354	20	203	415	135
Internal Link Dist (ft)		802			424			689			453	
Turn Bay Length (ft)	265		600	205		185	278		170	251		175
Base Capacity (vph)	686	1147	710	686	1634	692	686	2875	931	686	2846	948
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	0.33	0.36	0.52	0.22	0.21	0.49	0.49	0.35	0.07	0.38	0.39	0.24

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	380	340	140	320	310	310	930	60	240	1030	210
Future Volume (veh/h)	210	380	340	140	320	310	310	930	60	240	1030	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	228	413	370	152	348	337	337	1011	65	261	1120	228
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	281	1004	448	204	1330	413	390	1999	621	314	1887	586
Arrive On Green	0.08	0.28	0.28	0.06	0.26	0.26	0.11	0.39	0.39	0.09	0.37	0.37
Sat Flow, veh/h	3456	3554	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	228	413	370	152	348	337	337	1011	65	261	1120	228
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	8.4	12.2	28.3	5.6	7.0	25.9	12.4	19.5	3.4	9.6	23.0	13.7
Cycle Q Clear(g_c), s	8.4	12.2	28.3	5.6	7.0	25.9	12.4	19.5	3.4	9.6	23.0	13.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	1004	448	204	1330	413	390	1999	621	314	1887	586
V/C Ratio(X)	0.81	0.41	0.83	0.74	0.26	0.82	0.86	0.51	0.10	0.83	0.59	0.39
Avail Cap(c_a), veh/h	666	1096	489	666	1575	489	666	2756	856	666	2756	856
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.6	37.8	43.5	60.0	38.1	45.0	56.5	29.9	25.0	58.0	33.0	30.1
Incr Delay (d2), s/veh	2.1	0.1	9.4	2.0	0.4	14.0	2.6	0.4	0.1	2.2	0.6	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	5.4	12.2	2.5	3.0	11.8	5.6	8.1	1.3	4.3	9.6	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.7	37.9	52.9	62.0	38.4	59.0	59.1	30.3	25.2	60.1	33.6	31.0
LnGrp LOS	E	D	D	E	D	E	E	C	C	E	C	C
Approach Vol, veh/h		1011			837			1413			1609	
Approach Delay, s/veh		48.5			51.0			37.0			37.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.1	53.7	16.1	39.8	17.3	56.6	13.2	42.6
Change Period (Y+Rc), s	5.5	* 5.8	5.5	* 6	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	25.0	* 70	25.0	* 40	25.0	* 70	25.0	40.0
Max Q Clear Time (g_c+I1), s	14.4	25.0	10.4	27.9	11.6	21.5	7.6	30.3
Green Ext Time (p_c), s	0.2	23.0	0.1	5.9	0.2	18.7	0.1	1.0

Intersection Summary	
HCM 6th Ctrl Delay	42.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

SimTraffic Simulation Summary

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:05	3:05	3:05	3:05	3:05	3:05	3:05
End Time	4:15	4:15	4:15	4:15	4:15	4:15	4:15
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	15233	15176	15312	15005	14976	15117	15011
Vehs Exited	15191	15193	15301	14984	15003	15144	14956
Starting Vehs	417	421	455	461	427	449	397
Ending Vehs	459	404	466	482	400	422	452
Travel Distance (mi)	7897	7861	7947	7787	7783	7870	7808
Travel Time (hr)	477.5	460.7	494.0	498.9	463.1	471.4	461.1
Total Delay (hr)	189.6	175.0	204.9	215.4	179.6	184.6	177.3
Total Stops	14317	14008	14440	14162	13978	14135	14354
Fuel Used (gal)	332.6	327.9	338.3	334.9	326.6	330.6	326.4

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:05	3:05	3:05	3:05
End Time	4:15	4:15	4:15	4:15
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	15025	15250	15010	15112
Vehs Exited	15052	15228	14985	15105
Starting Vehs	432	432	451	433
Ending Vehs	405	454	476	442
Travel Distance (mi)	7825	7891	7792	7846
Travel Time (hr)	464.9	469.7	454.5	471.6
Total Delay (hr)	180.7	182.7	170.7	186.0
Total Stops	14077	14159	13992	14156
Fuel Used (gal)	327.3	332.2	324.2	330.1

Interval #0 Information Seeding

Start Time	3:05
End Time	3:15
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information

Start Time	3:15
End Time	3:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3740	3836	3644	3642	3648	3647	3698
Vehs Exited	3733	3805	3662	3703	3616	3665	3592
Starting Vehs	417	421	455	461	427	449	397
Ending Vehs	424	452	437	400	459	431	503
Travel Distance (mi)	1949	1996	1886	1912	1882	1922	1894
Travel Time (hr)	115.7	115.6	113.5	115.2	111.6	110.4	111.0
Total Delay (hr)	44.8	42.9	44.8	45.7	43.0	40.6	42.3
Total Stops	3500	3604	3425	3432	3439	3293	3573
Fuel Used (gal)	81.9	83.0	79.2	80.4	78.7	79.4	78.9

Interval #1 Information

Start Time	3:15
End Time	3:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3736	3751	3713	3704
Vehs Exited	3710	3751	3693	3693
Starting Vehs	432	432	451	433
Ending Vehs	458	432	471	444
Travel Distance (mi)	1943	1947	1933	1926
Travel Time (hr)	116.0	111.8	114.8	113.6
Total Delay (hr)	45.7	41.0	44.5	43.5
Total Stops	3486	3452	3666	3485
Fuel Used (gal)	81.1	80.9	80.7	80.4

Interval #2 Information

Start Time	3:30
End Time	3:45
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3973	3970	4005	3852	4052	4028	3966
Vehs Exited	3924	3936	3933	3745	3990	3981	3952
Starting Vehs	424	452	437	400	459	431	503
Ending Vehs	473	486	509	507	521	478	517
Travel Distance (mi)	2031	2020	2068	1986	2087	2073	2046
Travel Time (hr)	129.0	122.1	128.0	126.5	124.3	128.5	122.0
Total Delay (hr)	55.0	48.6	52.8	54.2	48.6	53.0	47.6
Total Stops	3747	3670	3770	3744	3760	3844	3694
Fuel Used (gal)	87.3	85.3	88.2	85.3	87.7	88.3	86.0

Interval #2 Information

Start Time	3:30
End Time	3:45
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3930	4031	3958	3975
Vehs Exited	3860	3937	3851	3910
Starting Vehs	458	432	471	444
Ending Vehs	528	526	578	513
Travel Distance (mi)	2013	2062	2028	2042
Travel Time (hr)	124.5	125.8	119.7	125.1
Total Delay (hr)	51.4	50.9	45.8	50.8
Total Stops	3804	3813	3661	3750
Fuel Used (gal)	85.7	87.4	84.8	86.6

Interval #3 Information

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3777	3764	3815	3728	3624	3747	3661
Vehs Exited	3757	3781	3840	3778	3711	3809	3670
Starting Vehs	473	486	509	507	521	478	517
Ending Vehs	493	469	484	457	434	416	508
Travel Distance (mi)	1977	1963	1989	1947	1921	1946	1931
Travel Time (hr)	120.3	114.5	126.1	128.7	116.9	119.0	112.9
Total Delay (hr)	48.1	43.1	53.7	58.0	46.7	47.9	42.7
Total Stops	3730	3372	3583	3527	3442	3415	3477
Fuel Used (gal)	83.2	81.6	85.1	85.1	81.1	82.1	80.3

Interval #3 Information

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3699	3684	3651	3713
Vehs Exited	3774	3740	3798	3764
Starting Vehs	528	526	578	513
Ending Vehs	453	470	431	463
Travel Distance (mi)	1956	1940	1938	1951
Travel Time (hr)	114.1	117.5	113.2	118.3
Total Delay (hr)	43.1	46.9	42.7	47.3
Total Stops	3429	3512	3393	3489
Fuel Used (gal)	81.3	82.3	80.9	82.3

Interval #4 Information Recording

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3743	3606	3848	3783	3652	3695	3686
Vehs Exited	3777	3671	3866	3758	3686	3689	3742
Starting Vehs	493	469	484	457	434	416	508
Ending Vehs	459	404	466	482	400	422	452
Travel Distance (mi)	1940	1882	2004	1942	1894	1929	1936
Travel Time (hr)	112.5	108.6	126.4	128.4	110.3	113.4	115.2
Total Delay (hr)	41.6	40.4	53.6	57.5	41.3	43.1	44.7
Total Stops	3340	3362	3662	3459	3337	3583	3610
Fuel Used (gal)	80.3	78.1	85.8	84.0	79.0	80.8	81.1

Interval #4 Information Recording

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3660	3784	3688	3714
Vehs Exited	3708	3800	3643	3733
Starting Vehs	453	470	431	463
Ending Vehs	405	454	476	442
Travel Distance (mi)	1913	1941	1893	1927
Travel Time (hr)	110.4	114.6	106.7	114.6
Total Delay (hr)	40.5	43.8	37.7	44.4
Total Stops	3358	3382	3272	3431
Fuel Used (gal)	79.2	81.6	77.7	80.7

3: Sunrise Blvd & US50 EB Ramps Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	14.6	2.6	7.4	4.7	29.3
Total Del/Veh (s)	38.6	14.7	14.2	13.0	20.4
Stop Delay (hr)	12.3	2.3	5.5	3.4	23.6
Stop Del/Veh (s)	32.5	13.0	10.6	9.5	16.4

4: US50 WB Ramps & Sunrise Blvd Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0
Total Delay (hr)	2.1	3.2	8.4	3.3	17.0
Total Del/Veh (s)	24.2	24.8	11.6	8.2	12.6
Stop Delay (hr)	1.8	2.8	4.3	1.8	10.7
Stop Del/Veh (s)	20.7	21.7	5.9	4.6	8.0

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.2	6.0	0.2	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	2.9	0.2	0.3	14.7	13.6	15.5	0.0	0.0	0.0
Total Delay (hr)	5.6	1.0	0.1	2.3	1.9	4.3	1.2	23.2	0.7	12.0	8.5	0.7
Total Del/Veh (s)	67.6	52.0	15.0	64.5	56.8	27.2	86.4	52.5	50.3	74.0	23.2	8.3
Stop Delay (hr)	5.2	0.9	0.1	2.2	1.6	3.7	1.1	18.6	0.6	10.8	6.3	0.4
Stop Del/Veh (s)	63.3	47.7	14.8	60.1	49.7	23.9	79.5	42.2	41.9	66.4	17.1	4.5

