

Second Errata to the Final Revised Environmental Impact Report Fanita Ranch Project

Volume IV September 2020 SCH No. 2005061118



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Harris & Associates



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September 2020

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Table of Contents

Chapter 1 Second Errata to the Final Revised EIR 1

1.1 Introduction..... 1

1.2 Chapter 3: Project Description..... 3

1.3 Chapter 4: Environmental Impact Analysis..... 3

1.3.1 Environmental Issues Not Affected By Project Change..... 4

1.3.2 Environmental Issues That Warrant Further Discussion..... 7

1.4 Chapter 6: Alternatives 52

1.5 Conclusion..... 52

Tables

Table 1. Elimination of Magnolia Avenue Extension in the EIR 2

Table 2. Estimated Carbon Monoxide Concentrations 9

Table 3. Off-Site Impact Comparison..... 13

Table 4. Comparison of Mitigation Requirements for Permanent Impacts to Sensitive Upland Vegetation Communities 14

Table 5. Comparison of Restoration Requirements for Temporary Impacts to Sensitive Upland Vegetation Communities 15

Table 6. Existing Off-Site Roadway Noise Levels..... 19

Table 7. Significant Permanent Vehicle Noise Impact Summary..... 23

Table 8. Permanent Vehicle Noise Impact with Noise Barrier Installation..... 24

Table 9. Intersection Operations (No Magnolia Avenue Extension – Full Access)..... 31

Table 10. Segment Operations (No Magnolia Avenue Extension – Full Access To/From Cuyamaca Street) 35

Table 11. Intersection Operations (No Magnolia Avenue Extension – Prohibited Southbound Left-Turns from Cuyamaca Street)..... 39

Table 12. Segment Operations (No Magnolia Avenue Extension – Prohibited Southbound Left-Turns from Cuyamaca Street) 43

Table 13. Mitigation Measure EDU Triggers without Magnolia Avenue Extension 46

Attachments

- Attachment 1. Fanita Ranch Fire Protection Plan and Evacuation Plan Analysis of No Magnolia Extension
- Attachment 2. Fanita Ranch – Magnolia Avenue Deletion/Utilities and Storm Drain Memorandum
- Attachment 3. Memorandum to the Air Quality Analysis Report – Removal of Magnolia Extension, Memorandum to the Energy Analysis Report – Removal of Magnolia Extension, Memorandum to the Greenhouse Gas Analysis Report – Removal of Magnolia Extension, and Supplemental Analysis of Emissions and Fuel Use without the Extension of Magnolia Avenue
- Attachment 4. Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum and Fanita Ranch Supplemental VMT Memorandum

Attachment 5. Removal of Magnolia Avenue from the Fanita Ranch Project Biological Resources Memorandum

Attachment 6. Addendum to the Noise Technical Report for the Fanita Ranch Project

Chapter 1 **Second Errata to the Final Revised EIR**

1.1 Introduction

On August 21, 2020, the project applicant, HomeFed Fanita Rancho, LLC (HomeFed), notified the City of Santee (City) of a change to the Fanita Ranch Project (proposed project) by eliminating the proposed Magnolia Avenue extension.

Magnolia Avenue is an existing north–south City street that currently terminates at the northern edge of existing development approximately 500 feet north of Princess Joann Road, southeast of the project site. The project had formerly proposed to improve and extend this street approximately 0.5 mile from its current northerly terminus, curving west to intersect with the extended off-site segment of Cuyamaca Street south of the project site boundary. The extension of Magnolia Avenue does not provide direct access to the project site. Magnolia Avenue is identified in the Mobility Element of the Santee General Plan as a high priority for improvement and expansion. The City anticipates the future implementation of this roadway but, without funding in place, is unable to determine when this road extension will be implemented, likely when the adjacent vacant or underdeveloped property is improved. It was included as part of the proposed project by HomeFed as a project design feature to provide an additional community benefit. The EIR analyzed the impacts of improving and extending Magnolia Avenue as a project design feature.

Before the elimination of the Magnolia Avenue improvements from the proposed project, the Final EIR, including the EIR Errata (now referred to as the First Errata), Appendices Errata, and the Response to Comments, as well as the Mitigation, Monitoring, and Reporting Program (MMRP), were nearly complete and in the process of being finalized. To address the project description change, the City has prepared a Second Errata to the Final EIR summarizing the change to the proposed project and providing a discussion of the potential effects that the change will have on the impact analysis provided in the EIR. Without the proposed extension of Magnolia Avenue, proposed project traffic originally slated for this roadway would be expected to use Cuyamaca Street. Therefore, the Second Errata presents two potential traffic circulation network scenarios. The first scenario would allow full access movements from Cuyamaca Street to Princess Joann Road, Woodglen Vista Drive, and El Nopal connecting to Magnolia Avenue. The second scenario would prohibit southbound left-turn movements from Cuyamaca Street to the above-mentioned local streets. An analysis of impacts from these two traffic scenarios is analyzed in this Errata with respect to air quality, noise, and traffic impacts.

Any reference to the previously proposed Magnolia Avenue extension as a project feature contained in the Draft or Final EIR or EIR Appendices is hereby deleted from the EIR. Though no physical text changes were made to the Draft EIR (Volume I), EIR Appendices (Volume II), or Final EIR (Volume III), the Second Errata (Volume IV) effectively removes the Magnolia Avenue

extension as a project design feature from the earlier EIR volumes. This Second Errata is written from the perspective that the Magnolia Avenue extension has been eliminated from the proposed project. Table 1 identifies the page numbers in the Draft EIR where the Magnolia Avenue extension language has been removed or revised. This also includes removal of the Magnolia Avenue extension in the text and EIR figures. In addition, any discussion of the extension of Magnolia Avenue in EIR Appendices A through P2 is deleted and no longer applicable. This Second Errata to the Final EIR supersedes and supplements the Final EIR, including the Responses to Comments and First Errata, regarding the Magnolia Avenue extension.

Table 1. Elimination of Magnolia Avenue Extension in the EIR

Section	Page Number
1, Executive Summary	1-2, 1-17, 1-49, 1-60
2, Introduction	2-1, 2-9
3, Project Description	3-1, 3-30, 3-34 (Table 3-6), 3-35, 3-46, 3-48, 3-49, 3-50, 3-55, 3-71, 3-77, 3-78, 3-82 Figures 3-2, 3-3, 3-4, 3-6, 3-7, 3-8, 3-9, 3-10, 3-11, 3-12, 3-13, 3-15, 3-16, 3-17
4, Environmental Impact Analysis	None
4.1, Aesthetics	4.1-7, 4.1-47, 4.1-51, 4.1-54, 4.1-56, 4.1-57 Figures 4.1-1, 4.1-4, 4.1-14, 4.1-18
4.2, Air Quality	None
4.3, Biological Resources	4.3-3, 4.3-4, 4.3-5, 4.3-13, 4.3-38, 4.3-42, 4.8-84 Figures 4.3-3, 4.3-4, 4.3-5, 4.3-6a, 4.3-6b, 4.3-6c, 4.3-7, 4.3-8, 4.3-9, 4.3-10
4.4, Cultural and Tribal Cultural Resources	4.4-19, 4.4-42, 4.4-45 Figures 4.4-1a, 4.4-1b
4.5, Energy	None
4.6, Geology, Soils, and Paleontological Resources	4.6-1, 4.6-2, 4.6-5, 4.6-8, 4.6-11, 4.6-14, 4.16-18, 4.6-25, 4.6-26, 4.6-28, 4.6-29, 4.6-30, 4.6-31, 4.6-32, 4.6-36 Figures 4.6-1, 4.6-2
4.7, Greenhouse Gas Emissions	None
4.8, Hazards	4.8-24, 4.8-27 Figure 4.8-1
4.9, Hydro	4.9-1, 4.9-19, 4.9-29, 4.9-30 Figure 4.9-2
4.10, Land Use	4.10-15, 4.10-28, 4.10-31
4.11, Minerals	Figure 4.11-1

Table 1. Elimination of Magnolia Avenue Extension in the EIR

Section	Page Number
4.12, Noise	4.12-14, 4.12-25, 4.12-26, 4.12-27, 4.12-28, 4.12-30, 4.12-31, 4.12-33, 4.12-36, 4.12-37, 4.12-52, 4.12-53, 4.12-54, 4.12-55, 4.12-56, 4.12-57, 4.12-58, 4.12-59, 4.12-60, 4.12-61, 4.12-62, 4.12-64, 4.12-67, 4.12-68, 4.12-69, 4.12-73, 4.12-76, 4.12-83, 4.12-84 Figures 4.12-1, 4.12-3, 4.12-4
4.13, Pop and Housing	4.13-15
4.14, Public Services	None
4.15, Recreation	None
4.16, Transportation	4.16-35, 4.16-36, 4.16-37, 4.16-38, 4.16-39, 4.16-40, 4.16-41, 4.16-43, 4.16-44, 4.16-45, 4.16-46, 4.16-47, 4.16-48, 4.16-51, 4.16-52, 4.16-53, 4.16-54, 4.16-55, 4.16-56, 4.16-57, 4.16-58, 4.16-59, 4.16-64, 4.16-65, 4.16-66, 4.16-67, 4.16-68, 4.16-69, 4.16-70, 4.16-71, 4.16-72, 4.16-73, 4.16-80, 4.16-81, 4.16-82, 4.16-83, 4.16-84, 4.16-85, 4.16-110, 4.16-111 Figures 4.16-1, 4.16-2
4.17, Utilities	4.17-4, 4.17-12, 4.17-13, 4.17-14, 4.17-16
4.18, Wildfire	4.18-8, 4.18-9, 4.18-22, 4.18-25 Figure 4.18-1
5, Other CEQA Considerations	5-6
6, Alternatives	6-4, 6-6, 6-15, 6-16, 6-21, 6-23, 6-31, 6-36, 6-37

1.2 Chapter 3: Project Description

The removal of the Magnolia Avenue extension as a project design feature constitutes the elimination of the language describing the extension and its components in Chapter 3, Project Description, as identified in Table 1. Note that, notwithstanding the elimination of the Magnolia Avenue extension as described herein, Project Objective 9 has not been revised to delete Magnolia Avenue. It states, “Implement major transportation components of the Santee General Plan Mobility Element by extending Fanita Parkway, Cuyamaca Street, and Magnolia Avenue to the planned development.” Project Objective 9 is unchanged.

1.3 Chapter 4: Environmental Impact Analysis

The following environmental impact analysis is split between two groupings: the environmental resource topics that are not materially affected by the project change and those that warrant further discussion based on the removal of extension of Magnolia Avenue as a project design feature. A summary of how the project change affects each topic is provided below.

1.3.1 Environmental Issues Not Affected By Project Change

The environmental topics listed below would not be affected by the project change and would result in the same or reduced impacts with or without the Magnolia Avenue extension. The numbering below identifies the EIR section numbering for each topic (e.g., Section 4.1: Aesthetics).

1.3.1.1 Section 4.1: Aesthetics

The removal of the Magnolia Avenue extension as a project design feature would result in fewer less than significant impacts on aesthetics compared to the analysis provided in the EIR with the extension. It would eliminate the need for key view point 3 (KVP-3) (Figure 4.1-14, KVP-13: From the Northbound Terminus of Magnolia Avenue), which shows a view looking north at the current northern terminus of Magnolia Avenue and depicts the future extension of Magnolia Avenue. Potential light and glare from the yellow flashing beacons with advisory speed signs proposed to be situated along the proposed extension of Magnolia Avenue would no longer be applicable. Therefore, the removal of the Magnolia Avenue extension would cause fewer less than significant aesthetics impacts under the preferred land use plan with school and land use plan without school. No further analysis is required for aesthetics.

1.3.1.2 Section 4.4: Cultural and Tribal Cultural Resources

The removal of the Magnolia Avenue extension as a project design feature would result in less intensive impacts on cultural and tribal cultural resources compared to the analysis provided in the EIR with the extension. No significant historical resources, archaeological resources, tribal cultural resources, or human remains are known to occur in the area of the Magnolia Avenue extension. In addition, the possibility of discovering unknown cultural resources in the Magnolia Avenue extension area would no longer occur because the land would not be developed as part of the project. Therefore, the removal of the Magnolia Avenue extension would result in less intensive impacts under the preferred land use plan with school and land use plan without school. No further analysis is required for cultural and tribal cultural resources.

1.3.1.3 Section 4.6: Geology, Soils, and Paleontological Resources

The removal of the Magnolia Avenue extension as a project design feature would result in less intensive impacts on geology, soils, and paleontological resources compared to the analysis provided in the EIR with the extension. The potentially significant impacts related to soil erosion or topsoil loss, geologic stability, and expansive soils as a result of the extension of Magnolia Avenue would no longer occur because this land would not be developed. The geotechnical recommendations for the extension of Magnolia Avenue will be removed from Mitigation Measure GEO-1. Therefore, this language has been removed from the proposed project's MMRP. In addition, this site has low potential for paleontological resources to occur and the elimination of the Magnolia Avenue extension would not change the conclusions of the EIR related to

paleontological resources. Therefore, the removal of the Magnolia Avenue extension would result in less intensive impacts under the preferred land use plan with school and land use plan without school. No further analysis is required for geology, soils, and paleontological resources.

1.3.1.4 Section 4.8: Hazards and Hazardous Materials

The removal of the Magnolia Avenue extension as a project design feature would result in the same less than significant impacts on hazards and hazardous materials compared to the analysis in the EIR with the extension. The elimination of the extension of Magnolia Avenue would have no effect on the transport, use, and disposal of hazardous materials, accidental releases, hazards to nearby schools, hazardous materials sites, or airport safety hazards because the deletion of this roadway would not increase the use of hazardous materials near sensitive land uses including schools or airports. In addition, the extension of Magnolia Avenue is not necessary for emergency response or evacuation and would not impair implementation of an adopted emergency response plan or evacuation plan, as further explained in the Fanita Ranch Fire Protection Plan and Evacuation Plan Analysis of No Magnolia Extension prepared by Dudek (2020) (Attachment 1). Figure 4.8-1, Emergency Evacuation Plan, is hereby revised to remove the extension of Magnolia Avenue as a secondary evacuation route. Refer below to Section 1.3.2.8, Wildfire, for a more detailed explanation of the use of Magnolia Avenue for evacuation. The removal of the Magnolia Avenue extension would result in the same less than significant impacts under the preferred land use plan with school and land use plan without school as provided in the EIR with the extension. No further analysis is required for hazards and hazardous materials.

1.3.1.5 Section 4.9: Hydrology and Water Quality

The removal of the Magnolia Avenue extension as a project design feature would result in less intensive less than significant impacts on hydrology and water quality compared to the analysis provided in the EIR with the extension. Because the land previously slated for the extension of Magnolia Avenue would not be developed, it would have less effect on the site drainage and hydrology and result in less potential pollutants from construction to be discharged into nearby water bodies. In addition, as described in more detail in Section 1.3.2.7 and in the Fanita Ranch – Magnolia Avenue Deletion/Utilities and Storm Drain Memorandum prepared by Hunsaker and Associates (2020) (Attachment 2), an interim basin is proposed to be built within the future rights-of-way of Magnolia Avenue and would be removed when Magnolia Avenue is extended at a later date under General Plan buildout. This interim basin, which would be a condition of project approval, would be smaller in size and area than the one previously proposed with the extension of the Magnolia Avenue as part of the proposed project. Therefore, the removal of the Magnolia Avenue extension would result in less intensive less than significant impacts under the preferred land use plan with school and land use plan without school. No further analysis is required for hydrology and water quality.

1.3.1.6 Section 4.10: Land Use and Planning

The removal of the Magnolia Avenue extension as a project design feature would result in the same less than significant impacts on land use and planning compared to the analysis provided in the EIR with the extension. The extension of Magnolia Avenue is not required as part of the proposed Guiding Principles for Fanita Ranch and its removal does not conflict with a goal, objective, or policy of the Santee General Plan. Though the Santee General Plan Mobility Element identifies the extension of Magnolia Avenue as a priority for the City, it is not a requirement of the proposed project to build it. Therefore, the removal of the Magnolia Avenue extension would result in the same less than significant impacts under the preferred land use plan with school and land use plan without school as provided in the EIR with the extension. No further analysis is required for land use and planning.

1.3.1.7 Section 4.11: Mineral Resources

The removal of the Magnolia Avenue extension as a project design feature would result in less intensive less than significant impacts on mineral resources compared to the analysis provided in the EIR with the extension. The site of the extension of Magnolia Avenue is classified as Mineral Resource Zone 3, which is an area containing mineral deposits, the significance of which cannot be evaluated from available data. Because the proposed project would no longer extend Magnolia Avenue, it would not have the potential to impact the mineral resources in the extension area. In addition, the removal of locally important mineral resource site would not occur in the extension area. Therefore, the removal of the Magnolia Avenue extension would result in less intensive less than significant impacts under the preferred land use plan with school and land use plan without school. No further analysis is required for mineral resources.

1.3.1.8 Section 4.13: Population and Housing

The removal of the Magnolia Avenue extension as a project design feature would result in the same less than significant impacts on population and housing compared to the analysis provided in the EIR with the extension. The removal of the Magnolia Avenue extension would have no impact on the projected population or employment under the preferred land use plan with school and land use plan without school and would not induce unplanned population growth or displace people or housing. Therefore, the removal of the Magnolia Avenue extension would result in the same less than significant impact under the preferred land use plan with school and land use plan without school as provided in the EIR with the extension. No further analysis is required for population and housing.

1.3.1.9 Section 4.14: Public Services

The removal of the Magnolia Avenue extension as a project design feature would result in the same less than significant impacts on public services compared to the analysis provided in the EIR with the extension. The elimination of the Magnolia Avenue extension would not affect the Santee Fire Department's and Santee County Sheriff's Department's abilities to access the project site

and would not cause physical impacts to fire protection facilities, police protection facilities, public school facilities, or libraries under both the preferred land use plan with school and land use plan without school. There are several other access options, including the two roads that access the site directly: Fanita Parkway and Cuyamaca Street. In addition, the extension of Magnolia Avenue is presumed to be completed by Year 2035 in line with the General Plan Mobility Element buildout. Therefore, the removal of the Magnolia Avenue extension would result in the same less than significant impact under the preferred land use plan with school and land use plan without school as provided in the EIR with the extension. No further analysis is required for public services.

1.3.1.10 Section 4.15: Recreation

The removal of the Magnolia Avenue extension as a project design feature would result in the same impacts on recreation compared to the analysis provided in the EIR with the extension. The removal of the Magnolia Avenue extension would have no impact on the use of existing recreation facilities and would not cause the construction or expansion of new recreational facilities. Therefore, the removal of the Magnolia Avenue extension would result in the same level of impacts under the preferred land use plan with school and land use plan without school as provided in the EIR with the extension. No further analysis is required for recreation.

1.3.2 Environmental Issues That Warrant Further Discussion

The environmental topics listed below warrant additional discussion and technical memorandums have been prepared by the specific technical consultant, analyzing the impacts without the Magnolia Avenue extension.

1.3.2.1 Section 4.2: Air Quality

The removal of the Magnolia Avenue extension as a project design feature would not result in any new significant air quality impacts under the preferred land use plan with school and land use plan without school from those analyzed in the EIR. Two additional studies, a Memorandum to the Air Quality Analysis Report – Removal of Magnolia Extension and a Supplemental Analysis of Emissions and Fuel Use without the Extension of Magnolia Avenue, were prepared by LSA Associates (2020) (Attachment 3) to document the revisions or clarifications required to reflect removal of the Magnolia Avenue extension. The only revisions necessary were to prepare a revised long-term criteria pollutant emissions analysis to assess the interim condition with the increased VMT and to update the carbon monoxide hotspots analysis due to the change in trip distribution, as described below. It should be noted that the revisions and clarifications related to long-term air quality emissions and carbon monoxide hotspots do not change any conclusions provided in the EIR.

Consistency with Applicable Air Quality Plan, Cumulative Increase in Criteria Pollutant Emissions, Odors

The analyses related to toxic air contaminants and odors are not affected by the elimination of the Magnolia Avenue extension. The elimination of the Magnolia Avenue extension does not result in any

change in proposed land uses and therefore does not result in any significant change in operation or trip generation. Construction would be reduced compared to the previous analysis, but elimination of the Magnolia Avenue extension would not affect construction of the remainder of the project site. The Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum and the Fanita Ranch Supplemental VMT Memorandum prepared by LLG (2020) (Attachment 4) note that the change in trip distribution as a result of elimination of the Magnolia Avenue extension would result in a de minimis change in project vehicle miles traveled (VMT). LSA prepared a Supplemental Analysis of Emissions and Fuel Use without the Extension of Magnolia Avenue (Attachment 3) to analyze the effects of the de minimis increase in VMT on long-term operational air quality without the extension of Magnolia Avenue. As shown in Tables 3 and 4 in the Supplemental Analysis of Emissions and Fuel Use without the Extension of Magnolia Avenue, the revised long-term criteria pollutant emissions analysis would result in slightly higher on-road emissions, however, the numerical increase does not change the significance findings related to air quality and consistency with applicable plans as identified in the Air Quality Analysis Report (EIR Appendix C1) and EIR Section 4.2, Air Quality. Therefore, because land uses generating the same emissions compared to the EIR would occur for both the preferred land use plan with school and land use plan without school, and construction would be slightly reduced, no revision to the Air Quality Analysis is required for these issues.

Sensitive Receptors

Carbon Monoxide Hotspots

The proposed project was evaluated based on the assumption that Fanita Parkway, Cuyamaca Street, and Magnolia Avenue would provide access to the project site. The interim period scenario (2020 through 2034) has been revised to reflect removal of the Magnolia Avenue extension as a project design feature. The revised analysis is based on the Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) conducted to determine the changes to the level of service (LOS) results without the connection of Magnolia Avenue to the project site. Without the connection of Magnolia Avenue extended to Cuyamaca Street, it is expected that project trips would instead use streets such as Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard. The Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) also analyzes a proposed condition that would prohibit southbound left-turns from Cuyamaca Street onto Princess Joann Road, Woodglen Vista Drive, and El Nopal. The elimination of southbound left-turns would result in slightly different traffic flows through the study intersections, which in turn, may change localized concentrations of carbon monoxide in the immediate vicinity of these intersections.

To assess this interim condition, a revised carbon dioxide hotspot analysis was completed to determine if these changes would result in any air quality impacts. The results of this analysis are provided in Table 2.

Table 2. Estimated Carbon Monoxide Concentrations

Intersection	Peak Hour	1-Hour CO Concentration (ppm)1			8-Hour CO Concentration (ppm)1			Impact?
		Interim Period Without Project	Interim Period With Project, With School (Left-Turns Allowed)	Interim Period With Project, With School (Restricted Left-Turns)	Interim Period Without Project	Interim Period With Project, With School (Left-Turns Allowed)	Interim Period With Project, With School (Restricted Left-Turns)	
Princess Joann Road and Cuyamaca Street	AM	1.7	1.9	1.9	1.2	1.3	1.2	No
	PM	1.7	1.9	1.9	1.2	1.3	1.3	No
Ganley Road and Fanita Parkway	AM	1.7	1.8	1.8	1.2	1.3	1.3	No
	PM	1.7	1.9	1.8	1.2	1.4	1.4	No
Woodglen Vista Drive and Cuyamaca Street	AM	1.7	2.0	2.0	1.2	1.4	1.4	No
	PM	1.8	2.0	2.0	1.3	1.4	1.4	No
El Nopal and Cuyamaca Street	AM	1.9	2.0	2.1	1.4	1.5	1.4	No
	PM	1.9	2.1	2.1	1.4	1.5	1.5	No
El Nopal and Magnolia Avenue	AM	1.9	2.0	2.0	1.4	1.5	1.4	No
	PM	1.9	2.0	2.0	1.4	1.5	1.5	No
El Nopal and Los Ranchitos Road	AM	1.8	1.8	1.8	1.3	1.3	1.3	No
	PM	1.8	1.8	1.8	1.3	1.3	1.3	No
Lake Canyon Road and Fanita Parkway	AM	1.7	1.9	1.9	1.2	1.4	1.3	No
	PM	1.8	1.9	1.9	1.3	1.4	1.4	No
Beck Drive and Cuyamaca Street	AM	1.9	2.1	2.1	1.4	1.5	1.5	No
	PM	1.9	2.0	2.0	1.4	1.5	1.5	No
Mast Boulevard and SR-52 WB Ramps	AM	2.6	2.7	2.7	1.9	1.9	1.9	No
	PM	2.1	2.2	2.2	1.5	1.6	1.6	No
Mast Boulevard and West Hills Parkway	AM	2.2	2.3	2.2	1.6	1.7	1.6	No
	PM	2.3	2.4	2.4	1.7	1.7	1.7	No

Table 2. Estimated Carbon Monoxide Concentrations

Intersection	Peak Hour	1-Hour CO Concentration (ppm)1			8-Hour CO Concentration (ppm)1			Impact?
		Interim Period Without Project	Interim Period With Project, With School (Left-Turns Allowed)	Interim Period With Project, With School (Restricted Left-Turns)	Interim Period Without Project	Interim Period With Project, With School (Left-Turns Allowed)	Interim Period With Project, With School (Restricted Left-Turns)	
Mast Boulevard and Fanita Parkway	AM	2.1	2.3	2.2	1.5	1.7	1.6	No
	PM	2.0	2.1	2.1	1.5	1.5	1.6	No
Mast Boulevard and Cuyamaca Street	AM	2.0	2.1	2.2	1.5	1.5	1.5	No
	PM	2.2	2.2	2.3	1.6	1.6	1.7	No
Riverford Road and SR-67 SB Ramps	AM	2.1	2.1	2.1	1.5	1.5	1.5	No
	PM	2.1	2.1	2.1	1.5	1.5	1.5	No
Riverford Road and Woodside Avenue	AM	2.1	2.1	2.1	1.5	1.5	1.5	No
	PM	2.0	2.1	2.1	1.5	1.5	1.5	No
Mission Gorge Road and West Hills Parkway	AM	2.3	2.4	2.3	1.7	1.7	1.7	No
	PM	2.0	2.0	2.0	1.5	1.5	1.5	No
Mission Gorge Road and Carlton Hills Boulevard	AM	2.3	2.5	2.5	1.7	1.8	1.8	No
	PM	2.2	2.3	2.3	1.6	1.7	1.7	No
Mission Gorge Road and Town Center Parkway	AM	1.9	1.9	1.9	1.4	1.4	1.4	No
	PM	2.1	2.2	2.2	1.5	1.6	1.6	No
Mission Gorge Road and Cuyamaca Street	AM	2.1	2.1	2.1	1.5	1.5	1.5	No
	PM	2.3	2.4	2.4	1.7	1.7	1.7	No
Mission Gorge Road and Cottonwood Avenue	AM	1.8	1.8	1.8	1.3	1.3	1.3	No
	PM	2.0	2.0	2.0	1.5	1.5	1.5	No

Table 2. Estimated Carbon Monoxide Concentrations

Intersection	Peak Hour	1-Hour CO Concentration (ppm) ¹			8-Hour CO Concentration (ppm) ¹			Impact?
		Interim Period Without Project	Interim Period With Project, With School (Left-Turns Allowed)	Interim Period With Project, With School (Restricted Left-Turns)	Interim Period Without Project	Interim Period With Project, With School (Left-Turns Allowed)	Interim Period With Project, With School (Restricted Left-Turns)	
Mission Gorge Road and Magnolia Avenue	AM	2.3	2.3	2.3	1.7	1.7	1.7	No
	PM	2.4	2.4	2.4	1.7	1.7	1.7	No
Woodside Avenue N and SR-67 SB Off-Ramp	AM	1.9	1.9	1.9	1.4	1.4	1.4	No
	PM	2.1	2.1	2.1	1.5	1.5	1.5	No
Fanita Drive and SR-52 WB Off-Ramp	AM	1.8	1.8	1.8	1.3	1.3	1.3	No
	PM	1.8	1.8	1.8	1.3	1.3	1.3	No
Buena Vista Avenue and Cuyamaca Street	AM	2.0	2.0	2.0	1.5	1.5	1.5	No
	PM	2.2	2.2	2.3	1.6	1.6	1.7	No
Prospect Avenue and Fanita Drive	AM	1.9	1.9	1.9	1.4	1.4	1.4	No
	PM	1.8	1.8	1.8	1.3	1.3	1.3	No

Source: CALINE4 using EMFAC2017 emission factors. See Attachment 1 in the Memorandum to the Air Quality Analysis Report – Removal of Magnolia Extension (Attachment 3 to this Second Errata) for model output sheets.

Notes:

¹ Modeling assumptions: 1-hour CO concentrations were calculated using the worst-case wind angle scenario in the CALINE4 model. CO emission factors were generated using the EMFAC2017 model, using the CO emission factor associated with Year 2035 for the total vehicle mix during conditions in January at a temperature of 40 degrees Fahrenheit. An ambient 1-hour CO concentration of 1.5 ppm and an ambient 8-hour CO concentration of 1.1 ppm were used to reflect ambient conditions. The 8-hour CO concentration is based on a persistence factor of 0.7 for urban uses.

SR-67 = State Route 67

ppm = parts per million

SR-52 = State Route 52

CO = carbon monoxide

SB = southbound WB = westbound

As shown in Table 2, the removal of the Magnolia Avenue extension in the interim condition would result in less than significant impacts related to carbon monoxide concentrations. Attachment 1 of the Memorandum to the Air Quality Analysis Report – Removal of Magnolia Extension (Attachment 3) provides additional details on the carbon monoxide hotspot analysis. Note that the preferred land use plan with school would increase traffic volumes by approximately 0.6 percent. This de minimis level of change would not increase carbon monoxide concentrations at the intersections evaluated above. Therefore, the preferred land use plan with school would also result in less than significant impacts related to carbon monoxide concentrations.

Summary

The above changes to the interim condition (2020 to 2034) do not result in changes to the Air Quality Analysis related to construction because no additional construction is proposed, or long-term operational emissions at buildout in Year 2035 because the Magnolia Avenue extension is assumed to be completed as part of General Plan buildout in the long term. Therefore, no additional analysis is needed.

1.3.2.2 Section 4.3: Biological Resources

The removal of the Magnolia Avenue extension as a project design feature would result in an overall decrease in impacts to biological resources occurring within the project site and no new significant impacts would occur under the preferred land use plan with school and land use plan without school. It should be noted that the project change does not affect the analysis or significance conclusions associated with on-site impacts. A Removal of Magnolia Avenue from the Fanita Ranch Project Biological Resources Memorandum was completed by Dudek (2020) (Attachment 5) documenting the impacts to biological resources associated with the removal of the Magnolia Avenue extension. The analysis of issues associated with vegetation communities, jurisdictional aquatic resources, special-status plant species, and special-status wildlife species is described below.

Vegetation Communities

Implementation of the original project (i.e., with the Magnolia Avenue extension) would result in off-site impacts to 32.60 acres, including 25.32 acres of permanent impacts and 7.29 acres of temporary impacts (Table 3). Implementation of the revised project (i.e., removal of Magnolia Avenue) would result in off-site impacts to 18.26 acres, including 14.30 acres of permanent impacts and 3.96 acres of temporary impacts (Table 3). Therefore, off-site impact totals would be reduced by a total of 14.35 acres, and impacts to sensitive vegetation communities (including wetlands) would be reduced by 8.00 acres with the removal of Magnolia Avenue (Table 3).

Table 3. Off-Site Impact Comparison

General Vegetation Community/Land Cover Category	Vegetation Type (Holland/Oberbauer Code)	Project with Magnolia Avenue Extension Impacts			Project Without Magnolia Avenue Extension Impacts		
		Perm	Temp	Total	Perm	Temp	Total
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	4.36	1.07	5.43	1.77	0.70	2.47
	Urban/Developed (12000)	3.16	0.34	3.50	0.10	0.01	0.11
<i>Disturbed and Developed Areas Subtotal</i>		<i>7.51</i>	<i>1.41</i>	<i>8.93</i>	<i>1.87</i>	<i>0.70</i>	<i>2.58</i>
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub ¹ (32500)	4.93	1.33	6.26	2.62	0.45	3.07
	Diegan Coastal Sage Scrub (fire recovered) ¹ (32500)	0.17	—	0.17	0.17	—	0.17
	Diegan Coastal Sage Scrub (disturbed) ¹ (32500)	8.70	3.28	11.99	5.65	1.54	7.20
	Diegan Coastal Sage Scrub–Valley Needlegrass Grassland ¹ (32500/42110)	0.01	0.09	0.10	0.01	0.09	0.10
	Diegan Coastal Sage Scrub–Valley Needlegrass Grassland (disturbed) ¹ (32500/42110)	1.44	0.94	2.38	1.44	0.94	2.38
<i>Scrub and Chaparral Subtotal</i>		<i>15.25</i>	<i>5.64</i>	<i>20.89</i>	<i>9.89</i>	<i>3.03</i>	<i>12.92</i>
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Non-native Grassland ¹ (42200)	2.50	0.21	2.72	2.50	0.21	2.72
	Vernal Pool (44000) ¹	0.01	—	0.01	0.01	—	0.01
<i>Grasslands, Vernal Pools, Meadows, and Other Herb Communities Subtotal</i>		<i>2.52</i>	<i>0.21</i>	<i>2.73</i>	<i>2.52</i>	<i>0.21</i>	<i>2.73</i>
Riparian and Bottomland Habitat (60000)	Non-vegetated Channel or Floodway ¹ (64200)	0.04	0.02	0.06	0.02	0.01	0.03
<i>Riparian and Bottomland Habitat Subtotal</i>		<i>0.04</i>	<i>0.02</i>	<i>0.06</i>	<i>0.02</i>	<i>0.01</i>	<i>0.03</i>
<i>Sensitive Vegetation (including Wetlands) Subtotal</i>		<i>17.80</i>	<i>5.87</i>	<i>23.68</i>	<i>12.42</i>	<i>3.25</i>	<i>15.68</i>
Grand Total²		25.32	7.29	32.60	14.30	3.96	18.26

Source: Attachment 5.

Notes:

¹ Sensitive vegetation community in the Draft Santee Multiple Species Conservation Program (MSCP) Subarea Plan.

² Totals may not sum due to rounding.