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	All
Denied Delay (hr)	6.5
Denied Del/Veh (s)	4.7
Total Delay (hr)	61.4
Total Del/Veh (s)	43.5
Stop Delay (hr)	51.5
Stop Del/Veh (s)	36.4

6: US50 EB Ramps & Zinfandel Dr Performance by movement

Movement	EBL	EBT	EBR	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay (hr)	5.6	0.8	3.2	1.0	15.2	0.1	6.2	32.0
Total Del/Veh (s)	34.0	25.6	14.9	9.2	22.5	21.3	16.1	20.2
Stop Delay (hr)	5.0	0.8	2.4	0.7	9.8	0.0	5.2	23.9
Stop Del/Veh (s)	30.6	24.0	11.1	6.6	14.5	14.6	13.4	15.1

7: US50 WB Ramps Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.4	0.3	0.0	0.0	0.1
Total Delay (hr)	5.1	1.4	2.0	1.6	10.1
Total Del/Veh (s)	36.4	14.5	4.9	5.0	10.4
Stop Delay (hr)	4.6	1.2	1.2	0.9	7.9
Stop Del/Veh (s)	33.0	11.9	3.0	2.8	8.1

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	EB	EB	EB	EB	EB	B33	NB	NB	NB	NB	SB	SB
Directions Served	L	L	L	R	R	T	T	T	T	T	T	T
Maximum Queue (ft)	365	382	390	167	178	124	298	259	272	76	253	235
Average Queue (ft)	247	264	274	93	96	4	267	147	146	21	150	141
95th Queue (ft)	331	353	363	143	151	91	319	234	239	59	227	214
Link Distance (ft)	1013	1013	1013	1013		611	54	54	54	54	204	204
Upstream Blk Time (%)						0	34	28	27	2	2	1
Queuing Penalty (veh)						0	159	129	126	12	7	3
Storage Bay Dist (ft)					510							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	SB
Directions Served	T
Maximum Queue (ft)	220
Average Queue (ft)	133
95th Queue (ft)	208
Link Distance (ft)	204
Upstream Blk Time (%)	1
Queuing Penalty (veh)	2
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: US50 WB Ramps & Sunrise Blvd

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	T	T	T	T	T	T
Maximum Queue (ft)	129	154	179	179	347	365	349	157	179	191
Average Queue (ft)	58	84	96	97	198	199	198	89	99	112
95th Queue (ft)	106	131	155	153	306	308	312	139	154	173
Link Distance (ft)		2272	2272		243	243	243	377	377	377
Upstream Blk Time (%)					3	3	3			
Queuing Penalty (veh)					24	22	26			
Storage Bay Dist (ft)	416			250						
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	EB	EB	EB	EB	EB	B32	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	TR	T	L	L	T	TR	R	L
Maximum Queue (ft)	259	269	245	59	74	19	134	142	192	269	263	82
Average Queue (ft)	120	163	43	22	22	1	37	83	86	167	155	12
95th Queue (ft)	224	247	164	50	54	21	116	131	165	245	234	47
Link Distance (ft)			411	411		267			351	351	351	
Upstream Blk Time (%)			1								0	
Queuing Penalty (veh)			0								0	
Storage Bay Dist (ft)	263	263			167		237	237				143
Storage Blk Time (%)	0	1	0						0			0
Queuing Penalty (veh)	0	0	1						0			0

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	L	T	T	TR	L	L	T	T	T	R
Maximum Queue (ft)	168	408	415	430	383	390	338	325	320	153
Average Queue (ft)	81	337	365	392	236	250	150	166	174	41
95th Queue (ft)	182	443	450	462	347	355	280	282	282	106
Link Distance (ft)		391	391	391	488	488	488	488	488	488
Upstream Blk Time (%)		5	10	31		0				
Queuing Penalty (veh)		0	0	0		0				
Storage Bay Dist (ft)	143									
Storage Blk Time (%)	0	41								
Queuing Penalty (veh)	2	21								

Queuing and Blocking Report

Intersection: 6: US50 EB Ramps & Zinfandel Dr

Movement	EB	EB	EB	EB	EB	EB	B14	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	R	T	R	R	T	T	T
Maximum Queue (ft)	223	344	75	452	300	250	92	165	150	445	476	508
Average Queue (ft)	115	206	34	93	207	111	4	79	59	202	242	266
95th Queue (ft)	201	304	65	335	340	304	70	151	126	385	431	462
Link Distance (ft)	440	440	440	440			1753	568	568	488	488	488
Upstream Blk Time (%)				1						0	0	0
Queuing Penalty (veh)				0						0	0	1
Storage Bay Dist (ft)					200	200						
Storage Blk Time (%)					15	0						
Queuing Penalty (veh)					8	0						

Intersection: 6: US50 EB Ramps & Zinfandel Dr

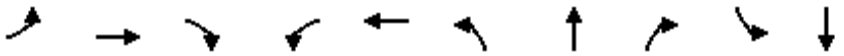
Movement	NB	SB	SB	SB
Directions Served	TR	T	T	T
Maximum Queue (ft)	496	200	177	172
Average Queue (ft)	293	163	140	138
95th Queue (ft)	481	215	199	190
Link Distance (ft)	488	50	50	50
Upstream Blk Time (%)	0	33	32	32
Queuing Penalty (veh)	2	154	147	150
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: US50 WB Ramps

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	LR	R	T	T	T	T	T
Maximum Queue (ft)	169	190	206	182	189	187	161	238	182
Average Queue (ft)	86	105	126	80	92	94	79	106	92
95th Queue (ft)	138	156	183	141	172	175	143	194	164
Link Distance (ft)		1501	1501		101	101	101	129	129
Upstream Blk Time (%)					5	4	2	2	2
Queuing Penalty (veh)					24	20	12	14	10
Storage Bay Dist (ft)	185			185					
Storage Blk Time (%)	0	0	1	0					
Queuing Penalty (veh)	0	0	1	0					

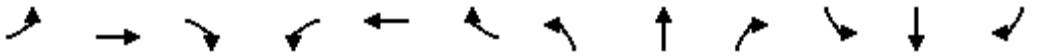
Appendix E

Analysis Worksheets for
Cumulative plus Proposed Project Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	98	402	47	142	717	138	109	198	76	163
v/c Ratio	0.45	0.53	0.11	0.52	0.62	0.51	0.38	0.48	0.39	0.41
Control Delay	33.3	24.3	1.4	32.1	23.2	32.1	28.7	9.1	33.4	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	24.3	1.4	32.1	23.2	32.1	28.7	9.1	33.4	26.7
Queue Length 50th (ft)	32	64	0	45	78	44	34	0	25	24
Queue Length 95th (ft)	87	130	5	114	144	111	90	52	73	61
Internal Link Dist (ft)		445			491		394			408
Turn Bay Length (ft)	310		375	210		190		290	140	
Base Capacity (vph)	783	3475	1556	1096	5004	1254	1319	1179	1254	2413
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	0.13	0.12	0.03	0.13	0.14	0.11	0.08	0.17	0.06	0.07

Intersection Summary



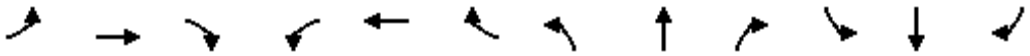
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	370	43	131	590	70	127	100	182	70	110	40
Future Volume (veh/h)	90	370	43	131	590	70	127	100	182	70	110	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	402	47	142	641	76	138	109	198	76	120	43
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	614	274	182	909	107	294	309	262	158	231	79
Arrive On Green	0.07	0.17	0.17	0.10	0.20	0.20	0.17	0.17	0.17	0.09	0.09	0.09
Sat Flow, veh/h	1781	3554	1585	1781	4633	544	1781	1870	1585	1781	2595	892
Grp Volume(v), veh/h	98	402	47	142	469	248	138	109	198	76	81	82
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1772	1781	1870	1585	1781	1777	1710
Q Serve(g_s), s	2.4	4.7	1.1	3.5	5.8	5.9	3.2	2.3	5.4	1.8	1.9	2.1
Cycle Q Clear(g_c), s	2.4	4.7	1.1	3.5	5.8	5.9	3.2	2.3	5.4	1.8	1.9	2.1
Prop In Lane	1.00		1.00	1.00		0.31	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	125	614	274	182	668	348	294	309	262	158	158	152
V/C Ratio(X)	0.79	0.65	0.17	0.78	0.70	0.71	0.47	0.35	0.76	0.48	0.51	0.54
Avail Cap(c_a), veh/h	989	5525	2465	1385	5293	2756	1583	1662	1408	1583	1579	1519
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	17.4	15.9	19.7	16.9	16.9	17.0	16.7	17.9	19.5	19.6	19.6
Incr Delay (d2), s/veh	4.1	0.4	0.1	2.7	0.5	1.0	0.4	0.3	1.7	0.8	0.9	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.7	0.4	1.4	2.0	2.2	1.2	0.9	1.8	0.7	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.7	17.8	16.0	22.5	17.4	17.9	17.4	16.9	19.6	20.4	20.5	20.7
LnGrp LOS	C	B	B	C	B	B	B	B	B	C	C	C
Approach Vol, veh/h		547			859			445			239	
Approach Delay, s/veh		18.9			18.4			18.3			20.5	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	14.0		9.5	9.7	13.0		12.8				
Change Period (Y+Rc), s	5.5	* 5.2		5.5	* 5.1	* 5.2		5.4				
Max Green Setting (Gmax), s	25.0	* 70		40.0	* 35	* 70		40.0				
Max Q Clear Time (g_c+I1), s	4.4	7.9		4.1	5.5	6.7		7.4				
Green Ext Time (p_c), s	0.0	1.0		0.1	0.0	0.5		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		18.7	
HCM 6th LOS		B	