The mitigation required for permanent off-site impacts to sensitive upland vegetation communities under the original project totals 33.00 acres (Table 4). The revised project would reduce the mitigation requirement total for impacts to sensitive upland vegetation communities by 10.71 acres, totaling 22.29 acres (Table 4). Therefore, the proposed project's total mitigation requirement for all permanent impacts would be reduced from 1,303.33 acres to 1,292.62 acres (see Biological Resources Technical Report [BTR] Table 6-3 for details). No changes would occur to the total conservation occurring within the Habitat Preserve (i.e., BTR and EIR Mitigation Measure BIO-1, Preserve Management Plan, would not change).

Table 4. Comparison of Mitigation Requirements for Permanent Impacts to Sensitive Upland Vegetation Communities

Vegetation Type (Holland/ Oberbauer Code)	Project with Magnolia Avenue Extension Impacts and Mitigation Requirement			Project without Magnolia Avenue Extension Impacts and Mitigation Requirement		
	Perm	Ratio ¹	Total	Perm	Ratio ¹	Total
Diegan Coastal Sage Scrub	4.93	2:1	9.86	2.62	2:1	5.24
Diegan Coastal Sage Scrub (fire recovered)	0.17	2:1	0.34	0.17	2:1	0.34
Diegan Coastal Sage Scrub (disturbed)	8.70	2:1	17.40	5.65	2:1	11.31
Diegan Coastal Sage Scrub–Valley Needlegrass Grassland	0.01	2:1	0.01	0.01	2:1	0.01
Diegan Coastal Sage Scrub–Valley Needlegrass Grassland (disturbed)	1.44	2:1	2.88	1.44	2:1	2.88
<i>Scrub and Chaparral Subtotal</i>	<i>15.25</i>	—	<i>30.50</i>	<i>9.89</i>	—	<i>19.78</i>
Non-native Grassland	2.50	1:1	2.50	2.50	1:1	2.50
<i>Grasslands, Vernal Pools, Meadows, and Other Herb Communities Subtotal</i>	<i>2.50</i>	—	<i>2.50</i>	<i>2.50</i>	—	<i>2.50</i>
Grand Total²	17.76	—	33.00	12.39	—	22.29

Source: Attachment 5.

Notes:

¹ Mitigation ratios are based on Table 5-14 in the Draft Santee MSCP Subarea Plan.

² Totals may not sum due to rounding.

Restoration for temporary impacts occurring along the Magnolia Avenue extension would no longer be required. Therefore, the off-site restoration requirement would be reduced from 5.86 acres to 3.24 acres (Table 5), and the proposed project's total restoration would be reduced from 130.21 acres to 127.59 acres (see Biological Resources Technical Report [BTR] Table 6-3 for details). BTR and EIR Mitigation Measure BIO-2, Upland Restoration Plan, would still apply to the revised project.

Table 5. Comparison of Restoration Requirements for Temporary Impacts to Sensitive Upland Vegetation Communities

Vegetation Type (Holland/ Oberbauer Code)	May 2020 Impacts and Restoration Requirement			August 2020 Impacts and Restoration Requirement		
	Temp	Ratio1	Total	Temp	Ratio1	Total
Diegan Coastal Sage Scrub	1.33	1:1	1.33	0.45	1:1	0.45
Diegan Coastal Sage Scrub (disturbed)	3.28	1:1	3.28	1.54	1:1	1.54
Diegan Coastal Sage Scrub–Valley Needlegrass Grassland	0.09	1:1	0.09	0.09	1:1	0.09
Diegan Coastal Sage Scrub–Valley Needlegrass Grassland (disturbed)	0.94	1:1	0.94	0.94	1:1	0.94
<i>Scrub and Chaparral Subtotal</i>	5.64	—	5.64	3.03	—	3.03
Non-native Grassland	0.21	1:1	0.21	0.21	1:1	0.21
Grand Total²	5.86	—	5.86	3.24	—	3.24

Source: Attachment 5.

Notes:

¹ Ratios are based on Table 5-14 in the Draft Santee MSCP Subarea Plan.

² Totals may not sum due to rounding.

Jurisdictional Aquatic Resources

Implementation of the revised project would reduce impacts to jurisdictional resources (i.e., non-vegetated channel) occurring along Magnolia Avenue by 0.03 acres. Therefore, assuming a 2:1 mitigation ratio for impacts to non-vegetated channel, the project’s total mitigation requirements would be reduced by 0.06 acre. A total of 24.07 acres of mitigation would be required under the May 2020 project, whereas a total of 24.01 acres would be required under the revised project.

Special-Status Plant Species

Although the Magnolia Avenue extension contains suitable habitat, albeit very limited, it was not surveyed for special-status plant species due to limited legal access. Implementation of the revised project would not result in any change to the impact analysis for special-status plant species. However, Mitigation Measure BIO-5, Preconstruction Surveys and Avoidance and Minimization Measures for Special-Status Plant Species, (BTR Mitigation Measure BIO-6), which required preconstruction special-status plant surveys in all impact areas along Magnolia Avenue containing suitable habitat, would no longer be required. Mitigation Measure BIO-5 has been removed from the project’s MMRP.

Special-Status Wildlife Species

Although the Magnolia Avenue extension contains suitable habitat, albeit very limited, it was not surveyed for special-status wildlife species due to limited legal access. Implementation of the revised project would not result in any change to the impact analysis for special-status wildlife species occurrences. There would be a reduction in impacts to suitable habitat (i.e., coastal sage

scrub varieties and non-native grassland) utilized by special-status wildlife species. See the Vegetation Communities section above for details.

Additionally, implementation of the revised project would result in reduced impacts to both U.S. Fish and Wildlife Service designated Critical Habitat for coastal California gnatcatcher and U.S. Fish and Wildlife Service proposed Critical Habitat for the Hermes copper butterfly.

Summary

In summary, removal of the Magnolia Avenue extension from the proposed project would result in an overall decrease in impacts on vegetation communities, jurisdictional aquatic resources, special-status plant species (if present), and special-status wildlife species on the project site, and no new significant impacts would occur. Therefore, no further analysis of biological resources is required.

1.3.2.3 Section 4.5: Energy

The removal of the Magnolia Avenue extension as a project design feature would not result in any new significant energy impacts under the preferred land use plan with school and land use plan without school. A Memorandum to the Energy Analysis Report – Removal of Magnolia Extension was prepared by LSA Associates (2020) (Attachment 3) to evaluate the energy impacts as a result of the deletion of the extension of Magnolia Avenue. The proposed project was evaluated based upon the assumption that Fanita Parkway, Cuyamaca Street, and Magnolia Avenue would all provide access to the project site. An updated Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) was prepared to revise the interim period scenario (2020 through 2034) to reflect removal of the Magnolia Avenue extension connection between the proposed project site and Magnolia Avenue. The Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) was prepared to determine the changes to the LOS results without the Magnolia Avenue extension. Without the Magnolia Avenue extension, project trips would instead use streets such as Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard. This change would result in slightly different traffic flows through the study intersections due to vehicles no longer using Magnolia Avenue directly from Cuyamaca Street. While there would be a small change in traffic flow, because of the grid pattern of alternate routes used to access the site, any VMT increases would be de minimis. Refer to the Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum and Fanita Ranch Supplemental VMT Memorandum (Attachment 4) for further details on the traffic pattern and VMT increases without the extension of Magnolia Avenue. LSA also prepared a Supplemental Analysis of Emissions and Fuel Use without the Extension of Magnolia Avenue (September 2020) documenting the effects of the de minimis increase in VMT on energy without the Magnolia Avenue extension. The analysis focused on the resulting change in fossil fuel use from operation of the proposed project during the interim period (2020–2034) prior to buildout (see Table 5 of the Supplemental Analysis of Emissions and Fuel Use without the Extension of Magnolia Avenue) and found the 0.67 percent

increase in VMT would not result in a change in significance due to wasteful, inefficient energy use from the analysis in the EIR. Therefore, there would be a de minimis change in fossil fuel use from operation compared to the EIR. Additionally, the removal of the Magnolia Avenue extension would not result in any change to the proposed land uses or project operation. Energy demand during operation and implementation of energy-reducing project features would be the same as the previous analysis. No increase in energy demand during construction would occur because construction would be slightly reduced with elimination of construction of the extension.

The Santee General Plan Mobility Element includes the Magnolia Avenue extension. The long-term (Year 2035) analysis in the EIR assumes General Plan buildout, which includes the extension of Magnolia Avenue. Therefore, it is assumed that by Year 2035, Magnolia Avenue would connect to the proposed project site and long-term operational conditions would be the same as those analyzed in the Energy Analysis Report. Therefore, impacts related to energy and fuel use would remain less than significant and additional analysis of the interim condition is not required.

1.3.2.4 Section 4.7: Greenhouse Gas Emissions

The removal of the Magnolia Avenue extension as a project design feature would not result in new greenhouse gas emissions impacts under the preferred land use plan with school and land use plan without school. A Memorandum to the Greenhouse Gas Analysis Report – Removal of Magnolia Extension was prepared by LSA Associates (2020) (Attachment 3) analyzing the effects of the deletion of the extension of Magnolia Avenue on greenhouse gas emissions. An updated Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) has been prepared to revise the interim period scenario (2020 through 2034) to reflect removal of the Magnolia Avenue extension. Without the Magnolia Avenue extension, project trips would instead use streets such as Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard. The Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) also analyzes a proposed condition that would prohibit southbound left-turns from Cuyamaca Street onto Princess Joann Road, Woodglen Vista Drive, and El Nopal. These changes would result in slightly different traffic flows through the study intersections due to vehicles no longer using Magnolia Avenue directly from Cuyamaca Street. While there would be a small change in traffic flow, because of the grid pattern of alternate routes used to access the site, the increase in VMT would be de minimis. This is because, while some routes would be slightly longer, others would be slightly shorter, and total VMT associated with the proposed project would increase by 0.67 percent (Fanita Ranch Supplemental VMT Memorandum, LLG, September 2020 [included in Attachment 4]). A Supplemental Analysis of Emissions and Fuel Use without the Extension of Magnolia Avenue has been prepared by LSA (September 2020) (Attachment 3) which concludes that there would be a 0.01 metric tons of carbon dioxide equivalent per /service population increase in GHG emissions, which is considered de minimis, and would not exceed the applicable GHG threshold (see Tables 1 and 2 in the Supplemental Analysis of Emissions and Fuel Use without the

Extension of Magnolia Avenue). Therefore, greenhouse gas emissions from fuel use would be de minimis compared to the analysis in the EIR.

Additionally, there would be no change to the proposed land uses or operation of the proposed project, including demand for energy, water, and solid waste disposal. Neither the elimination of the Magnolia Avenue extension nor the potential restriction on left-turns described above would affect implementation of greenhouse gas-reducing features. No change in impact related to project greenhouse gas emissions would occur compared to the EIR (Supplemental Analysis of Emissions and Fuel Use without the Extension of Magnolia Avenue, LSA, September 2020 [included in Attachment 3]).

The Santee General Plan Mobility Element includes the Magnolia Avenue extension. The long-term (Year 2035) analysis in the EIR assumes General Plan buildout, which includes the extension of Magnolia Avenue. Therefore, it is assumed that, by Year 2035, Magnolia Avenue would connect to the proposed project site, and long-term operational conditions would be exactly the same as those analyzed in the Greenhouse Gas Analysis Report. Therefore, impacts related to greenhouse gas emissions would remain less than significant and additional analysis of the interim condition is not required.

1.3.2.5 Section 4.12: Noise

The removal of the Magnolia Avenue extension as a project design feature would not result in new significant noise impacts under the preferred land use plan with school and land use plan without school from those analyzed in the EIR. An Addendum to the Noise Technical Report for the Fanita Ranch Project prepared by Harris & Associates (2020) (Attachment 6) has been prepared to reflect removal of the extension of Magnolia Avenue based on the Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4). Without the connection of Magnolia Avenue extended to Cuyamaca Street, it is expected that project trips would instead utilize streets such as Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard to reach the same destinations from the eastern project access on Cuyamaca Street. Four roadway segments that were not previously modeled that would experience an increase in project traffic compared to the previous analysis have been added to the traffic noise analysis. Table 6 provides the existing average daily trips (ADT) and noise level on these roadways, and is a supplement to Table 4.12-4 in the EIR (Table 8 of the Noise Technical Report [NTR]), Existing Off-Site Roadway Noise Levels, in Section 4.12.1.3 in the EIR (Section 3.4.3.2 of the NTR), Roadways. No changes in existing ADT or noise level would occur to the segments previously identified in Table 4.12-4 of the EIR (Table 8 of the NTR).

Table 6. Existing Off-Site Roadway Noise Levels

Roadway	Segment	Existing Average Daily Trips	Noise Level at 50 Feet from Roadway Centerline (dBA Ldn)
Mast Boulevard	Cuyamaca Street to Magnolia Avenue	18,490	64
Princess Joann Road	Cuyamaca Street to Magnolia Avenue	530	45
Woodglen Vista Drive	Cuyamaca Street to Magnolia Avenue	1,700	50
El Nopal	Cuyamaca Street to Magnolia Avenue	3,780	55

Source: Attachment 4 (traffic data). See Attachment 1 of the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6 of this Second Errata) for noise model assumptions and output.

Notes: dBA = A-weighted decibel; Ldn = day-night noise level

Exceedance of Noise Standards

The analysis of the permanent increase in traffic noise levels in Section 4.12.5.1 of the EIR (5.1.1 of the NTR) Threshold 1: Exceedance of Noise Standards, has been revised to reflect modified project trip distribution under the Existing + Project and Near-Term + Project scenarios. No change to the Year 2035 scenario is anticipated and no portion of the Year 2035 analysis is revised below. The analysis below includes the four roadway segments that were not previously modeled that would experience an increase in project traffic compared to the previous analysis, as well as 10 previously modeled segments that would experience a change in trip distribution. Segments that were included in Section 4.12.5.1 of the EIR (5.1.1 of the NTR) that would not be affected by the change in trip distribution are not included below. The analysis provided in the EIR and NTR remains the same for these segments.

The Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) indicates that the difference in vehicle trips on the affected segments would be de minimis between the preferred land use plan with school and land use plan without school. Consistent with the traffic analysis, this analysis represents the potential impacts of both land use plans. Traffic levels for each roadway are provided in the appendices to the memorandum. A substantial permanent noise increase would occur if implementation of the proposed project were to result in an ambient noise level at 50 feet from the roadway centerline that exceeds the land use compatibility limits established in the Santee General Plan, including 65 dBA Ldn at the property line for residential properties and schools. For conditions where the roadway noise level exceeds the standard without project implementation, a significant impact would occur if the proposed project would result in an increase of 3 dBA or greater at 50 feet from the roadway centerline. The following presents a conservative analysis since actual noise levels at nearby receptors would decrease based on their distance from the roadway and would vary based on each individual receptor’s location.

Existing + Project Scenario

Existing noise levels and future increases in traffic with implementation of the proposed project are provided in Table 2 for the Full Access scenario and Table 3 for the Prohibited Southbound Left-Turns from Cuyamaca Street scenario in the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6). As shown in these tables, 2 of the 10 existing roadway segments currently generate noise levels at 50 feet from the roadway centerline that exceed applicable thresholds, both on Magnolia Avenue. In addition, the newly modeled segment of Mast Boulevard between Cuyamaca Street and Magnolia Avenue currently generates noise levels that exceed applicable thresholds without implementation of the proposed project. The significant project-related traffic noise impact identified in the EIR and NTR to one of these already impacted segments, Magnolia Avenue from Woodglen Vista Drive to El Nopal, would be reduced to below a level of significance under either traffic flow scenario with removal of the Magnolia Avenue extension because project traffic volume on this segment would be reduced. Additionally, the significant impact identified in the EIR and NTR to Magnolia Avenue from Princess Joann Road to Woodglen Vista Drive would be reduced to below a level of significance with the removal of the Magnolia Avenue extension. The impact identified in the EIR and NTR to Cuyamaca Street from El Nopal to Mast Boulevard is the same as identified in the EIR and NTR under the Full Access scenario. The proposed project's contribution to noise level on this segment is 1 dBA Ldn higher under the Prohibited Southbound Left-Turns from Cuyamaca Street scenario.

Table 2 and Table 3 in the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6) also identify five segments, compared to three segments in the EIR and NTR, that exceed applicable thresholds but are not identified as significant. The segments of Cuyamaca Street from the project site to future Magnolia Avenue to Chaparral Drive currently do not exist. This extension would be constructed as part of the proposed project, and noise levels with project operation at 50 feet from the roadway would exceed the applicable threshold of 65 dBA Ldn with implementation of project. However, actual noise levels at the nearest receptors to the impacted segments of Cuyamaca Street would be reduced by distance and topography compared to the estimated noise level in Table 2 and Table 3 in the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6). The nearest residences, located on Dakota Ranch Road, are more than 100 feet east of the centerline of Cuyamaca Street. At this distance, noise levels would be reduced to less than 65 dBA Ldn and a significant impact would not occur. Noise levels on Cuyamaca Street from its existing terminus to El Nopal would exceed 65 dBA with operation of the proposed project. However, the existing residential subdivisions on Cuyamaca Street north of El Nopal were constructed with masonry and glass barriers along the edge of development on Cuyamaca Street that would reduce noise levels compared to the estimated noise level in Table 2 and Table 3. The EIR and NTR assumed a minimum noise reduction of 5 dBA for these barriers in accordance with Caltrans guidance (Attachment 6). However, noise technical analysis prepared for the prior residential subdivision project indicates that the barriers were constructed to achieve

at least an 8 dBA noise reduction (Attachment 6). The existing noise barrier is not accounted for in the model and would, therefore, reduce the maximum estimated roadway noise level of 71 dBA Ldn shown in Table 3 in the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6) on Cuyamaca Street from Chaparral Drive to Woodglen Vista Drive under the Prohibited Southbound Left-Turns from Cuyamaca Street scenario to the acceptable noise level of 65 dBA Ldn or below. Impacts to these segments would be less than significant under the Full Access scenario or the Prohibited Southbound Left-Turns from Cuyamaca Street scenario. In summary, under either scenario, with the removal of the Magnolia Avenue extension, significant impacts to two roadway segment impacts would be reduced to below a level of significance, and no new impacts are identified under the Existing + Project scenario compared to the NTR. The significant impact identified in Table 2 and Table 3 in the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6) to Cuyamaca Street from El Nopal to Mast Boulevard was previously identified in the EIR and NTR and is not a new impact as a result of the elimination of the Magnolia Avenue extension.

Near-Term Scenario

The Near-Term scenario includes development of the proposed project and cumulative projects (Attachment 4). Near-term traffic noise levels, with and without the proposed project, are provided in Tables 4 and 5 in the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6). As shown in these tables, 2 of the 10 existing roadway segments would generate noise levels at 50 feet from the roadway centerline that exceed applicable thresholds, both on Magnolia Avenue. In addition, the newly modeled segment of Mast Boulevard between Cuyamaca Street and Magnolia Avenue would generate noise levels that exceed applicable thresholds without project implementation. The significant project-related traffic noise impact identified in the EIR and NTR to one of these already impacted segments, Magnolia Avenue from Woodglen Vista Drive to El Nopal, would be reduced to below a level of significance under either scenario with the removal of the Magnolia Avenue extension because project traffic volume would be reduced. Additionally, the significant impact identified in the NTR to Magnolia Avenue from Princess Joann Road to Woodglen Vista Drive would be reduced to below a level of significance with removal of the Magnolia Avenue extension. The impact identified in the EIR and NTR to Cuyamaca Street from El Nopal to Mast Boulevard is the same as identified in the EIR and NTR under the Full Access scenario. The proposed project's contribution to noise level on this segment is 1 dBA Ldn higher under the Prohibited Southbound Left-Turns from Cuyamaca Street scenario.

Tables 4 and 5 in the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6) also identify five segments, compared to three segments in the EIR and NTR that exceed applicable thresholds but are not identified as significant. The segments of Cuyamaca Street from the project site to future Magnolia Avenue to Chaparral Drive currently do not exist. This extension would be constructed as part of the proposed project, and noise levels with project operation at 50 feet from the roadway would exceed the applicable threshold of 65 dBA Ldn with implementation

of the proposed project. However, actual noise levels at the nearest receptors to the impacted segments of Cuyamaca Street would be reduced by distance and topography compared to the estimated noise level in Tables 4 and 5. The nearest residences, located on Dakota Ranch Road, are more than 100 feet east of the centerline of Cuyamaca Street. At this distance, noise levels would be reduced to less than 65 dBA Ldn and a significant impact would not occur. Noise levels on Cuyamaca Street from its existing terminus to El Nopal would exceed 65 dBA with operation of the proposed project. However, the existing noise barriers at residences along Cuyamaca Street would reduce the maximum estimated roadway noise level of 71 dBA Ldn on Cuyamaca Street from Chaparral Drive to Woodglen Vista Drive to the acceptable noise level of 65 dBA Ldn or below. Impacts to these segments would be less than significant under the Full Access scenario or the Prohibited Southbound Left-Turns from Cuyamaca Street scenario.

In summary, under either scenario, with the removal of the Magnolia Avenue extension, significant impacts at two roadway segments would be reduced to below a level of significance, and no new impacts are identified under the Near-Term scenario compared to the NTR. The significant impact identified in Tables 4 and 5 in the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6) to Cuyamaca Street from El Nopal to Mast Boulevard was previously identified in the EIR and NTR and is not a new impact as a result of the elimination of the Magnolia Avenue extension.

Mitigation Measures

Permanent Increase in Vehicle Noise

Table 7 replaces Table 4.12-16 in the EIR (Table 16 in the NTR), Significant Permanent Vehicle Noise Impact Summary, to provide a summary of the permanent vehicle impacts and where they would occur with removal of the Magnolia Avenue extension from the project. Significant noise impacts to Magnolia Avenue have been reduced to below a level of significance with removal of the Magnolia Avenue extension. Therefore, mitigation to reduce noise levels on Magnolia Avenue is no longer needed. The impacts to Fanita Parkway and Cuyamaca Street remain the same as identified in the EIR and NTR under the Full Access scenario. Table 7 provides the worst-case scenario that would occur to Cuyamaca Street under the Prohibited Southbound Left-Turns from Cuyamaca Street scenario.

Table 7. Significant Permanent Vehicle Noise Impact Summary

Roadway	Segment	Scenario When Impact Would Occur	Maximum Noise Level at 50 Feet (dBA Ldn)
Fanita Parkway	On-Site Portion to Ganley Road	Existing + Project Near-Term + Project Year 2035 + Project Cumulatively Considerable	66
	Ganley Road to Lake Canyon Road	Existing + Project Near-Term + Project Year 2035 + Project Cumulatively Considerable	70
	Lake Canyon Road to Mast Boulevard	Existing + Project Near-Term + Project Year 2035 + Project Cumulatively Considerable	70
Cuyamaca Street (Silver Country Estates)	El Nopal to Mast Boulevard	Existing + Project Near-Term + Project	72

Source: Attachment 6.

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level

Mitigation Measure NOI-6 (NTR Mitigation Measure NOI-2) has been revised to remove the requirement for installation of a noise barrier on Magnolia Avenue. The following Mitigation Measure NOI-6 replaces the measure in the NTR and Final EIR. The MMRP has been updated to reflect the change to Mitigation Measure NOI-6.

NOI-6: Noise Barrier Installation. A permanent noise barrier shall be installed on the western side of Fanita Parkway from Mast Boulevard to the project site, and on the eastern side of Cuyamaca Street from Mast Boulevard to El Nopal in conjunction with proposed improvements to these roadways. The noise barriers shall be designed by a qualified acoustical engineer. The applicant shall submit an analysis to the Director of Development Services prior to the start of construction that demonstrates that the proposed noise barriers would reduce traffic noise exposure at residential receptors to 65-A-weighted-decibel community noise equivalent level or below on Fanita Parkway and Cuyamaca Street. Noise barriers shall be installed concurrently with the following proposed roadway improvements:

- Extension and widening of Fanita Parkway prior to the commencement of building construction activity on site
- Extension and widening of Cuyamaca Street prior to issuance of the first certificate of occupancy

Additionally, Table 8 replaces Table 4.12-17 in the EIR (Table 17 in the NTR), Permanent Vehicle Noise Impact with Noise Barrier Installation Mitigation, to remove references to the impact on

Magnolia Avenue. No change to the impacts to Fanita Parkway and Cuyamaca Street following mitigation would occur as a result of removal of the Magnolia Avenue extension from the proposed project. The impacts identified in Table 8 are the same as identified in the EIR and NTR, except for the Magnolia Avenue impact which has been eliminated.

Table 8. Permanent Vehicle Noise Impact with Noise Barrier Installation Mitigation

Roadway	Segment	Mitigation	Unmitigated Worst-Case Noise Level (dBA Ldn)	Worst-Case + Project Noise Level with Mitigation (dBA Ldn) ¹	Significant Impact?
Fanita Parkway	On-Site Portion to Ganley Road – western side of street	Noise Barrier Installation (NOI-6)	66	61	No
	On-Site Portion to Ganley Road – eastern side of street	No feasible mitigation	66	66	Yes
	Ganley Road to Lake Canyon Road – western side of street	Noise Barrier Installation (NOI-6)	70	65	No
	Ganley Road to Lake Canyon Road – eastern side of street	No feasible mitigation	70	70	Yes
	Lake Canyon Road to Mast Boulevard – western side of street	Noise Barrier Installation (NOI-6)	70	65	No
	Lake Canyon Road to Mast Boulevard – eastern side of street	No feasible mitigation	70	70	Yes
Cuyamaca Street (Silver Country Estates)	EI Nopal to Mast Boulevard – western side of street	No feasible mitigation	72	72	Yes
	EI Nopal to Mast Boulevard – east side of street	Noise Barrier Installation (NOI-6)	72	65	No

Source: Attachment 6.

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level

¹ Due to differences in topography between receptors and roadways along the impacted segments, required noise barrier height and design will vary. As previously stated, at a minimum, a noise reduction of 5 dBA would be achieved, and up to 30 dBA is typical. Table 7 assumes the minimum noise reduction required to mitigate impacts for the segment of Cuyamaca Street from EI Nopal to Mast Boulevard (7 dBA reduction). Final barrier design may achieve higher reductions.

Temporary Noise Increase

Construction of the proposed project would have the potential to result in temporary noise level increases as a result of increased traffic volumes and the operation of heavy equipment. These analyses have been revised to reflect removal of the Magnolia Avenue extension as a project feature.

Construction Traffic Noise

Removal of the Magnolia Avenue extension as a project feature would not result in any change in traffic volumes during the Existing + Construction scenario because it was previously assumed that the Magnolia Avenue connection would not be available until after Phase 1 of construction. All construction traffic was assumed to use Fanita Parkway during the Existing + Construction scenario. Therefore, construction traffic modeling was not revised for this scenario and there are no changes to the analysis or results in the EIR and NTR.

However, the Near-Term + Interim Operation + Construction scenario assumes 50 percent of traffic volumes from full operation of the proposed project to determine whether construction would result in a significant temporary increase in noise level compared to noise levels without construction. The Near-Term + Interim + Construction scenario has been revised to reflect the revised interim operation trip distribution under the Full Access and Prohibited Southbound Left-Turns from Cuyamaca Street scenarios. There would be no change to estimated construction trip generation. Only roadway segments that would experience a change in trip distribution as a result of removal of the Magnolia extension as a project feature are included in the revised analysis.

Tables 8 and 9 in the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6) provide the estimated traffic noise levels for interim operation and construction activities other than building construction compared to near-term noise levels without the proposed project under each scenario. Tables 10 and 11 in the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6) provide the estimated traffic noise levels compared to near-term noise levels during a building construction period and interim operation.

As shown in Tables 8 through 11, compared to existing conditions, several roadways would experience a significant increase in noise level in the Near-Term + Interim Operation + Construction scenario compared to conditions without the project. However, these increases would be primarily attributable to the increase in permanent operational traffic rather than construction traffic and are therefore not a significant impact related to construction traffic. Significant increases in noise level attributable to operation are addressed in the analysis of permanent impacts above. As shown in Table 8 and Table 9, no significant impacts associated with construction traffic noise would occur during activities without building construction under either traffic flow scenario. As shown in Table 10 and Table 11, construction traffic noise levels during building construction would result in temporary significant noise impacts on one segment of Magnolia Avenue (Princess Joann Road to Woodglen Vista Drive) under either scenario. This significant

and mitigated impact was previously identified in the EIR and NTR. The EIR and NTR also previously identified an impact to Magnolia Avenue from Woodglen Vista Drive to El Nopal under the Near-Term + Interim Operation + Building Construction scenario. With elimination of the Magnolia Avenue extension, traffic noise levels with building construction would be the same on this segment under either traffic flow scenario compared to the EIR and NTR. Because noise levels on this roadway segment would exceed the applicable 65 dBA Ldn threshold without the proposed project, and the increase in noise attributable to construction is less than 3 dBA on this roadway segment, this impact would not be significant, and Tables 10 and 11 make this revision to the EIR and NTR. It should be noted that implementation of Mitigation Measure NOI-2 (NTR Mitigation Measure NOI-5) would continue to eliminate truck traffic on this segment regardless of significance determination because truck traffic would be prohibited on the length Magnolia Avenue north of Mast Boulevard. There would be no change to the impact to Fanita Parkway identified in the EIR and NTR.

A previously identified impact to Magnolia Avenue (Princess Joann Road to Woodglen Vista Drive) is identified during building construction activities under either traffic flow scenario in the Near-Term + Interim Operation + Construction analysis with removal of the Magnolia Avenue extension. Mitigation Measure NOI-2 (NTR Mitigation Measure NOI-5), which prohibits construction truck trips on Magnolia Avenue, would continue to be required under either scenario and would reduce this impact to a less than significant level.

Table 12 of the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6) revises the impact to Magnolia Avenue in Table 4.12-14 in the EIR (Table 18 in the NTR), Interim Traffic Noise Impacts (Unmitigated), to reflect the reduced, but still significant, maximum noise level on Magnolia Avenue (Princess Joann Road to Woodglen Vista Drive) and remove the impact to Magnolia Avenue from Woodglen Vista Drive to El Nopal. Table 13 of the Addendum to the Noise Technical Report for the Fanita Ranch Project (Attachment 6) revises the mitigated noise levels on Magnolia Avenue (Princess Joann Road to Woodglen Vista Drive) in Table 4.12-15 in the EIR (Table 19 in the NTR), Mitigation Interim Traffic Noise Impacts, and removes Magnolia Avenue (Woodglen Vista Drive to El Nopal) from the list of impacted segments. There is no change to Fanita Parkway in either table because impacts to this segment would be same before or after mitigation.

Construction Equipment Noise

The analysis of potential impacts from construction equipment in the EIR and NTR concluded that operation of heavy equipment during construction would have the potential to create substantial short-term noise increases to residences located within 300 feet of the construction areas along Fanita Parkway, Cuyamaca Street, and Magnolia Avenue, and dead-end roadway improvements on the southern boundary of the site. Impacts to residences within 300 feet of the Magnolia Avenue extension are eliminated with removal of the extension from the project. Mitigation Measures

NOI-3 and NOI-4 (NTR Mitigation Measures NOI-6 and NOI-7) would continue to be required for the remaining construction impacts, and no change to these measures has been made.

Excessive Groundborne Vibration or Noise

The analysis in Section 4.12.5.2 of the EIR (Section 5.1.2 of the NTR), Threshold 2: Excessive Groundborne Vibration or Noise, concluded that operation of construction equipment equivalent to a vibratory roller would result in a potentially significant nuisance impact, including during construction of the Magnolia Avenue extension. Impacts related to the construction of the Magnolia Avenue extension are eliminated with removal of this project feature. Mitigation Measures NOI 3, NOI-4, NOI-8, and NOI-9 (NTR Mitigation Measures NOI-6 through NOI-9) would continue to be required for the remaining construction impacts, and no changes to these measures have been made.

Summary

No new significant impacts have been identified as a result of the removal of the Magnolia Avenue extension as a project design feature. The significant impacts to noise levels on Magnolia Avenue from Princess Joann Road to El Nopal identified in the NTR during project operation would be eliminated with removal of the extension. Additionally, construction noise and vibration impacts associated with construction of the Magnolia Avenue extension would be eliminated. A significant impact to the existing Magnolia Avenue roadway segment of Princess Joann Road to Woodglen Vista Drive during building construction and interim operation would continue to occur with removal of the Magnolia Avenue extension and would be mitigated to less than significant with implementation of Mitigation Measure NOI-2 (NTR Mitigation Measure NOI-5). All other impacts remain the same as identified in the EIR and NTR.

1.3.2.6 Section 4.16: Transportation

The removal of the Magnolia Avenue extension as a project design feature would not result in any new significant transportation impacts under the preferred land use plan with school and land use plan without school. A Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum has been prepared by LLG (2020) (Attachment 4) to evaluate the potential transportation impacts on the local circulation system for the proposed project without the extension of Magnolia Avenue between future Cuyamaca Street and its existing terminus just north of Princess Joann Road. The analysis is based on the preferred land use plan with school. The land use plan without school would generate a 0.66 percent more traffic (26,272 ADT versus 26,445 ADT). Insofar as the trip generation is nearly identical the analysis would apply to both the preferred land use plan with school and land use plan without school. The analysis focuses on the Existing, Existing + Project, Existing + Cumulative Projects, and Existing + Cumulative Projects + Project scenarios. A long-term (Year 2035) analysis is not necessary since Magnolia Avenue will remain on the City’s Mobility Element to be constructed at a later date. Therefore, the Year

2035 analysis prepared for the project remains applicable because it assumes buildout of the General Plan, which includes the extension of Magnolia Avenue.

Without the connection of Magnolia Avenue, the Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) evaluates two network scenarios. The first would allow full access movements from Cuyamaca Street to Princess Joann Road, Woodglen Vista Drive, and El Nopal connecting to Magnolia Avenue. The second would prohibit southbound left-turn movements from Cuyamaca Street to these local streets. The analyses evaluated the operations specific to the Cuyamaca Street and Magnolia Avenue corridors, where a change in project trips would occur. The following locations affected are listed below (note that the numbers correspond to the intersection or street segment number in the Transportation Impact Analysis [TIA] originally prepared for the proposed project):

Intersections

1. Princess Joann Road/Cuyamaca Street (future)
2. Princess Joann Road/Magnolia Avenue
4. Woodglen Vista Drive/Cuyamaca Street
5. Woodglen Vista Drive/Magnolia Avenue
6. El Nopal/Cuyamaca Street
7. El Nopal/Magnolia Avenue
12. Beck Drive/Cuyamaca Street
13. 2nd Street/Magnolia Avenue
14. Carefree Drive/Magnolia Avenue
25. Mast Boulevard/Cuyamaca Street
26. Mast Boulevard/Park Center Drive
27. Mast Boulevard/Magnolia Avenue

Street Segments

Princess Joann Road

1. Cuyamaca Street to Magnolia Avenue

Woodglen Vista Drive

2. Cuyamaca Street to Magnolia Avenue

El Nopal

3. Cuyamaca Street to Magnolia Avenue

Mast Boulevard

12. Cuyamaca Street to Magnolia Avenue

Cuyamaca Street

42. Project Site to Magnolia Avenue (future)
43. Magnolia Avenue to Princess Joann Road (future)
44. Princess Joann Road to Chaparral Drive (future)
45. Chaparral Drive to Woodglen Vista Drive
46. Woodglen Vista Drive to El Nopal
47. El Nopal to Mast Boulevard

Magnolia Avenue

54. Cuyamaca Street to Princess Joann Road (future)
55. Princess Joann Road to Woodglen Vista Drive
56. Woodglen Vista Drive to El Nopal
57. El Nopal to Mast Boulevard

In the Full Access scenario without the Magnolia Avenue extension, traffic would utilize Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard to reach destinations southeast of the project site. It is expected that 10 percent of project traffic would use Princess Joann Road, with 5 percent on Woodglen Vista Drive and El Nopal. Princess Joann Road is expected to attract a higher amount of traffic since it provides a shorter distance between Cuyamaca Street and Magnolia Avenue. It should be noted that Appendix Y of the TIA (EIR Appendix N) contains an assessment of the timing for the Magnolia Avenue extension and was not intended as a cumulative capacity analysis of the potentially affected roadways. The assumptions for the amount of traffic that would use Princess Joann Road, Woodglen Vista Drive, and El Nopal have been updated in the Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) to reflect the most accurate estimate of distribution based on trip lengths and travel time. The deletion of

Magnolia Avenue would not change the anticipated trip distribution on Fanita Parkway since Magnolia Avenue is about 2 miles away. In other words, no traffic destined for Magnolia Avenue would choose to use Fanita Parkway if Magnolia Avenue was not constructed given the out of direction travel that would be required.

The Existing + Project and Existing + Cumulative Projects + Project conditions were analyzed for both the No Magnolia Avenue Extension Allowing Full Access scenario and the No Magnolia Avenue Extension Prohibiting Southbound Left-Turns on Cuyamaca Street scenario, as discussed below.

No Magnolia Avenue Extension Allowing Full Access – Capacity Analysis

Existing + Project Peak Hour Intersections

As seen in Table 9, Intersection Operations (No Magnolia Avenue Extension – Full Access, the following intersections are calculated to operate at LOS E or F with the addition of Project traffic:

- Intersection No. 4. Woodglen Vista Drive/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 6. El Nopal/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 12. Beck Drive/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 25. Mast Boulevard/Cuyamaca Street – LOS E (AM peak hour)

Based on the established significance criteria, four significant direct impacts were calculated with the addition of project traffic at the study area locations above since the project-induced change in delay is greater than 2.0 seconds for LOS E or F operating intersections. These impacts are also calculated to occur under the project with Magnolia Avenue extension analyzed in the EIR. Thus, no new or more severe significant impacts would occur.

Existing + Cumulative Projects + Project Peak Hour Intersections

As seen in Table 9, Intersection Operations (No Magnolia Avenue Extension – Full Access, the following intersections are calculated to operate at LOS E or F with the addition of cumulative traffic and project traffic:

- Intersection No. 4. Woodglen Vista Drive/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 6. El Nopal/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 12. Beck Drive/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 25. Mast Boulevard/Cuyamaca Street – LOS E/F (AM/PM peak hours)

Based on the established significance criteria, four significant direct impacts were calculated with the addition of project traffic at the study area locations above since the project-induced change in delay is greater than 2.0 seconds for LOS E or F operating intersections. These impacts are also calculated to occur under the proposed project with Magnolia Avenue extension analyzed in the EIR. Thus, no new or more severe significant impacts would occur.

Table 9. Intersection Operations (No Magnolia Avenue Extension – Full Access)

Intersection	Jur.	Control Type	Peak Hour	Existing		Existing + Project		Δ ^c Delay	Sig?	EIR Impact w/Magnolia Avenue Extension? ^d	Existing + Cumulative Projects		Existing + Cumulative Projects + Project		Δ ^c Delay	Sig?	EIR Impact w/Magnolia Avenue Extension? ^d
				Delay ^a	LOS ^b	Delay	LOS				Delay	LOS	Delay	LOS			
1. Princess Joann Road/Cuyamaca Street <i>(future intersection)</i>	Santee	DNE/MSS C	AM	—	—	11.4	B	—	No	No	—	—	11.4	B	—	No	No
			PM	—	—	21.6	C	—			—	—	21.6	C	—		
2. Princess Joann Road/Magnolia Avenue	Santee	AWSC	AM	7.6	A	8.9	A	1.3	No	No	7.7	A	9.0	A	1.3	No	No
			PM	7.9	A	10.3	B	2.4			7.9	A	10.3	B	2.4		
4. Woodglen Vista Drive/Cuyamaca Street	Santee	AWSC	AM	8.9	A	80.2	F	71.3	Yes	Yes	8.9	A	81.9	F	73.0	Yes	Yes
			PM	9.0	A	>100.0	F	>2.0			9.1	A	>100.0	F	>2.0		
5. Woodglen Vista Drive/Magnolia Avenue	Santee	Signal	AM	11.9	B	14.9	B	3.0	No	No	12.0	B	15.0	B	3.0	No	No
			PM	10.7	B	11.6	B	0.9			10.7	B	11.6	B	0.9		
6. El Nopal/Cuyamaca Street	Santee	AWSC	AM	12.0	B	>100.0	F	>2.0	Yes	Yes	12.3	B	>100.0	F	>2.0	Yes	Yes
			PM	11.8	B	>100.0	F	>2.0			12.1	B	>100.0	F	>2.0		
7. El Nopal/Magnolia Avenue	Santee	Signal	AM	23.9	C	27.8	C	3.9	No	No	24.3	C	28.4	C	4.1	No	No
			PM	18.3	B	22.3	C	4.0			18.6	C	22.8	C	4.2		
12. Beck Drive/Cuyamaca Street	Santee	AWSC	AM	22.4	C	>100.0	F	>2.0	Yes	Yes	24.1	C	>100.0	F	>2.0	Yes	Yes
			PM	13.3	B	>100.0	F	>2.0			13.7	B	>100.0	F	>2.0		
13. 2nd Street/Magnolia Avenue	Santee	Signal	AM	8.0	A	8.0	A	0.0	No	No	8.2	A	8.2	A	0.0	No	No
			PM	6.6	A	6.7	A	0.1			6.7	A	6.8	C	0.1		
14. Carefree Drive/Magnolia Avenue	Santee	Signal	AM	17.4	B	20.3	C	2.9	No	No	17.8	B	21.0	C	3.2	No	No
			PM	9.2	A	9.6	A	0.4			9.3	A	9.7	A	0.4		
25. Mast Boulevard/Cuyamaca Street	Santee	Signal	AM	36.9	D	72.4	E	35.5	Yes	Yes	38.0	D	75.4	E	37.4	Yes	Yes
			PM	33.3	C	50.7	D	17.4			33.7	D	53.6	D	19.9		
26. Mast Boulevard/Park Center Drive	Santee	Signal	AM	7.1	A	7.2	A	0.1	No	No	7.1	A	7.1	A	0.0	No	No
			PM	8.7	A	8.7	A	0.0			8.9	A	8.9	A	0.0		
27. Mast Boulevard/Magnolia Avenue	Santee	Signal	AM	32.9	C	37.5	D	4.6	No	No	36.6	D	41.6	D	5.0	No	No
			PM	26.8	C	28.6	C	1.8			28.1	D	30.6	C	2.5		

Source: Attachment 4.

Notes:

- ^a Average delay expressed in seconds per vehicle.
- ^b Level of Service
- ^c Δ denotes the increase in delay due to Project.
- ^d See Tables 8–1 and 10–1 in the EIR traffic study (EIR Appendix N) for the “with Magnolia Avenue Extension” analysis.

General Notes:

- ¹ Sig = Significant impact, yes or no.
- ² Jur. = Jurisdiction

SIGNALIZED UNSIGNALIZED

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0A	
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

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Existing + Project Daily Segment Operations

As seen in Table 10, Segment Operations (No Magnolia Avenue Extension – Full Access), the following street segments are calculated to operate at LOS E or F with the addition of project traffic:

- Segment No. 41. Cuyamaca Street from Project Site to Magnolia Avenue – LOS E
- Segment No. 42. Cuyamaca Street from Magnolia Avenue to Princess Joann Road – LOS E
- Segment No. 45. Cuyamaca Street from Woodglen Vista Drive to El Nopal – LOS E
- Segment No. 46. Cuyamaca Street from El Nopal to Mast Boulevard – LOS F

Based on the established significance criteria, two significant direct impacts were calculated with the addition of project traffic at study area locations above since the project-induced change in V/C is greater than 0.02 for LOS E or F operating street segments. The significant impact on Segment No. 45 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under Year 2035 conditions. The significant impact on Segment No. 46 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under near-term conditions. Segments No. 41 and No. 42 are not deemed to be significant impacts as the intersection operations bookending each segment and the peak hour arterial analyses are calculated to operate at LOS B or better based on standards of practice in the industry and per methodologies for calculating LOS as described in the Highway Capacity Manual (HCM).

Existing + Cumulative Projects + Project Daily Segment Operations

As seen in Table 10, Segment Operations (No Magnolia Avenue Extension – Full Access), the following street segments are calculated to operate at LOS E or F with the addition of project traffic:

- Segment No. 41. Cuyamaca Street from Project Site to Magnolia Avenue – LOS E
- Segment No. 42. Cuyamaca Street from Magnolia Avenue to Princess Joann Road – LOS E
- Segment No. 45. Cuyamaca Street from Woodglen Vista Drive to El Nopal – LOS E
- Segment No. 46. Cuyamaca Street from El Nopal to Mast Boulevard – LOS F

Based on the established significance criteria, two significant direct impacts were calculated with the addition of project traffic at study area locations above since the project-induced change in V/C is greater than 0.02 for LOS E or F operating street segments. The significant impact on Segment No. 45 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under Year 2035 conditions. The significant impact on Segment No. 46 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under near-term conditions. Segments No. 41 and No. 42 are not deemed to be significant impacts as the intersection operations bookending each segment and the peak hour arterial analyses are calculated to operate at LOS B or better based on standards of practice in the industry and per methodologies for calculating LOS as described in the HCM.

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Table 10. Segment Operations (No Magnolia Avenue Extension – Full Access To/From Cuyamaca Street)

Street Segment	Jur.	Existing Capacity (LOS E) ^a	Existing			Existing + Project			Project Volumes	Δ ^e V/C	Sig?	EIR Impact w/Magnolia Avenue Extension? ^f	Existing + Cumulative Projects			Existing + Cumulative Projects + Project			Project Volumes	Δ ^e V/C	Sig?	EIR Impact w/Magnolia Avenue Extension? ^f
			ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C					ADT	LOS	V/C	ADT	LOS	V/C				
Princess Joann Road																						
1. Cuyamaca St to Magnolia Ave	Santee	8,000	530	A	0.066	3,160	B	0.395	2,630	0.329	No	No	685	A	0.086	3,315	B	0.414	2,630	0.328	No	No
Woodglen Vista Drive																						
2. Cuyamaca St to Magnolia Ave	Santee	8,000	1,700	A	0.213	3,010	B	0.376	1,310	0.163	No	No	1,759	A	0.220	3,069	B	0.384	1,310	0.164	No	No
El Nopal																						
3. Cuyamaca St to Magnolia Ave	Santee	8,000	3,780	C	0.473	5,090	D	0.636	1,310	0.163	No	No	3,886	C	0.486	5,196	D	0.650	1,310	0.164	No	No
Mast Boulevard																						
12. Cuyamaca St to Magnolia Ave	Santee	40,000	18,490	B	0.462	19,280	B	0.482	790	0.020	No	No	19,616	B	0.490	20,406	B	0.510	790	0.020	No	No
Cuyamaca Street																						
41. Project Site to Magnolia Ave ^g	Santee	DNE/15,000	—	—	—	13,920	E ^h	0.928	13,920	—	No ^h	No ^h	—	—	—	13,920	E ^h	1.000	13,920	—	No ^h	No ^h
42. Magnolia Ave to Princess Joann Rd ^g	Santee	DNE/15,000	—	—	—	13,920	E ^h	0.928	13,920	—	No ^h	No ^h	—	—	—	13,920	E ^h	1.000	13,920	—	No ^h	No ^h
43. Princess Joann Rd to Chaparral Dr ^g	Santee	DNE/15,000	—	—	—	11,300	D	0.753	11,300	—	No	No	—	—	—	11,300	D	1.000	11,300	—	No	No
44. Chaparral Dr to Woodglen Vista Dr ⁱ	Santee	15,000/40,000	670	A	0.045	11,970	A ⁱ	0.299	11,300	0.254	No	No	683	A	0.4c/046	11,983	A ⁱ	0.300	11,300	0.283	No	No
45. Woodglen Vista Dr to El Nopal	Santee	15,000	4,360	A	0.291	14,340	E	0.956	9,980	0.665	Yes	Yes^j	4,472	A	0.298	14,452	E	0.963	9,980	0.665	Yes	Yes^j
46. El Nopal to Mast Blvd	Santee	15,000	8,860	C	0.591	17,530	F	1.169	8,670	0.578	Yes	Yes	9,173	C	0.612	17,843	F	1.190	8,670	0.578	Yes	Yes
Magnolia Avenue																						
54. Cuyamaca St to Princess Joann Rd	Santee	DNE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
55. Princess Joann Rd to Woodglen Vista Dr	Santee	40,000	2,020	A	0.051	4,650	A	0.116	2,630	0.065	No	No	2,204	A	0.055	4,834	A	0.121	2,630	0.066	No	No
56. Woodglen Vista Dr to El Nopal	Santee	40,000	9,030	A	0.226	12,970	A	0.324	3,940	0.098	No	No	9,415	A	0.235	13,355	A	0.334	3,940	0.099	No	No
57. El Nopal to Mast Blvd	Santee	40,000	13,690	A	0.342	16,320	B	0.408	2,630	0.066	No	No	14,291	A	0.357	16,921	B	0.423	2,630	0.066	No	No

Source: Attachment 4.

Notes:

- ^a Capacities based on City of Santee Roadway Classification & LOS table.
- ^b Average Daily Traffic
- ^c Level of Service
- ^d Volume to Capacity ratio
- ^e Δ denotes a Project-induced increase in the Volume to Capacity ratio

- f See Tables 8–2 and 10–2 in the EIR traffic study (EIR Appendix N) for the “with Magnolia Avenue Extension” analysis.
- g The 15,000 ADT capacity for the existing sections of Cuyamaca Street was continued along this future section providing access to the Project.
- h The intersection operations at both ends of the Cuyamaca Street road segment between the Project Site and Woodglen Vista Drive report LOS C or better operations and the peak hour arterial operations indicate LOS B or better operations with the mitigation proposed by the Project. Therefore, adequate operations are expected along this roadway. See Tables 3 and 4.
- i As part of the Project Design Features for this Project, Cuyamaca Street from Chaparral Drive to Woodglen Vista Drive is proposed to be improved to four-lane Major Road standards. Therefore, an LOS E capacity of 40,000 ADT was used in the “Plus Project” analyses.
- j Without the connection of the Magnolia Avenue Extension, this segment impact would be a direct impact instead of a cumulative impact, as identified in the EIR traffic study. The mitigation recommended in the EIR of improving Cuyamaca Street between Woodglen Vista Drive and El Nopal to four lanes would still be recommended. Therefore, no new impacts would occur without the extension of Magnolia Avenue and the mitigation would be unchanged.

General Notes:

- ¹ Sig = Significant impact, yes or no.
- ² DNE, “—” = Does not exist.

Peak Hour Arterial Analysis

The Cuyamaca Street intersections with Princess Joann Road and Woodglen Vista Drive would be improved from stop controls to traffic signals as part of the project mitigation detailed in the EIR. Table 3 of the Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) shows the results of the mitigated intersection LOS results without the connection of the Magnolia Avenue extension. Based on the computed intersection analysis, the signalized intersections would operate at LOS B or better, and thus, the roadway would be expected to operate efficiently since LOS B is calculated at the intersections on either end of each segment with the proposed mitigation.

Table 4 of the Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) summarizes the Existing + Cumulative Projects + Project peak hour arterial operations of Cuyamaca Street without the Magnolia Avenue Extension, allowing full access movements to local streets. The section of Cuyamaca Street from the project site to Woodglen Vista Drive serves as an access route to a major roadway (Mast Boulevard) ultimately connecting to daily commuter routes. Thus, this segment is classified as a Class III Arterial, per the HCM. Table 4 shows travel speeds (mph) in both directions on Cuyamaca Street along this section operating at LOS B or better.

No Magnolia Avenue Extension Prohibiting Southbound Left-Turns on Cuyamaca Street

Existing + Project Peak Hour Intersections

As seen in Table 11, Intersection Operations (No Magnolia Avenue Extension – Prohibited Southbound Left-Turns from Cuyamaca Street), the following intersections are calculated to operate at LOS E or F with the addition of project traffic without the Magnolia Avenue Extension, and prohibiting southbound left-turning movements from Cuyamaca Street to local streets:

- Intersection No. 4. Woodglen Vista Drive/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 6. El Nopal/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 12. Beck Drive/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 25. Mast Boulevard/Cuyamaca Street – LOS F/E (AM/PM peak hours)

Based on the established significance criteria, four significant direct impacts were calculated with the addition of project traffic at the study area locations above since the project-induced change in delay is greater than 2.0 seconds for LOS E or F operating intersections. These impacts are also calculated to occur under the project with Magnolia Avenue extension condition analyzed in the EIR. Thus, no new or more severe significant impacts would occur.

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Table 11. Intersection Operations (No Magnolia Avenue Extension – Prohibited Southbound Left-Turns from Cuyamaca Street)

Intersection	Jur.	Control Type	Peak Hour	Existing		Existing + Project		Δ ^c Delay	Sig?	EIR Impact w/Magnolia Avenue Extension? ^d	Existing + Cumulative Projects		Existing + Cumulative Projects + Project		Δ ^c Delay	Sig?	EIR Impact w/Magnolia Avenue Extension? ^d
				Delay ^a	LOS ^b	Delay	LOS				Delay	LOS	Delay	LOS			
1. Princess Joann Road/Cuyamaca Street <i>(future intersection)</i>	Santee	DNE/MSS C	AM	—	—	11.4	B	—	No	No	—	—	11.4	B	—	No	No
			PM	—	—	21.6	C	—			—	—	21.6	C			
2. Princess Joann Road/Magnolia Avenue	Santee	AWSC	AM	7.6	A	8.5	A	0.9	No	No	7.7	A	8.5	A	0.8	No	No
			PM	7.9	A	10.1	B	2.2			7.9	A	10.1	B	2.2		
4. Woodglen Vista Drive/Cuyamaca Street	Santee	AWSC	AM	8.9	A	>100.0	F	>2.0	Yes	Yes	8.9	A	>100.0	F	>2.0	Yes	Yes
			PM	9.0	A	>100.0	F	>2.0			9.1	A	>100.0	F	>2.0		
5. Woodglen Vista Drive/Magnolia Avenue	Santee	Signal	AM	11.9	B	13.4	B	1.5	No	No	12.0	B	13.5	B	1.5	No	No
			PM	10.7	B	11.2	B	0.5			10.7	B	11.2	B	0.5		
6. El Nopal/Cuyamaca Street	Santee	AWSC	AM	12.0	B	>100.0	F	>2.0	Yes	Yes	12.3	B	>100.0	F	>2.0	Yes	Yes
			PM	11.8	B	>100.0	F	>2.0			12.1	B	>100.0	F	>2.0		
7. El Nopal/Magnolia Avenue	Santee	Signal	AM	23.9	C	25.8	C	1.9	No	No	24.3	C	26.3	C	2.0	No	No
			PM	18.3	B	22.2	C	3.9			18.6	C	23.0	C	4.4		
12. Beck Drive/Cuyamaca Street	Santee	AWSC	AM	22.4	C	>100.0	F	>2.0	Yes	Yes	24.1	C	>100.0	F	>2.0	Yes	Yes
			PM	13.3	B	>100.0	F	>2.0			13.7	B	>100.0	F	>2.0		
13. 2nd Street/Magnolia Avenue	Santee	Signal	AM	8.0	A	8.8	A	0.8	No	No	8.2	A	9.1	A	0.9	No	No
			PM	6.6	A	8.6	A	2.0			6.7	A	9.3	A	2.6		
14. Carefree Drive/Magnolia Avenue	Santee	Signal	AM	17.4	B	17.6	B	0.2	No	No	17.8	B	18.0	B	0.2	No	No
			PM	9.2	A	9.4	A	0.2			9.3	A	9.6	A	0.3		
25. Mast Boulevard/Cuyamaca Street	Santee	Signal	AM	36.9	D	98.3	F	61.4	Yes	Yes	38.0	D	>100.0	F	>2.0	Yes	Yes
			PM	33.3	C	62.9	E	29.6			33.7	D	64.3	E	30.6		
26. Mast Boulevard/Park Center Drive	Santee	Signal	AM	7.1	A	7.7	A	0.6	No	No	7.1	A	7.8	A	0.7	No	No
			PM	8.7	A	9.1	A	0.4			8.9	A	9.4	A	0.5		
27. Mast Boulevard/Magnolia Avenue	Santee	Signal	AM	32.9	C	52.0	D	19.1	No	No	36.6	D	54.4	D	17.8	No	No
			PM	26.8	C	31.3	C	4.5			28.1	D	33.9	C	5.8		

Source: Attachment 4.

Notes:

- ^a Average delay expressed in seconds per vehicle.
- ^b Level of Service
- ^c Δ denotes the increase in delay due to Project.
- ^d See Tables 8–1 and 10–1 in the EIR traffic study (EIR Appendix N) for the “with Magnolia Avenue Extension” analysis.

General Notes:

- ¹ Sig = Significant impact, yes or no.
- ² Jur. = Jurisdiction

SIGNALIZED UNSIGNALIZED

DELAY/LOS THRESHOLDS DELAY/LOS THRESHOLDS

Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

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Existing + Cumulative Projects + Project Peak Hour Intersections

As seen in Table 11, the following intersections are calculated to operate at LOS E or F with the addition of cumulative traffic and project traffic without the Magnolia Avenue extension, and prohibiting southbound left-turning movements from Cuyamaca Street to local streets:

- Intersection No. 4. Woodglen Vista Drive/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 6. El Nopal/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 12. Beck Drive/Cuyamaca Street – LOS F (AM/PM peak hours)
- Intersection No. 25. Mast Boulevard/Cuyamaca Street – LOS F (AM/PM peak hours)

Based on the established significance criteria, four significant direct impacts were calculated with the addition of project traffic at the study area locations above since the project-induced change in delay is greater than 2.0 seconds for LOS E or F operating intersections. These impacts are also calculated to occur under the project with Magnolia Avenue extension analyzed in the EIR. Thus, no new or more severe significant impacts would occur.

Existing + Project Daily Segment Operations

As seen in Table 12, Segment Operations (No Magnolia Avenue Extension – Prohibited Southbound Left-Turns from Cuyamaca Street), the following street segments are calculated to operate at LOS E or F with the addition of project traffic without the Magnolia Avenue extension, and prohibiting southbound left-turning movements from Cuyamaca Street to local streets:

- Segment No. 41. Cuyamaca Street from Project Site to Magnolia Avenue – LOS E
- Segment No. 42. Cuyamaca Street from Magnolia Avenue to Princess Joann Road – LOS E
- Segment No. 45. Cuyamaca Street from Woodglen Vista Drive to El Nopal – LOS F
- Segment No. 46. Cuyamaca Street from El Nopal to Mast Boulevard – LOS F

Based on the established significance criteria, two significant direct impacts were calculated with the addition of project traffic at study area locations above since the project-induced change in V/C is greater than 0.02 for LOS E or F operating street segments. The significant impact on Segment No. 45 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under Year 2035 conditions. The significant impact on Segment No. 46 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under near-term conditions. Segments No. 41 and No. 42 are not deemed to be significant impacts as the intersection operations bookending each segment and the peak hour arterial analyses are calculated to operate at LOS B or better based on standards of practice in the industry and per methodologies for calculating LOS as described in the HCM.

Existing + Cumulative Projects + Project Daily Segment Operations

As seen in Table 12, the following street segments are calculated to operate at LOS E or F with the addition of project traffic without the Magnolia Avenue extension, and prohibiting southbound left-turning movements from Cuyamaca Street to local streets:

- Segment No. 41. Cuyamaca Street from Project Site to Magnolia Avenue – LOS E
- Segment No. 42. Cuyamaca Street from Magnolia Avenue to Princess Joann Road – LOS E
- Segment No. 45. Cuyamaca Street from Woodglen Vista Drive to El Nopal – LOS F
- Segment No. 46. Cuyamaca Street from El Nopal to Mast Boulevard – LOS F

Based on the established significance criteria, two significant direct impacts were calculated with the addition of project traffic at study area locations above since the project-induced change in V/C is greater than 0.02 for LOS E or F operating street segments. The significant impact on Segment No. 45 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under Year 2035 conditions. The significant impact on Segment No. 46 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under near-term conditions. Segments No. 41 and No. 42 are not deemed to be significant impacts as the intersection operations bookending each segment and the peak hour arterial analyses are calculated to operate at LOS B or better based on standards of practice in the industry and per methodologies for calculating LOS as described in the HCM.

Table 12. Segment Operations (No Magnolia Avenue Extension – Prohibited Southbound Left-Turns from Cuyamaca Street)

Street Segment	Jur.	Existing Capacity (LOS E) a	Existing			Existing + Project			Project Volumes	Δ e V/C	Sig?	EIR Impact w/Magnolia Avenue Extension? f	Existing + Cumulative Projects			Existing + Cumulative Projects + Project			Project Volumes	Δ e V/C	Sig?	EIR Impact w/Magnolia Avenue Extension? f
			ADT b	LOS c	V/C d	ADT	LOS	V/C					ADT	LOS	V/C	ADT	LOS	V/C				
Princess Joann Road																						
1. Cuyamaca St to Magnolia Ave	Santee	8,000	530	A	0.066	1,840	A	0.230	1,310	0.164	No	No	685	A	0.086	1,995	A	0.249	1,310	0.163	No	No
Woodglen Vista Drive																						
2. Cuyamaca St to Magnolia Ave	Santee	8,000	1,700	A	0.213	2,360	A	0.295	660	0.082	No	No	1,759	A	0.220	2,419	A	0.302	660	0.082	No	No
El Nopal																						
3. Cuyamaca St to Magnolia Ave	Santee	8,000	3,780	C	0.473	4,440	C	0.555	660	0.082	No	No	3,886	C	0.486	4,546	C	0.568	660	0.082	No	No
Mast Boulevard																						
13. Cuyamaca St to Magnolia Ave	Santee	40,000	18,490	B	0.462	21,910	C	0.548	3,420	0.086	No	No	19,616	B	0.490	23,036	C	0.576	3,420	0.086	No	No
Cuyamaca Street																						
41. Project Site to Magnolia Ave g	Santee	DNE/15,000	—	—	—	13,920	E h	0.928	13,920	—	No h	No h	—	—	—	13,920	E h	1.000	13,920	—	No h	No h
42. Magnolia Ave to Princess Joann Rd g	Santee	DNE/15,000	—	—	—	13,920	E h	0.928	13,920	—	No h	No h	—	—	—	13,920	E h	1.000	13,920	—	No h	No h
43. Princess Joann Rd to Chaparral Dr g	Santee	DNE/15,000	—	—	—	12,610	D	0.841	12,610	—	No	No	—	—	—	12,610	D	1.000	12,610	—	No	No
44. Chaparral Dr to Woodglen Vista Dr i	Santee	15,000/40,000	670	A	0.045	13,280	A i	0.332	12,610	0.287	No	No	683	A	0.046	13,293	A i	0.332	12,610	0.315	No	No
45. Woodglen Vista Dr to El Nopal	Santee	15,000	4,360	A	0.291	16,310	F	1.087	11,950	0.796	Yes	Yes j	4,472	A	0.298	16,422	F	1.095	11,950	0.797	Yes	Yes j
46. El Nopal to Mast Blvd	Santee	15,000	8,860	C	0.591	20,160	F	1.344	11,300	0.753	Yes	Yes	9,173	C	0.612	20,473	F	1.365	11,300	0.753	Yes	Yes
Magnolia Avenue																						
54. Cuyamaca St to Princess Joann Rd	Santee	DNE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
55. Princess Joann Rd to Woodglen Vista Dr	Santee	40,000	2,020	A	0.051	3,330	A	0.083	1,310	0.032	No	No	2,204	A	0.055	3,514	A	0.088	1,310	0.033	No	No
56. Woodglen Vista Dr to El Nopal	Santee	40,000	9,030	A	0.226	11,000	A	0.275	1,970	0.049	No	No	9,415	A	0.235	11,385	A	0.285	1,970	0.050	No	No
57. El Nopal to Mast Blvd	Santee	40,000	13,690	A	0.342	16,320	B	0.408	2,630	0.066	No	No	14,291	A	0.357	16,921	B	0.423	2,630	0.066	No	No

Source: Attachment 4.

Notes:

- a Capacities based on City of Santee Roadway Classification & LOS table.
- b Average Daily Traffic
- c Level of Service
- d Volume to Capacity ratio
- e Δ denotes a Project-induced increase in the Volume to Capacity ratio
- f See Table 8–2 in the EIR traffic study for the “with Magnolia Avenue Extension” analysis.
- g The 15,000 ADT capacity for the existing sections of Cuyamaca Street was continued along this future section providing access to the Project.
- h The intersection operations at both ends of the Cuyamaca Street road segment between the Project Site and Woodglen Vista Drive report LOS C or better operations and the peak hour arterial operations indicate LOS B or better operations. Therefore, adequate operations are expected along this roadway. See Tables 7 and 8.
- i As part of the Project Design Features for this Project, Cuyamaca Street from Chaparral Drive to Woodglen Vista Drive is proposed to be improved to four-lane Major Road standards. Therefore, an LOS E capacity of 40,000 ADT was used in the “Plus Project” analyses.
- j Without the connection of the Magnolia Avenue Extension, this segment impact would be a direct impact instead of a cumulative impact, as identified in the EIR traffic study. The mitigation recommended in the EIR of improving Cuyamaca Street between Woodglen Vista Drive and El Nopal to four lanes would still be recommended. Therefore, no new impacts would occur without the extension of Magnolia Avenue and the mitigation would be unchanged.

General Notes:

- ¹ Sig = Significant impact, yes or no.
- ² DNE, “—” = Does not exist.

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Peak Hour Arterial Analysis

The Cuyamaca Street intersections with Princess Joann Road and Woodglen Vista Drive would be improved from stop controls to traffic signals as part of the project mitigation (TRA-2, TRA-4) detailed in the EIR. Table 9 of the Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) shows the results of the mitigated intersection LOS without Magnolia Avenue and with restricted southbound left-turn movements. Based on the computed intersection analysis, the signalized intersections would operate at LOS B or better, and thus, the roadway would be expected to operate efficiently since LOS B is calculated at the intersections on either end of each segment with the proposed mitigation.

Table 10 of the Fanita Ranch – No Magnolia Avenue Extension Analysis Traffic Memorandum (Attachment 4) summarizes the Existing + Cumulative Projects + Project peak hour arterial operations of Cuyamaca Street without the Magnolia Avenue extension, restricting southbound left-turns from Cuyamaca Street. The section of Cuyamaca Street from the project site to Woodglen Vista Drive serves as an access route to a major roadway (Mast Boulevard) ultimately connecting to daily commuter routes, which classifies as a Class III Arterial, per the HCM. Table 10 shows travel speeds (mph) in both directions on Cuyamaca Street along this section operating at LOS B or better.

VMT Impacts

The TIA (EIR Appendix N) analyzed the proposed project's VMT using data science under existing baseline conditions and using the San Diego Association of Governments travel demand model for Year 2035 conditions. For the Year 2035 VMT analysis, the San Diego Association of Governments model VMT results were reported. The north/south routes of Cuyamaca Street and Magnolia Avenue run parallel to each other for their existing entirety. Without the future extension of Magnolia Avenue coded into the model, any trip destined to/from Magnolia would travel virtually the same distance along Princess Joann Road, Woodglen Vista Drive, El Nopal, or Mast Boulevard (with restricted southbound lefts on Cuyamaca Street), thus also negligibly affecting the results of the VMT analysis.

The VMT conclusion would not change as a result of the deletion of the extension of Magnolia Avenue. For the reasons explained herein, the grid-like pattern of the north/south corridors of Cuyamaca Street and Magnolia Street intersecting with the east/west roadways of Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard would result in a de minimis change in the distances traveled between the project site and destinations to the south under the full movement scenario when Magnolia Avenue is not extended. For the scenario with southbound left-turns on Cuyamaca Street prohibited, additional VMT would occur for drivers oriented to and from El Nopal to the east. Since 10 percent of the total trip generation is oriented to and from El Nopal and a small amount of additional trip length (approximately 1.25 miles for 1,313 project

ADT) would occur with this scenario, the overall project increase in VMT of 1,643 (0.67 percent) would be de minimis (Fanita Ranch Supplemental VMT Memorandum, LLG, September 2020 [included in Attachment 4]).

In addition, it should be noted that the VMT impact was found to be significant and unavoidable in the EIR, and no changes to those conclusions would occur without the connection of Magnolia Avenue under both scenarios.