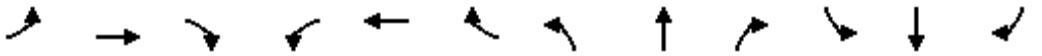
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	284	229	141	87	299	130	424	870	76	261	870	168
v/c Ratio	0.67	0.30	0.31	0.42	0.37	0.36	0.71	0.44	0.11	0.65	0.51	0.27
Control Delay	57.2	39.3	8.7	61.7	45.5	11.3	52.1	25.8	4.8	57.7	31.4	9.2
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	57.2	39.3	8.7	61.7	45.5	11.3	52.1	25.8	4.8	57.7	31.4	9.2
Queue Length 50th (ft)	99	71	0	30	69	0	144	159	0	91	178	16
Queue Length 95th (ft)	179	132	56	70	123	59	252	247	27	167	268	73
Internal Link Dist (ft)		802			424			689			453	
Turn Bay Length (ft)	265		600	205		185	278		170	251		175
Base Capacity (vph)	805	1328	682	805	1918	678	805	3349	1071	805	3340	1085
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	0.35	0.17	0.21	0.11	0.16	0.19	0.53	0.26	0.07	0.32	0.26	0.15

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	211	130	80	275	120	390	800	70	240	800	155
Future Volume (veh/h)	261	211	130	80	275	120	390	800	70	240	800	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	284	229	141	87	299	130	424	870	76	261	870	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	358	802	358	144	837	260	498	1996	620	335	1755	545
Arrive On Green	0.10	0.23	0.23	0.04	0.16	0.16	0.14	0.39	0.39	0.10	0.34	0.34
Sat Flow, veh/h	3456	3554	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	284	229	141	87	299	130	424	870	76	261	870	168
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	7.5	5.0	7.0	2.3	4.8	7.0	11.2	11.7	2.9	6.9	12.6	7.3
Cycle Q Clear(g_c), s	7.5	5.0	7.0	2.3	4.8	7.0	11.2	11.7	2.9	6.9	12.6	7.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	358	802	358	144	837	260	498	1996	620	335	1755	545
V/C Ratio(X)	0.79	0.29	0.39	0.60	0.36	0.50	0.85	0.44	0.12	0.78	0.50	0.31
Avail Cap(c_a), veh/h	927	1525	680	927	2192	680	927	3836	1191	927	3836	1191
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	29.9	30.7	43.9	34.6	35.5	38.9	20.8	18.2	41.1	24.2	22.4
Incr Delay (d2), s/veh	1.5	0.1	0.3	1.5	0.9	5.1	1.6	0.3	0.2	1.5	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	2.1	2.7	1.0	2.1	3.0	4.8	4.6	1.1	3.0	5.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.3	29.9	30.9	45.4	35.5	40.5	40.5	21.1	18.3	42.6	24.6	23.1
LnGrp LOS	D	C	C	D	D	D	D	C	B	D	C	C
Approach Vol, veh/h		654			516			1370			1299	
Approach Delay, s/veh		35.5			38.4			27.0			28.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.9	37.8	15.2	21.3	14.5	42.2	9.4	27.0
Change Period (Y+Rc), s	5.5	* 5.8	5.5	* 6	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	25.0	* 70	25.0	* 40	25.0	* 70	25.0	40.0
Max Q Clear Time (g_c+I1), s	13.2	14.6	9.5	9.0	8.9	13.7	4.3	9.0
Green Ext Time (p_c), s	0.3	17.5	0.2	6.3	0.2	16.1	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	30.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

SimTraffic Simulation Summary

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	13843	13823	13726	13840	13675	13784	13880
Vehs Exited	13870	13841	13696	13802	13659	13764	13847
Starting Vehs	400	414	432	393	390	395	360
Ending Vehs	373	396	462	431	406	415	393
Travel Distance (mi)	7145	7111	7047	7121	7043	7097	7100
Travel Time (hr)	409.9	402.0	405.3	397.7	424.3	399.5	421.2
Total Delay (hr)	149.9	143.3	149.7	139.1	168.6	141.3	163.2
Total Stops	13137	12518	12879	12325	14149	12640	13999
Fuel Used (gal)	294.6	292.2	291.7	291.1	295.8	290.3	297.2

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	13874	13919	13702	13804
Vehs Exited	13832	13906	13642	13785
Starting Vehs	409	364	340	387
Ending Vehs	451	377	400	413
Travel Distance (mi)	7117	7166	7027	7097
Travel Time (hr)	410.7	412.8	404.7	408.8
Total Delay (hr)	151.6	152.0	149.0	150.8
Total Stops	13190	12981	13142	13093
Fuel Used (gal)	294.4	295.9	290.8	293.4

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

SimTraffic Simulation Summary

Interval #1 Information

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3379	3477	3293	3283	3261	3353	3386
Vehs Exited	3365	3496	3371	3298	3257	3381	3388
Starting Vehs	400	414	432	393	390	395	360
Ending Vehs	414	395	354	378	394	367	358
Travel Distance (mi)	1733	1794	1695	1689	1666	1731	1731
Travel Time (hr)	103.1	101.4	94.3	92.8	92.2	95.7	93.8
Total Delay (hr)	39.8	36.1	33.1	31.6	31.6	32.7	31.0
Total Stops	3520	3185	3054	2832	2885	2964	2895
Fuel Used (gal)	72.4	73.7	69.8	68.5	67.4	70.4	69.9

Interval #1 Information

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3384	3437	3317	3355
Vehs Exited	3427	3415	3259	3364
Starting Vehs	409	364	340	387
Ending Vehs	366	386	398	378
Travel Distance (mi)	1752	1758	1700	1725
Travel Time (hr)	97.9	99.5	95.8	96.6
Total Delay (hr)	34.1	35.2	33.8	33.9
Total Stops	2955	3085	3138	3048
Fuel Used (gal)	71.6	71.9	69.6	70.5

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3650	3658	3644	3634	3779	3668	3636
Vehs Exited	3643	3593	3554	3611	3668	3615	3527
Starting Vehs	414	395	354	378	394	367	358
Ending Vehs	421	460	444	401	505	420	467
Travel Distance (mi)	1877	1848	1869	1861	1914	1871	1830
Travel Time (hr)	109.4	101.7	106.3	104.2	119.9	109.6	109.5
Total Delay (hr)	41.1	34.6	38.5	36.7	50.2	41.5	43.3
Total Stops	3507	3021	3264	3247	4035	3561	3673
Fuel Used (gal)	78.2	75.4	76.8	76.1	81.8	77.4	76.9

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3661	3714	3644	3666
Vehs Exited	3588	3645	3581	3600
Starting Vehs	366	386	398	378
Ending Vehs	439	455	461	447
Travel Distance (mi)	1859	1889	1845	1866
Travel Time (hr)	109.8	108.5	109.4	108.9
Total Delay (hr)	42.1	39.8	42.2	41.0
Total Stops	3521	3339	3654	3480
Fuel Used (gal)	77.5	78.1	77.0	77.5

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3398	3324	3362	3418	3302	3370	3519
Vehs Exited	3434	3403	3426	3387	3360	3428	3547
Starting Vehs	421	460	444	401	505	420	467
Ending Vehs	385	381	380	432	447	362	439
Travel Distance (mi)	1769	1741	1746	1753	1725	1753	1790
Travel Time (hr)	99.0	100.8	98.9	97.1	109.3	98.3	111.2
Total Delay (hr)	34.7	37.3	35.5	33.4	46.8	34.4	45.8
Total Stops	3108	3146	3025	3088	3726	3140	3796
Fuel Used (gal)	72.3	72.1	71.9	71.7	73.7	71.8	76.3

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3454	3357	3374	3390
Vehs Exited	3504	3382	3474	3434
Starting Vehs	439	455	461	447
Ending Vehs	389	430	361	402
Travel Distance (mi)	1794	1747	1773	1759
Travel Time (hr)	105.2	103.7	103.6	102.7
Total Delay (hr)	40.1	40.1	39.2	38.7
Total Stops	3466	3410	3336	3324
Fuel Used (gal)	74.8	72.6	74.3	73.2

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3416	3364	3427	3505	3333	3393	3339
Vehs Exited	3428	3349	3345	3506	3374	3340	3385
Starting Vehs	385	381	380	432	447	362	439
Ending Vehs	373	396	462	431	406	415	393
Travel Distance (mi)	1766	1729	1737	1817	1739	1742	1749
Travel Time (hr)	98.4	98.1	105.8	103.5	103.0	95.8	106.6
Total Delay (hr)	34.4	35.4	42.6	37.4	40.0	32.6	43.1
Total Stops	3002	3166	3536	3158	3503	2975	3635
Fuel Used (gal)	71.7	71.0	73.2	74.8	72.8	70.7	74.1

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3375	3411	3367	3396
Vehs Exited	3313	3464	3328	3383
Starting Vehs	389	430	361	402
Ending Vehs	451	377	400	413
Travel Distance (mi)	1713	1771	1709	1747
Travel Time (hr)	97.7	101.2	95.9	100.6
Total Delay (hr)	35.3	36.9	33.8	37.1
Total Stops	3248	3147	3014	3235
Fuel Used (gal)	70.4	73.3	69.9	72.2

3: Sunrise Blvd & US50 EB Ramps Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	11.3	3.7	4.0	4.6	23.6
Total Del/Veh (s)	36.6	18.7	11.4	11.5	18.8
Stop Delay (hr)	9.8	3.3	3.0	3.2	19.3
Stop Del/Veh (s)	31.9	16.5	8.6	8.2	15.5

4: US50 WB Ramps & Sunrise Blvd Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0
Total Delay (hr)	1.8	2.0	5.2	3.7	12.7
Total Del/Veh (s)	16.5	16.6	9.6	9.0	10.7
Stop Delay (hr)	1.4	1.7	2.7	2.0	7.8
Stop Del/Veh (s)	12.8	14.0	5.0	4.9	6.6

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	3.1	0.1	0.2	2.5	0.4	0.8	0.0	0.0	0.0
Total Delay (hr)	4.4	1.0	0.1	0.9	1.0	3.0	0.6	10.1	1.0	9.9	7.4	0.8
Total Del/Veh (s)	61.1	43.1	15.3	65.0	57.3	19.8	71.0	30.7	30.1	63.4	18.4	7.9
Stop Delay (hr)	4.1	0.9	0.1	0.8	0.9	2.6	0.6	7.7	0.8	8.8	5.0	0.4
Stop Del/Veh (s)	57.4	38.9	15.2	61.6	50.8	17.3	66.5	23.4	24.0	56.4	12.5	3.6