Summary

Without the construction of the Magnolia Avenue extension, one roadway segment would experience a direct impact instead of a cumulative impact (Cuyamaca Street between Woodglen Vista Drive and El Nopal). Mitigation Measure TRA-25 in the EIR recommended that improving Cuyamaca Street between Woodglen Vista Drive and El Nopal to four lanes would fully mitigate this impact. No new impacts would occur by removing the extension of Magnolia Avenue. Implementation of the mitigation measures proposed in the TIA and EIR (TRA-1 through TRA-30, AIR-6) (EIR Appendix N) would fully mitigate the impacts associated with the deletion of the Magnolia Avenue extension.

Utilizing the methodology in the EIR, an analysis was conducted at each of the impacted locations with the deletion of the Magnolia Avenue extension to determine the number of units that could be built before a significant project impact would occur. As shown in Table 13, the equivalent dwelling units (EDU) triggers for mitigation measures would be changed for six mitigation measures as a result of the transfer of project traffic from Magnolia Avenue to Cuyamaca Street. The updated mitigation triggers identified in Table 13 are included in the MMRP for the proposed project using the more conservative EDU triggers identified for the Prohibited Southbound Left-Turns scenario.

Table 13. Mitigation Measure EDU Triggers without Magnolia Avenue Extension

Mitigation Measure	EDU Triggers – Identified in the EIR	EDU Triggers Full Access Scenario	EDU Triggers Prohibited Southbound Left-Turns
TRA-4	2,212	1,592	1,563
TRA-5	1,327	1,150	1,091
TRA-8	265	236	236
TRA-12	2,212	2,005	1,268
TRA-25	155	118	118
TRA-26	1,481	1,302	1,302

Source: Attachment 4.

1.3.2.7 Section 4.17: Utilities and Service Systems

The removal of the Magnolia Avenue extension as a project design feature would result in slight changes to utilities but would not cause additional impacts under the preferred land use plan with school and land

use plan without school compared to the analysis provided in the EIR. By not extending Magnolia Avenue certain utilities adjustments would need to be made, as described below. A Fanita Ranch – Magnolia Avenue Deletion/Utilities and Storm Drain Memorandum (Attachment 2) analyzes the impacts on new or expanded utilities and service systems from the deletion of the extension of Magnolia Avenue from the existing terminus to the proposed extension of Cuyamaca Street.

Water Infrastructure and Facilities

The Water Service Study (2020) (EIR Appendix O1) prepared by Michael Baker International identifies a 12-inch water line (880 zone) within the Magnolia Avenue extension. The study concludes that this water line is to be used to serve the new hydrants along this street and is not hydraulically necessary to serve the proposed project (see Section 4.17.5.1 of the EIR, Appendix O1, Item 4). Therefore, elimination of the Magnolia Avenue extension would not impact the ability to provide water service to the proposed project.

Wastewater Infrastructure and Facilities

The Sewer Service Study (2020) (EIR Appendix O2) prepared by Michael Baker International does not identify any sewer improvements in the Magnolia Avenue extension. Therefore, elimination of the Magnolia Avenue extension would not impact the ability to provide sewer service to the proposed project.

Stormwater Infrastructure and Facilities

Basin BF-1-10A is currently proposed approximately 1,000 feet east of Cuyamaca Street along the right-of-way for the Magnolia Avenue extension. This basin provides water quality, hydromodification, and critical course sediment mitigation for the reach of Cuyamaca Street north of the Magnolia Avenue and south of the water tank, and also for the easterly 1,000-foot reach of the Magnolia Avenue extension. With the deletion of the Magnolia Avenue extension, an interim basin would be installed adjacent to and directly east of Cuyamaca Street on property currently identified as APN 378-220-05. The interim basin would be built within the future right-of-way for Magnolia Avenue and would be constructed entirely within the grading footprint analyzed by the EIR with the Magnolia Avenue extension. The deletion of the Magnolia Avenue extension reduces the impervious area treated by the original basin by approximately 30 percent. The bottom area of the interim basin would be reduced in size accordingly. The interim basin would be removed at such time that Magnolia Avenue is extended, consistent with buildout of the General Plan, and a new basin would be required in a size and location similar to the basin that was eliminated with the deletion of the Magnolia Avenue extension.

Water Supply Availability, Wastewater Treatment Capacity, Solid Waste

The removal of the Magnolia Avenue extension as a project design feature would result in the same less than significant impacts on water supply availability, wastewater treatment capacity, and

solid waste as the analysis analyzed in the EIR. The removal of this roadway extension would not affect the ability of the water service provider, wastewater service provider, and solid waste haulers to serve the proposed project.

1.3.2.8 Section 4.18: Wildfire

The removal of the Magnolia Avenue extension as a project design feature would result in the same less than significant impacts on wildfire as the analysis provided in the EIR under the preferred land use plan with school and land use plan without school. A Fanita Ranch Fire Protection Plan and Evacuation Plan Analysis of No Magnolia Extension (Attachment 1) was prepared by Dudek (2020), which provides a summary of the results of the analysis of the project without the extension of Magnolia Avenue with regard to fire protection and evacuation.

A Fire Protection Plan (FPP) and a Wildland Fire Evacuation Plan were originally prepared for the project, both of which are included in the EIR as Appendices P1 and P2, respectively. The FPP analyzed the fire environment and required various fire safety features including application of the required fire codes along with code-exceeding features where found to be prudent. The Wildland Fire Evacuation Plan provides a resident-focused document to assist in preparedness and awareness, as well as background on how evacuations are managed and examples of law enforcement direction that may be provided to residents during an evacuation.

The Magnolia Avenue extension provided an intersection between Cuyamaca Street and Magnolia Avenue north of existing streets that currently connect these two roads. Magnolia Avenue is not a direct access point to the project site. With the Magnolia Avenue extension, there are two points of ingress/egress and without the Magnolia Avenue extension, there remain two points of ingress/egress. In no case in the FPP, the Wildland Fire Evacuation Plan, or the EIR, was the Magnolia Avenue extension considered a critical component to fire protection, fire response, or evacuation of the proposed project. The 2019 California Fire Code, Appendix D, and The City's local amendments to the California Fire Code require projects with greater than 200 dwelling units to include two separate access routes. Without the Magnolia Avenue extension, the project has two access points: Fanita Parkway and Cuyamaca Street. Thus, even absent the Magnolia Avenue extension, the project meets fire code requirements for secondary access.

The Magnolia Avenue extension was designed to provide an optional two-lane route (one lane in each direction) to Cuyamaca Street that was approximately 1,300 feet north of existing Princess Joann Road (see Attachment 1 of the Fanita Ranch Fire Protection Plan and Evacuation Plan Analysis of No Magnolia Extension, which is included as Attachment 1 to this Second Errata). The use of this alternative route to Cuyamaca Street during an evacuation would be highly dependent on the wildfire scenario and where emergency managers choose to direct evacuees. Without the Magnolia Avenue extension, emergency managers would retain the ability to route traffic to Magnolia Avenue via three existing two lane roadways (Princess Joann Road, Woodglen

Vista Drive, and El Nopal) and other more circuitous available options intersecting these east-west routes (see Attachment 2 of the Fanita Ranch Fire Protection Plan and Evacuation Plan Analysis of No Magnolia Extension, which is included as Attachment 1 to this Second Errata). While the Magnolia Avenue extension would potentially allow emergency managers to route a percentage of evacuating proposed project vehicles to Magnolia Avenue north of the existing neighborhoods, it would not necessarily result in more efficient evacuations. Without the Magnolia Avenue extension, the same primary roadways would be used to move vehicles out of the area. Existing residents and proposed project residents would be routed to Cuyamaca Street and Magnolia Avenue via existing and project-provided roadways, while existing residents may also be moved south via the neighborhood-internal Timberlane Way, an additional north–south connection to Mast Boulevard.

Evacuations are fluid events that rely on situational awareness to guide decision-making. San Diego County Sheriff’s Department has vast experience managing large wildfire evacuations and relies on cutting edge technology, robust personnel resources, and real-time decision-making to move people and their vehicles during evacuations. Options are critical for successful evacuations. Proposed project evacuation options are available with or without the Magnolia Avenue extension. Without the extension, the existing portion of Magnolia Avenue is still potentially available, as it would be with the extension, if emergency managers determine it is needed.

The following information provides a summary of the Magnolia Avenue extension analysis in the FPP, Wildland Fire Evacuation Plan, and the EIR. The revisions to EIR Section 4.18.5.1, Threshold 1: Emergency Response Plan or Evacuation Plan, are also provided.

Appendix P1 – Fire Protection Plan

The FPP refers to Magnolia Avenue in several sections, including:

Section 3, where it indicates that internal roads would provide residents the option to evacuate from at least two routes that lead to three main arteries. The FPP states: “Depending on the nature of the emergency, residents can exit to the south on Fanita Parkway or Cuyamaca Street, which would also connect with the extension of Magnolia Avenue.” Without the Magnolia Avenue extension, the first portion of this statement remains accurate, as vehicles could be routed via the existing east-west roads (Princess Joann Road, Woodglen Vista Drive, and El Nopal) to existing Magnolia Avenue. The potential for existing speed bumps along Princess Joann Road affecting an evacuation is minimal. Typical evacuation speeds are less than posted speed limits, particularly in large-scale evacuations.

Also in Section 3, the FPP indicates that the Magnolia Avenue extension would achieve roadway substantial completion prior to the issuance of certificate of occupancy for the 1,500th EDU for the project in accordance with the project phasing plan. Because the east-west connector roads between Cuyamaca Street and Magnolia Avenue already exist, the ability to route evacuating

vehicles to Magnolia Avenue would be available at the completion of the Cuyamaca Street extension, which would occur during Phase 1 of the project. As such, there would be no measureable impact associated with this project change.

Section 5.2 and Figures 11 and 12 provide results of an emergency response time analysis. The on-site fire station can reach all project units within the City's internal response times. As part of the analysis to determine if any existing fire stations could service the project within required response times, Station 4, which is southeast of the project site, was modeled. The modeling included an existing condition with Cuyamaca Street extended into the project site and a second model utilizing Magnolia Avenue with the Magnolia Avenue extension. The Magnolia extension was found to result in a 6 second faster response to the most remote structures. This result is immaterial in terms of its additional time but also for the fact that the on-site fire station is demonstrated to provide fast initial response to all structures. This analysis is consistent with the conclusion that the Magnolia Avenue extension is not critical for the project's fire safety.

Appendix P2 – Wildland Fire Evacuation Plan

The Wildland Fire Evacuation Plan refers to Magnolia Avenue in several sections, including:

Section 1, where it indicates Magnolia Avenue would be a potential evacuation route: “Evacuating traffic would potentially have the option of continuing south on Cuyamaca Street or Magnolia Avenue once south of the project's boundaries. Note that the Magnolia Avenue connection would be constructed by the 1500th certificate of occupancy. The available evacuation routes prior to the Magnolia Avenue connection (Fanita Parkway and Cuyamaca Street) would meet the 2019 California Fire Code, Appendix D, and the Santee Municipal Code and Ordinance 570 requirement for multiple access points, and therefore, are considered adequate for emergency purposes for the interim period until the 1500th certificate of occupancy.” Because there would still be a minimum of three east–west connector roads between the extended Cuyamaca Street and the existing portion of Magnolia Avenue, there is no measureable impact related to the removal of the Magnolia Avenue extension.

Section 4 indicates the “probable” roadways that would be utilized in a wildfire evacuation. The plan states that “The primary roadways that would be used for evacuation from Fanita Ranch are Fanita Parkway, Cuyamaca Street and Magnolia Avenue.” It further states that “These roads provide access to major traffic corridors including indirectly to SR-52 to the south, southwest and southeast, SR-67 to the east and northeast, I-125 to the south, and I-15 to the west.” This statement remains valid without the Magnolia Avenue extension because the existing portion of Magnolia Avenue would still be available, if needed by emergency managers during an evacuation.

Also in Section 4, the plan indicates that Cuyamaca Street and/or Magnolia Avenue would be the primary routes for the majority of the evacuation traffic, with Fanita Parkway providing evacuation

for the western portion of the community. This statement remains valid without the Magnolia Avenue extension.

Section 6.1 repeats Section 1 statements regarding Cuyamaca Street and Magnolia Avenue as available evacuation routes for proposed project residents and guests. Because these routes would still be potentially available during evacuations (depending on the nature of the event and the evacuation strategy employed by emergency managers), the statement remains valid without the Magnolia Avenue extension.

Environmental Impact Report

The Magnolia Avenue extension is discussed in various EIR sections, describing its planned attributes, timing, grading, and benefits. The occurrence that represents the most substantive analysis is found in Chapter 4, Section 4.18, Wildfire, specifically Section 4.18.5.1, regarding potential impacts. Without the Magnolia Avenue extension, the ability to access Magnolia Avenue is retained through existing streets. With the Magnolia Avenue extension, potential evacuation traffic from the project site would be directed to utilize Cuyamaca Street or Magnolia Avenue by emergency managers, likely stationed at the Cuyamaca Street/Magnolia Avenue intersection, depending on the type of evacuation and traffic flow. Without the Magnolia Avenue extension, project evacuation traffic would still be directed to utilize Cuyamaca Street or the existing portion of Magnolia Avenue, but emergency managers may be positioned at any of the three existing east-west connector streets to direct traffic. The same number of vehicles from the proposed project and the existing community would be evacuating in either scenario, with Cuyamaca Street and Magnolia Avenue representing the primary routes and Timberlane Way also potentially available to existing residents, resulting in a similar assessment and conclusion.

Summary

The EIR analysis, which incorporated the Magnolia Avenue extension, concluded that the project would not substantially impair an adopted emergency response plan or emergency evacuation plan. Accordingly, the EIR concluded that the project would have a less than significant impact under CEQA. Without the Magnolia Avenue extension, as indicated in the preceding analysis herein, several available options remain that can incorporate the existing portion of Magnolia Avenue into an evacuation plan, if needed. Because the original evacuation plan does not rely on Magnolia Avenue for evacuation success and the project meets the code requirements for access roads, the same significance conclusion would result (i.e., absent the Magnolia Avenue extension, the site would have a less than significant impact related to substantially impairing an adopted emergency response plan or emergency evacuation plan).

1.4 Chapter 6: Alternatives

Five alternatives to the proposed project were analyzed in the EIR: (1) No Project/No Build Alternative, (2) No Project/General Plan Consistency Alternative, (3) Modified Development Footprint Alternative, (4) No Fanita Commons Reduced Project Alternative, and (5) No Vineyard Village Reduced Project Alternative. The elimination of the Magnolia Avenue extension as a project design feature would mean that, while the proposed project satisfies Project Objective 9 to a great extent by installing and extending Fanita Parkway and Cuyamaca Avenue, it would not completely meet the objective. Similarly, any project alternative that does not propose to install the Magnolia extension would also not satisfy that component of Project Objective 9. The No Fanita Commons Reduced Project Alternative and the No Vineyard Village Reduced Project Alternative, which propose the Magnolia Avenue extension, would satisfy Project Objective 9 to a greater degree than the proposed project.

1.5 Conclusion

As illustrated in the discussion above, the removal of the off-site improvement and extension of Magnolia Avenue as a project design feature would not increase impacts or cause new impacts to occur as analyzed in the Draft Revised EIR. None of the clarifications as a result of the removal of the Magnolia Avenue extension as a project feature results in “significant new information” pursuant to CEQA Guidelines, Section 15088.5(a), which would require recirculation of the Draft Revised EIR. Information can include changes in the project or environmental setting, as well as additional data or other information. New information is not significant unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment on a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect. “Significant new information” could include the following:

- A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.
- A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
- A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the environmental impacts of the project, but the project’s proponents decline to adopt it.
- The Draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

As stated in CEQA Guidelines, Section 15088.5(b), recirculation is not required where the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR. While minor clarifications were incorporated into the Final Revised EIR, they do not trigger the need for recirculation because they do not constitute “significant new

information” or “deprive the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project’s proponents have declined to implement.” Therefore, the City has determined that the elimination of the Magnolia Avenue extension does not trigger recirculation of the Draft Revised EIR.

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**Attachment 1. Fanita Ranch Fire Protection Plan and
Evacuation Plan Analysis of No Magnolia Extension**

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MEMORANDUM

To: Marnie Borg, Principal Environmental Planner, City of Santee
From: Dudek Fire Protection Planning Team; Michael Huff, Principal Fire Protection Planner
Subject: Fanita Ranch Fire Protection Plan and Evacuation Plan Analysis of No Magnolia Extension
Date: 8/31/2020
cc: Jeff O'Connor, HomeFed Corporation
Attachment(s): 1) Magnolia Extension, 2) No Magnolia Extension

This memorandum provides a summary of the results of Dudek's analysis of the Fanita Ranch "no Magnolia extension alternative" with regard to fire protection and evacuation. Dudek previously prepared a Fire Protection Plan and a Wildland Fire Evacuation Plan for the Fanita Ranch project, both of which are included in the project's EIR as Appendices P1 and P2, respectively. The Fire Protection Plan analyzed the fire environment and required various fire safety features including application of the required fire codes along with code-exceeding features where found to be prudent. The Wildland Fire Evacuation Plan provides a resident-focused document to assist in preparedness and awareness as well as providing background on how evacuations are managed and examples of law enforcement direction that may be provided to residents during an evacuation.

The Magnolia extension provided an intersection between Cuyamaca Street and Magnolia Avenue north of existing streets that currently connect these two roads. The Magnolia extension is located off-site, approximately 1,250 feet from the project entry. Magnolia Avenue is not a direct access point to Fanita Ranch. With the Magnolia Extension, there are two points of ingress/egress and without the Magnolia extension, there remain two points of ingress/egress. In no case in the Fire Protection Plan, the Wildland Fire Evacuation Plan, or the EIR, was the Magnolia extension considered a critical component to fire protection, fire response or evacuation of the Fanita Ranch Project. The 2019 California Fire Code, Appendix D and Santee's local amendments to the CFC require projects with greater than 200 dwelling units to include 2 separate access routes.

Without the Magnolia extension, the project has two access points at Fanita Parkway and Cuyamaca Street. Thus, even absent the Magnolia extension, the project meets fire code requirements for secondary access.

The Magnolia extension would provide an optional two lane (one lane each direction) route to Magnolia Avenue that was located approximately 1,300 feet to the north of existing Princess Joann Road (Attachment 1). The use of this alternative to Cuyamaca Street during an evacuation would be highly dependent on the wildfire scenario and where emergency managers chose to direct evacuees. Without the Magnolia extension, emergency managers would retain the ability to route traffic to Magnolia Avenue via three existing two lane roadways (Princess Joann Road, Woodglen Vista Drive, and El Nopal) and other more circuitous available options intersecting these east-west routes (Attachment 2). While the Magnolia extension would potentially allow emergency managers to route a percentage of evacuating Fanita Ranch vehicles to Magnolia Avenue north of the existing neighborhoods, it would not necessarily result in more efficient evacuations. Without the Magnolia extension, the same primary roadways would be used to move vehicles out of the area. Existing residents and Fanita Ranch residents would be routed to Cuyamaca Street and Magnolia Avenue via existing and project-provided roadways, while existing residents may

also be moved south via the neighborhood-internal Timberlane Way, an additional north-south connection to Mast Boulevard.

Evacuations are fluid events that rely on situational awareness to guide decision making. San Diego County Sherriff's Department has vast experience managing large wildfire evacuations and relies on cutting edge technology, robust personnel resources, and real-time decision making to move people and their vehicles during evacuations. Options are critical for successful evacuations. Fanita Ranch evacuation options are available with or without the Magnolia extension. Without the extension, Magnolia Avenue is still potentially available, as it would be with the extension, if emergency managers determine it is needed.

The following information provides a summary of the EIR's and its appendices' Magnolia extension analysis. The revisions that would be appropriate for CEQA impact Threshold 1 are also provided.

Appendix P1 - Fire Protection Plan

The Fanita Ranch Fire Protection Plan refers to Magnolia road in several sections, including:

Section 3, where it indicates that internal roads would provide residents the option to evacuate from at least 2 routes that lead to 3 main arteries. The FPP states: "Depending on the nature of the emergency, residents can exit to the south on Fanita Parkway or Cuyamaca Street, which would also connect with the extension of Magnolia Avenue". Without the Magnolia extension, this statement remains accurate, as vehicles could be routed via the existing east-west roads (Princess Joann, Woodglen Vista Drive, and El Nopal) to existing Magnolia Road. The potential for existing speed bumps along Princess Joann affecting an evacuation is minimal. Typical evacuation speeds are less than posted speed limits, particularly in large-scale evacuations.

Also in Section 3, the FPP indicates that the Magnolia extension would achieve Roadway Substantial Completion prior to the issuance of certificate of occupancy for the 1,500th equivalent dwelling units (EDU) for the Project in accordance with the Project Phasing Plan. Because the east-west connector roads between Cuyamaca Street and Magnolia Avenue already exist, the ability to route evacuating vehicles to Magnolia will be available at the completion of the Cuyamaca Street extension, which would be during Phase 1 of the project. As such, there would be no measureable impact associated with this project change.

Section 5.2 and Figures 11 and 12 provide results of an emergency response time analysis. The on-site fire station can reach all project units within Santee's internal response times. As part of the analysis to determine if any existing Fire Stations could service the project within required response times, Station 4, which is located southeast of Fanita Ranch, was modeled. The modeling included an existing condition with Cuyamaca Street extended into Fanita Ranch and a second model utilizing Magnolia Avenue with the Magnolia extension. The Magnolia extension was found to result in a 6 second faster response to the most remote structures. This result is immaterial in terms of its additional time, but also for the fact that the on-site fire station is demonstrated to provide fast initial response to all structures. This analysis is consistent with the conclusion that the Magnolia extension is not critical for the project's fire safety.

Appendix P2- Wildland Fire Evacuation Plan

The Wildland Fire Evacuation Plan refers to Magnolia Road in several sections, including:

Section 1, where it indicates Magnolia Avenue would be a potential evacuation route: Evacuating traffic would potentially have the option of continuing south on Cuyamaca or Magnolia once south of the Project's boundaries. Note that the Magnolia Avenue connection will be constructed by the 1500th certificate of occupancy. The available evacuation routes prior to the Magnolia connection (Fanita Parkway and Cuyamaca Street) would meet the 2019 California Fire Code, Appendix D and Santee's local amendments to the CFC requirement for multiple access points, and therefore, are considered adequate for emergency purposes for the interim period until the 1500th certificate of occupancy. Because there would still be a minimum of three east-west connector roads between the extended Cuyamaca Street and Magnolia Avenue, there is no measureable impact related to the removal of the Magnolia extension.

Section 4 indicates the "probable" roadways that would be utilized in a wildfire evacuation. The plan states that "The primary roadways that would be used for evacuation from Fanita Ranch are Fanita Parkway, Cuyamaca Street and Magnolia Avenue". It further states that "These roads provide access to major traffic corridors including indirectly to SR 52 to the south, southwest and southeast, SR 67 to the east and northeast, I-125 to the south, and I-15 to the west". This statement remains valid without the Magnolia extension as Magnolia Avenue would still be available, if considered needed by emergency managers, during an evacuation.

Also in Section 4, the plan indicates that Cuyamaca Street and/or Magnolia would be the primary routes for the majority of the evacuation traffic, with Fanita Parkway providing evacuation for the western portion of the community. This statement remains valid without the Magnolia extension.

Section 6.1 repeats Section 1 statements regarding Cuyamaca Street and Magnolia Avenue as available evacuation routes for Fanita Ranch residents and guests. Because these routes would still be potentially available during evacuations (depending on the nature of the event and the evacuation strategy employed by emergency managers), the statement remains valid without the Magnolia extension.

Environmental Impact Report

The Magnolia Avenue extension is discussed in various EIR sections, describing its planned attributes, timing, grading, and benefits. The occurrence that represents the most substantive analysis is found in Chapter 4 (4.18.5.1), regarding potential impacts. Without the Magnolia extension, the ability to access Magnolia Avenue is retained through existing streets. With the Magnolia extension, potential evacuation traffic from Fanita Ranch would be directed to utilize Cuyamaca Street or Magnolia Avenue by emergency managers, likely stationed at the Cuyamaca/Magnolia intersection, depending on the type of evacuation and traffic flow. Without the Magnolia extension, Fanita Ranch evacuation traffic would still be directed to utilize Cuyamaca Street or Magnolia, but emergency managers may be positioned at any of the three existing east-west connector streets to direct traffic. The same number of vehicles from Fanita Ranch and the existing community would be evacuating in either scenario, with Cuyamaca and Magnolia representing the primary routes and Timberlane Way also potentially available to existing residents, resulting in a similar assessment and conclusion. The following edits would be provided to the impact discussion for Threshold 1:

Threshold 1: Emergency Response Plan or Evacuation Plan: The primary streets that would be used for evacuation from the project site are Fanita Parkway, Cuyamaca Street, and Magnolia Avenue. These streets would provide access to major traffic corridors including directly or indirectly to State Route (SR-) 52 to the south, SR-67 to the east, Interstate (I-) 8 to the south, I-125 to the south, and I-15 to the west (Appendix P2). During an emergency

evacuation from the project site, the primary and secondary roadways would be capable of providing resident egress while responding emergency vehicles are traveling inbound. In addition, bicycle lanes would be provided in both directions that can act as emergency lanes for first responders and evacuation lanes for project occupants. Because the roadways are designed to meet or exceed the 2019 California Fire Code requirements and Santee's local amendments to the CFC, including unobstructed travel lanes consistent with the Fanita Ranch Specific Plan standards, adequate parking, 28-foot inside radius, grade maximums, signals at intersections, and extremely wide roadside fuel modification zones, potential conflicts that could reduce roadway efficiency would be minimized, allowing for smooth evacuations. Additionally, the streets would provide residents the option to evacuate from at least two routes that lead to three main arteries. Depending on the nature of the emergency, residents can exit south on Fanita Parkway or Cuyamaca Street, which also connects with Magnolia Avenue (Appendix P2) via existing streets (Princess Joann, Woodglen Vista Drive, and El Nopal). Note that the Magnolia Avenue extension would be constructed by the certificate of occupancy of the 1,500th equivalent dwelling unit. The available evacuation routes prior to the Magnolia Avenue connection (Fanita Parkway and Cuyamaca Street) would meet the 2019 California Fire Code, Appendix D, and the Santee Municipal Code and Ordinance 570 requirement for multiple access points. Therefore, the evacuation routes are considered adequate for emergency purposes through all phases of the project. Refer to Figure 4.8-1, Emergency Evacuation Plan, in Section 4.8 for a depiction of the evacuation plan for the project site. (EIR p. 4.18-8 – 4.18-9.)

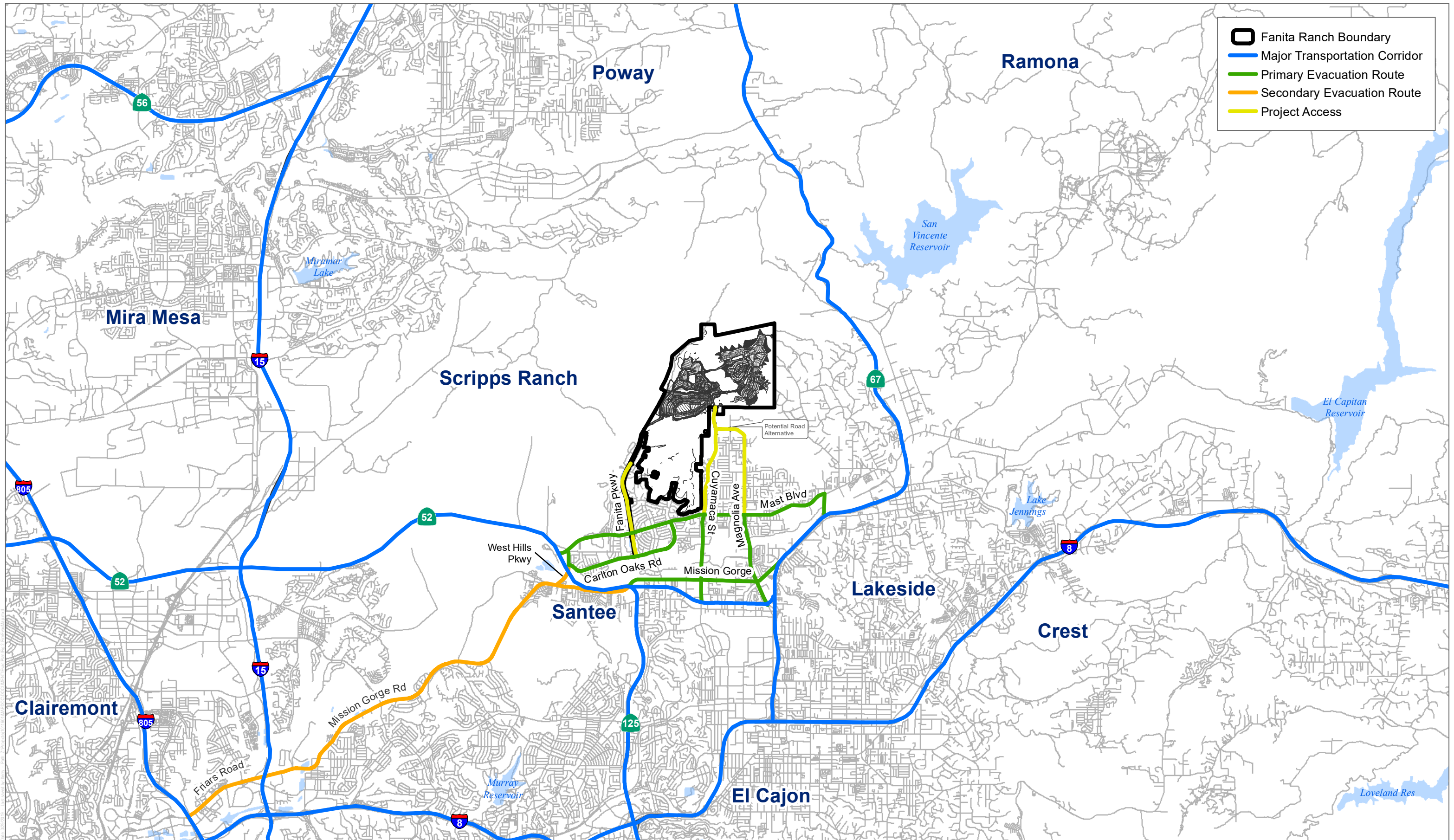
Impact Conclusion

The EIR analysis, which incorporated the Magnolia extension, concluded that the project would not substantially impair an adopted emergency response plan or emergency evacuation plan. Accordingly, the EIR concluded that the project would have a less than significant impact under CEQA. Without the Magnolia extension, as indicated in the preceding analysis herein, there remain several available options that can incorporate Magnolia Avenue into an evacuation, if needed. Because the original evacuation plan does not rely on Magnolia Avenue for evacuation success and the project meets the code requirements for access roads, the same significance conclusion results, i.e., absent the Magnolia extension, the site would have a less than significant impact related to substantially impairing an adopted emergency response plan or emergency evacuation plan.



Attachment 1

Magnolia Extension Evacuation Route Map



- Fanita Ranch Boundary
- Major Transportation Corridor
- Primary Evacuation Route
- Secondary Evacuation Route
- Project Access

SOURCE: SANDAG, 2017; HUNSAKER 2018



FIGURE 2

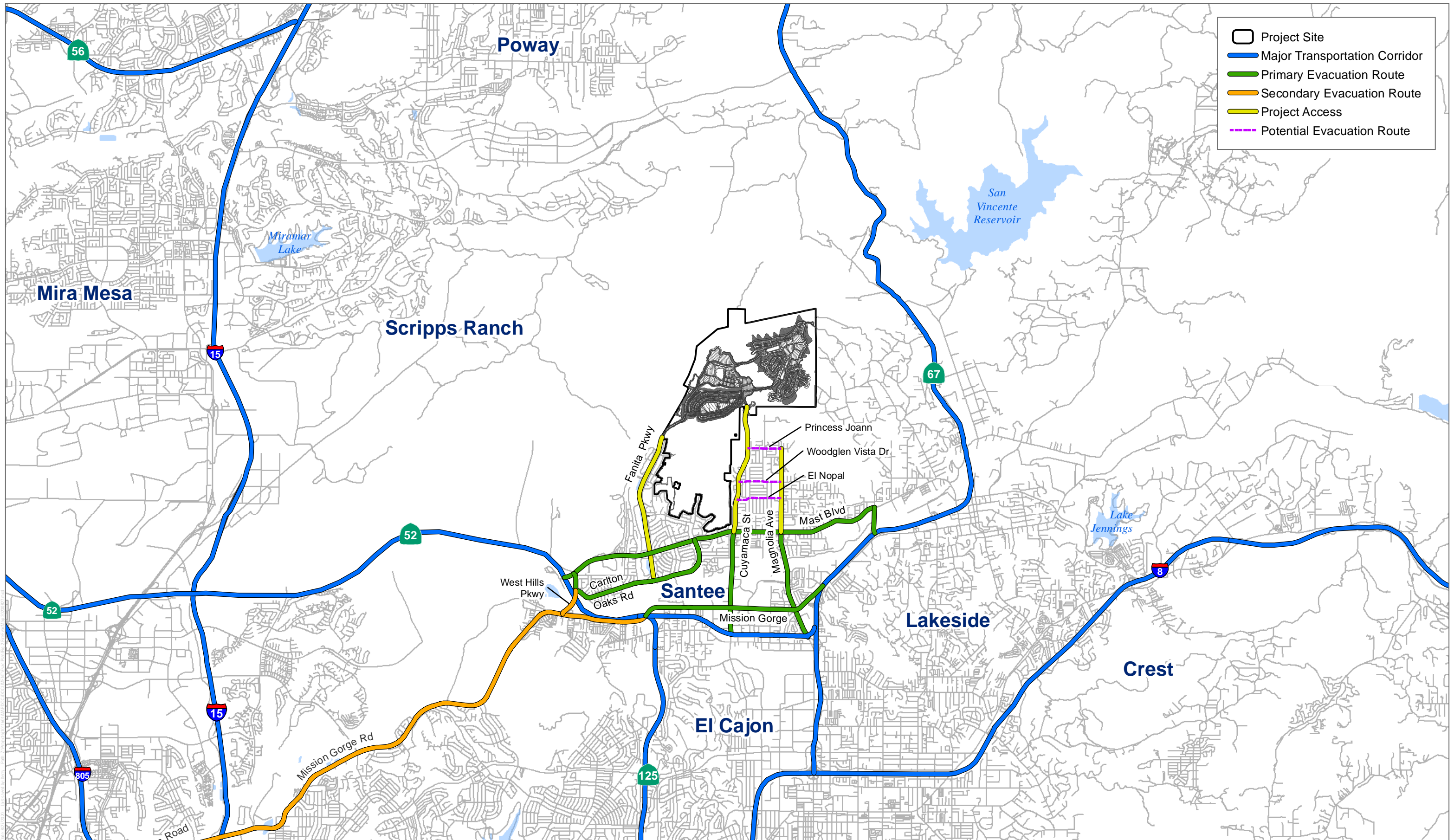
Fire Evacuation Plan

Fanita Ranch Conceptual Wildland Fire Evacuation Plan



Attachment 2

No Magnolia Extension Evacuation Route Map



- Project Site
- Major Transportation Corridor
- Primary Evacuation Route
- Secondary Evacuation Route
- Project Access
- Potential Evacuation Route

SOURCE: SANDAG, 2017; HUNSAKER 2019



FIGURE 2

Fire Evacuation Plan

Fanita Ranch Conceptual Wildland Fire Evacuation Plan

**Attachment 2. Fanita Ranch – Magnolia Avenue Deletion/Utilities and
Storm Drain Memorandum**

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HUNSAKER & ASSOCIATES

SAN DIEGO, INC.

PLANNING
ENGINEERING
SURVEYING

September 14, 2020

IRVINE
SAN DIEGO
RIVERSIDE
PALM DESERT
LOS ANGELES

Mr. Tom Blessent
HomeFed Corporation
1903 Wright Place #220
Carlsbad, CA 92008

Dear Tom:

Re: Fanita Ranch- Magnolia Avenue Deletion/Utilities and Storm Drain

We have reviewed a Fanita Ranch Vesting Tentative Map with the deletion of the extension of Magnolia Avenue from the existing terminus to the proposed extension of Cuyamaca Street for any issues related to wet utilities and storm drain. The following is a summary of our findings:

Sewer

The Fanita Ranch Development Sewer Service Study (February 4, 2020) prepared by Michael Baker International does not identify any sewer improvements in the Magnolia Avenue extension. Therefore, elimination of the Magnolia Avenue extension from the VTM will not impact the ability to provide sewer service to the Fanita Ranch project.

Water

The Fanita Ranch Water Service Study (February 4, 2020) prepared by Michael Baker International identifies a 12" water line (880 zone) within the Magnolia Avenue extension. The report concludes that this line is to be used to serve the new hydrants along this street and is not hydraulically necessary to serve the Fanita Ranch project (see report Page 5-1, Item 4). Therefore, elimination of the Magnolia Avenue extension from the VTM will not impact the ability to provide water service to the Fanita Ranch project.

Storm Drain & Water Quality

Basin BF-1-10A is currently proposed on the VTM approximately 1000' east of Cuyamaca Street along the right-of-way for the Magnolia Avenue extension. This basin provides Water Quality, Hydromodification and CCS mitigation for the reach of Cuyamaca Street north of the Magnolia Avenue and south of the water tank, and also for the easterly 1000' reach of the Magnolia Avenue extension.

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HomeFed Corporation
Fanita Ranch- Magnolia Avenue Deletion/Utilities and Storm Drain
September 14, 2020
Page 2

With the deletion of the Magnolia Avenue extension from the VTM, an interim basin will be installed adjacent to and directly east of Cuyamaca Street on property currently identified as APN 378-220-05. The interim basin will be built within the future right-of-way for Magnolia Avenue and will be constructed entirely within the grading footprint analyzed by the Draft Revised Environmental Impact Report for Fanita Ranch. The deletion of the Magnolia Avenue extension reduces the impervious area treated by the original basin by approximately 30%. The bottom area of the interim basin will be reduced accordingly. The interim basin will be removed at such time that Magnolia Avenue is extended, and a new basin will be required in a size and location similar to the basin that was removed from the VTM with the deletion of the Magnolia Avenue extension.

If you have any questions or concerns, please call me to discuss.

Thank you,

Hunsaker & Associates
San Diego, Inc.

A handwritten signature in blue ink that reads "Alisa S. Vialpando".

Alisa S. Vialpando, PE
Vice President

**Attachment 3. Memorandum to the Air Quality Analysis Report –
Removal of Magnolia Extension, Memorandum to the Energy Analysis
Report – Removal of Magnolia Extension, Memorandum to the
Greenhouse Gas Analysis Report – Removal of Magnolia Extension,
and Supplemental Analysis of Emissions and Fuel Use without the
Extension of Magnolia Avenue**

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MEMORANDUM TO THE AIR QUALITY ANALYSIS REPORT-REMOVAL OF MAGNOLIA EXTENSION

**FANITA RANCH PROJECT
CITY OF SANTEE
SAN DIEGO COUNTY, CALIFORNIA**

Prepared for:

City of Santee
10601 Magnolia Avenue
Santee, California 92071

Prepared by:

LSA Associates, Inc.
1500 Iowa Avenue, Suite 200
Riverside, California 92507
(951) 781-9310

Project No. HRS1601

The logo for LSA Associates, Inc. consists of the letters 'LSA' in a bold, blue, sans-serif font.

September 2020

MEMORANDUM

At the applicant's request, the extension of Magnolia Avenue has been removed as a project feature. The following analysis revises sections of the Air Quality Analysis to reflect this project change. Where no change to the Air Quality Analysis is required, no analysis is included in this memorandum. The following analysis is based on the revised traffic analysis prepared by Linscott Law & Greenspan (2020) to address the removal of Magnolia Avenue extension as a project feature. Removal of the extension as a project feature results in the shift of traffic from Magnolia Avenue to Cuyamaca Street in the near-term. The extension of Magnolia Avenue is a Mobility Element road identified in the City of Santee General Plan. The long-term (Year 2035) scenario assumes buildout of the City's General Plan, including Mobility Element roadways. Therefore, the removal of the Magnolia Avenue extension as a project feature does not result in any changes to the long-term (Year 2035) analyses.

This memorandum to the Air Quality Analysis Report for the Fanita Ranch Project lists the revisions or clarifications required to reflect removal of the Magnolia Avenue extension as a project feature. The only revision necessary was to update the carbon monoxide hotspots analysis due to the change in trip distribution. The other analyses related to criteria pollutant emissions, toxic air contaminants, and odors are not affected by the elimination of the Magnolia extension. The elimination of the Magnolia Avenue extension does not result in any change in proposed land uses and therefore does not result in any change in operation or trip generation. Required construction would be reduced compared to the previous analysis, but elimination of the Magnolia Avenue extension does not affect required construction in the remainder of the project area. The revised traffic analysis notes that the change in trip distribution as a result of elimination of the Magnolia Avenue extension results in a nominal change in project vehicle miles travelled (LLG 2020). Therefore, because land uses generating the same emissions compared to the EIR would occur for both the preferred land use plan with school and land use plan without school, and construction would be slightly reduced, no revision to the Air Quality Analysis is required for these issues. It should be noted that the revisions and clarifications listed in this document related to carbon monoxide hotspots do not change any conclusions provided in the EIR.

REVISIONS TO ANALYSIS

Impacts to Sensitive Receptors

Carbon Monoxide Hot Spots

The Fanita Ranch Project was evaluated based upon the assumption that Fanita Parkway, Cuyamaca Street, and Magnolia Avenue would all provide access to the Fanita Ranch Project site. The interim period scenario (2020 through 2034) has been revised to reflect removal of the Magnolia Avenue extension as a project feature. The revised analysis is based on the updated traffic impact analysis (LLG September 2020) conducted to determine the changes to the Level of Service results without the connection of Magnolia Avenue to Cuyamaca Street. Without the connection of Magnolia Avenue extended to Cuyamaca Street, it is expected that Project trips would instead utilize streets such as Princess Joann Road, Woodglen Vista Drive, El Nopal and Mast Boulevard. The traffic impact analysis also analyzed a proposed condition that would prohibit southbound left turns from

Cuyamaca Street onto Princess Joann Road, Woodglen Vista Drive, and El Nopal. These changes would result in slightly different traffic flows through the study intersections, which in turn, may change localized concentrations of carbon monoxide in the immediate vicinity of these intersections. To assess this interim condition, a revised carbon dioxide hot spot analysis was completed to determine if these changes would result in any air quality impacts. The results on this analysis are provided in Table 1.

Table 1: Estimated Carbon Monoxide Concentrations

Intersection	Peak Hour	1-Hour CO Concentration (ppm) ¹			8-Hour CO Concentration (ppm) ¹			Impact?
		Interim Period Without Project	Interim Period With Project, With School (Left Turns Allowed)	Interim Period With Project, With School (Restricted Left Turns)	Interim Period Without Project	Interim Period With Project, With School (Left Turns Allowed)	Interim Period With Project, With School (Restricted Left Turns)	
Princess Joann Road and Cuyamaca Street	AM	1.7	1.9	1.9	1.2	1.3	1.2	No
	PM	1.7	1.9	1.9	1.2	1.3	1.3	No
Ganley Road and Fanita Parkway	AM	1.7	1.8	1.8	1.2	1.3	1.3	No
	PM	1.7	1.9	1.8	1.2	1.4	1.4	No
Woodglen Vista Drive and Cuyamaca Street	AM	1.7	2.0	2.0	1.2	1.4	1.4	No
	PM	1.8	2.0	2.0	1.3	1.4	1.4	No
El Nopal and Cuyamaca Street	AM	1.9	2.0	2.1	1.4	1.5	1.4	No
	PM	1.9	2.1	2.1	1.4	1.5	1.5	No
El Nopal and Magnolia Avenue	AM	1.9	2.0	2.0	1.4	1.5	1.4	No
	PM	1.9	2.0	2.0	1.4	1.5	1.5	No
El Nopal and Los Ranchitos Road	AM	1.8	1.8	1.8	1.3	1.3	1.3	No
	PM	1.8	1.8	1.8	1.3	1.3	1.3	No
Lake Canyon Road and Fanita Parkway	AM	1.7	1.9	1.9	1.2	1.4	1.3	No
	PM	1.8	1.9	1.9	1.3	1.4	1.4	No
Beck Drive and Cuyamaca Street	AM	1.9	2.1	2.1	1.4	1.5	1.5	No
	PM	1.9	2.0	2.0	1.4	1.5	1.5	No
Mast Boulevard and SR-52 WB Ramps	AM	2.6	2.7	2.7	1.9	1.9	1.9	No
	PM	2.1	2.2	2.2	1.5	1.6	1.6	No
Mast Boulevard and West Hills Parkway	AM	2.2	2.3	2.2	1.6	1.7	1.6	No
	PM	2.3	2.4	2.4	1.7	1.7	1.7	No
Mast Boulevard and Fanita Parkway	AM	2.1	2.3	2.2	1.5	1.7	1.6	No
	PM	2.0	2.1	2.1	1.5	1.5	1.6	No
Mast Boulevard and Cuyamaca Street	AM	2.0	2.1	2.2	1.5	1.5	1.5	No
	PM	2.2	2.2	2.3	1.6	1.6	1.7	No
Riverford Road and SR-67 SB Ramps	AM	2.1	2.1	2.1	1.5	1.5	1.5	No
	PM	2.1	2.1	2.1	1.5	1.5	1.5	No

Table 1: Estimated Carbon Monoxide Concentrations

Intersection	Peak Hour	1-Hour CO Concentration (ppm) ¹			8-Hour CO Concentration (ppm) ¹			Impact?
		Interim Period Without Project	Interim Period With Project, With School (Left Turns Allowed)	Interim Period With Project, With School (Restricted Left Turns)	Interim Period Without Project	Interim Period With Project, With School (Left Turns Allowed)	Interim Period With Project, With School (Restricted Left Turns)	
Riverford Road and Woodside Avenue	AM	2.1	2.1	2.1	1.5	1.5	1.5	No
	PM	2.0	2.1	2.1	1.5	1.5	1.5	No
Mission Gorge Road and West Hills Parkway	AM	2.3	2.4	2.3	1.7	1.7	1.7	No
	PM	2.0	2.0	2.0	1.5	1.5	1.5	No
Mission Gorge Road and Carlton Hills Boulevard	AM	2.3	2.5	2.5	1.7	1.8	1.8	No
	PM	2.2	2.3	2.3	1.6	1.7	1.7	No
Mission Gorge Road and Town Center Parkway	AM	1.9	1.9	1.9	1.4	1.4	1.4	No
	PM	2.1	2.2	2.2	1.5	1.6	1.6	No
Mission Gorge Road and Cuyamaca Street	AM	2.1	2.1	2.1	1.5	1.5	1.5	No
	PM	2.3	2.4	2.4	1.7	1.7	1.7	No
Mission Gorge Road and Cottonwood Avenue	AM	1.8	1.8	1.8	1.3	1.3	1.3	No
	PM	2.0	2.0	2.0	1.5	1.5	1.5	No
Mission Gorge Road and Magnolia Avenue	AM	2.3	2.3	2.3	1.7	1.7	1.7	No
	PM	2.4	2.4	2.4	1.7	1.7	1.7	No
Woodside Avenue N and SR-67 SB Off-Ramp	AM	1.9	1.9	1.9	1.4	1.4	1.4	No
	PM	2.1	2.1	2.1	1.5	1.5	1.5	No
Fanita Drive and SR-52 WB Off-Ramp	AM	1.8	1.8	1.8	1.3	1.3	1.3	No
	PM	1.8	1.8	1.8	1.3	1.3	1.3	No
Buena Vista Avenue and Cuyamaca Street	AM	2.0	2.0	2.0	1.5	1.5	1.5	No
	PM	2.2	2.2	2.3	1.6	1.6	1.7	No
Prospect Avenue and Fanita Drive	AM	1.9	1.9	1.9	1.4	1.4	1.4	No
	PM	1.8	1.8	1.8	1.3	1.3	1.3	No

Source: CALINE4 using EMFAC2017 emission factors. See the Appendix D for model output sheets.

Note: ¹ Modeling assumptions: 1-hour CO concentrations were calculated using the worst-case wind angle scenario in the CALINE4 model. CO emission factors were generated using the EMFAC2017 model, using the CO emission factor associated with Year 2035 for the total vehicle mix during conditions in January at a temperature of 40 degrees Fahrenheit. An ambient 1-hour CO concentration of 1.5 ppm and an ambient 8-hour CO concentration of 1.1 ppm were used to reflect ambient conditions. The 8-hour CO concentration is based on a persistence factor of 0.7 for urban uses (Caltrans 1997).

SR-67 = State Route 67
 SR-52 = State Route 52
 SB = southbound

WB = westbound
 ppm = parts per million
 CO = carbon monoxide

As shown in Table 1, the removal of the Magnolia Avenue extension in the interim condition would result in less than significant impacts related to carbon monoxide concentrations. Appendix 1 provides additional details on the carbon monoxide hot spot analysis. Note that the Fanita Ranch

Project Land Use Plan Without School would increase traffic volumes by approximately 0.6 percent¹. This nominal level of change will not increase carbon monoxide concentrations at the intersections evaluated above. Therefore, the Fanita Ranch Project Land Use Plan Without School would also result in less than significant impacts related to carbon monoxide concentrations.

The above changes to the interim condition (2020 to 2034) do not result in changes to the air quality analysis related to construction because no additional construction is proposed, or long-term operational emissions at buildout in 2035 because the Magnolia Avenue extension is assumed to be completed as part of General Plan buildout in the long term. Therefore, no additional analysis is needed.

References

Linscott Law and Greenspan, Engineers. 2020. Fanita Ranch– No Magnolia Avenue Extension Analysis, Santee, California. September 4.

¹ LLG September 2020. Fanita Ranch No Magnolia Avenue Extension.

APPENDIX 1
CO HOTSPOT ANALYSIS OF INERIM CONDITION WITHOUT MAGNOLIA AVENUE
CONNECTION AND RESTRICTED LEFT TURNS

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
Princess Joann Rd & Cuyamaca St	NB	Approach	362	12.4	40	1.69	SB	Approach	700	10.6	40	1.90	
		Depart	362	25.6	N/A	1.69		Depart	700	21	N/A	1.90	
		Left Turn	0	--	--	--		Left Turn	163	5.1	80	2.27	
	EB	Approach	0	--	--	--	WB	Approach	0	7.4	70	2.12	
		Depart	0	21.5	N/A	1.77		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	84	1.7	80	2.28	
	NBX	Approach	362	28	N/A	0.69	SBX	Approach	863	28	N/A	0.69	
		Depart	446	28	N/A	0.69		Depart	700	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	84	28	N/A	0.69	
		Depart	163	28	N/A	0.69		Depart	0	--	--	--	
	Ganley Rd & Fanita Pkwy	NB	Approach	455	11.6	40	1.77	SB	Approach	762	7.2	40	2.14
			Depart	402	24.8	N/A	0.78		Depart	890	17.8	N/A	1.84
Left Turn			0	--	--	--	Left Turn		5	5.1	80	2.27	
EB		Approach	0	--	--	--	WB	Approach	5	7.4	70	2.12	
		Depart	63	21.5	N/A	1.77		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	128	5.1	80	2.27	
NBX		Approach	455	28	N/A	0.69	SBX	Approach	767	28	N/A	0.69	
		Depart	402	28	N/A	0.69		Depart	890	28	N/A	0.69	
EBX		Approach	0	--	--	--	WBX	Approach	133	28	N/A	0.69	
		Depart	63	28	N/A	0.69		Depart	0	--	--	--	
Woodglen Vista Dr & Cuyamaca St		NB	Approach	397	9	55	2.02	SB	Approach	335	3	55	2.28
			Depart	372	23.6	N/A	1.14		Depart	456	6.5	N/A	2.18
	Left Turn		3	5.1	80	2.27	Left Turn		46	5.1	80	2.27	
	EB	Approach	20	11.1	55	1.83	WB	Approach	97	11.1	55	1.83	
		Depart	85	24.4	N/A	0.90		Depart	5	24.4	N/A	0.90	
		Left Turn	0	--	--	--		Left Turn	111	1.7	80	2.28	
	NBX	Approach	415	28	N/A	0.69	SBX	Approach	380	28	N/A	0.69	
		Depart	345	28	N/A	0.69		Depart	836	28	N/A	0.69	
	EBX	Approach	20	28	N/A	0.69	WBX	Approach	208	28	N/A	0.69	
		Depart	85	28	N/A	0.69		Depart	7	28	N/A	0.69	
	El Nopa; & Cuyamaca St.	NB	Approach	406	9	55	2.02	SB	Approach	415	3	55	2.28
			Depart	358	23.6	N/A	1.14		Depart	415	6.5	N/A	2.18
Left Turn			5	5.1	80	2.27	Left Turn		45	5.1	80	2.27	
EB		Approach	8	11.1	55	1.83	WB	Approach	95	11.1	55	1.83	
		Depart	1	24.4	N/A	0.90		Depart	8	24.4	N/A	0.90	
		Left Turn	0	--	--	--		Left Turn	102	1.7	80	2.28	
NBX		Approach	411	28	N/A	0.69	SBX	Approach	460	28	N/A	0.69	
		Depart	445	28	N/A	0.69		Depart	524	28	N/A	0.69	
EBX		Approach	8	28	N/A	0.69	WBX	Approach	197	28	N/A	0.69	
		Depart	94	28	N/A	0.69		Depart	13	28	N/A	0.69	
El Nopal & Magnolia Ave		NB	Approach	421	9	55	2.02	SB	Approach	393	1	55	2.28
			Depart	356	23	N/A	1.32		Depart	384	6.5	N/A	2.18
	Left Turn		51	5.1	80	2.27	Left Turn		100	5.1	80	2.27	
	EB	Approach	241	11.8	55	1.75	WB	Approach	346	11.8	55	1.75	
		Depart	145	27.6	N/A	0.69		Depart	193	27.6	N/A	0.69	
		Left Turn	46	5.1	80	2.27		Left Turn	146	1.7	80	2.28	
	NBX	Approach	472	28	N/A	0.69	SBX	Approach	493	28	N/A	0.69	
		Depart	555	28	N/A	0.69		Depart	628	28	N/A	0.69	
	EBX	Approach	287	31	N/A	0.65	WBX	Approach	492	31	N/A	0.65	
		Depart	301	31	N/A	0.65		Depart	146	31	N/A	0.65	
	El Nopal & Los Ranchitos Rd	NB	Approach	250	6.4	70	2.19	SB	Approach	0	--	--	--
			Depart	0	--	--	--		Depart	210	20	N/A	2.21
Left Turn			15	5.1	80	2.27	Left Turn		0	--	--	--	
EB		Approach	429	11.6	40	1.77	WB	Approach	315	12.4	40	1.68	
		Depart	659	23	N/A	1.32		Depart	330	25.2	N/A	0.72	
		Left Turn	0	--	--	--		Left Turn	190	5.1	80	2.27	
NBX		Approach	265	28	N/A	0.69	SBX	Approach	0	--	--	--	
		Depart	0	--	--	--		Depart	210	28	N/A	0.69	
EBX		Approach	429	28	N/A	0.69	WBX	Approach	505	28	N/A	0.69	
		Depart	659	28	N/A	0.69		Depart	330	28	N/A	0.69	
Lake Canyon Rd & Fanita Pkwy		NB	Approach	500	11.6	40	1.77	SB	Approach	825	4.8	40	2.28
			Depart	463	24.8	N/A	0.78		Depart	915	13.2	N/A	1.58
	Left Turn		0	--	--	--	Left Turn		59	5.1	80	2.27	
	EB	Approach	0	--	--	--	WB	Approach	38	7.4	70	2.12	
		Depart	134	21.5	N/A	1.77		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	90	5.1	80	2.27	
	NBX	Approach	500	28	N/A	0.69	SBX	Approach	884	28	N/A	0.69	
		Depart	463	28	N/A	0.69		Depart	915	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	128	28	N/A	0.69	
		Depart	134	28	N/A	0.69		Depart	0	--	--	--	
	Beck Dr & Cuyamaca St	NB	Approach	452	9	55	2.02	SB	Approach	1,066	1	55	2.28
			Depart	420	23	N/A	1.32		Depart	1,066	6.5	N/A	2.18
Left Turn			1	5.1	80	2.27	Left Turn		3	5.1	80	2.27	
EB		Approach	11	11.8	55	1.75	WB	Approach	4	11.8	55	1.75	
		Depart	0	--	--	--		Depart	2	27.6	N/A	0.69	
		Left Turn	0	--	--	--		Left Turn	57	5.3	80	2.26	
NBX		Approach	453	28	N/A	0.69	SBX	Approach	1,066	28	N/A	0.69	
		Depart	422	28	N/A	0.69		Depart	1,165	28	N/A	0.69	
EBX		Approach	11	31	N/A	0.65	WBX	Approach	61	31	N/A	0.65	
		Depart	0	--	--	--		Depart	3	31	N/A	0.65	
Mast Blvd & SR-52 WB Ramps		NB	Approach	75	7.7	70	2.10	SB	Approach	0	--	--	--
			Depart	2,932	0.9	N/A	2.28		Depart	0	--	--	--

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
	EB	Left Turn	10	5.3	80	2.26	WB	Left Turn	0	--	--	--	
		Approach	578	13.9	40	1.50		Approach	3,202	2.7	40	2.28	
		Depart	653	28.6	N/A	0.68		Depart	300	29.1	N/A	0.67	
		Left Turn	20	5.3	80	2.26		Left Turn	0	--	--	--	
		Approach	85	31	N/A	0.65		SBX	Approach	0	--	--	--
		Depart	2,932	31	N/A	0.65			Depart	0	--	--	--
	NBX	Approach	598	31	N/A	0.65	WBX	Approach	3,202	31	N/A	0.65	
		Depart	653	31	N/A	0.65		Depart	300	31	N/A	0.65	
	Mast Blvd & West Hills Pkwy	NB	Approach	475	1.7	70	2.28	SB	Approach	110	7.7	70	2.10
			Depart	155	23.9	N/A	1.05		Depart	323	18	N/A	1.88
			Left Turn	1,200	0.1	80	2.28		Left Turn	10	5.3	80	2.26
			Approach	533	13.9	40	1.50		WB	Approach	1,922	2.7	40
Depart			893	28.1	N/A	0.68	Depart			3,202	14.1	N/A	1.48
Left Turn			120	5.3	80	2.26	Left Turn		203	5.3	80	2.26	
NBX		Approach	1,675	31	N/A	0.65	SBX	Approach	120	31	N/A	0.65	
		Depart	155	31	N/A	0.65		Depart	323	31	N/A	0.65	
EBX		Approach	653	31	N/A	0.65	WBX	Approach	2,125	31	N/A	0.65	
		Depart	893	31	N/A	0.65		Depart	3,202	31	N/A	0.65	
Mast Blvd & Fanita Pkwy		NB	Approach	196	7.7	70	2.10	SB	Approach	843	0.1	70	2.28
			Depart	546	5.1	N/A	2.27		Depart	573	5.1	N/A	2.27
	Left Turn		70	5.3	80	2.26	Left Turn		76	5.3	80	2.26	
	Approach		755	12.4	40	1.68	WB		Approach	1,612	4.8	40	2.28
	Depart		701	25.2	N/A	0.72			Depart	2,163	13.2	N/A	1.58
	Left Turn		311	0.5	80	2.28	Left Turn		120	5.1	80	2.27	
	NBX	Approach	266	31	N/A	0.65	SBX	Approach	919	31	N/A	0.65	
		Depart	546	31	N/A	0.65		Depart	573	31	N/A	0.65	
	EBX	Approach	1,066	28	N/A	0.69	WBX	Approach	1,732	28	N/A	0.69	
		Depart	701	28	N/A	0.69		Depart	2,163	28	N/A	0.69	
	Mast Blvd & Cuyamaca St	NB	Approach	673	11	55	1.84	SB	Approach	557	10.3	55	1.92
			Depart	282	27.1	N/A	0.70		Depart	382	20.4	N/A	2.09
Left Turn			258	5.3	80	2.26	Left Turn		39	0.1	80	2.28	
Approach			558	10.3	55	1.92	WB		Approach	385	9.3	55	2.00
Depart			339	24.1	N/A	0.99			Depart	317	24.1	N/A	0.99
Left Turn			157	5.3	80	2.26	Left Turn		318	5.3	80	2.26	
NBX		Approach	883	31	N/A	0.65	SBX	Approach	661	31	N/A	0.65	
		Depart	507	31	N/A	0.65		Depart	919	31	N/A	0.65	
EBX		Approach	715	31	N/A	0.65	WBX	Approach	703	31	N/A	0.65	
		Depart	568	31	N/A	0.65		Depart	1,034	31	N/A	0.65	
Riverford Rd & SR-67 SB Ramps		NB	Approach	634	9.2	40	2.01	SB	Approach	1,089	2.7	40	2.28
			Depart	842	17.8	N/A	1.84		Depart	439	24.8	N/A	0.78
	Left Turn		460	0.2	80	2.28	Left Turn		0	--	--	--	
	Approach		0	--	--	--	WB		Approach	208	6.6	70	2.18
	Depart		0	--	--	--			Depart	1,130	0.9	N/A	2.28
	Left Turn		0	--	--	--	Left Turn		20	5.3	80	2.26	
	NBX	Approach	1,094	28	N/A	0.69	SBX	Approach	1,089	28	N/A	0.69	
		Depart	842	28	N/A	0.69		Depart	439	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	228	31	N/A	0.65	
		Depart	0	--	--	--		Depart	1,130	31	N/A	0.65	
	Riverford Rd & Woodside Ave	NB	Approach	0	--	--	--	SB	Approach	50	7.4	70	2.12
			Depart	1,094	0.9	N/A	2.28		Depart	0	--	--	--
Left Turn			0	--	--	--	Left Turn		339	0.5	80	2.28	
Approach			350	12.4	40	1.68	WB		Approach	704	7.2	40	2.14
Depart			689	23	N/A	1.32			Depart	180	25.9	N/A	0.71
Left Turn			520	0.1	80	2.28	Left Turn		0	--	--	--	
NBX		Approach	0	--	--	--	SBX	Approach	389	28	N/A	0.69	
		Depart	1,094	28	N/A	0.69		Depart	0	--	--	--	
EBX		Approach	870	28	N/A	0.69	WBX	Approach	704	28	N/A	0.69	
		Depart	689	28	N/A	0.69		Depart	180	28	N/A	0.69	
Mission Gorge Rd & West Hills Pkwy		NB	Approach	140	7.7	70	2.10	SB	Approach	549	0.7	70	2.28
			Depart	1,653	0.9	N/A	2.28		Depart	220	22.3	N/A	1.53
	Left Turn		40	5.3	80	2.26	Left Turn		175	5.3	80	2.26	
	Approach		490	13.9	40	1.50	WB		Approach	2,325	2.7	40	2.28
	Depart		665	28.6	N/A	0.68			Depart	1,619	19.5	N/A	2.13
	Left Turn		358	5.3	80	2.26	Left Turn		80	5.3	80	2.26	
	NBX	Approach	180	31	N/A	0.65	SBX	Approach	724	31	N/A	0.65	
		Depart	1,653	31	N/A	0.65		Depart	220	31	N/A	0.65	
	EBX	Approach	848	31	N/A	0.65	WBX	Approach	2,405	31	N/A	0.65	
		Depart	665	31	N/A	0.65		Depart	1,619	31	N/A	0.65	
	Mission Gorge Rd & Carlton Hills Blvd	NB	Approach	50	7.7	70	2.10	SB	Approach	1,208	0.1	70	2.28
			Depart	1,279	0.9	N/A	2.28		Depart	195	23.9	N/A	1.05
Left Turn			40	5.3	80	2.26	Left Turn		441	1.7	80	2.28	
Approach			908	13.1	40	1.59	WB		Approach	1,833	9.6	40	1.98
Depart			1,269	28.1	N/A	0.68			Depart	2,567	19.5	N/A	2.13
Left Turn			805	0.2	80	2.28	Left Turn		25	5.3	80	2.26	
NBX		Approach	90	31	N/A	0.65	SBX	Approach	1,649	31	N/A	0.65	
		Depart	1,279	31	N/A	0.65		Depart	195	31	N/A	0.65	
EBX		Approach	1,713	31	N/A	0.65	WBX	Approach	1,858	31	N/A	0.65	
		Depart	1,269	31	N/A	0.65		Depart	2,567	31	N/A	0.65	
Mission Gorge Rd & Town Center Pkwy		NB	Approach	185	7.7	70	2.10	SB	Approach	410	1.7	70	2.28
			Depart	560	5.1	N/A	2.27		Depart	420	10.1	N/A	1.95
	Left Turn		210	5.3	80	2.26	Left Turn		110	5.3	80	2.26	
	Approach		863	13.1	40	1.59	Approach		1,049	12.4	40	1.68	