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.2
Total Delay (hr)	40.2
Total Del/Veh (s)	30.6
Stop Delay (hr)	32.7
Stop Del/Veh (s)	24.9

6: US50 EB Ramps & Zinfandel Dr Performance by movement

Movement	EBL	EBT	EBR	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	2.6	2.8	7.2	0.1	13.1	0.1	6.6	32.5
Total Del/Veh (s)	29.8	29.1	28.3	2.5	23.7	23.3	17.3	23.0
Stop Delay (hr)	2.4	2.6	5.7	0.0	9.2	0.0	5.5	25.5
Stop Del/Veh (s)	27.6	26.5	22.6	1.1	16.6	16.4	14.5	18.1

7: US50 WB Ramps Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.3	0.2	0.0	0.0	0.1
Total Delay (hr)	6.8	0.5	1.4	1.4	10.2
Total Del/Veh (s)	36.8	9.9	5.3	5.6	13.5
Stop Delay (hr)	6.1	0.4	0.9	0.9	8.3
Stop Del/Veh (s)	32.9	7.0	3.6	3.5	11.0

Queuing and Blocking Report

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	EB	EB	EB	EB	EB	B33	NB	NB	NB	NB	SB	SB
Directions Served	L	L	L	R	R	T	T	T	T	T	T	T
Maximum Queue (ft)	291	309	319	224	236	63	290	192	161	50	249	253
Average Queue (ft)	196	209	214	119	124	4	211	85	66	7	145	142
95th Queue (ft)	264	281	289	191	203	91	303	158	131	31	226	222
Link Distance (ft)	1013	1013	1013	1013		611	54	54	54	54	204	204
Upstream Blk Time (%)						0	30	17	14	0	1	1
Queuing Penalty (veh)						0	94	54	44	1	6	4
Storage Bay Dist (ft)					510							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	SB
Directions Served	T
Maximum Queue (ft)	215
Average Queue (ft)	133
95th Queue (ft)	208
Link Distance (ft)	204
Upstream Blk Time (%)	0
Queuing Penalty (veh)	2
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: US50 WB Ramps & Sunrise Blvd

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	T	T	T	T	T	T
Maximum Queue (ft)	114	143	152	150	260	249	261	155	174	191
Average Queue (ft)	54	78	71	73	136	140	139	85	101	113
95th Queue (ft)	96	121	118	121	216	218	222	130	152	172
Link Distance (ft)		2272	2272		243	243	243	377	377	377
Upstream Blk Time (%)					0	0	0			
Queuing Penalty (veh)					2	1	2			
Storage Bay Dist (ft)	416			250						
Storage Blk Time (%)										
Queuing Penalty (veh)										

Queuing and Blocking Report

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	TR	R	L	L
Maximum Queue (ft)	206	227	118	64	73	62	103	126	222	208	31	166
Average Queue (ft)	85	131	29	22	21	3	37	46	125	111	4	44
95th Queue (ft)	167	199	81	51	52	28	81	100	186	189	19	122
Link Distance (ft)			411	411				351	351	351		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	263	263			167	237	237				143	143
Storage Blk Time (%)		0	0									0
Queuing Penalty (veh)		0	0									0

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	TR	L	L	T	T	T	R
Maximum Queue (ft)	334	379	414	307	316	261	278	290	160
Average Queue (ft)	199	252	288	200	211	127	147	159	40
95th Queue (ft)	302	363	414	285	297	236	248	260	104
Link Distance (ft)	391	391	391	488	488	488	488	488	488
Upstream Blk Time (%)	0	0	2						
Queuing Penalty (veh)	0	0	0						
Storage Bay Dist (ft)									
Storage Blk Time (%)	17								
Queuing Penalty (veh)	5								

Queuing and Blocking Report

Intersection: 6: US50 EB Ramps & Zinfandel Dr

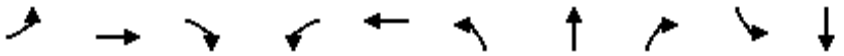
Movement	EB	EB	EB	EB	EB	EB	B14	B14	WB	WB	NB	NB
Directions Served	L	L	T	T	R	R	T	T	R	R	T	T
Maximum Queue (ft)	134	199	232	525	300	250	797	1047	78	70	302	341
Average Queue (ft)	57	97	99	333	275	203	185	281	12	7	167	206
95th Queue (ft)	114	169	196	640	357	357	886	1027	51	37	291	329
Link Distance (ft)	440	440	440	440			1753	1753	568	568	488	488
Upstream Blk Time (%)				13				0				
Queuing Penalty (veh)				0				0				
Storage Bay Dist (ft)					200	200						
Storage Blk Time (%)				0	40	2						
Queuing Penalty (veh)				1	69	3						

Intersection: 6: US50 EB Ramps & Zinfandel Dr

Movement	NB	NB	SB	SB	SB
Directions Served	T	TR	T	T	T
Maximum Queue (ft)	382	419	201	179	170
Average Queue (ft)	227	262	164	145	142
95th Queue (ft)	352	397	213	203	190
Link Distance (ft)	488	488	50	50	50
Upstream Blk Time (%)			34	33	33
Queuing Penalty (veh)			153	147	147
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: US50 WB Ramps

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	LR	R	T	T	T	T	T
Maximum Queue (ft)	194	242	267	200	164	168	142	200	190
Average Queue (ft)	107	133	160	69	70	70	63	96	91
95th Queue (ft)	166	205	233	163	138	141	126	171	166
Link Distance (ft)		1501	1501		101	101	101	129	129
Upstream Blk Time (%)					2	2	1	2	2
Queuing Penalty (veh)					7	6	5	8	8
Storage Bay Dist (ft)	185			185					
Storage Blk Time (%)	0	1	3	0					
Queuing Penalty (veh)	0	2	3	0					



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	76	717	93	284	565	105	109	245	43	206
v/c Ratio	0.49	0.73	0.18	0.60	0.25	0.54	0.54	0.63	0.26	0.57
Control Delay	52.5	34.1	6.5	35.1	15.1	50.8	49.8	13.5	44.9	36.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.5	34.1	6.5	35.1	15.1	50.8	49.8	13.5	44.9	36.7
Queue Length 50th (ft)	39	181	0	131	63	54	56	0	22	41
Queue Length 95th (ft)	100	305	35	266	110	128	130	74	65	94
Internal Link Dist (ft)		445			491		394			408
Turn Bay Length (ft)	310		375	210		190		290	140	
Base Capacity (vph)	537	2915	1321	752	4448	859	904	894	859	1651
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	0.14	0.25	0.07	0.38	0.13	0.12	0.12	0.27	0.05	0.12

Intersection Summary

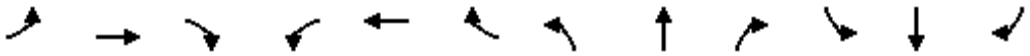
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	660	86	261	440	80	97	100	225	40	120	70
Future Volume (veh/h)	70	660	86	261	440	80	97	100	225	40	120	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	717	93	284	478	87	105	109	245	43	130	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	841	375	328	1570	279	321	337	286	163	203	112
Arrive On Green	0.05	0.24	0.24	0.18	0.36	0.36	0.18	0.18	0.18	0.09	0.09	0.09
Sat Flow, veh/h	1781	3554	1585	1781	4359	776	1781	1870	1585	1781	2211	1217
Grp Volume(v), veh/h	76	717	93	284	371	194	105	109	245	43	103	103
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1731	1781	1870	1585	1781	1777	1651
Q Serve(g_s), s	2.9	13.3	3.3	10.7	5.4	5.6	3.5	3.5	10.3	1.5	3.9	4.2
Cycle Q Clear(g_c), s	2.9	13.3	3.3	10.7	5.4	5.6	3.5	3.5	10.3	1.5	3.9	4.2
Prop In Lane	1.00		1.00	1.00		0.45	1.00		1.00	1.00		0.74
Lane Grp Cap(c), veh/h	97	841	375	328	1226	623	321	337	286	163	163	151
V/C Ratio(X)	0.78	0.85	0.25	0.87	0.30	0.31	0.33	0.32	0.86	0.26	0.63	0.68
Avail Cap(c_a), veh/h	646	3606	1609	904	3455	1756	1033	1085	919	1033	1030	958
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.2	25.2	21.3	27.3	15.8	15.9	24.6	24.6	27.4	29.2	30.2	30.4
Incr Delay (d2), s/veh	5.0	1.0	0.1	2.7	0.1	0.1	0.2	0.2	2.9	0.3	1.5	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	5.4	1.2	4.6	2.0	2.1	1.4	1.5	3.9	0.7	1.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	26.1	21.5	30.1	15.9	16.0	24.8	24.8	30.3	29.5	31.7	32.4
LnGrp LOS	D	C	C	C	B	B	C	C	C	C	C	C
Approach Vol, veh/h		886			849			459			249	
Approach Delay, s/veh		26.6			20.7			27.7			31.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	30.0		11.8	17.8	21.5		17.8				
Change Period (Y+Rc), s	5.5	* 5.2		5.5	* 5.1	* 5.2		5.4				
Max Green Setting (Gmax), s	25.0	* 70		40.0	* 35	* 70		40.0				
Max Q Clear Time (g_c+I1), s	4.9	7.6		6.2	12.7	15.3		12.3				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.1	1.0		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		25.3	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	248	420	370	152	360	337	337	1011	65	261	1120	262
v/c Ratio	0.70	0.55	0.65	0.60	0.38	0.66	0.76	0.47	0.09	0.71	0.55	0.36
Control Delay	73.3	52.2	18.0	76.1	51.5	19.9	71.8	29.4	3.1	72.9	32.9	13.0
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	73.3	52.2	18.0	76.1	51.5	19.9	71.8	29.4	3.1	72.9	32.9	13.0
Queue Length 50th (ft)	109	174	57	67	102	54	147	220	0	114	263	53
Queue Length 95th (ft)	196	278	193	131	166	186	256	361	20	205	423	156
Internal Link Dist (ft)		802			424			689			453	
Turn Bay Length (ft)	265		600	205		185	278		170	251		175
Base Capacity (vph)	669	1127	703	669	1595	679	669	2816	914	669	2778	938
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	0.37	0.37	0.53	0.23	0.23	0.50	0.50	0.36	0.07	0.39	0.40	0.28