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
	EB	Depart	818	25.6	N/A	0.72	WB	Depart	1,429	24.8	N/A	0.78	
		Left Turn	300	5.1	80	2.27		Left Turn	100	5.1	80	2.27	
		Approach	395	31	N/A	0.65		SBX	Approach	520	31	N/A	0.65
	Depart	560	31	N/A	0.65	Depart	420		31	N/A	0.65		
	Approach	1,163	28	N/A	0.69	WBX	Approach		1,149	28	N/A	0.69	
	Depart	818	28	N/A	0.69		Depart	1,429	28	N/A	0.69		
Mission Gorge Rd & Cuyamaca St	NB	Approach	753	4.2	70		2.28	SB	Approach	821	6.6	70	2.18
		Depart	963	10.1	N/A	1.95	Depart		1,144	18	N/A	1.88	
		Left Turn	700	0.5	80	2.28	Left Turn		153	5.3	80	2.26	
	EB	Approach	768	13.9	40	1.50	WB	Approach	748	13.9	40	1.50	
		Depart	755	29.1	N/A	0.67		Depart	1,479	28.1	N/A	0.68	
		Left Turn	200	5.3	80	2.26		Left Turn	198	5.3	80	2.26	
	NBX	Approach	1,453	31	N/A	0.65	SBX	Approach	974	31	N/A	0.65	
		Depart	963	31	N/A	0.65		Depart	1,144	31	N/A	0.65	
	EBX	Approach	968	31	N/A	0.65	WBX	Approach	946	31	N/A	0.65	
		Depart	755	31	N/A	0.65		Depart	1,479	31	N/A	0.65	
	Mission Gorge Rd & Cottonwood Ave	NB	Approach	190	7.7	70	2.10	SB	Approach	45	7.7	70	2.10
			Depart	155	23.9	N/A	1.05		Depart	270	22.3	N/A	1.53
Left Turn			120	5.3	80	2.26	Left Turn		50	5.3	80	2.26	
EB		Approach	597	13.7	40	1.52	WB	Approach	1,034	12.4	40	1.68	
		Depart	647	25.6	N/A	0.72		Depart	1,129	25.2	N/A	0.72	
		Left Turn	35	5.1	80	2.27		Left Turn	130	5.1	80	2.27	
NBX		Approach	310	31	N/A	0.65	SBX	Approach	95	31	N/A	0.65	
		Depart	155	31	N/A	0.65		Depart	270	31	N/A	0.65	
EBX		Approach	632	28	N/A	0.69	WBX	Approach	1,164	28	N/A	0.69	
		Depart	647	28	N/A	0.69		Depart	1,129	28	N/A	0.69	
Mission Gorge Rd & Magnolia Ave		NB	Approach	1,261	5.5	55	2.25	SB	Approach	1,571	3.1	55	2.28
			Depart	1,312	20.4	N/A	2.09		Depart	1,857	6.5	N/A	2.18
	Left Turn		270	5.3	80	2.26	Left Turn		343	5.3	80	2.26	
	EB	Approach	400	11.8	55	1.75	WB	Approach	934	9.3	55	2.00	
		Depart	993	25.6	N/A	0.72		Depart	1,224	20.4	N/A	2.09	
		Left Turn	177	5.3	80	2.26		Left Turn	430	1.7	80	2.28	
	NBX	Approach	1,531	31	N/A	0.65	SBX	Approach	1,914	31	N/A	0.65	
		Depart	1,312	31	N/A	0.65		Depart	1,857	31	N/A	0.65	
	EBX	Approach	577	31	N/A	0.65	WBX	Approach	1,364	31	N/A	0.65	
		Depart	993	31	N/A	0.65		Depart	1,224	31	N/A	0.65	
	Woodside Ave N & SR-67 SB Off-Ramp	NB	Approach	458	11.6	40	1.77	SB	Approach	634	12.4	40	1.68
			Depart	0	--	--	--		Depart	1,104	24.1	N/A	0.99
Left Turn			320	0.5	80	2.28	Left Turn		10	5.1	80	2.27	
EB		Approach	160	7.7	70	2.10	WB	Approach	10	7.7	70	2.10	
		Depart	478	10.1	N/A	1.95		Depart	370	18	N/A	1.88	
		Left Turn	0	--	--	--		Left Turn	360	0.5	80	2.28	
NBX		Approach	778	28	N/A	0.69	SBX	Approach	644	28	N/A	0.69	
		Depart	0	--	--	--		Depart	1,104	28	N/A	0.69	
EBX		Approach	160	31	N/A	0.65	WBX	Approach	370	31	N/A	0.65	
		Depart	478	31	N/A	0.65		Depart	370	31	N/A	0.65	
Fanita Dr & SR-52 WB Off-Ramp		NB	Approach	644	13.1	40	1.59	SB	Approach	804	12.3	40	1.69
			Depart	1,233	26	N/A	0.71		Depart	914	28.1	N/A	0.68
	Left Turn		0	--	--	--	Left Turn		0	--	--	--	
	EB	Approach	0	--	--	--	WB	Approach	589	0.7	70	2.28	
		Depart	0	--	--	--		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	110	5.3	80	2.26	
	NBX	Approach	644	31	N/A	0.65	SBX	Approach	804	31	N/A	0.65	
		Depart	1,233	31	N/A	0.65		Depart	914	31	N/A	0.65	
	EBX	Approach	0	--	--	--	WBX	Approach	699	31	N/A	0.65	
		Depart	0	--	--	--		Depart	0	--	--	--	
	Buena Vista Ave & Cuyamaca St	NB	Approach	1,575	10.6	40	1.89	SB	Approach	1,213	11.6	40	1.77
			Depart	1,475	24.8	N/A	0.78		Depart	1,408	24.8	N/A	0.78
Left Turn			55	5.1	80	2.27	Left Turn		70	5.1	80	2.27	
EB		Approach	25	7.7	70	2.10	WB	Approach	75	7.7	70	2.10	
		Depart	260	22.3	N/A	1.53		Depart	90	23.9	N/A	1.05	
		Left Turn	10	5.3	80	2.26		Left Turn	210	1.7	80	2.28	
NBX		Approach	1,630	28	N/A	0.69	SBX	Approach	1,283	28	N/A	0.69	
		Depart	1,475	28	N/A	0.69		Depart	1,408	28	N/A	0.69	
EBX		Approach	35	31	N/A	0.65	WBX	Approach	285	31	N/A	0.65	
		Depart	260	31	N/A	0.65		Depart	90	31	N/A	0.65	
Prospect Ave & Fanita Dr		NB	Approach	409	11.6	40	1.77	SB	Approach	278	13.7	40	1.52
			Depart	969	13.2	N/A	1.58		Depart	328	25.9	N/A	0.71
	Left Turn		75	5.1	80	2.27	Left Turn		220	1.7	80	2.28	
	EB	Approach	210	6.6	70	2.18	WB	Approach	590	0.7	70	2.28	
		Depart	445	10.1	N/A	1.95		Depart	355	18	N/A	1.88	
		Left Turn	215	1.7	80	2.28		Left Turn	100	5.3	80	2.26	
	NBX	Approach	484	28	N/A	0.69	SBX	Approach	498	28	N/A	0.69	
		Depart	969	28	N/A	0.69		Depart	328	28	N/A	0.69	
	EBX	Approach	425	31	N/A	0.65	WBX	Approach	690	31	N/A	0.65	
		Depart	445	31	N/A	0.65		Depart	355	31	N/A	0.65	

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
Princess Joann Rd & Cuyamaca St	NB	Approach	718	7.2	40	2.14	SB	Approach	361	13.1	40	1.59	
		Depart	718	24.1	N/A	0.99		Depart	361	25.2	N/A	0.72	
		Left Turn	0	--	--	--		Left Turn	84	5.1	80	2.27	
	EB	Approach	0	--	--	--	WB	Approach	167	7.4	70	2.12	
		Depart	0	--	--	--		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	0	--	--	--	
	NBX	Approach	718	28	N/A	0.69	SBX	Approach	445	28	N/A	0.69	
		Depart	802	28	N/A	0.69		Depart	361	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	167	28	N/A	0.69	
		Depart	0	--	--	--		Depart	0	--	--	--	
	Ganley Rd & Fanita Pkwy	NB	Approach	883	4.8	40	2.28	SB	Approach	394	12.4	40	1.68
			Depart	785	21	N/A	1.92		Depart	457	24.8	N/A	0.78
Left Turn			0	--	--	--	Left Turn		5	5.1	80	2.27	
EB		Approach	0	--	--	--	WB	Approach	5	7.4	70	2.12	
		Depart	108	21.5	N/A	1.77		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	63	5.1	80	2.27	
NBX		Approach	883	28	N/A	0.69	SBX	Approach	399	28	N/A	0.69	
		Depart	785	28	N/A	0.69		Depart	457	28	N/A	0.69	
EBX		Approach	0	--	--	--	WBX	Approach	68	28	N/A	0.69	
		Depart	108	28	N/A	0.69		Depart	0	--	--	--	
Woodglen Vista Dr & Cuyamaca St		NB	Approach	907	1	55	2.28	SB	Approach	335	9.8	55	1.97
			Depart	669	14	N/A	1.49		Depart	333	23	N/A	1.32
	Left Turn		7	5.1	80	2.27	Left Turn		45	5.1	80	2.27	
	EB	Approach	13	11.1	55	1.83	WB	Approach	97	11.1	55	1.83	
		Depart	12	24	N/A	1.02		Depart	2	24.4	N/A	0.90	
		Left Turn	0	--	--	--		Left Turn	111	5.1	80	2.27	
	NBX	Approach	914	28	N/A	0.69	SBX	Approach	380	28	N/A	0.69	
		Depart	764	28	N/A	0.69		Depart	451	28	N/A	0.69	
	EBX	Approach	13	28	N/A	0.69	WBX	Approach	208	28	N/A	0.69	
		Depart	295	28	N/A	0.69		Depart	7	28	N/A	0.69	
	El Nopa; & Cuyamaca St.	NB	Approach	943	1	55	2.28	SB	Approach	415	9	55	2.02
			Depart	834	6.5	N/A	2.18		Depart	415	21.7	N/A	1.71
Left Turn			13	5.1	80	2.27	Left Turn		45	5.1	80	2.27	
EB		Approach	6	11.8	55	1.75	WB	Approach	95	11.8	55	1.75	
		Depart	1	27.6	N/A	0.69		Depart	8	27.6	N/A	0.69	
		Left Turn	5	5.3	80	2.26		Left Turn	102	5.3	80	2.26	
NBX		Approach	956	28	N/A	0.69	SBX	Approach	460	28	N/A	0.69	
		Depart	922	28	N/A	0.69		Depart	522	28	N/A	0.69	
EBX		Approach	7	31	N/A	0.65	WBX	Approach	197	31	N/A	0.65	
		Depart	185	31	N/A	0.65		Depart	110	31	N/A	0.65	
El Nopal & Magnolia Ave		NB	Approach	790	1	55	2.28	SB	Approach	393	9	55	2.02
			Depart	586	6.5	N/A	2.18		Depart	384	21.7	N/A	1.71
	Left Turn		95	5.1	80	2.27	Left Turn		100	5.1	80	2.27	
	EB	Approach	241	11.8	55	1.75	WB	Approach	346	11.8	55	1.75	
		Depart	145	27.6	N/A	0.69		Depart	193	27.6	N/A	0.69	
		Left Turn	6	5.3	80	2.26		Left Turn	146	5.3	80	2.26	
	NBX	Approach	885	28	N/A	0.69	SBX	Approach	493	28	N/A	0.69	
		Depart	745	28	N/A	0.69		Depart	593	28	N/A	0.69	
	EBX	Approach	287	31	N/A	0.65	WBX	Approach	492	31	N/A	0.65	
		Depart	449	31	N/A	0.65		Depart	299	31	N/A	0.65	
	El Nopal & Los Ranchitos Rd	NB	Approach	220	6.4	70	2.19	SB	Approach	0	--	--	--
			Depart	0	--	--	--		Depart	185	21.5	N/A	1.77
Left Turn			10	5.1	80	2.27	Left Turn		0	--	--	--	
EB		Approach	350	12.4	40	1.68	WB	Approach	461	11.6	40	1.77	
		Depart	555	24.1	N/A	0.99		Depart	471	24.8	N/A	0.78	
		Left Turn	0	--	--	--		Left Turn	170	5.1	80	2.27	
NBX		Approach	230	28	N/A	0.69	SBX	Approach	0	--	--	--	
		Depart	0	--	--	--		Depart	185	28	N/A	0.69	
EBX		Approach	350	28	N/A	0.69	WBX	Approach	631	28	N/A	0.69	
		Depart	555	28	N/A	0.69		Depart	471	28	N/A	0.69	
Lake Canyon Rd & Fanita Pkwy		NB	Approach	963	2.7	40	2.28	SB	Approach	457	11.6	40	1.77
			Depart	946	13.2	N/A	1.58		Depart	510	24.1	N/A	0.99
	Left Turn		0	--	--	--	Left Turn		36	5.1	80	2.27	
	EB	Approach	0	--	--	--	WB	Approach	76	7.4	70	2.12	
		Depart	129	21.5	N/A	1.77		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	53	5.1	80	2.27	
	NBX	Approach	963	28	N/A	0.69	SBX	Approach	493	28	N/A	0.69	
		Depart	946	28	N/A	0.69		Depart	510	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	129	28	N/A	0.69	
		Depart	129	28	N/A	0.69		Depart	0	--	--	--	
	Beck Dr & Cuyamaca St	NB	Approach	1,033	1	55	2.28	SB	Approach	504	7.6	55	2.11
			Depart	968	6.5	N/A	2.18		Depart	501	18.8	N/A	2.01
Left Turn			65	5.1	80	2.27	Left Turn		2	5.1	80	2.27	
EB		Approach	6	11.8	55	1.75	WB	Approach	4	11.8	55	1.75	
		Depart	0	--	--	--		Depart	2	27.6	N/A	0.69	
		Left Turn	0	--	--	--		Left Turn	57	5.3	80	2.26	
NBX		Approach	1,042	28	N/A	0.69	SBX	Approach	506	28	N/A	0.69	
		Depart	970	28	N/A	0.69		Depart	564	28	N/A	0.69	
EBX		Approach	6	31	N/A	0.65	WBX	Approach	67	31	N/A	0.65	
		Depart	67	31	N/A	0.65		Depart	14	31	N/A	0.65	
Mast Blvd & SR-52 WB Ramps		NB	Approach	645	0.4	70	2.28	SB	Approach	0	--	--	--
			Depart	771	1.6	N/A	2.28		Depart	0	--	--	--

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
	EB	Left Turn	0	--	--	--	WB	Left Turn	0	--	--	--	
		Approach	1,743	4.9	40	2.28		Approach	1,096	2.7	40	2.28	
		Depart	2,383	14.1	N/A	1.48		Depart	355	28.6	N/A	0.68	
		Left Turn	25	5.3	80	2.26		Left Turn	0	--	--	--	
		Approach	645	31	N/A	0.65		Approach	0	--	--	--	
		Depart	771	31	N/A	0.65		Depart	0	--	--	--	
	NBX	Approach	1,768	31	N/A	0.65	WBX	Approach	1,096	31	N/A	0.65	
		Depart	2,383	31	N/A	0.65		Depart	355	31	N/A	0.65	
	Mast Blvd & West Hills Pkwy	NB	Approach	554	0.7	70	2.28	SB	Approach	120	7.7	70	2.10
			Depart	275	22.3	N/A	1.53		Depart	748	1.6	N/A	2.28
			Left Turn	280	5.3	80	2.26		Left Turn	75	5.3	80	2.26
		EB	Approach	2,233	2.7	40	2.28	WB	Approach	786	13.1	40	1.59
Depart			2,297	14.1	N/A	1.48	Depart		1,096	27.2	N/A	0.70	
Left Turn			150	5.3	80	2.26	Left Turn		218	5.3	80	2.26	
NBX		Approach	834	31	N/A	0.65	SBX	Approach	195	31	N/A	0.65	
		Depart	275	31	N/A	0.65		Depart	748	31	N/A	0.65	
EBX		Approach	2,383	31	N/A	0.65	WBX	Approach	1,004	31	N/A	0.65	
		Depart	2,297	31	N/A	0.65		Depart	1,096	31	N/A	0.65	
Mast Blvd & Fanita Pkwy		NB	Approach	319	4.2	70	2.28	SB	Approach	471	1.7	70	2.28
			Depart	1,013	0.9	N/A	2.28		Depart	265	22.3	N/A	1.53
	Left Turn		80	5.3	80	2.26	Left Turn		97	5.3	80	2.26	
	EB	Approach	1,189	10.6	40	1.89	WB	Approach	621	12.4	40	1.68	
		Depart	1,266	23	N/A	1.32		Depart	904	24.8	N/A	0.78	
		Left Turn	631	0.1	80	2.28		Left Turn	40	5.1	80	2.27	
	NBX	Approach	399	31	N/A	0.65	SBX	Approach	568	31	N/A	0.65	
		Depart	1,013	31	N/A	0.65		Depart	265	31	N/A	0.65	
	EBX	Approach	1,820	28	N/A	0.69	WBX	Approach	661	28	N/A	0.69	
		Depart	1,266	28	N/A	0.69		Depart	904	28	N/A	0.69	
	Mast Blvd & Cuyamaca St	NB	Approach	1,094	7.9	55	2.09	SB	Approach	572	10.3	55	1.92
			Depart	656	20.4	N/A	2.09		Depart	382	24.1	N/A	0.99
Left Turn			275	5.3	80	2.26	Left Turn		39	5.3	80	2.26	
EB		Approach	958	5.5	55	2.25	WB	Approach	365	11	55	1.84	
		Depart	685	14.8	N/A	1.40		Depart	317	25.6	N/A	0.72	
		Left Turn	334	0.1	80	2.28		Left Turn	318	5.3	80	2.26	
NBX		Approach	1,352	31	N/A	0.65	SBX	Approach	611	31	N/A	0.65	
		Depart	1,058	31	N/A	0.65		Depart	1,001	31	N/A	0.65	
EBX		Approach	1,292	31	N/A	0.65	WBX	Approach	703	31	N/A	0.65	
		Depart	1,162	31	N/A	0.65		Depart	765	31	N/A	0.65	
Riverford Rd & SR-67 SB Ramps		NB	Approach	866	4.8	40	2.28	SB	Approach	1,102	2.7	40	2.28
			Depart	1,010	13.2	N/A	1.58		Depart	322	25.2	N/A	0.72
	Left Turn		300	1.7	80	2.28	Left Turn		0	--	--	--	
	EB	Approach	0	--	--	--	WB	Approach	144	7.7	70	2.10	
		Depart	0	--	--	--		Depart	1,100	0.9	N/A	2.28	
		Left Turn	0	--	--	--		Left Turn	20	5.3	80	2.26	
	NBX	Approach	1,166	28	N/A	0.69	SBX	Approach	1,102	28	N/A	0.69	
		Depart	1,010	28	N/A	0.69		Depart	322	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	164	31	N/A	0.65	
		Depart	0	--	--	--		Depart	1,100	31	N/A	0.65	
	Riverford Rd & Woodside Ave	NB	Approach	0	--	--	--	SB	Approach	40	7.4	70	2.12
			Depart	1,106	0.9	N/A	2.28		Depart	0	--	--	--
Left Turn			0	--	--	--	Left Turn		237	1.7	80	2.28	
EB		Approach	740	7.2	40	2.14	WB	Approach	486	11.6	40	1.77	
		Depart	977	13.2	N/A	1.58		Depart	150	25.9	N/A	0.71	
		Left Turn	730	0	80	2.28		Left Turn	0	--	--	--	
NBX		Approach	0	--	--	--	SBX	Approach	277	28	N/A	0.69	
		Depart	1,106	28	N/A	0.69		Depart	0	--	--	--	
EBX		Approach	1,470	28	N/A	0.69	WBX	Approach	486	28	N/A	0.69	
		Depart	977	28	N/A	0.69		Depart	150	28	N/A	0.69	
Mission Gorge Rd & West Hills Pkwy		NB	Approach	100	7.7	70	2.10	SB	Approach	465	1.7	70	2.28
			Depart	951	0.9	N/A	2.28		Depart	230	22.3	N/A	1.53
	Left Turn		30	5.3	80	2.26	Left Turn		260	5.3	80	2.26	
	EB	Approach	965	12.3	40	1.69	WB	Approach	765	13.1	40	1.59	
		Depart	1,200	27.2	N/A	0.70		Depart	920	28.1	N/A	0.68	
		Left Turn	631	0.5	80	2.28		Left Turn	85	5.3	80	2.26	
	NBX	Approach	130	31	N/A	0.65	SBX	Approach	725	31	N/A	0.65	
		Depart	951	31	N/A	0.65		Depart	230	31	N/A	0.65	
	EBX	Approach	1,596	31	N/A	0.65	WBX	Approach	850	31	N/A	0.65	
		Depart	1,200	31	N/A	0.65		Depart	920	31	N/A	0.65	
	Mission Gorge Rd & Carlton Hills Blvd	NB	Approach	115	7.7	70	2.10	SB	Approach	792	0.2	70	2.28
			Depart	1,659	0.9	N/A	2.28		Depart	440	10.1	N/A	1.95
Left Turn			60	5.3	80	2.26	Left Turn		442	1.7	80	2.28	
EB		Approach	1,510	11.1	40	1.83	WB	Approach	1,666	11.1	40	1.83	
		Depart	1,827	26	N/A	0.71		Depart	1,741	27.2	N/A	0.70	
		Left Turn	932	0.2	80	2.28		Left Turn	150	5.3	80	2.26	
NBX		Approach	175	31	N/A	0.65	SBX	Approach	1,234	31	N/A	0.65	
		Depart	1,659	31	N/A	0.65		Depart	440	31	N/A	0.65	
EBX		Approach	2,442	31	N/A	0.65	WBX	Approach	1,816	31	N/A	0.65	
		Depart	1,827	31	N/A	0.65		Depart	1,741	31	N/A	0.65	
Mission Gorge Rd & Town Center Pkwy		NB	Approach	490	1.7	70	2.28	SB	Approach	730	0.2	70	2.28
			Depart	1,285	0.9	N/A	2.28		Depart	605	3.2	N/A	2.28
	Left Turn		390	5.3	80	2.26	Left Turn		340	5.3	80	2.26	
	Approach		1,391	11.6	40	1.77	Approach		1,090	12.4	40	1.68	

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
	EB	Depart	1,711	24.1	N/A	0.99	WB	Depart	1,645	24.1	N/A	0.99	
		Left Turn	620	0.5	80	2.28		Left Turn	195	5.1	80	2.27	
	NBX	Approach	880	31	N/A	0.65	SBX	Approach	1,070	31	N/A	0.65	
		Depart	1,285	31	N/A	0.65		Depart	605	31	N/A	0.65	
	EBX	Approach	2,011	28	N/A	0.69	WBX	Approach	1,285	28	N/A	0.69	
		Depart	1,711	28	N/A	0.69		Depart	1,645	28	N/A	0.69	
Mission Gorge Rd & Cuyamaca St	NB	Approach	1,436	0.2	70	2.28	SB	Approach	1,140	4.2	70	2.28	
		Depart	1,714	1.2	N/A	2.28		Depart	1,544	5.1	N/A	2.27	
		Left Turn	735	0.5	80	2.28		Left Turn	348	5.3	80	2.26	
	EB	Approach	1,083	13.1	40	1.59	WB	Approach	761	13.9	40	1.50	
		Depart	1,437	28.1	N/A	0.68		Depart	1,514	27.2	N/A	0.70	
		Left Turn	413	1.7	80	2.28		Left Turn	293	5.3	80	2.26	
	NBX	Approach	2,171	31	N/A	0.65	SBX	Approach	1,488	31	N/A	0.65	
		Depart	1,714	31	N/A	0.65		Depart	1,544	31	N/A	0.65	
	EBX	Approach	1,496	31	N/A	0.65	WBX	Approach	1,054	31	N/A	0.65	
		Depart	1,437	31	N/A	0.65		Depart	1,514	31	N/A	0.65	
	Mission Gorge Rd & Cottonwood Ave	NB	Approach	290	6.6	70	2.18	SB	Approach	50	7.7	70	2.10
			Depart	260	22.3	N/A	1.53		Depart	350	18	N/A	1.88
Left Turn			155	5.3	80	2.26	Left Turn		20	5.3	80	2.26	
EB		Approach	1,451	11.6	40	1.77	WB	Approach	987	12.4	40	1.68	
		Depart	1,496	24.8	N/A	0.78		Depart	1,087	25.2	N/A	0.72	
		Left Turn	85	5.1	80	2.27		Left Turn	155	5.1	80	2.27	
NBX		Approach	445	31	N/A	0.65	SBX	Approach	70	31	N/A	0.65	
		Depart	260	31	N/A	0.65		Depart	350	31	N/A	0.65	
EBX		Approach	1,536	28	N/A	0.69	WBX	Approach	1,142	28	N/A	0.69	
		Depart	1,496	28	N/A	0.69		Depart	1,087	28	N/A	0.69	
Mission Gorge Rd & Magnolia Ave		NB	Approach	1,642	1.6	55	2.28	SB	Approach	903	9.3	55	2.00
			Depart	1,913	6.5	N/A	2.18		Depart	1,701	9.3	N/A	2.00
	Left Turn		310	5.3	80	2.26	Left Turn		288	5.3	80	2.26	
	EB	Approach	1,135	7.9	55	2.09	WB	Approach	980	9.3	55	2.00	
		Depart	1,483	14.8	N/A	1.40		Depart	1,177	24.1	N/A	0.99	
		Left Turn	421	1.7	80	2.28		Left Turn	595	1.7	80	2.28	
	NBX	Approach	1,952	31	N/A	0.65	SBX	Approach	1,191	31	N/A	0.65	
		Depart	1,913	31	N/A	0.65		Depart	1,701	31	N/A	0.65	
	EBX	Approach	1,556	31	N/A	0.65	WBX	Approach	1,575	31	N/A	0.65	
		Depart	1,483	31	N/A	0.65		Depart	1,177	31	N/A	0.65	
	Woodside Ave N & SR-67 SB Off-Ramp	NB	Approach	963	2.7	40	2.28	SB	Approach	565	13.1	40	1.59
			Depart	0	--	--	--		Depart	1,045	24.1	N/A	0.99
Left Turn			190	5.1	80	2.27	Left Turn		10	5.1	80	2.27	
EB		Approach	295	6.6	70	2.18	WB	Approach	5	7.7	70	2.10	
		Depart	1,008	0.9	N/A	2.28		Depart	205	22.3	N/A	1.53	
		Left Turn	0	--	--	--		Left Turn	230	1.7	80	2.28	
NBX		Approach	1,153	28	N/A	0.69	SBX	Approach	575	28	N/A	0.69	
		Depart	0	--	--	--		Depart	1,045	28	N/A	0.69	
EBX		Approach	295	31	N/A	0.65	WBX	Approach	235	31	N/A	0.65	
		Depart	1,008	31	N/A	0.65		Depart	205	31	N/A	0.65	
Fanita Dr & SR-52 WB Off-Ramp		NB	Approach	366	14.6	40	1.42	SB	Approach	820	12.3	40	1.69
			Depart	788	28.6	N/A	0.68		Depart	990	28.1	N/A	0.68
	Left Turn		0	--	--	--	Left Turn		0	--	--	--	
	EB	Approach	0	--	--	--	WB	Approach	422	1.7	70	2.28	
		Depart	0	--	--	--		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	170	5.3	80	2.26	
	NBX	Approach	366	31	N/A	0.65	SBX	Approach	820	31	N/A	0.65	
		Depart	788	31	N/A	0.65		Depart	990	31	N/A	0.65	
	EBX	Approach	0	--	--	--	WBX	Approach	592	31	N/A	0.65	
		Depart	0	--	--	--		Depart	0	--	--	--	
	Buena Vista Ave & Cuyamaca St	NB	Approach	2,099	9.2	40	2.01	SB	Approach	1,708	10.6	40	1.89
			Depart	1,979	23	N/A	1.32		Depart	2,088	23	N/A	1.32
Left Turn			30	5.1	80	2.27	Left Turn		80	5.1	80	2.27	
EB		Approach	70	7.7	70	2.10	WB	Approach	105	7.7	70	2.10	
		Depart	350	18	N/A	1.88		Depart	55	23.9	N/A	1.05	
		Left Turn	30	5.3	80	2.26		Left Turn	350	0.5	80	2.28	
NBX		Approach	2,129	28	N/A	0.69	SBX	Approach	1,788	28	N/A	0.69	
		Depart	1,979	28	N/A	0.69		Depart	2,088	28	N/A	0.69	
EBX		Approach	100	31	N/A	0.65	WBX	Approach	455	31	N/A	0.65	
		Depart	350	31	N/A	0.65		Depart	55	31	N/A	0.65	
Prospect Ave & Fanita Dr		NB	Approach	316	12.4	40	1.68	SB	Approach	393	13.7	40	1.52
			Depart	506	24.1	N/A	0.99		Depart	413	25.6	N/A	0.72
	Left Turn		60	5.1	80	2.27	Left Turn		220	1.7	80	2.28	
	EB	Approach	160	7.7	70	2.10	WB	Approach	260	6.6	70	2.18	
		Depart	430	10.1	N/A	1.95		Depart	300	22.3	N/A	1.53	
		Left Turn	130	5.3	80	2.26		Left Turn	110	5.3	80	2.26	
	NBX	Approach	376	28	N/A	0.69	SBX	Approach	613	28	N/A	0.69	
		Depart	506	28	N/A	0.69		Depart	413	28	N/A	0.69	
	EBX	Approach	290	31	N/A	0.65	WBX	Approach	370	31	N/A	0.65	
		Depart	430	31	N/A	0.65		Depart	300	31	N/A	0.65	

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
Princess Joann Rd & Cuyamaca St	NB	Approach	362	13.1	40	1.59	SB	Approach	863	11.6	40	1.77	
		Depart	362	25.6	N/A	0.72		Depart	863	23	N/A	1.32	
		Left Turn	0	--	--	--		Left Turn	0	--	--	--	
	EB	Approach	0	--	--	--	WB	Approach	84	7.4	70	2.12	
		Depart	0	--	--	--		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	0	--	--	--	
	NBX	Approach	362	28	N/A	0.69	SBX	Approach	863	28	N/A	0.69	
		Depart	446	28	N/A	0.69		Depart	863	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	84	28	N/A	0.69	
		Depart	0	--	--	--		Depart	0	--	--	--	
	Ganley Rd & Fanita Pkwy	NB	Approach	343	12.4	40	1.68	SB	Approach	657	9.2	40	2.01
			Depart	290	25.6	N/A	0.72		Depart	785	21	N/A	1.92
Left Turn			0	--	--	--	Left Turn		5	5.1	80	2.27	
EB		Approach	0	--	--	--	WB	Approach	5	7.4	70	2.12	
		Depart	63	21.5	N/A	1.77		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	128	5.1	80	2.27	
NBX		Approach	343	28	N/A	0.69	SBX	Approach	662	28	N/A	0.69	
		Depart	290	28	N/A	0.69		Depart	785	28	N/A	0.69	
EBX		Approach	0	--	--	--	WBX	Approach	133	28	N/A	0.69	
		Depart	63	28	N/A	0.69		Depart	0	--	--	--	
Woodglen Vista Dr & Cuyamaca St		NB	Approach	394	9.8	55	1.97	SB	Approach	891	5.4	55	2.25
			Depart	326	24	N/A	1.02		Depart	891	6.5	N/A	2.18
	Left Turn		3	5.1	80	2.27	Left Turn		0	--	--	--	
	EB	Approach	13	11.1	55	1.83	WB	Approach	46	11.1	55	1.83	
		Depart	1	24.4	N/A	0.90		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	0	--	--	--	
	NBX	Approach	397	28	N/A	0.69	SBX	Approach	891	28	N/A	0.69	
		Depart	372	28	N/A	0.69		Depart	1,136	28	N/A	0.69	
	EBX	Approach	13	28	N/A	0.69	WBX	Approach	279	28	N/A	0.69	
		Depart	69	28	N/A	0.69		Depart	3	28	N/A	0.69	
	El Nopa; & Cuyamaca St.	NB	Approach	409	9.8	55	1.97	SB	Approach	1,149	1.6	55	2.28
			Depart	358	23.6	N/A	1.14		Depart	1,148	6.5	N/A	2.18
Left Turn			5	5.1	80	2.27	Left Turn		0	--	--	--	
EB		Approach	8	11.8	55	1.75	WB	Approach	49	11.8	55	1.75	
		Depart	1	27.6	N/A	0.69		Depart	4	27.6	N/A	0.69	
		Left Turn	0	--	--	--		Left Turn	264	1.7	80	2.28	
NBX		Approach	414	28	N/A	0.69	SBX	Approach	1,149	28	N/A	0.69	
		Depart	403	28	N/A	0.69		Depart	1,419	28	N/A	0.69	
EBX		Approach	8	31	N/A	0.65	WBX	Approach	313	31	N/A	0.65	
		Depart	49	31	N/A	0.65		Depart	10	31	N/A	0.65	
El Nopal & Magnolia Ave		NB	Approach	574	9.8	55	1.97	SB	Approach	590	1.6	55	2.28
			Depart	356	23.6	N/A	1.14		Depart	472	6.5	N/A	2.18
	Left Turn		51	5.1	80	2.27	Left Turn		118	5.1	80	2.27	
	EB	Approach	160	11.8	55	1.75	WB	Approach	309	11.8	55	1.75	
		Depart	64	28	N/A	0.69		Depart	164	27.6	N/A	0.69	
		Left Turn	46	27.6	N/A	0.69		Left Turn	140	1.7	80	2.28	
	NBX	Approach	625	28	N/A	0.69	SBX	Approach	675	28	N/A	0.69	
		Depart	547	28	N/A	0.69		Depart	708	28	N/A	0.69	
	EBX	Approach	206	31	N/A	0.65	WBX	Approach	449	31	N/A	0.65	
		Depart	470	31	N/A	0.65		Depart	300	31	N/A	0.65	
	El Nopal & Los Ranchitos Rd	NB	Approach	250	6.4	70	2.19	SB	Approach	0	--	--	--
			Depart	0	--	--	--		Depart	210	20	N/A	2.21
Left Turn			25	5.1	80	2.27	Left Turn		0	--	--	--	
EB		Approach	407	11.6	40	1.77	WB	Approach	285	13.1	40	1.59	
		Depart	637	23	N/A	1.32		Depart	310	25.2	N/A	0.72	
		Left Turn	0	--	--	--		Left Turn	190	5.1	80	2.27	
NBX		Approach	275	28	N/A	0.69	SBX	Approach	0	--	--	--	
		Depart	0	--	--	--		Depart	210	28	N/A	0.69	
EBX		Approach	407	28	N/A	0.69	WBX	Approach	475	28	N/A	0.69	
		Depart	637	28	N/A	0.69		Depart	310	28	N/A	0.69	
Lake Canyon Rd & Fanita Pkwy		NB	Approach	373	12.4	40	1.68	SB	Approach	728	7.2	40	2.14
			Depart	324	25.2	N/A	0.72		Depart	818	17.8	N/A	1.84
	Left Turn		0	--	--	--	Left Turn		51	5.1	80	2.27	
	EB	Approach	0	--	--	--	WB	Approach	26	7.4	70	2.12	
		Depart	126	21.5	N/A	1.77		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	90	5.1	80	2.27	
	NBX	Approach	373	28	N/A	0.69	SBX	Approach	779	28	N/A	0.69	
		Depart	324	28	N/A	0.69		Depart	818	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	116	28	N/A	0.69	
		Depart	126	28	N/A	0.69		Depart	0	--	--	--	
	Beck Dr & Cuyamaca St	NB	Approach	452	9.8	55	1.97	SB	Approach	1,066	1	55	2.28
			Depart	420	23.6	N/A	1.14		Depart	1,066	6.5	N/A	2.18
Left Turn			1	5.1	80	2.27	Left Turn		3	5.1	80	2.27	
EB		Approach	11	11.8	55	1.75	WB	Approach	2	11.8	55	1.75	
		Depart	11	27.6	N/A	0.69		Depart	1	27.6	N/A	0.69	
		Left Turn	0	--	--	--		Left Turn	93	5.3	80	2.26	
NBX		Approach	453	28	N/A	0.69	SBX	Approach	1,069	28	N/A	0.69	
		Depart	422	28	N/A	0.69		Depart	1,170	28	N/A	0.69	
EBX		Approach	11	31	N/A	0.65	WBX	Approach	95	31	N/A	0.65	
		Depart	964	31	N/A	0.65		Depart	2	31	N/A	0.65	
Mast Blvd & SR-52 WB Ramps		NB	Approach	75	7.7	70	2.10	SB	Approach	0	--	--	--
			Depart	2,876	0.9	N/A	2.28		Depart	0	--	--	--