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	228	386	340	140	331	310	310	930	60	240	1030	241
Future Volume (veh/h)	228	386	340	140	331	310	310	930	60	240	1030	241
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	248	420	370	152	360	337	337	1011	65	261	1120	262
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	1020	455	204	1322	410	389	1996	620	313	1884	585
Arrive On Green	0.09	0.29	0.29	0.06	0.26	0.26	0.11	0.39	0.39	0.09	0.37	0.37
Sat Flow, veh/h	3456	3554	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	248	420	370	152	360	337	337	1011	65	261	1120	262
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	9.3	12.6	28.7	5.7	7.4	26.4	12.7	19.9	3.4	9.8	23.4	16.5
Cycle Q Clear(g_c), s	9.3	12.6	28.7	5.7	7.4	26.4	12.7	19.9	3.4	9.8	23.4	16.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	300	1020	455	204	1322	410	389	1996	620	313	1884	585
V/C Ratio(X)	0.83	0.41	0.81	0.75	0.27	0.82	0.87	0.51	0.10	0.83	0.59	0.45
Avail Cap(c_a), veh/h	654	1076	480	654	1546	480	654	2705	840	654	2705	840
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.3	38.1	43.8	61.2	39.0	46.1	57.7	30.6	25.6	59.1	33.7	31.5
Incr Delay (d2), s/veh	2.2	0.1	9.0	2.1	0.4	14.5	3.1	0.4	0.2	2.2	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	5.6	12.4	2.6	3.2	12.0	5.7	8.3	1.3	4.4	9.8	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	38.2	52.8	63.3	39.4	60.5	60.7	31.0	25.7	61.3	34.3	32.6
LnGrp LOS	E	D	D	E	D	E	E	C	C	E	C	C
Approach Vol, veh/h		1038			849			1413			1643	
Approach Delay, s/veh		49.0			52.1			37.8			38.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.4	54.6	17.0	40.2	17.5	57.5	13.3	43.9
Change Period (Y+Rc), s	5.5	* 5.8	5.5	* 6	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	25.0	* 70	25.0	* 40	25.0	* 70	25.0	40.0
Max Q Clear Time (g_c+I1), s	14.7	25.4	11.3	28.4	11.8	21.9	7.7	30.7
Green Ext Time (p_c), s	0.2	23.3	0.2	5.8	0.2	18.6	0.1	1.0

Intersection Summary	
HCM 6th Ctrl Delay	42.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

SimTraffic Simulation Summary

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:05	3:05	3:05	3:05	3:05	3:05	3:05
End Time	4:15	4:15	4:15	4:15	4:15	4:15	4:15
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	15372	15149	15250	15093	14948	15220	15288
Vehs Exited	15372	15151	15241	15040	14916	15129	15255
Starting Vehs	488	454	442	423	445	445	452
Ending Vehs	488	452	451	476	477	536	485
Travel Distance (mi)	7981	7837	7875	7829	7741	7864	7921
Travel Time (hr)	535.8	490.5	562.0	481.4	463.4	508.2	495.6
Total Delay (hr)	245.5	205.6	274.8	196.1	181.9	221.5	207.4
Total Stops	15672	14474	15579	14913	14189	14306	14697
Fuel Used (gal)	349.2	335.3	352.1	331.5	324.4	339.3	338.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:05	3:05	3:05	3:05
End Time	4:15	4:15	4:15	4:15
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	15450	15392	15349	15251
Vehs Exited	15412	15337	15284	15214
Starting Vehs	499	417	436	450
Ending Vehs	537	472	501	488
Travel Distance (mi)	8005	7947	7969	7897
Travel Time (hr)	552.1	483.8	535.7	510.8
Total Delay (hr)	261.1	194.3	246.1	223.4
Total Stops	16449	14557	14564	14935
Fuel Used (gal)	352.8	336.1	347.7	340.7

Interval #0 Information Seeding

Start Time	3:05
End Time	3:15
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information

Start Time	3:15
End Time	3:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3807	3703	3697	3660	3576	3662	3736
Vehs Exited	3825	3752	3593	3618	3493	3698	3727
Starting Vehs	488	454	442	423	445	445	452
Ending Vehs	470	405	546	465	528	409	461
Travel Distance (mi)	1980	1927	1873	1901	1837	1919	1930
Travel Time (hr)	118.6	119.2	147.1	115.2	109.7	111.6	116.0
Total Delay (hr)	46.6	48.9	78.7	46.2	43.0	41.7	45.9
Total Stops	3674	3614	4247	3611	3366	3445	3461
Fuel Used (gal)	83.0	82.7	87.1	80.2	76.8	79.8	81.4

Interval #1 Information

Start Time	3:15
End Time	3:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3782	3789	3760	3719
Vehs Exited	3839	3811	3696	3707
Starting Vehs	499	417	436	450
Ending Vehs	442	395	500	461
Travel Distance (mi)	1995	1973	1932	1927
Travel Time (hr)	121.9	118.2	119.7	119.7
Total Delay (hr)	49.4	46.4	49.4	49.6
Total Stops	3726	3487	3604	3624
Fuel Used (gal)	84.0	83.3	81.8	82.0

Interval #2 Information

Start Time	3:30
End Time	3:45
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4158	4003	4058	3965	4043	4037	4112
Vehs Exited	4068	3880	4063	3905	4070	3948	4045
Starting Vehs	470	405	546	465	528	409	461
Ending Vehs	560	528	541	525	501	498	528
Travel Distance (mi)	2117	2035	2105	2026	2089	2059	2116
Travel Time (hr)	141.6	131.2	138.7	122.3	125.4	129.4	140.8
Total Delay (hr)	64.3	57.1	61.8	48.5	49.3	54.2	63.8
Total Stops	4206	3792	4219	3801	3641	3781	4028
Fuel Used (gal)	92.9	87.9	91.7	85.0	88.0	88.4	92.5

Interval #2 Information

Start Time	3:30
End Time	3:45
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3999	4040	4008	4041
Vehs Exited	3838	3963	3948	3973
Starting Vehs	442	395	500	461
Ending Vehs	603	472	560	527
Travel Distance (mi)	2034	2054	2076	2071
Travel Time (hr)	137.3	129.2	135.5	133.2
Total Delay (hr)	63.3	54.2	59.9	57.6
Total Stops	4104	3826	3885	3927
Fuel Used (gal)	89.0	87.6	89.3	89.2

Interval #3 Information

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3752	3747	3739	3695	3650	3714	3744
Vehs Exited	3796	3829	3835	3775	3711	3727	3757
Starting Vehs	560	528	541	525	501	498	528
Ending Vehs	516	446	445	445	440	485	515
Travel Distance (mi)	1965	1968	1955	1965	1929	1924	1949
Travel Time (hr)	136.4	120.1	136.2	125.7	116.5	132.9	125.0
Total Delay (hr)	65.0	48.7	64.9	54.0	46.4	62.6	53.8
Total Stops	3877	3550	3512	3877	3661	3548	3763
Fuel Used (gal)	86.8	83.0	86.5	84.7	80.8	85.0	84.0

Interval #3 Information

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3831	3757	3710	3734
Vehs Exited	3895	3781	3829	3793
Starting Vehs	603	472	560	527
Ending Vehs	539	448	441	472
Travel Distance (mi)	1981	1970	1973	1958
Travel Time (hr)	140.6	119.0	143.2	129.6
Total Delay (hr)	68.7	47.1	71.7	58.3
Total Stops	3974	3603	3504	3684
Fuel Used (gal)	87.9	83.3	89.0	85.1

Interval #4 Information Recording

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3655	3696	3756	3773	3679	3807	3696
Vehs Exited	3683	3690	3750	3742	3642	3756	3726
Starting Vehs	516	446	445	445	440	485	515
Ending Vehs	488	452	451	476	477	536	485
Travel Distance (mi)	1919	1907	1942	1937	1887	1961	1926
Travel Time (hr)	139.2	119.9	139.9	118.1	111.8	134.3	113.8
Total Delay (hr)	69.6	50.9	69.3	47.4	43.2	63.0	43.9
Total Stops	3915	3518	3601	3624	3521	3532	3445
Fuel Used (gal)	86.4	81.8	86.8	81.5	78.8	86.2	80.3

Interval #4 Information Recording

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3838	3806	3871	3757
Vehs Exited	3840	3782	3811	3741
Starting Vehs	539	448	441	472
Ending Vehs	537	472	501	488
Travel Distance (mi)	1995	1949	1987	1941
Travel Time (hr)	152.2	117.4	137.3	128.4
Total Delay (hr)	79.7	46.6	65.1	57.9
Total Stops	4645	3641	3571	3702
Fuel Used (gal)	91.9	82.0	87.6	84.3

3: Sunrise Blvd & US50 EB Ramps Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	14.9	2.8	7.4	4.8	29.9
Total Del/Veh (s)	39.0	15.6	14.3	13.2	20.7
Stop Delay (hr)	12.6	2.5	5.6	3.6	24.2
Stop Del/Veh (s)	32.9	13.8	10.7	9.8	16.7

4: US50 WB Ramps & Sunrise Blvd Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0
Total Delay (hr)	1.9	3.0	8.0	3.3	16.2
Total Del/Veh (s)	22.8	24.0	11.0	8.0	12.0
Stop Delay (hr)	1.6	2.7	3.9	1.8	9.9
Stop Del/Veh (s)	19.4	21.0	5.3	4.4	7.4

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.6	19.7	0.7	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	2.8	0.2	0.3	42.0	44.4	44.9	0.0	0.0	0.0
Total Delay (hr)	6.0	1.0	0.1	2.5	1.8	4.9	1.4	27.9	1.0	17.6	9.7	0.6
Total Del/Veh (s)	70.0	50.0	14.0	67.9	57.3	28.9	92.4	63.4	66.9	99.8	26.6	8.1
Stop Delay (hr)	5.6	0.9	0.1	2.4	1.6	4.3	1.3	23.0	0.8	16.0	7.3	0.3
Stop Del/Veh (s)	65.5	46.0	13.9	63.5	50.2	25.3	85.3	52.2	57.7	90.7	20.1	4.2