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
	EB	Left Turn	10	5.3	80	2.26	WB	Left Turn	0	--	--	--	
		Approach	504	13.9	40	1.50		Approach	3,146	2.7	40	2.28	
		Depart	579	29.1	N/A	0.67		Depart	300	29.1	N/A	0.67	
		Left Turn	20	5.3	80	2.26		Left Turn	0	--	--	--	
	NBX	Approach	85	31	N/A	0.65	SBX	Approach	0	--	--	--	
		Depart	2,876	31	N/A	0.65		Depart	0	--	--	--	
	EBX	Approach	524	31	N/A	0.65	WBX	Approach	3,146	31	N/A	0.65	
		Depart	579	31	N/A	0.65		Depart	300	31	N/A	0.65	
	Mast Blvd & West Hills Pkwy	NB	Approach	451	1.7	70	2.28	SB	Approach	110	7.7	70	2.10
			Depart	155	23.9	N/A	1.05		Depart	305	18	N/A	1.88
			Left Turn	1,200	0.1	80	2.28		Left Turn	10	5.3	80	2.26
			Approach	459	13.9	40	1.50		Approach	1,866	2.7	40	2.28
EB		Depart	795	28.6	N/A	0.68	WB	Depart	3,146	14.1	N/A	1.48	
		Left Turn	120	5.3	80	2.26		Left Turn	185	5.3	80	2.26	
NBX		Approach	1,651	31	N/A	0.65	SBX	Approach	120	31	N/A	0.65	
		Depart	155	31	N/A	0.65		Depart	305	31	N/A	0.65	
EBX		Approach	579	31	N/A	0.65	WBX	Approach	2,051	31	N/A	0.65	
		Depart	795	31	N/A	0.65		Depart	3,146	31	N/A	0.65	
Mast Blvd & Fanita Pkwy		NB	Approach	158	7.7	70	2.10	SB	Approach	751	0.2	70	2.28
			Depart	419	10.1	N/A	1.95		Depart	543	5.1	N/A	2.27
	Left Turn		70	5.3	80	2.26	Left Turn		71	5.3	80	2.26	
	EB	Approach	731	12.4	40	1.68	WB	Approach	1,588	7.2	40	2.14	
		Depart	672	25.2	N/A	0.72		Depart	2,083	13.2	N/A	1.58	
		Left Turn	228	1.7	80	2.28		Left Turn	120	5.1	80	2.27	
	NBX	Approach	228	31	N/A	0.65	SBX	Approach	822	31	N/A	0.65	
		Depart	419	31	N/A	0.65		Depart	543	31	N/A	0.65	
	EBX	Approach	959	28	N/A	0.69	WBX	Approach	1,708	28	N/A	0.69	
		Depart	672	28	N/A	0.69		Depart	2,083	28	N/A	0.69	
	Mast Blvd & Cuyamaca St	NB	Approach	472	11	55	1.84	SB	Approach	1,124	7.9	55	2.09
			Depart	282	27.1	N/A	0.70		Depart	617	20.4	N/A	2.09
Left Turn			210	5.3	80	2.26	Left Turn		384	5.3	80	2.26	
EB		Approach	558	10.3	55	1.92	WB	Approach	725	9.3	55	2.00	
		Depart	339	26.7	N/A	0.70		Depart	694	14.8	N/A	1.40	
		Left Turn	157	5.3	80	2.26		Left Turn	346	5.3	80	2.26	
NBX		Approach	682	31	N/A	0.65	SBX	Approach	1,512	31	N/A	0.65	
		Depart	470	31	N/A	0.65		Depart	1,226	31	N/A	0.65	
EBX		Approach	715	31	N/A	0.65	WBX	Approach	1,071	31	N/A	0.65	
		Depart	913	31	N/A	0.65		Depart	1,411	31	N/A	0.65	
Riverford Rd & SR-67 SB Ramps		NB	Approach	631	9.2	40	2.01	SB	Approach	1,078	2.7	40	2.28
			Depart	827	17.8	N/A	1.84		Depart	428	24.8	N/A	0.78
	Left Turn		460	0.2	80	2.28	Left Turn		0	--	--	--	
	EB	Approach	0	--	--	--	WB	Approach	196	7.7	70	2.10	
		Depart	0	--	--	--		Depart	1,130	0.9	N/A	2.28	
		Left Turn	0	--	--	--		Left Turn	20	5.3	80	2.26	
	NBX	Approach	1,091	28	N/A	0.69	SBX	Approach	1,078	28	N/A	0.69	
		Depart	827	28	N/A	0.69		Depart	428	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	216	31	N/A	0.65	
		Depart	0	--	--	--		Depart	1,130	31	N/A	0.65	
	Riverford Rd & Woodside Ave	NB	Approach	0	--	--	--	SB	Approach	50	7.4	70	2.12
			Depart	1,091	0.9	N/A	2.28		Depart	0	--	--	--
Left Turn			0	--	--	--	Left Turn		328	0.5	80	2.28	
EB		Approach	350	12.4	40	1.68	WB	Approach	701	7.2	40	2.14	
		Depart	678	23	N/A	1.32		Depart	180	25.9	N/A	0.71	
		Left Turn	520	0.1	80	2.28		Left Turn	0	--	--	--	
NBX		Approach	0	--	--	--	SBX	Approach	378	28	N/A	0.69	
		Depart	1,091	28	N/A	0.69		Depart	0	--	--	--	
EBX		Approach	870	28	N/A	0.69	WBX	Approach	701	28	N/A	0.69	
		Depart	678	28	N/A	0.69		Depart	180	28	N/A	0.69	
Mission Gorge Rd & West Hills Pkwy		NB	Approach	140	7.7	70	2.10	SB	Approach	526	0.7	70	2.28
			Depart	1,624	0.9	N/A	2.28		Depart	220	22.3	N/A	1.53
	Left Turn		40	5.3	80	2.26	Left Turn		175	5.3	80	2.26	
	EB	Approach	490	13.9	40	1.50	WB	Approach	2,325	2.7	40	2.28	
		Depart	665	28.6	N/A	0.68		Depart	1,596	23.5	N/A	1.17	
		Left Turn	329	5.3	80	2.26		Left Turn	80	5.3	80	2.26	
	NBX	Approach	180	31	N/A	0.65	SBX	Approach	701	31	N/A	0.65	
		Depart	1,624	31	N/A	0.65		Depart	220	31	N/A	0.65	
	EBX	Approach	819	31	N/A	0.65	WBX	Approach	2,405	31	N/A	0.65	
		Depart	665	31	N/A	0.65		Depart	1,596	31	N/A	0.65	
	Mission Gorge Rd & Carlton Hills Blvd	NB	Approach	50	7.7	70	2.10	SB	Approach	1,175	0.1	70	2.28
			Depart	1,228	0.9	N/A	2.28		Depart	195	23.9	N/A	1.05
Left Turn			40	5.3	80	2.26	Left Turn		436	1.7	80	2.28	
EB		Approach	879	13.9	40	1.50	WB	Approach	1,805	9.6	40	1.98	
		Depart	1,235	28.1	N/A	0.68		Depart	2,512	19.5	N/A	2.13	
		Left Turn	760	0.5	80	2.28		Left Turn	25	5.3	80	2.26	
NBX		Approach	90	31	N/A	0.65	SBX	Approach	1,611	31	N/A	0.65	
		Depart	1,228	31	N/A	0.65		Depart	195	31	N/A	0.65	
EBX		Approach	1,639	31	N/A	0.65	WBX	Approach	1,830	31	N/A	0.65	
		Depart	1,235	31	N/A	0.65		Depart	2,512	31	N/A	0.65	
Mission Gorge Rd & Town Center Pkwy		NB	Approach	185	7.7	70	2.10	SB	Approach	410	1.7	70	2.28
			Depart	560	5.1	N/A	2.27		Depart	420	10.1	N/A	1.95
	Left Turn		210	5.3	80	2.26	Left Turn		110	5.3	80	2.26	
	Approach		834	13.1	40	1.59	Approach		1,027	12.4	40	1.68	

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
	EB	Depart	789	25.6	N/A	0.72	WB	Depart	1,407	24.8	N/A	0.78	
		Left Turn	300	5.1	80	2.27		Left Turn	100	5.1	80	2.27	
	NBX	Approach	395	31	N/A	0.65	SBX	Approach	520	31	N/A	0.65	
		Depart	560	31	N/A	0.65		Depart	420	31	N/A	0.65	
	EBX	Approach	1,134	28	N/A	0.69	WBX	Approach	1,127	28	N/A	0.69	
		Depart	789	28	N/A	0.69		Depart	1,407	28	N/A	0.69	
Mission Gorge Rd & Cuyamaca St	NB	Approach	723	4.2	70	2.28	SB	Approach	786	6.6	70	2.18	
		Depart	912	10.1	N/A	1.95		Depart	1,122	18	N/A	1.88	
		Left Turn	700	0.5	80	2.28		Left Turn	151	5.3	80	2.26	
	EB	Approach	759	13.9	40	1.50	WB	Approach	738	13.9	40	1.50	
		Depart	741	29.1	N/A	0.67		Depart	1,457	28.1	N/A	0.68	
		Left Turn	179	5.3	80	2.26		Left Turn	196	5.3	80	2.26	
	NBX	Approach	1,423	31	N/A	0.65	SBX	Approach	937	31	N/A	0.65	
		Depart	912	31	N/A	0.65		Depart	1,122	31	N/A	0.65	
	EBX	Approach	938	31	N/A	0.65	WBX	Approach	934	31	N/A	0.65	
		Depart	741	31	N/A	0.65		Depart	1,457	31	N/A	0.65	
	Mission Gorge Rd & Cottonwood Ave	NB	Approach	190	7.7	70	2.10	SB	Approach	65	7.7	70	2.10
			Depart	155	23.9	N/A	1.05		Depart	270	22.3	N/A	1.53
Left Turn			120	5.3	80	2.26	Left Turn		30	5.3	80	2.26	
EB		Approach	582	13.7	40	1.52	WB	Approach	1,023	12.4	40	1.68	
		Depart	612	25.6	N/A	0.72		Depart	1,138	25.2	N/A	0.72	
		Left Turn	35	5.1	80	2.27		Left Turn	130	5.1	80	2.27	
NBX		Approach	310	31	N/A	0.65	SBX	Approach	95	31	N/A	0.65	
		Depart	155	31	N/A	0.65		Depart	270	31	N/A	0.65	
EBX		Approach	617	28	N/A	0.69	WBX	Approach	1,153	28	N/A	0.69	
		Depart	612	28	N/A	0.69		Depart	1,138	28	N/A	0.69	
Mission Gorge Rd & Magnolia Ave		NB	Approach	1,243	5.5	55	2.25	SB	Approach	1,547	3.1	55	2.28
			Depart	1,276	20.4	N/A	2.09		Depart	1,844	6.5	N/A	2.18
	Left Turn		270	5.3	80	2.26	Left Turn		341	5.3	80	2.26	
	EB	Approach	400	11.8	55	1.75	WB	Approach	931	9.3	55	2.00	
		Depart	991	25.6	N/A	0.72		Depart	1,213	20.4	N/A	2.09	
		Left Turn	162	5.3	80	2.26		Left Turn	430	1.7	80	2.28	
	NBX	Approach	1,513	31	N/A	0.65	SBX	Approach	1,888	31	N/A	0.65	
		Depart	1,276	31	N/A	0.65		Depart	1,844	31	N/A	0.65	
	EBX	Approach	562	31	N/A	0.65	WBX	Approach	1,361	31	N/A	0.65	
		Depart	991	31	N/A	0.65		Depart	1,213	31	N/A	0.65	
	Woodside Ave N & SR-67 SB Off-Ramp	NB	Approach	456	11.6	40	1.77	SB	Approach	631	12.4	40	1.68
			Depart	0	--	--	--		Depart	1,101	24.1	N/A	0.99
Left Turn			320	0.5	80	2.28	Left Turn		10	5.1	80	2.27	
EB		Approach	160	7.7	70	2.10	WB	Approach	10	7.7	70	2.10	
		Depart	476	10.1	N/A	1.95		Depart	370	18	N/A	1.88	
		Left Turn	0	--	--	--		Left Turn	360	0.5	80	2.28	
NBX		Approach	776	28	N/A	0.69	SBX	Approach	641	28	N/A	0.69	
		Depart	0	--	--	--		Depart	1,101	28	N/A	0.69	
EBX		Approach	160	31	N/A	0.65	WBX	Approach	370	31	N/A	0.65	
		Depart	476	31	N/A	0.65		Depart	370	31	N/A	0.65	
Fanita Dr & SR-52 WB Off-Ramp		NB	Approach	641	13.1	40	1.59	SB	Approach	797	13.1	40	1.59
			Depart	1,224	26	N/A	0.71		Depart	907	28.1	N/A	0.68
	Left Turn		0	--	--	--	Left Turn		0	--	--	--	
	EB	Approach	0	--	--	--	WB	Approach	583	0.7	70	2.28	
		Depart	0	--	--	--		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	110	5.3	80	2.26	
	NBX	Approach	641	31	N/A	0.65	SBX	Approach	797	31	N/A	0.65	
		Depart	1,224	31	N/A	0.65		Depart	907	31	N/A	0.65	
	EBX	Approach	0	--	--	--	WBX	Approach	693	31	N/A	0.65	
		Depart	0	--	--	--		Depart	0	--	--	--	
	Buena Vista Ave & Cuyamaca St	NB	Approach	1,551	10.6	40	1.89	SB	Approach	1,195	12.4	40	1.68
			Depart	1,451	24.8	N/A	0.78		Depart	1,390	24.8	N/A	0.78
Left Turn			55	5.1	80	2.27	Left Turn		70	5.1	80	2.27	
EB		Approach	25	7.7	70	2.10	WB	Approach	75	7.7	70	2.10	
		Depart	260	22.3	N/A	1.53		Depart	90	23.9	N/A	1.05	
		Left Turn	10	5.3	80	2.26		Left Turn	210	1.7	80	2.28	
NBX		Approach	1,606	28	N/A	0.69	SBX	Approach	1,265	28	N/A	0.69	
		Depart	1,451	28	N/A	0.69		Depart	1,390	28	N/A	0.69	
EBX		Approach	35	31	N/A	0.65	WBX	Approach	285	31	N/A	0.65	
		Depart	260	31	N/A	0.65		Depart	90	31	N/A	0.65	
Prospect Ave & Fanita Dr		NB	Approach	426	11.6	40	1.77	SB	Approach	276	13.7	40	1.52
			Depart	966	13.2	N/A	1.58		Depart	326	25.9	N/A	0.71
	Left Turn		75	5.1	80	2.27	Left Turn		220	1.7	80	2.28	
	EB	Approach	210	6.6	70	2.18	WB	Approach	590	0.7	70	2.28	
		Depart	465	10.1	N/A	1.95		Depart	355	18	N/A	1.88	
		Left Turn	215	1.7	80	2.28		Left Turn	100	5.3	80	2.26	
	NBX	Approach	501	28	N/A	0.69	SBX	Approach	496	28	N/A	0.69	
		Depart	966	28	N/A	0.69		Depart	326	28	N/A	0.69	
	EBX	Approach	425	31	N/A	0.65	WBX	Approach	690	31	N/A	0.65	
		Depart	465	31	N/A	0.65		Depart	355	31	N/A	0.65	

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
Princess Joann Rd & Cuyamaca St	NB	Approach	718	7.2	40	2.14	SB	Approach	445	13.1	40	1.59	
		Depart	718	24.1	N/A	0.99		Depart	445	25.2	N/A	0.72	
		Left Turn	0	--	--	--		Left Turn	0	--	--	--	
	EB	Approach	0	--	--	--	WB	Approach	167	7.4	70	2.12	
		Depart	0	--	--	--		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	0	--	--	--	
	NBX	Approach	718	28	N/A	0.69	SBX	Approach	445	28	N/A	0.69	
		Depart	718	28	N/A	0.69		Depart	445	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	167	28	N/A	0.69	
		Depart	0	--	--	--		Depart	0	--	--	--	
	Ganley Rd & Fanita Pkwy	NB	Approach	908	2.7	40	2.28	SB	Approach	388	12.4	40	1.68
			Depart	810	17.8	N/A	1.84		Depart	451	24.8	N/A	0.78
Left Turn			0	--	--	--	Left Turn		5	5.1	80	2.27	
EB		Approach	0	--	--	--	WB	Approach	5	7.4	70	2.12	
		Depart	108	21.5	N/A	1.77		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	63	5.1	80	2.27	
NBX		Approach	908	28	N/A	0.69	SBX	Approach	393	28	N/A	0.69	
		Depart	810	28	N/A	0.69		Depart	451	28	N/A	0.69	
EBX		Approach	0	--	--	--	WBX	Approach	68	28	N/A	0.69	
		Depart	108	28	N/A	0.69		Depart	0	--	--	--	
Woodglen Vista Dr & Cuyamaca St		NB	Approach	900	1	55	2.28	SB	Approach	461	9.8	55	1.97
			Depart	668	14	N/A	1.49		Depart	459	23	N/A	1.32
	Left Turn		7	5.1	80	2.27	Left Turn		0	--	--	--	
	EB	Approach	8	11.1	55	1.83	WB	Approach	97	11.1	55	1.83	
		Depart	7	24	N/A	1.02		Depart	2	24.4	N/A	0.90	
		Left Turn	0	--	--	--		Left Turn	108	5.1	80	2.27	
	NBX	Approach	907	28	N/A	0.69	SBX	Approach	461	28	N/A	0.69	
		Depart	763	28	N/A	0.69		Depart	574	28	N/A	0.69	
	EBX	Approach	8	28	N/A	0.69	WBX	Approach	205	28	N/A	0.69	
		Depart	239	28	N/A	0.69		Depart	11	28	N/A	0.69	
	El Nopa; & Cuyamaca St.	NB	Approach	933	1	55	2.28	SB	Approach	579	9	55	2.02
			Depart	827	6.5	N/A	2.18		Depart	579	21.7	N/A	1.71
Left Turn			13	5.1	80	2.27	Left Turn		0	--	--	--	
EB		Approach	6	11.8	55	1.75	WB	Approach	95	11.8	55	1.75	
		Depart	1	27.6	N/A	0.69		Depart	8	27.6	N/A	0.69	
		Left Turn	1	5.3	80	2.26		Left Turn	99	5.3	80	2.26	
NBX		Approach	946	28	N/A	0.69	SBX	Approach	579	28	N/A	0.69	
		Depart	915	28	N/A	0.69		Depart	683	28	N/A	0.69	
EBX		Approach	7	31	N/A	0.65	WBX	Approach	194	31	N/A	0.65	
		Depart	109	31	N/A	0.65		Depart	21	31	N/A	0.65	
El Nopal & Magnolia Ave		NB	Approach	858	1	55	2.28	SB	Approach	296	9	55	2.02
			Depart	570	6.5	N/A	2.18		Depart	287	21.7	N/A	1.71
	Left Turn		92	5.1	80	2.27	Left Turn		54	5.1	80	2.27	
	EB	Approach	129	11.8	55	1.75	WB	Approach	340	11.8	55	1.75	
		Depart	69	27.6	N/A	0.69		Depart	190	27.6	N/A	0.69	
		Left Turn	60	5.3	80	2.26		Left Turn	142	5.3	80	2.26	
	NBX	Approach	945	28	N/A	0.69	SBX	Approach	350	28	N/A	0.69	
		Depart	726	28	N/A	0.69		Depart	489	28	N/A	0.69	
	EBX	Approach	135	31	N/A	0.65	WBX	Approach	482	31	N/A	0.65	
		Depart	406	31	N/A	0.65		Depart	291	31	N/A	0.65	
	El Nopal & Los Ranchitos Rd	NB	Approach	220	6.4	70	2.19	SB	Approach	0	--	--	--
			Depart	0	--	--	--		Depart	195	21.5	N/A	1.77
Left Turn			10	5.1	80	2.27	Left Turn		0	--	--	--	
EB		Approach	358	12.4	40	1.68	WB	Approach	466	11.6	40	1.77	
		Depart	553	24.1	N/A	0.99		Depart	476	24.8	N/A	0.78	
		Left Turn	0	--	--	--		Left Turn	170	5.1	80	2.27	
NBX		Approach	230	28	N/A	0.69	SBX	Approach	0	--	--	--	
		Depart	0	--	--	--		Depart	195	28	N/A	0.69	
EBX		Approach	358	28	N/A	0.69	WBX	Approach	636	28	N/A	0.69	
		Depart	553	28	N/A	0.69		Depart	476	28	N/A	0.69	
Lake Canyon Rd & Fanita Pkwy		NB	Approach	985	2.7	40	2.28	SB	Approach	452	11.6	40	1.77
			Depart	971	13.2	N/A	1.58		Depart	505	24.1	N/A	0.99
	Left Turn		0	--	--	--	Left Turn		35	5.1	80	2.27	
	EB	Approach	0	--	--	--	WB	Approach	79	7.4	70	2.12	
		Depart	128	21.5	N/A	1.77		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	53	5.1	80	2.27	
	NBX	Approach	985	28	N/A	0.69	SBX	Approach	487	28	N/A	0.69	
		Depart	971	28	N/A	0.69		Depart	505	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	132	28	N/A	0.69	
		Depart	128	28	N/A	0.69		Depart	0	--	--	--	
	Beck Dr & Cuyamaca St	NB	Approach	1,021	1	55	2.28	SB	Approach	497	7.6	55	2.11
			Depart	958	6.5	N/A	2.18		Depart	497	18.8	N/A	2.01
Left Turn			9	5.1	80	2.27	Left Turn		2	5.1	80	2.27	
EB		Approach	6	11.8	55	1.75	WB	Approach	4	11.8	55	1.75	
		Depart	0	--	--	--		Depart	2	27.6	N/A	0.69	
		Left Turn	0	--	--	--		Left Turn	54	5.3	80	2.26	
NBX		Approach	1,030	28	N/A	0.69	SBX	Approach	499	28	N/A	0.69	
		Depart	960	28	N/A	0.69		Depart	557	28	N/A	0.69	
EBX		Approach	6	31	N/A	0.65	WBX	Approach	58	31	N/A	0.65	
		Depart	0	--	--	--		Depart	14	31	N/A	0.65	
Mast Blvd & SR-52 WB Ramps		NB	Approach	645	0.4	70	2.28	SB	Approach	0	--	--	--
			Depart	768	1.6	N/A	2.28		Depart	0	--	--	--

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
	EB	Left Turn	0	--	--	--	WB	Left Turn	0	--	--	--	
		Approach	1,756	4.9	40	2.28		Approach	1,093	2.7	40	2.28	
		Depart	2,396	14.1	N/A	1.48		Depart	355	28.6	N/A	0.68	
		Left Turn	25	5.3	80	2.26		Left Turn	0	--	--	--	
		Approach	645	31	N/A	0.65		Approach	0	--	--	--	
		Depart	768	31	N/A	0.65		Depart	0	--	--	--	
	NBX	Approach	1,781	31	N/A	0.65	WBX	Approach	1,093	31	N/A	0.65	
		Depart	2,396	31	N/A	0.65		Depart	355	31	N/A	0.65	
	Mast Blvd & West Hills Pkwy	NB	Approach	558	0.7	70	2.28	SB	Approach	120	7.7	70	2.10
			Depart	275	22.3	N/A	1.53		Depart	746	1.6	N/A	2.28
			Left Turn	280	5.3	80	2.26		Left Turn	75	5.3	80	2.26
		EB	Approach	2,246	2.7	40	2.28	WB	Approach	783	13.1	40	1.59
Depart			2,314	14.1	N/A	1.48	Depart		1,093	27.2	N/A	0.70	
Left Turn			150	5.3	80	2.26	Left Turn		216	5.3	80	2.26	
NBX		Approach	838	31	N/A	0.65	SBX	Approach	195	31	N/A	0.65	
		Depart	275	31	N/A	0.65		Depart	746	31	N/A	0.65	
EBX		Approach	2,396	31	N/A	0.65	WBX	Approach	999	31	N/A	0.65	
		Depart	2,314	31	N/A	0.65		Depart	1,093	31	N/A	0.65	
Mast Blvd & Fanita Pkwy		NB	Approach	326	4.2	70	2.28	SB	Approach	466	1.7	70	2.28
			Depart	1,035	0.9	N/A	2.28		Depart	263	22.3	N/A	1.53
	Left Turn		80	5.3	80	2.26	Left Turn		97	5.3	80	2.26	
	EB	Approach	1,193	10.6	40	1.89	WB	Approach	619	12.4	40	1.68	
		Depart	1,270	23	N/A	1.32		Depart	899	24.8	N/A	0.78	
		Left Turn	646	0.1	80	2.28		Left Turn	40	5.1	80	2.27	
	NBX	Approach	406	31	N/A	0.65	SBX	Approach	563	31	N/A	0.65	
		Depart	1,035	31	N/A	0.65		Depart	263	31	N/A	0.65	
	EBX	Approach	1,839	28	N/A	0.69	WBX	Approach	659	28	N/A	0.69	
		Depart	1,270	28	N/A	0.69		Depart	899	28	N/A	0.69	
	Mast Blvd & Cuyamaca St	NB	Approach	1,061	5.5	55	2.25	SB	Approach	557	10.3	55	1.92
			Depart	646	20.4	N/A	2.09		Depart	372	24.1	N/A	0.99
Left Turn			238	5.3	80	2.26	Left Turn		205	5.3	80	2.26	
EB		Approach	887	5.5	55	2.25	WB	Approach	348	11	55	1.84	
		Depart	633	14.8	N/A	1.40		Depart	281	25.6	N/A	0.72	
		Left Turn	329	0.1	80	2.28		Left Turn	302	5.3	80	2.26	
NBX		Approach	1,299	31	N/A	0.65	SBX	Approach	762	31	N/A	0.65	
		Depart	1,042	31	N/A	0.65		Depart	928	31	N/A	0.65	
EBX		Approach	1,216	31	N/A	0.65	WBX	Approach	650	31	N/A	0.65	
		Depart	1,253	31	N/A	0.65		Depart	704	31	N/A	0.65	
Riverford Rd & SR-67 SB Ramps		NB	Approach	867	4.8	40	2.28	SB	Approach	1,107	2.7	40	2.28
			Depart	1,013	13.2	N/A	1.58		Depart	327	25.2	N/A	0.72
	Left Turn		300	1.7	80	2.28	Left Turn		0	--	--	--	
	EB	Approach	0	--	--	--	WB	Approach	146	7.7	70	2.10	
		Depart	0	--	--	--		Depart	1,100	0.9	N/A	2.28	
		Left Turn	0	--	--	--		Left Turn	20	5.3	80	2.26	
	NBX	Approach	1,167	28	N/A	0.69	SBX	Approach	1,107	28	N/A	0.69	
		Depart	1,013	28	N/A	0.69		Depart	327	28	N/A	0.69	
	EBX	Approach	0	--	--	--	WBX	Approach	166	31	N/A	0.65	
		Depart	0	--	--	--		Depart	1,100	31	N/A	0.65	
	Riverford Rd & Woodside Ave	NB	Approach	0	--	--	--	SB	Approach	40	7.4	70	2.12
			Depart	1,107	0.9	N/A	2.28		Depart	0	--	--	--
Left Turn			0	--	--	--	Left Turn		237	1.7	80	2.28	
EB		Approach	740	7.2	40	2.14	WB	Approach	487	11.6	40	1.77	
		Depart	977	13.2	N/A	1.58		Depart	150	25.9	N/A	0.71	
		Left Turn	730	0	80	2.28		Left Turn	0	--	--	--	
NBX		Approach	0	--	--	--	SBX	Approach	277	28	N/A	0.69	
		Depart	1,107	28	N/A	0.69		Depart	0	--	--	--	
EBX		Approach	1,470	28	N/A	0.69	WBX	Approach	487	28	N/A	0.69	
		Depart	977	28	N/A	0.69		Depart	150	28	N/A	0.69	
Mission Gorge Rd & West Hills Pkwy		NB	Approach	100	7.7	70	2.10	SB	Approach	463	1.7	70	2.28
			Depart	956	0.9	N/A	2.28		Depart	230	22.3	N/A	1.53
	Left Turn		30	5.3	80	2.26	Left Turn		260	5.3	80	2.26	
	EB	Approach	965	12.3	40	1.69	WB	Approach	765	13.1	40	1.59	
		Depart	1,200	27.2	N/A	0.70		Depart	918	28.1	N/A	0.68	
		Left Turn	636	0.5	80	2.28		Left Turn	85	5.3	80	2.26	
	NBX	Approach	130	31	N/A	0.65	SBX	Approach	723	31	N/A	0.65	
		Depart	956	31	N/A	0.65		Depart	230	31	N/A	0.65	
	EBX	Approach	1,601	31	N/A	0.65	WBX	Approach	850	31	N/A	0.65	
		Depart	1,200	31	N/A	0.65		Depart	918	31	N/A	0.65	
	Mission Gorge Rd & Carlton Hills Blvd	NB	Approach	115	7.7	70	2.10	SB	Approach	790	0.2	70	2.28
			Depart	1,698	0.9	N/A	2.28		Depart	440	10.1	N/A	1.95
Left Turn			60	5.3	80	2.26	Left Turn		442	1.7	80	2.28	
EB		Approach	1,516	11.1	40	1.83	WB	Approach	1,666	11.1	40	1.83	
		Depart	1,833	26	N/A	0.71		Depart	1,738	27.2	N/A	0.70	
		Left Turn	970	0.2	80	2.28		Left Turn	150	5.3	80	2.26	
NBX		Approach	175	31	N/A	0.65	SBX	Approach	1,232	31	N/A	0.65	
		Depart	1,698	31	N/A	0.65		Depart	440	31	N/A	0.65	
EBX		Approach	2,486	31	N/A	0.65	WBX	Approach	1,816	31	N/A	0.65	
		Depart	1,833	31	N/A	0.65		Depart	1,738	31	N/A	0.65	
Mission Gorge Rd & Town Center Pkwy		NB	Approach	490	1.7	70	2.28	SB	Approach	840	0.1	70	2.28
			Depart	1,285	0.9	N/A	2.28		Depart	605	3.2	N/A	2.28
	Left Turn		390	5.3	80	2.26	Left Turn		340	5.3	80	2.26	
	Approach		1,396	11.6	40	1.77	Approach		1,088	12.4	40	1.68	

INTERSECTING STREETS			VPH	MPH	%RT	EF			VPH	MPH	%RT	EF	
	EB	Depart	1,716	24.1	N/A	0.99	WB	Depart	1,753	24.1	N/A	0.99	
		Left Turn	620	0.5	80	2.28		Left Turn	195	5.1	80	2.27	
	NBX	Approach	880	31	N/A	0.65	SBX	Approach	1,180	31	N/A	0.65	
		Depart	1,285	31	N/A	0.65		Depart	605	31	N/A	0.65	
	EBX	Approach	2,016	28	N/A	0.69	WBX	Approach	1,283	28	N/A	0.69	
		Depart	1,716	28	N/A	0.69		Depart	1,753	28	N/A	0.69	
Mission Gorge Rd & Cuyamaca St	NB	Approach	1,442	0.2	70	2.28	SB	Approach	1,138	4.2	70	2.28	
		Depart	1,723	1.2	N/A	2.28		Depart	1,543	5.1	N/A	2.27	
		Left Turn	735	0.5	80	2.28		Left Turn	348	5.3	80	2.26	
	EB	Approach	1,085	13.1	40	1.59	WB	Approach	762	13.9	40	1.50	
		Depart	1,440	28.1	N/A	0.68		Depart	1,513	27.2	N/A	0.70	
		Left Turn	416	1.7	80	2.28		Left Turn	293	5.3	80	2.26	
	NBX	Approach	2,177	31	N/A	0.65	SBX	Approach	1,486	31	N/A	0.65	
		Depart	1,723	31	N/A	0.65		Depart	1,543	31	N/A	0.65	
	EBX	Approach	1,501	31	N/A	0.65	WBX	Approach	1,055	31	N/A	0.65	
		Depart	1,440	31	N/A	0.65		Depart	1,513	31	N/A	0.65	
	Mission Gorge Rd & Cottonwood Ave	NB	Approach	290	6.6	70	2.18	SB	Approach	50	7.7	70	2.10
			Depart	260	22.3	N/A	1.53		Depart	350	18	N/A	1.88
Left Turn			155	5.3	80	2.26	Left Turn		20	5.3	80	2.26	
EB		Approach	1,453	11.6	40	1.77	WB	Approach	987	12.4	40	1.68	
		Depart	1,498	24.8	N/A	0.78		Depart	1,087	25.2	N/A	0.72	
		Left Turn	85	5.1	80	2.27		Left Turn	155	5.1	80	2.27	
NBX		Approach	445	31	N/A	0.65	SBX	Approach	70	31	N/A	0.65	
		Depart	260	31	N/A	0.65		Depart	350	31	N/A	0.65	
EBX		Approach	1,538	28	N/A	0.69	WBX	Approach	1,142	28	N/A	0.69	
		Depart	1,498	28	N/A	0.69		Depart	1,087	28	N/A	0.69	
Mission Gorge Rd & Magnolia Ave		NB	Approach	1,645	1.6	55	2.28	SB	Approach	902	9.3	55	2.00
			Depart	1,920	6.5	N/A	2.18		Depart	1,700	9.3	N/A	2.00
	Left Turn		310	5.3	80	2.26	Left Turn		288	5.3	80	2.26	
	EB	Approach	1,135	7.9	55	2.09	WB	Approach	982	9.3	55	2.00	
		Depart	1,483	14.8	N/A	1.40		Depart	1,177	24.1	N/A	0.99	
		Left Turn	423	1.7	80	2.28		Left Turn	595	1.7	80	2.28	
	NBX	Approach	1,955	31	N/A	0.65	SBX	Approach	1,190	31	N/A	0.65	
		Depart	1,920	31	N/A	0.65		Depart	1,700	31	N/A	0.65	
	EBX	Approach	1,558	31	N/A	0.65	WBX	Approach	1,577	31	N/A	0.65	
		Depart	1,483	31	N/A	0.65		Depart	1,177	31	N/A	0.65	
	Woodside Ave N & SR-67 SB Off-Ramp	NB	Approach	963	2.7	40	2.28	SB	Approach	567	13.1	40	1.59
			Depart	0	--	--	--		Depart	1,047	24.1	N/A	0.99
Left Turn			190	5.1	80	2.27	Left Turn		10	5.1	80	2.27	
EB		Approach	295	6.6	70	2.18	WB	Approach	5	7.7	70	2.10	
		Depart	1,008	0.9	N/A	2.28		Depart	205	22.3	N/A	1.53	
		Left Turn	0	--	--	--		Left Turn	230	1.7	80	2.28	
NBX		Approach	1,153	28	N/A	0.69	SBX	Approach	577	28	N/A	0.69	
		Depart	0	--	--	--		Depart	1,047	28	N/A	0.69	
EBX		Approach	295	31	N/A	0.65	WBX	Approach	235	31	N/A	0.65	
		Depart	1,008	31	N/A	0.65		Depart	205	31	N/A	0.65	
Fanita Dr & SR-52 WB Off-Ramp		NB	Approach	367	14.6	40	1.42	SB	Approach	820	12.3	40	1.69
			Depart	790	28.6	N/A	0.68		Depart	990	28.1	N/A	0.68
	Left Turn		0	--	--	--	Left Turn		0	--	--	--	
	EB	Approach	0	--	--	--	WB	Approach	423	1.7	70	2.28	
		Depart	0	--	--	--		Depart	0	--	--	--	
		Left Turn	0	--	--	--		Left Turn	170	5.3	80	2.26	
	NBX	Approach	367	31	N/A	0.65	SBX	Approach	820	31	N/A	0.65	
		Depart	790	31	N/A	0.65		Depart	990	31	N/A	0.65	
	EBX	Approach	0	--	--	--	WBX	Approach	593	31	N/A	0.65	
		Depart	0	--	--	--		Depart	0	--	--	--	
	Buena Vista Ave & Cuyamaca St	NB	Approach	2,103	7.2	40	2.14	SB	Approach	1,706	10.6	40	1.89
			Depart	1,983	23	N/A	1.32		Depart	2,086	23	N/A	1.32
Left Turn			30	5.1	80	2.27	Left Turn		80	5.1	80	2.27	
EB		Approach	70	7.7	70	2.10	WB	Approach	105	7.7	70	2.10	
		Depart	350	18	N/A	1.88		Depart	55	23.9	N/A	1.05	
		Left Turn	30	5.3	80	2.26		Left Turn	350	0.5	80	2.28	
NBX		Approach	2,133	28	N/A	0.69	SBX	Approach	1,786	28	N/A	0.69	
		Depart	1,983	28	N/A	0.69		Depart	2,086	28	N/A	0.69	
EBX		Approach	100	31	N/A	0.65	WBX	Approach	455	31	N/A	0.65	
		Depart	350	31	N/A	0.65		Depart	55	31	N/A	0.65	
Prospect Ave & Fanita Dr		NB	Approach	317	12.4	40	1.68	SB	Approach	393	13.7	40	1.52
			Depart	507	24.1	N/A	0.99		Depart	413	25.6	N/A	0.72
	Left Turn		60	5.1	80	2.27	Left Turn		220	1.7	80	2.28	
	EB	Approach	160	7.7	70	2.10	WB	Approach	260	6.6	70	2.18	
		Depart	430	10.1	N/A	1.95		Depart	300	22.3	N/A	1.53	
		Left Turn	130	5.3	80	2.26		Left Turn	110	5.3	80	2.26	
	NBX	Approach	377	28	N/A	0.69	SBX	Approach	613	28	N/A	0.69	
		Depart	507	28	N/A	0.69		Depart	413	28	N/A	0.69	
	EBX	Approach	290	31	N/A	0.65	WBX	Approach	370	31	N/A	0.65	
		Depart	430	31	N/A	0.65		Depart	300	31	N/A	0.65	

**MEMORANDUM TO THE ENERGY ANALYSIS
REPORT- REMOVAL OF MAGNOLIA EXTENSION**

**FANITA RANCH PROJECT
CITY OF SANTEE
SAN DIEGO COUNTY, CALIFORNIA**

Prepared for:

City of Santee
10601 Magnolia Avenue
Santee, California 92071

Prepared by:

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Project No. HRS1601



September 2020

MEMORANDUM

At the applicant's request, the extension of Magnolia Avenue has been removed as a project feature. The following analysis reviews the conclusions of the Energy Analysis Report considering this project change. The following analysis is based on the revised traffic analysis prepared by Linscott Law & Greenspan (2020) to address the removal of Magnolia Avenue extension as a project feature. Removal of the extension as a project feature results in the shift of traffic from Magnolia Avenue to Cuyamaca Street in the near-term. The extension of Magnolia Avenue is a Mobility Element road identified in the City of Santee General Plan. The long-term (Year 2035) scenario assumes buildout of the City's General Plan, including Mobility Element roadways. Therefore, the removal of the Magnolia Avenue extension as a project feature does not result in any changes to the long-term (Year 2035) analyses.