5: Zinfandel Dr & White Rock Rd Performance by movement

Movement	All
Denied Delay (hr)	21.2
Denied Del/Veh (s)	14.8
Total Delay (hr)	74.4
Total Del/Veh (s)	51.7
Stop Delay (hr)	63.5
Stop Del/Veh (s)	44.1

6: US50 EB Ramps & Zinfandel Dr Performance by movement

Movement	EBL	EBT	EBR	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay (hr)	5.5	0.9	5.3	1.1	16.8	0.1	6.8	36.5
Total Del/Veh (s)	34.4	26.9	23.3	10.0	24.5	24.9	17.5	22.7
Stop Delay (hr)	5.0	0.8	4.2	0.8	11.2	0.1	5.7	27.8
Stop Del/Veh (s)	31.1	25.1	18.7	7.3	16.3	18.0	14.7	17.3

7: US50 WB Ramps Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.4	0.3	0.0	0.0	0.1
Total Delay (hr)	5.1	1.5	2.2	1.6	10.4
Total Del/Veh (s)	36.2	14.2	5.2	5.1	10.5
Stop Delay (hr)	4.6	1.2	1.4	1.0	8.1
Stop Del/Veh (s)	32.7	11.3	3.3	3.0	8.2

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	EB	EB	EB	EB	EB	B33	NB	NB	NB	NB	SB	SB
Directions Served	L	L	L	R	R	T	T	T	T	T	T	T
Maximum Queue (ft)	350	368	380	188	195	63	301	254	273	86	258	262
Average Queue (ft)	247	263	272	101	106	2	268	147	148	23	152	147
95th Queue (ft)	332	349	362	167	173	64	319	236	245	63	230	232
Link Distance (ft)	1013	1013	1013	1013		611	54	54	54	54	204	204
Upstream Blk Time (%)						0	34	28	28	3	2	1
Queuing Penalty (veh)						0	162	132	129	15	7	5
Storage Bay Dist (ft)					510							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 3: Sunrise Blvd & US50 EB Ramps

Movement	SB
Directions Served	T
Maximum Queue (ft)	221
Average Queue (ft)	138
95th Queue (ft)	207
Link Distance (ft)	204
Upstream Blk Time (%)	1
Queuing Penalty (veh)	2
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: US50 WB Ramps & Sunrise Blvd

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	T	T	T	T	T	T
Maximum Queue (ft)	118	132	174	174	308	324	328	158	181	199
Average Queue (ft)	53	77	93	94	187	186	188	87	102	113
95th Queue (ft)	96	116	150	149	285	286	297	140	158	176
Link Distance (ft)		2272	2272		243	243	243	377	377	377
Upstream Blk Time (%)					2	2	2			
Queuing Penalty (veh)					16	14	18			
Storage Bay Dist (ft)	416			250						
Storage Blk Time (%)			0							
Queuing Penalty (veh)			0							

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	TR	R	L	L
Maximum Queue (ft)	261	270	234	47	58	146	152	208	302	286	52	168
Average Queue (ft)	129	171	34	19	19	47	89	86	182	170	14	92
95th Queue (ft)	235	255	120	45	47	135	140	168	266	252	42	193
Link Distance (ft)			411	411				351	351	351		
Upstream Blk Time (%)									0	0		
Queuing Penalty (veh)									0	0		
Storage Bay Dist (ft)	263	263			167	237	237				143	143
Storage Blk Time (%)	0	1	0					0				0
Queuing Penalty (veh)	0	0	1					0				2

Intersection: 5: Zinfandel Dr & White Rock Rd

Movement	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	TR	L	L	T	T	T	R
Maximum Queue (ft)	413	424	434	463	459	448	454	468	259
Average Queue (ft)	352	382	403	314	321	211	213	227	48
95th Queue (ft)	440	445	441	476	473	428	407	445	180
Link Distance (ft)	391	391	391	488	488	488	488	488	488
Upstream Blk Time (%)	10	20	47	1	0	1	1	3	0
Queuing Penalty (veh)	0	0	0	3	2	3	4	12	0
Storage Bay Dist (ft)									
Storage Blk Time (%)	48								
Queuing Penalty (veh)	25								

Intersection: 6: US50 EB Ramps & Zinfandel Dr

Movement	EB	EB	EB	EB	EB	EB	B14	B14	WB	WB	NB	NB
Directions Served	L	L	T	T	R	R	T	T	R	R	T	T
Maximum Queue (ft)	264	351	121	515	300	250	573	666	172	171	441	482
Average Queue (ft)	116	202	37	189	241	151	100	138	86	62	224	267
95th Queue (ft)	213	310	94	532	357	342	690	774	156	134	407	457
Link Distance (ft)	440	440	440	440			1753	1753	568	568	488	488
Upstream Blk Time (%)				8			0	1			0	0
Queuing Penalty (veh)				0			0	0			0	1
Storage Bay Dist (ft)					200	200						
Storage Blk Time (%)				0	27	1						
Queuing Penalty (veh)				0	15	1						

Intersection: 6: US50 EB Ramps & Zinfandel Dr

Movement	NB	NB	SB	SB	SB
Directions Served	T	TR	T	T	T
Maximum Queue (ft)	512	505	194	179	173
Average Queue (ft)	286	314	167	143	139
95th Queue (ft)	482	510	213	202	194
Link Distance (ft)	488	488	50	50	50
Upstream Blk Time (%)	0	1	36	33	34
Queuing Penalty (veh)	1	5	165	155	156
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: US50 WB Ramps

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	LR	R	T	T	T	T	T
Maximum Queue (ft)	168	192	210	199	191	189	164	229	197
Average Queue (ft)	88	105	124	80	100	101	85	110	99
95th Queue (ft)	137	159	177	140	188	186	149	198	173
Link Distance (ft)		1501	1501		101	101	101	129	129
Upstream Blk Time (%)					6	5	3	3	2
Queuing Penalty (veh)					30	26	16	16	12
Storage Bay Dist (ft)	185			185					
Storage Blk Time (%)	0	0	0	0					
Queuing Penalty (veh)	0	0	1	0					

Appendix F

Analysis Worksheets for Signal Warrants

Kimley»Horn

Traffic Signal Warrants Worksheet Warrant 3:
Peak Hour
Source: MUTCD 2012 California Supplement

Scenario: Existing Plus Project Conditions AM
Intersection: Kilgore Rd AND Project Driveway
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

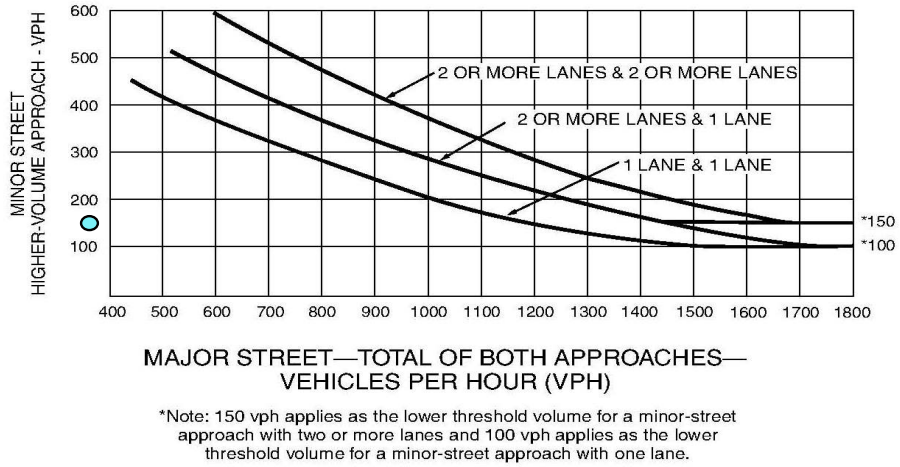
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — No

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		373
Highest Approach - Minor Street	157	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet Warrant 3:
Peak Hour
Source: MUTCD 2012 California Supplement

Scenario: Existing Plus Project Conditions PM
Intersection: Kilgore Rd AND Project Driveway
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

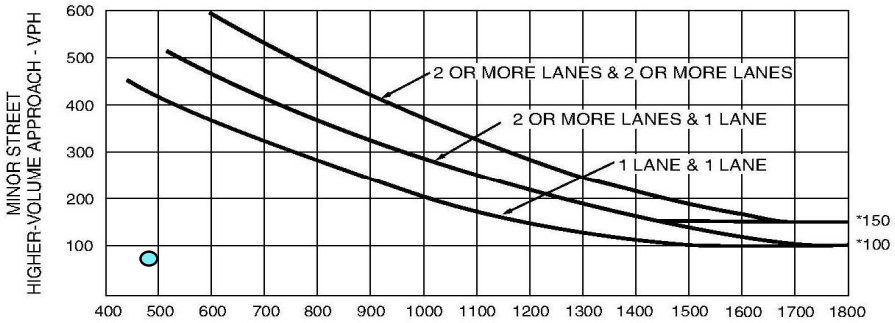
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — No

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		497
Highest Approach - Minor Street	91	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet Warrant 3:
Peak Hour
Source: MUTCD 2012 California Supplement

Scenario: Cumulative Year Conditions AM
Intersection: Kilgore Rd AND Project Driveway
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

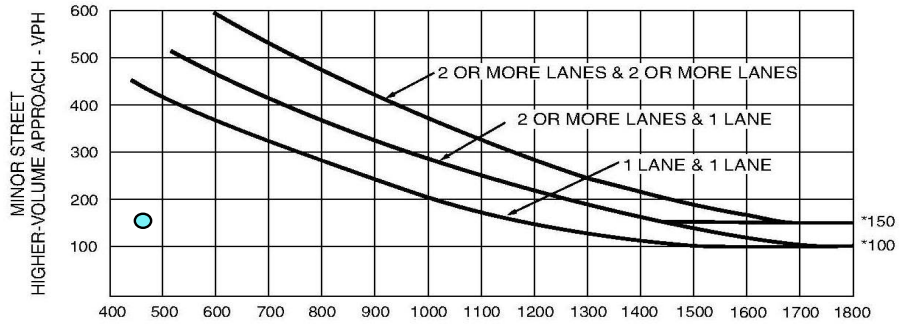
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — No

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		471
Highest Approach - Minor Street	157	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet Warrant 3: Peak Hour
Source: MUTCD 2012 California Supplement

Scenario: Cumulative Year Conditions PM
Intersection: Kilgore Rd AND Project Driveway
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

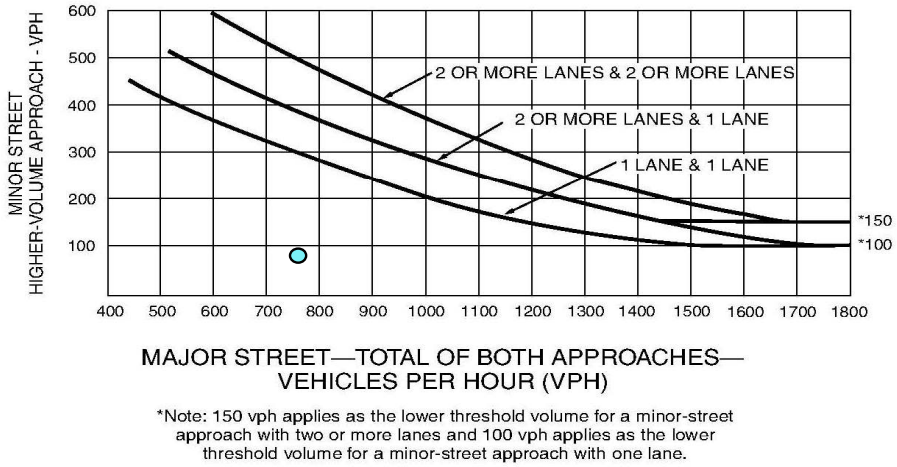
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		764
Highest Approach - Minor Street	91	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2012 California Supplement

Scenario: Cumulative Year Plus Project Conditions AM
Intersection: Kilgore Rd AND Project Driveway
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

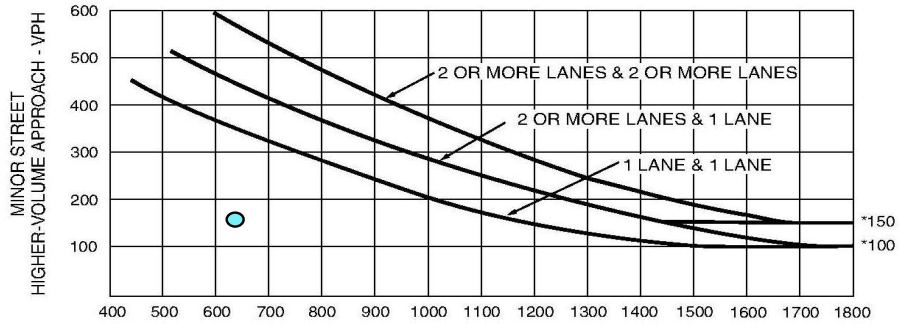
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		637
Highest Approach - Minor Street	157	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2012 California Supplement

Scenario: Cumulative Year Plus Project Conditions PM
Intersection: Kilgore Rd AND Project Driveway
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) — SATISFIED **NO**

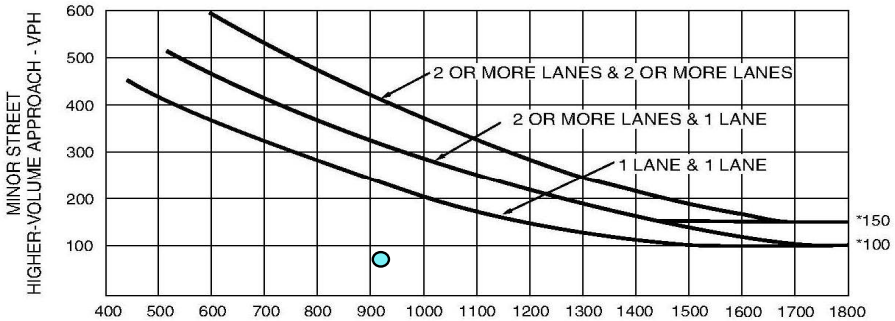
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B — SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		910
Highest Approach - Minor Street	91	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Appendix G

Streetlight Data Sheets

Location: Sunrise Blvd & US-50 EB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 22-070003-003
Date: 1/11/2022

Streetlight Data - Totals

NS/EW Streets:	Sunrise Blvd				Sunrise Blvd				US-50 EB Ramps				US-50 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	4	2	0	0	3	2	0	3	0	2	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	95	0	0	0	286	0	0	104	0	92	0	0	0	0	0	577
6:15 AM	0	148	0	0	0	244	0	0	113	0	104	0	0	0	0	0	609
6:30 AM	0	179	0	0	0	392	0	0	168	0	122	0	0	0	0	0	861
6:45 AM	0	208	0	0	0	359	0	0	180	0	134	0	0	0	0	0	881
7:00 AM	0	204	0	0	0	383	0	0	201	0	146	0	0	0	0	0	934
7:15 AM	0	217	0	0	0	270	0	0	296	0	162	0	0	0	0	0	945
7:30 AM	0	263	0	0	0	379	0	0	273	0	193	0	0	0	0	0	1108
7:45 AM	0	262	0	0	0	495	0	0	344	0	225	0	0	0	0	0	1326
8:00 AM	0	314	0	0	0	346	0	0	351	0	155	0	0	0	0	0	1166
8:15 AM	0	219	0	0	0	534	0	0	393	0	107	0	0	0	0	0	1253
8:30 AM	0	242	0	0	0	541	0	0	306	0	129	0	0	0	0	0	1218
8:45 AM	0	270	0	0	0	469	0	0	345	0	124	0	0	0	0	0	1208
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2621	0	0	0	4698	0	0	3074	0	1693	0	0	0	0	0	12086
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	64.49%	0.00%	35.51%	0.00%					
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	1045	0	0	0	1890	0	0	1395	0	515	0	0	0	0	0	4845
PEAK HR FACTOR :	0.000	0.832	0.000	0.000	0.000	0.873	0.000	0.000	0.887	0.000	0.831	0.000	0.000	0.000	0.000	0.000	0.967
	0.832				0.873				0.944								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	4	2	0	0	3	2	0	3	0	2	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	598	0	0	0	455	0	0	404	0	95	0	0	0	0	0	1552
4:15 PM	0	513	0	0	0	552	0	0	468	0	112	0	0	0	0	0	1645
4:30 PM	0	576	0	0	0	498	0	0	398	0	128	0	0	0	0	0	1600
4:45 PM	0	520	0	0	0	585	0	0	449	0	128	0	0	0	0	0	1682
5:00 PM	0	529	0	0	0	558	0	0	405	0	117	0	0	0	0	0	1609
5:15 PM	0	577	0	0	0	555	0	0	356	0	149	0	0	0	0	0	1637
5:30 PM	0	446	0	0	0	423	0	0	463	0	147	0	0	0	0	0	1479
5:45 PM	0	431	0	0	0	502	0	0	487	0	141	0	0	0	0	0	1561
6:00 PM	0	511	0	0	0	447	0	0	409	0	130	0	0	0	0	0	1497
6:15 PM	0	348	0	0	0	443	0	0	409	0	127	0	0	0	0	0	1327
6:30 PM	0	442	0	0	0	322	0	0	335	0	128	0	0	0	0	0	1227
6:45 PM	0	241	0	0	0	325	0	0	349	0	116	0	0	0	0	0	1031
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5732	0	0	0	5665	0	0	4932	0	1518	0	0	0	0	0	17847
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	76.47%	0.00%	23.53%	0.00%					
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	0	2138	0	0	0	2193	0	0	1720	0	485	0	0	0	0	0	6536
PEAK HR FACTOR :	0.000	0.928	0.000	0.000	0.000	0.937	0.000	0.000	0.919	0.000	0.947	0.000	0.000	0.000	0.000	0.000	0.971
	0.928				0.937				0.950								

Location: Zinfandel Dr & US-50 EB Ramps/Gold Center Dr
City: Rancho Cordova
Control: Signalized

Project ID: 22-070003-006
Date: 1/11/2022

Streetlight Data - Totals

NS/EW Streets:	Zinfandel Dr					Zinfandel Dr				US-50 EB Ramps/Gold Center Dr				US-50 EB Ramps/Gold Center Dr					
AM	NORTHBOUND					SOUTHBOUND				EASTBOUND				WESTBOUND					
	0	4	0	0	0	0	3	1	0	2	2	2	0	0	0	2	0	0	
	NL	NT	NR	NU	NR2	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	WU2	TOTAL
6:00 AM	0	209	2	0	0	0	104	0	0	27	174	9	0	4	0	31	0	2	562
6:15 AM	0	313	0	0	0	0	122	0	0	50	103	0	0	7	0	21	0	1	617
6:30 AM	0	302	0	0	0	0	164	0	0	62	109	6	0	7	0	26	0	2	678
6:45 AM	0	283	0	0	0	0	187	0	0	93	148	18	0	2	0	17	0	0	748
7:00 AM	0	350	0	0	0	0	170	0	0	62	155	6	0	0	0	9	0	5	757
7:15 AM	0	489	0	0	0	0	312	0	0	68	167	0	0	2	0	25	0	6	1069
7:30 AM	0	462	0	0	0	0	275	0	0	104	159	0	0	0	0	47	0	4	1051
7:45 AM	0	606	0	0	0	0	359	0	0	147	210	0	0	0	0	48	0	5	1375
8:00 AM	0	602	0	0	0	0	359	0	0	147	214	0	0	0	0	36	0	5	1363
8:15 AM	0	508	1	0	0	0	291	0	0	125	229	2	0	2	0	31	0	6	1195
8:30 AM	0	331	9	0	0	0	314	0	0	125	208	7	0	5	0	29	0	5	1033
8:45 AM	0	317	19	0	0	0	245	0	0	142	213	8	0	2	0	33	0	4	983
	NL	NT	NR	NU	NR2	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	WU2	TOTAL
TOTAL VOLUMES :	0	4772	31	0	0	0	2902	0	0	1152	2089	56	0	31	0	353	0	45	11431
APPROACH %'s :	0.00%	99.35%	0.65%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	34.94%	63.36%	1.70%	0.00%	7.23%	0.00%	82.28%	0.00%	10.49%	
PEAK HR :	07:30 AM - 08:30 AM																		TOTAL
PEAK HR VOL :	0	2178	1	0	0	0	1284	0	0	523	812	2	0	2	0	162	0	20	4984
PEAK HR FACTOR :	0.000	0.899	0.250	0.000	0.000	0.000	0.894	0.000	0.000	0.889	0.886	0.250	0.000	0.250	0.000	0.844	0.000	0.833	0.906
			0.899				0.894				0.926					0.868			

PM	NORTHBOUND					SOUTHBOUND				EASTBOUND				WESTBOUND					
	0	4	0	0	0	0	3	1	0	2	2	2	0	0	0	2	0	0	
	NL	NT	NR	NU	NR2	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	WU2	TOTAL
4:00 PM	0	727	5	0	0	0	302	0	0	326	53	4	0	0	0	134	0	6	1557
4:15 PM	0	727	18	0	0	0	414	0	0	341	48	9	0	2	0	155	0	9	1723
4:30 PM	0	748	18	0	0	0	417	0	0	434	46	23	0	2	0	189	0	11	1888
4:45 PM	0	723	5	0	0	0	443	0	0	380	46	33	0	6	0	191	0	5	1832
5:00 PM	0	1038	0	0	0	0	428	0	0	372	33	33	0	2	0	222	0	14	2142
5:15 PM	0	585	3	0	0	0	503	0	0	346	31	14	0	0	0	166	0	10	1658
5:30 PM	0	629	2	0	0	0	371	0	0	306	54	6	0	2	0	113	0	13	1496
5:45 PM	0	607	3	0	0	0	413	0	0	254	74	5	0	1	0	95	0	12	1464
6:00 PM	0	532	7	0	0	0	296	0	0	214	64	2	0	0	3	106	0	27	1251
6:15 PM	0	455	8	0	0	0	497	0	0	197	34	0	0	0	0	81	0	20	1292
6:30 PM	0	499	11	0	0	0	406	0	0	219	38	0	0	0	0	60	0	14	1247
6:45 PM	2	527	17	0	0	0	299	0	0	288	56	0	0	6	0	44	0	9	1248
	NL	NT	NR	NU	NR2	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	WU2	TOTAL
TOTAL VOLUMES :	2	7797	97	0	0	0	4789	0	0	3677	577	129	0	21	3	1556	0	150	18798
APPROACH %'s :	0.03%	98.75%	1.23%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	83.89%	13.16%	2.94%	0.00%	1.21%	0.17%	89.94%	0.00%	8.67%	
PEAK HR :	04:15 PM - 05:15 PM																		TOTAL
PEAK HR VOL :	0	2353	15	0	0	0	1583	0	0	1120	223	27	0	3	3	480	0	62	5869
PEAK HR FACTOR :	0.000	0.935	0.536	0.000	0.000	0.000	0.787	0.000	0.000	0.809	0.753	0.482	0.000	0.375	0.250	0.723	0.000	0.574	0.885
			0.938				0.787				0.876					0.778			

Location: Zinfandel Dr & US-50 WB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 22-070003-007
Date: 1/11/2022

Streetlight Data - Totals

NS/EW Streets:	Zinfandel Dr				Zinfandel Dr				US-50 WB Ramps				US-50 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	2	1	0	0	0	0	0	2.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	50	0	0	0	32	0	0	0	0	0	0	69	0	10	0	161
6:15 AM	0	56	0	0	0	62	0	0	0	0	0	0	69	0	17	0	204
6:30 AM	0	80	0	0	0	86	0	0	0	0	0	0	76	0	33	0	275
6:45 AM	0	113	0	0	0	68	0	0	0	0	0	0	95	0	36	0	312
7:00 AM	0	123	0	0	0	43	0	0	0	0	0	0	111	0	47	0	324
7:15 AM	0	123	0	0	0	64	0	0	0	0	0	0	239	0	46	0	472
7:30 AM	0	163	0	0	0	85	0	0	0	0	0	0	191	0	35	0	474
7:45 AM	0	322	0	0	0	103	0	0	0	0	0	0	233	0	50	0	708
8:00 AM	0	249	0	0	0	125	0	0	0	0	0	0	200	0	60	0	634
8:15 AM	0	184	0	0	0	140	0	0	0	0	0	0	159	0	52	0	535
8:30 AM	0	150	0	0	0	126	0	0	0	0	0	0	143	0	36	0	455
8:45 AM	0	179	0	0	0	96	0	0	0	0	0	0	132	0	29	0	436
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1792	0	0	0	1030	0	0	0	0	0	0	1717	0	451	0	4990
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					79.20%	0.00%	20.80%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	918	0	0	0	453	0	0	0	0	0	0	783	0	197	0	2351
PEAK HR FACTOR :	0.000	0.713	0.000	0.000	0.000	0.809	0.000	0.000	0.000	0.000	0.000	0.000	0.840	0.000	0.821	0.000	0.830
		0.713				0.809								0.866			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	2	1	0	0	0	0	0	2.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	367	0	0	0	250	0	0	0	0	0	0	132	0	68	0	817
4:15 PM	0	424	0	0	0	216	0	0	0	0	0	0	102	0	79	0	821
4:30 PM	0	397	0	0	0	247	0	0	0	0	0	0	119	0	89	0	852
4:45 PM	0	417	0	0	0	212	0	0	0	0	0	0	138	0	98	0	865
5:00 PM	0	572	0	0	0	210	0	0	0	0	0	0	137	0	95	0	1014
5:15 PM	0	360	0	0	0	234	0	0	0	0	0	0	124	0	87	0	805
5:30 PM	0	358	0	0	0	245	0	0	0	0	0	0	115	0	88	0	806
5:45 PM	0	353	0	0	0	215	0	0	0	0	0	0	113	0	73	0	754
6:00 PM	0	294	0	0	0	201	0	0	0	0	0	0	124	0	88	0	707
6:15 PM	0	243	0	0	0	305	0	0	0	0	0	0	143	0	75	0	766
6:30 PM	0	312	0	0	0	251	0	0	0	0	0	0	116	0	59	0	738
6:45 PM	0	354	0	0	0	188	0	0	0	0	0	0	96	0	72	0	710
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4451	0	0	0	2774	0	0	0	0	0	0	8680	0	971	0	16876
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					89.94%	0.00%	10.06%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	1365	0	0	0	895	0	0	0	0	0	0	476	0	336	0	3072
PEAK HR FACTOR :	0.000	0.948	0.000	0.000	0.000	0.913	0.000	0.000	0.000	0.000	0.000	0.000	0.960	0.000	0.955	0.000	0.953
		0.948				0.913								0.958			

Appendix H

NCHRP-684 Internal Capture Data Sheets

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Residences at Capital Center	**Organization:**	Kimley-Horn and Associates, Inc.
Project Location:	Rancho Cordova, CA	**Performed By:**	AB
Scenario Description:	Opening Year plus Project	**Date:**	1/10/2022
Analysis Year:		**Checked By:**	SD
Analysis Period:	**AM Street Peak Hour**	**Date:**	5/10/2022

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office		-	1,000 Sq Ft	0	0	0
Retail		-	1,000 Sq Ft	0	0	0
Restaurant		9	1,000 Sq Ft	81	45	36
Cinema/Entertainment		-	Screen(s)	0	0	0
Residential		417	Dwelling Unit(s)	172	41	131
Hotel		-	Room(s)	0	0	0
All Other Land Uses[2]		-	0	0	0	0
				253	86	167

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.00	0%	0%	1.00	0%	0%
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment	1.00	0%	0%	1.00	0%	0%
Residential	1.00	0%	0%	1.00	0%	0%
Hotel	1.00	0%	0%	1.00	0%	0%
All Other Land Uses[2]	1.00	0%	0%	1.00	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	9	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	253	86	167
Internal Capture Percentage	8%	12%	6%
External Vehicle-Trips[5]	233	76	157
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	20%	3%
Cinema/Entertainment	N/A	N/A
Residential	2%	7%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Residences at Capital Center
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	45	45	1.00	36	36
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	41	41	1.00	130.71	131
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	11	5		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	3	1	26	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	10	0	0	0
Retail	0		23	0	1	0
Restaurant	0	0		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	9	0		0
Hotel	0	0	3	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	9	36	45	36	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	40	41	40	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	1	35	36	35	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	9	122	131	122	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Residences at Capital Center	**Organization:**	Kimley-Horn and Associates, Inc.
Project Location:	Rancho Cordova, CA	**Performed By:**	AB
Scenario Description:	Opening Year plus Project	**Date:**	1/10/2022
Analysis Year:		**Checked By:**	SD
Analysis Period:	**PM Street Peak Hour**	**Date:**	5/10/2022

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office		-	1,000 Sq Ft	0	0	0
Retail		-	1,000 Sq Ft	0	0	0
Restaurant		9	1,000 Sq Ft	77	47	30
Cinema/Entertainment		-	Screen(s)	0	0	0
Residential		417	Dwelling Unit(s)	191	118	73
Hotel		-	Room(s)	0	0	0
All Other Land Uses[2]		-	0	0	0	0
				268	165	103

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.00	0%	0%	1.00	0%	0%
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment	1.00	0%	0%	1.00	0%	0%
Residential	1.00	0%	0%	1.00	0%	0%
Hotel	1.00	0%	0%	1.00	0%	0%
All Other Land Uses[2]	1.00	0%	0%	1.00	0%	0%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	5	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	7	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	268	165	103
Internal Capture Percentage	9%	7%	12%
External Vehicle-Trips[5]	244	153	91
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	15%	17%
Cinema/Entertainment	N/A	N/A
Residential	4%	10%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Residences at Capital Center
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	47	47	1.00	30	30
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	118	118	1.00	72.6	73
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	1	12		2	5	2
Cinema/Entertainment	0	0	0		0	0
Residential	3	31	15	0		2
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	1	0	5	0
Retail	0		14	0	54	0
Restaurant	0	0		0	19	0
Cinema/Entertainment	0	0	1		5	0
Residential	0	0	7	0		0
Hotel	0	0	2	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	7	40	47	40	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	113	118	113	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	5	25	30	25	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	7	66	73	66	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.