This memorandum to the Energy Analysis Report for the Fanita Ranch Project lists the clarifications required to reflect removal of the Magnolia Avenue extension as a project feature. It should be noted that the revisions and clarifications listed in this document do not change any conclusions provided in the EIR.

The Fanita Ranch Project was evaluated based upon the assumption that Fanita Parkway, Cuyamaca Street, and Magnolia Avenue would all provide access to the Fanita Ranch Project site. An updated traffic analysis (LLG September 2020) has been prepared to revise the interim period scenario (2020 through 2034) to reflect removal of the Magnolia Avenue extension connection between Cuyamaca Street and existing Magnolia Avenue. Without the connection of Magnolia Avenue extended to Cuyamaca Street, it is expected that Project trips would instead utilize streets such as Princess Joann Road, Woodglen Vista Drive, El Nopal and Mast Boulevard. This change would result in slightly different traffic flows through the study intersections. However, while there would be a small change in traffic flow, because of the grid pattern of alternate routes used to access the site vehicle miles traveled (VMT) would remain almost the same. Therefore, there would be no change in fossil fuel use from operation compared to the EIR. Additionally, the removal of the Magnolia Avenue extension does not result in any change to the proposed land uses or project operation. Energy demand during operation and implementation of energy-reducing project features would be the same as the previous analysis. No increase in energy demand during construction would occur because construction would be slightly reduced with elimination of construction of the extension.

Additionally, the City of Santee General Plan Mobility Element includes the Magnolia Avenue extension. The long-term (Year 2035) analysis assumes General Plan buildout. Therefore, it is assumed that by Year 2035, Magnolia Avenue would connect to Cuyamaca Street and long-term operational conditions would be the same as those analyzed in the Energy Analysis Report. Therefore, impacts related to energy and fuel use remain less than significant. No revisions to the Energy Analysis report are required.

**MEMORANDUM TO THE GREENHOUSE GAS
ANALYSIS REPORT -REMOVAL OF MAGNOLIA
EXTENSION**

**FANITA RANCH PROJECT
CITY OF SANTEE
SAN DIEGO COUNTY, CALIFORNIA**

Prepared for:

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10601 Magnolia Avenue
Santee, California 92071

Prepared by:

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(951) 781-9310

Project No. HRS1601

LSA

September 2020





MEMORANDUM

At the applicant's request, the extension of Magnolia Avenue has been removed as a project feature. The following analysis reviews the Greenhouse Gas Analysis, considering this project change. The following analysis is based on the revised traffic analysis prepared by Linscott Law & Greenspan (2020) to address the removal of Magnolia Avenue extension as a project feature. Removal of the extension as a project feature results in the shift of traffic from Magnolia Avenue to Cuyamaca Street in the near-term. The extension of Magnolia Avenue is a Mobility Element road identified in the City of Santee General Plan. The long-term (Year 2035) scenario assumes buildout of the City's General Plan, including Mobility Element roadways. Therefore, the removal of the Magnolia Avenue extension as a project feature does not result in any changes to the long-term (Year 2035) analyses.

This memorandum to the Greenhouse Gas Analysis Report for the Fanita Ranch Project lists the clarifications required to reflect removal of the Magnolia Avenue extension as a project feature. It should be noted that the revisions and clarifications listed in this document do not change any conclusions provided in the EIR.

The Fanita Ranch Project was evaluated based upon the assumption that Fanita Parkway, Cuyamaca Street, and Magnolia Avenue would all provide access to the Fanita Ranch Project site. An updated traffic analysis (LLG September 2020) has been prepared to revise the interim period scenario (2020 through 2034) to reflect removal of the Magnolia Avenue extension connection between Cuyamaca Street and existing Magnolia Avenue. Without the connection of Magnolia Avenue extended to Cuyamaca Street, it is expected that Project trips would instead utilize streets such as Princess Joann Road, Woodglen Vista Drive, El Nopal and Mast Boulevard. The traffic impact analysis also analyzed a proposed condition that would prohibit southbound left turns from Cuyamaca Street onto Princess Joann Road, Woodglen Vista Drive, and El Nopal. These changes would result in slightly different traffic flows through the study intersections due to vehicles no longer using Magnolia Avenue directly from Cuyamaca Street. However, while there would be a small change in traffic flow, because of the grid pattern of alternate routes used to access the site vehicle miles traveled (VMT) would be de minimis. This is because while some routes would be slightly longer, others would be slightly shorter and total VMT associated with the proposed project would be de minimis. Therefore, greenhouse gas (GHG) emissions from fuel use would be the same as the EIR. Additionally, there would be no change to the proposed land uses or operation of the project, including demand for energy, water, and solid waste disposal. Elimination of the Magnolia Avenue extension and the potential restriction on left turns described above would not affect implementation of GHG-reducing features. No change in project GHG emissions would occur compared to the EIR.

Additionally, the City of Santee General Plan Mobility Element includes the Magnolia Avenue extension. The long-term (Year 2035) analysis assumes General Plan buildout. Therefore, it is assumed that by Year 2035, Magnolia Avenue would connect to the proposed project site and long-term operational conditions would be exactly the same as those analyzed in the Greenhouse Gas Analysis Report. Therefore, impacts related to GHG emissions and consistency with applicable plans



remain the same as identified in the Greenhouse Gas Analysis Report and additional analysis is not required.

References

Linscott Law and Greenspan, Engineers. 2020. Fanita Ranch – No Magnolia Avenue Extension Analysis, Santee, California. September 4.



MEMORANDUM

DATE: September 16, 2020
To: Diane Sandman
FROM: Michael Hendrix
SUBJECT: Supplemental Analysis of Emissions and Fuel Use without the Extension of Magnolia Avenue

The Fanita Ranch Project was evaluated based upon the assumption that Fanita Parkway, Cuyamaca Street, and Magnolia Avenue would all provide access to the Fanita Ranch Project site. An updated traffic analysis (LLG 2020A) has been prepared to revise the interim period scenario (2020 through 2034) to reflect removal of the Magnolia Avenue extension connection between Cuyamaca Street and existing Magnolia Avenue. Without the connection of Magnolia Avenue extended to Cuyamaca Street, it is expected that Project trips would instead utilize streets such as Princess Joann Road, Woodglen Vista Drive, El Nopal and Mast Boulevard. The traffic impact analysis also analyzed a proposed condition that would prohibit southbound left turns from Cuyamaca Street onto Princess Joann Road, Woodglen Vista Drive, and El Nopal. These changes would result in slightly different traffic flows through the study intersections. However, while there would be a small change in traffic flow and vehicle miles traveled (VMT), because of the grid pattern of alternate routes used to access, VMT would only increase by approximately 0.67 percent¹. This is because while some routes would be slightly longer, others would be slightly shorter and total VMT associated with the proposed project would increase slightly. Additionally, there would be no change to the proposed land uses or operation of the project, including demand for energy, water, and solid waste disposal. Elimination of the Magnolia Avenue extension and the potential restriction on left turns described above would not affect implementation of GHG-reducing project features or mitigation measures.

Additionally, the City of Santee General Plan Mobility Element includes the Magnolia Avenue extension. The long-term (Year 2035) analysis assumes General Plan buildout. Therefore, it is assumed that by Year 2035, Magnolia Avenue would connect to the proposed project site and long-term operational conditions would be exactly the same as those analyzed in the Greenhouse Gas Analysis Report, Air Quality Report, and Energy Analysis Report.

The following revisions in analyses focus on the slight change in VMT generated during the interim period.

¹ Linscott Law and Greenspan, Engineers. LLG 2020B. Fanita Ranch – Supplemental VMT Analysis, Santee, California. September 16.

REVISIONS TO ANALYSES

Greenhouse Gas Emissions

To assess this interim condition, a revised GHG analysis was completed to determine if these changes would result in a change in the significance findings of the EIR. The changes in VMT are highest in the scenario that limits southbound left-turns from Cuyamaca Street onto Princess Joann Road, Woodglen Vista Drive, and El Nopal. The results of this analysis are provided in Table 1 for the Preferred Land Use Plan with school and Table 2 for the Land Use Plan without school. The numerical changes in both tables are shown in red.

Table 1: Mitigated Operational Greenhouse Gas Emissions– Preferred Land Use Plan With School, Interim Period (2020-2034) Without Magnolia Avenue Extension and Restricted Southbound Left-Turns

Category	Metric Tons per Year						Percent of Total
	Bio-CO ₂	NBio-CO ₂	Total CO ₂	CH ₄	N ₂ O	CO ₂ e	
Area	—	25.05	25.05	0.02	—	25.5	0.1
Energy	—	1,253.21	1,253.21	0.07	0.03	1,263.56	6.2
Mobile	—	16,922.00	16,922.00	1.07	—	16,948.76	83.2
Waste	85.04	—	85.04	5.03	—	210.68	1.0
Water	132.06	99.48	231.55	13.58	0.32	667.44	3.3
Construction (Amortized 30 yrs)	—	1,242.85	1,242.85	0.21	—	1,248.07	6.1
Total	217.10	19,542.59	19,759.70	19.98	0.35	20,364.01	100.0
100 Electric Vehicles(MM GHG-6)						-400.00	
PV Generation*						-6,714.00	
Net Sequestration						-530.70	
Net Emissions						12,719.31	
Project's Service Population						8,424	
MT CO₂e/SP						1.51	
Per Capita GHG Significance Threshold						1.77	
Will the Project Generate Significant Levels of GHG Emissions?						No	

Source: Compiled by LSA (September 2020).

CH₄ = methane

Bio-CO₂ = biological carbon dioxide

CO₂ = carbon dioxide

CO₂e = carbon dioxide equivalent

N₂O = nitrous oxide

NBio-CO₂ = non-biological carbon dioxide

Table 2: Mitigated Operational Greenhouse Gas Emissions – Land Use Plan Without School, Interim Period (2020-2034) Without Magnolia Avenue Extension and Restricted Southbound Left-Turns

Category	Metric Tons per Year						Percent of Total
	Bio-CO ₂	NBio-CO ₂	Total CO ₂	CH ₄	N ₂ O	CO ₂ e	
Area	—	25.54	25.54	0.02	—	26.00	0.12
Energy Consumption	—	1,229.89	1,229.89	0.07	0.03	1,240.11	5.87
Mobile	—	17,609.31	17,727.31	1.12	—	17,755.32	83.97
Waste	82.73	—	82.73	4.89	—	204.97	0.98
Water	132.43	99.21	231.64	13.61	0.32	668.72	3.16
Construction (Amortized 30 yrs)	—	1,242.85	1,242.85	0.21	—	1,248.07	5.90
Total	215.16	20,206.80	20,539.96	19.92	0.35	21,143.19	100.0
100 Electric Vehicles						-400.00	
PV Solar Generation						-6,661.00	
Net Sequestration						-530.70	
Net Emissions						13,551.49	
Project's Service Population						8,345	
MT CO₂e/SP						1.62	
Per Capita GHG Significance Threshold						1.77	
Will the Project Generate Significant Levels of GHG Emissions?						No	

Source: Compiled by LSA (September 2020).

CH₄ = methane

Bio-CO₂ = biological carbon dioxide

CO₂ = carbon dioxide

CO₂e = carbon dioxide equivalent

N₂O = nitrous oxide

NBio-CO₂ = non-biological carbon dioxide

As shown in Tables 1 and 2, while the interim period (2020-2034) results in slightly higher on-road emissions, the numerical increase was small and did not exceed the thresholds. Therefore, impacts related to GHG emissions and consistency with applicable plans remain the same as identified in the Greenhouse Gas Analysis Report and EIR. Additional analysis is not required.

Long-Term Operational Air Quality

The elimination of the Magnolia Avenue extension does not result in any change in proposed land uses and therefore does not result in any change in operation or trip generation other than movements within intersections and a slight increase in VMT. An analysis of CO Hotspots was previously conducted and determined that the changes would not result in significant impacts. Criteria pollutant emissions from short-term construction would be reduced compared to the previous analysis, but elimination of the Magnolia Avenue extension does not affect required construction in the remainder of the project area. The revised traffic analysis notes that the change in trip distribution as a result of elimination of the Magnolia Avenue extension results in approximately a 0.67 percent increase in project VMT (LLG 2020).

To assess this interim condition, a revised long-term criteria pollutant emissions analysis was completed to determine if these changes would result in a change in the significance findings of the EIR. The changes in VMT are highest in the scenario that limits southbound left-turns from

Cuyamaca Street onto Princess Joann Road, Woodglen Vista Drive, and El Nopal. The results of this analysis are provided in Table 3 for the Preferred Land Use Plan with school and Table 4 for the Land Use Plan without school. The numerical changes in both tables are shown in red.

Table 3: Mitigated Regional Operational Emissions – Preferred Land Use Plan With School, Interim Period (2020-2034) Without Magnolia Avenue Extension, Restricted Southbound Left-Turns

Source	Pollutant Emissions, lbs/day					
	VOC	NOx	CO	SOx	PM ₁₀	PM _{2.5}
Area ¹	120.49	2.23	184.34	<0.01	1.01	1.01
Energy ²	0.48	4.36	3.66	0.03	0.33	0.33
Mobile ³	15.36	58.82	235.76	1.11	135.97	36.73
Total Daily Project Emissions	136.33	65.41	423.76	1.15	136.40	38.07
Total Annual Project Emissions (tons)	24.38	11.92	57.17	0.20	24.10	6.60
Daily County Thresholds	75	250	550	250	100	55
Annual County Thresholds (tons)	13.7	40	100	40	15	10
Significant?	Yes	No	No	No	Yes	No

Source: Compiled by LSA (September 2020).

Note: Numbers in table may not appear to add up correctly due to rounding of all numbers.

¹ Area source includes architectural coatings, consume products, and landscaping equipment.

² Energy source includes natural gas consumption.

³ Mobile source includes project-generated vehicle trips.

CO = carbon monoxide

lbs/day = pounds per day

NOx = nitrogen oxides

PM_{2.5} = particulate matter less than or equal to 2.5 microns in size

PM₁₀ = particulate matter less than or equal to 10 microns in size

VOC = volatile organic compound

County = County of San Diego

SOx = sulfur oxides

Table 4: Mitigated Regional Operational Emissions – Land Use Plan Without School Interim Period (2020-2035) Without Magnolia Avenue Extension, Restricted Southbound Left-Turns

Source	Pollutant Emissions, lbs/day					
	VOC	NOx	CO	SOx	PM ₁₀	PM _{2.5}
Area ¹	121.08	2.27	187.97	<0.01	1.03	1.03
Energy ²	0.47	4.24	3.56	0.03	0.32	0.32
Mobile ³	15.92	60.59	244.37	1.16	141.16	38.13
Total Project Emissions	137.47	67.01	435.90	1.19	142.51	39.48
Annual Total Project Emissions (tons)	24.59	12.37	59.30	0.21	25.08	6.90
Daily County Thresholds	75	250	550	250	100	55
Annual County Thresholds (tons)	13.7	40	100	40	15	10
Significant?	Yes	No	No	No	Yes	No

Source: Compiled by LSA (September 2020).

Note: Numbers in table may not appear to add up correctly due to rounding of all numbers.

¹ Area source includes architectural coatings, consume products, and landscaping equipment.

² Energy source includes natural gas consumption.

³ Mobile source includes project-generated vehicle trips.

CO = carbon monoxide

lbs/day = pounds per day

NOx = nitrogen oxides

PM_{2.5} = particulate matter less than or equal to 2.5 microns in size

PM₁₀ = particulate matter less than or equal to 10 microns in size

VOC = volatile organic compound

County = County of San Diego

SOx = sulfur oxides

As shown in Tables 3 and 4, while the interim period (2020-2034) results in slightly higher on-road emissions, the numerical increase was small and did not change the significance findings in the tables. Therefore, impacts related to air quality and consistency with applicable plans remain the same as identified in the Air Quality Analysis Report and EIR. Additional analysis is not required.

Energy and Fuel Use

This change eliminating the extension of Magnolia Avenue to the proposed project site would result in slightly different traffic flows through the study intersections. However, while there would be a small change in traffic flow, because of the grid pattern of alternate routes used to access the site, VMT would increase by approximately 0.67 percent. An analysis focused on the resulting change in fossil fuel use from operation of the proposed project during the interim period was conducted and shown in Table 5. The numerical changes in the table are shown in red.

Table 5: Annual Petroleum Demand of the Proposed Project, Interim Period (2020-2034) Without Magnolia Avenue Extension, Restricted Southbound Left-Turns

Scenario		With School	Without School
Interim Period Project Buildout Without Mitigation Measures	Gasoline (gallons) ¹	2,266,359	2,320,935
	Diesel (gallons) ²	430,465	440,831
	Energy (MMBtu)	332,210	340,210

	Percent of State 2018 Consumption	0.01	0.01
Interim Period Project Buildout With Mitigation Measures (MM AIR-5, AIR-6, and AIR-7, AIR-10)	Gasoline (gallons) ¹	1,683,366	1,763,883
	Diesel (gallons) ²	319,733	335,026
	Energy (MMBtu)	246,778	258,556
	Percent of State 2018 Consumption	0.01	0.01
	Energy Reduction from Buildout Without Mitigation Measures (MMBtu)	85,432	81,654

Source: EMFAC2017. Compiled by LSA (September 2020).

Note: ¹ One gallon of gasoline is equivalent to 120,476 Btu.

² One gallon of diesel is equivalent to 137,452 Btu.

MMBtu = million British Thermal Units

The proposed project is anticipated to generate a service population of approximately 8,424 people under the Preferred Land Use Plan with School, or 8,345 people under the Land Use Plan without School, which is equivalent to approximately 0.02 percent of the State’s total population. Therefore, as shown in Table 5, the project’s petroleum consumption per person during the interim period (2020-2034) would be less than the State per capita average, and would not result in significant environmental impact due to wasteful, inefficient energy use. Note that while the numeric values changed in Table 5, the significance findings for the interim period remains the same as those shown in the Energy Analysis Report and EIR. No additional analysis is required.

References

Linscott Law and Greenspan, Engineers. LLG 2020A. Fanita Ranch – No Magnolia Avenue Extension Analysis, Santee, California. September 4.

_____. LLG 2020B. Fanita Ranch – Supplemental VMT Analysis, Santee, California. September 16.

**Attachment 4. Fanita Ranch – No Magnolia Avenue Extension
Analysis Traffic Memorandum and
Fanita Ranch Supplemental VMT Memorandum**

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September 9, 2020

Marni Borg
City of Santee
10601 Magnolia Avenue
Santee, CA 92071

LLG Reference: 3-15-2462

Subject: **Fanita Ranch – No Magnolia Avenue Extension Analysis**
City of Santee, CA

Dear Ms. Borg:

Linscott, Law & Greenspan, Engineers (LLG) has prepared the following traffic letter report to evaluate the potential transportation impacts on the local circulation system for the Fanita Ranch Project (Project) without the extension of Magnolia Avenue between future Cuyamaca Street and its existing terminus just north of Princess Joann Road.

This letter report includes the following:

- Introduction
- Summary of Findings
- Network Conditions Description
- Traffic Volumes
- Capacity Analyses
 - Full Access to Cuyamaca Street
 - Prohibited Southbound Left-Turns from Cuyamaca Street
- Vehicle Miles Traveled
- Summary & Conclusions

The analysis in this letter report is based on the preferred Project, referred to as “With School.” The “Without School” alternative generates 0.66% more traffic (26,272 vs. 26,445 ADT). Insofar as the trip generation is nearly identical, the results of this analysis apply to both the “With” and “Without School” alternatives.

The analysis herein focuses on the Existing, Existing + Project, Existing + Cumulative Projects, and Existing + Cumulative Projects + Project scenarios. A long-term analysis is not necessary since Magnolia Avenue will remain on the City’s Mobility Element to be constructed at a later date.

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INTRODUCTION

The Fanita Ranch Transportation Study contained in the Environmental Impact Report (EIR) assumes the connections of Fanita Parkway, Cuyamaca Street, and Magnolia Avenue would all provide access to the Fanita Ranch Project site. An analysis was conducted to determine the changes to the Level of Service results without the connection of Magnolia Avenue to/from the Project site. Without the connection of Magnolia Avenue extended to Cuyamaca Street, it is expected that Project trips would instead utilize streets such as Princess Joann Road, Woodglen Vista Drive, El Nopal and Mast Boulevard. An assessment of the potential for any changes in Vehicle Miles Traveled (VMT) without the connection of Magnolia Avenue was also conducted.

SUMMARY OF FINDINGS

Without the construction of the Magnolia Avenue Extension, one roadway segment would experience a direct impact instead of a cumulative impact (Cuyamaca Street between Woodglen Vista Drive and El Nopal). The mitigation recommended in the EIR of improving Cuyamaca Street between Woodglen Vista Drive and El Nopal to four lanes would fully mitigate this impact. Therefore, no new impacts would occur by deleting the extension of Magnolia Avenue and the previously recommended mitigation would be unchanged.

The VMT analysis and conclusion would not change as a result of the deletion of the Magnolia Avenue extension. For the reasons explained herein, the grid-like pattern of the north/south corridors of Cuyamaca Street and Magnolia Street intersecting with the east/west roadways of Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard would result in similar distances traveled between the Project site and destinations to the south.

NETWORK CONDITIONS

The Project proposes to construct Cuyamaca Street from its current terminus at Chaparral Drive to connect to the Project site as a Project Design Feature. Based on the analysis presented in the EIR Traffic Study, Cuyamaca Street from the Project Site to Chaparral Drive will be constructed as a two-lane divided roadway (Two-Lane Parkway). Proposed improvements to Cuyamaca Street further south, from Chaparral Drive to Woodglen Vista Drive, will increase the capacity from two to four lanes as addressed in the EIR Traffic Study. This segment will transition from two to four lanes as a Four-Lane Major Arterial. The respective LOS E capacities for Two-Lane Parkway (15,000 ADT) and Four-Lane Major Arterial (40,000 ADT) segments were used in the “Plus Project” analyses provided in this letter report.

In the forthcoming analysis, Magnolia Avenue was assumed to not be constructed from the future Cuyamaca Street extension to its existing terminus just north of Princess Joann Road. Without this connection, two network scenarios were analyzed. The first would allow full access movements from Cuyamaca Street to Princess Joann

Road, Woodglen Vista Drive, and El Nopal connecting to Magnolia Avenue. The second condition would prohibit southbound left-turn movements from Cuyamaca Street to these local streets.

The analyses provided in this report evaluate the operations specific to the Cuyamaca Street and Magnolia Avenue corridors, where a change in Project trips would occur. The locations affected are listed on the following page:

<i>Intersections</i>	<i>Street Segments</i>
1. Princess Joann Road / Cuyamaca Street <i>(future)</i>	Princess Joann Road
2. Princess Joann Road / Magnolia Avenue	1. Cuyamaca Street to Magnolia Avenue
4. Woodglen Vista Drive / Cuyamaca Street	Woodglen Vista Drive
5. Woodglen Vista Drive / Magnolia Avenue	2. Cuyamaca Street to Magnolia Avenue
6. El Nopal / Cuyamaca Street	El Nopal
7. El Nopal / Magnolia Avenue	3. Cuyamaca Street to Magnolia Avenue
12. Beck Drive / Cuyamaca Street	Mast Boulevard
13. 2 nd Street / Magnolia Avenue	12. Cuyamaca Street to Magnolia Avenue
14. Carefree Drive / Magnolia Avenue	Cuyamaca Street
25. Mast Boulevard / Cuyamaca Street	42. Project Site to Magnolia Avenue <i>(future)</i>
26. Mast Boulevard / Park Center Drive	43. Magnolia Avenue to Princess Joann Road <i>(future)</i>
27. Mast Boulevard / Magnolia Avenue	44. Princess Joann Road to Chaparral Drive <i>(future)</i>
	45. Chaparral Drive to Woodglen Vista Drive
	46. Woodglen Vista Drive to El Nopal
	47. El Nopal to Mast Boulevard
	Magnolia Avenue
	54. Cuyamaca Street to Princess Joann Road <i>(future)</i>
	55. Princess Joann Road to Woodglen Vista Drive
	56. Woodglen Vista Drive to El Nopal
	57. El Nopal to Mast Boulevard

TRAFFIC VOLUMES

Without the connection of Magnolia Avenue, Project trips on Cuyamaca Street destined to Magnolia Avenue would divert to Magnolia Avenue via Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard which could result in more trips on these streets. The Existing + Project and Existing + Cumulative Projects

+ Project conditions were analyzed for each alternative, without the connection of Magnolia Avenue.

Without the Magnolia Avenue extension, traffic will utilize Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard to reach destinations southeast of the Project site. It is expected that 10% of Fanita Ranch traffic will use Princess Joann Road, with 5% on Woodglen Vista Drive and El Nopal. Princess Joann Road is expected to attract a higher amount of traffic since it provides a shorter distance between Cuyamaca Street and Magnolia Avenue. It should be noted that Appendix Y of the EIR Traffic Study contains an assessment of the timing for the Magnolia Avenue Extension, and was not intended as a cumulative capacity analysis of the potentially affected roadways. The assumptions for the amount of traffic that would use Princess Joann Road, Woodglen Vista Drive, and El Nopal have been updated in this letter report to reflect the most accurate estimate of distribution based on trip lengths and travel time. The deletion of Magnolia Avenue will not change the anticipated trip distribution on Fanita Parkway since Magnolia Avenue is located about two miles away. In other words, no traffic destined to Magnolia Avenue would choose to use Fanita Parkway if Magnolia Avenue was not constructed given the out of direction travel that would occur. Since no additional traffic would use Fanita Parkway, this roadway is not shown on the figures provided in this letter report as the Project distribution to Fanita Parkway remains unchanged.

The Project distribution without the connection of Magnolia Avenue with full access movements from Cuyamaca Street is depicted on **Figure 1**. **Figure 2** shows the Project traffic volumes without this connection.

Figure 3 and Figure 4 depict the Existing + Project and Existing + Project + Cumulative Projects traffic volumes without the connection of Magnolia Avenue, respectively.

The Project distribution without the connection of Magnolia Avenue prohibiting southbound left-turning movements from Cuyamaca Street is depicted on **Figure 5**. **Figure 6** shows the Project traffic volumes without this connection with prohibited turning movements.

Figure 7 and Figure 8 depict the traffic volumes for the Existing + Project and Existing + Project + Cumulative Projects conditions without the connection of Magnolia Avenue and prohibiting southbound left-turning movements, respectively.

All figures are provided at the end of this letter report.

NO MAGNOLIA AVENUE EXTENSION ALLOWING FULL ACCESS – CAPACITY ANALYSIS

Existing + Project Peak Hour Intersections

Table 1 summarizes the Existing + Project intersection operations without the Magnolia Avenue Extension, allowing full access movements to local streets. As seen in *Table 1*, the following intersections are calculated to operate at LOS E or F with the addition of Project traffic:

- **Intersection #4. Woodglen Vista Drive / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #6. El Nopal / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #12. Beck Drive / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #25. Mast Boulevard / Cuyamaca Street – LOS E (AM peak hour)**

Based on the established significance criteria, **four (4) significant direct impacts** were calculated with the addition of Project traffic at the study area locations above since the Project-induced change in delay is greater than 2.0 seconds for LOS E or F operating intersections.

These impacts are also calculated to occur under the proposed Project (i.e. “With Magnolia Avenue Extension”) condition analyzed in the EIR.

Attachment A contains the Existing + Project (No Magnolia Avenue Extension) peak hour intersection calculation worksheets. *All attachments are provided at the end of this letter report.*

Existing + Cumulative Projects + Project Peak Hour Intersections

Table 1 summarizes the Existing + Cumulative Projects + Project intersection operations without the Magnolia Avenue Extension, allowing full access movements to local streets. As seen in *Table 1*, the following intersections are calculated to operate at LOS E or F with the addition of cumulative traffic and Project traffic:

- **Intersection #4. Woodglen Vista Drive / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #6. El Nopal / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #12. Beck Drive / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #25. Mast Boulevard / Cuyamaca Street – LOS E/F (AM/PM peak hours)**

Based on the established significance criteria, **four (4) significant direct impacts** were calculated with the addition of Project traffic at the study area locations above since the Project-induced change in delay is greater than 2.0 seconds for LOS E or F operating intersections.

These impacts are also calculated to occur under the proposed Project (i.e. “With Magnolia Avenue Extension”) condition analyzed in the EIR.

Attachment B contains the Existing + Cumulative Projects + Project (No Magnolia Avenue Extension) peak hour intersection calculation worksheets.

Existing + Project Daily Segment Operations

Table 2 summarizes the Existing + Project street segment operations without the Magnolia Avenue Extension, allowing full access movements to local streets. As seen in *Table 2*, the following street segments are calculated to operate at LOS E or F with the addition of Project traffic:

- Segment #41. Cuyamaca Street from Project Site to Magnolia Avenue – LOS E
- Segment #42. Cuyamaca Street from Magnolia Avenue to Princess Joann Road – LOS E
- **Segment #45. Cuyamaca Street from Woodglen Vista Drive to El Nopal – LOS E**
- **Segment #46. Cuyamaca Street from El Nopal to Mast Boulevard – LOS F**

Based on the established significance criteria, **two (2) significant direct impacts** were calculated with the addition of Project traffic at study area locations above since the Project-induced change in V/C is greater than 0.02 for LOS E or F operating street segments. The significant impact on Segment #45 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under Year 2035 conditions. The significant impact on Segment #46 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under near-term conditions.

Segments #41 and #42 are not deemed to be significant impacts as the intersections operations bookending each segment and the peak hour arterial analyses are calculated to operate at LOS B or better based on standards of practice in the industry and per methodologies for calculating LOS as described in the Highway Capacity Manual (HCM). Further details on this approach to evaluating street segment operations using peak hour intersection results are provided later on in this letter report.

Existing + Cumulative Projects + Project Daily Segment Operations

Table 2 summarizes the Existing + Cumulative Projects + Project street segment operations without the Magnolia Avenue Extension, allowing full access movements to local streets. As seen in Table 2, the following street segments are calculated to operate at LOS E or F with the addition of Project traffic:

- Segment #41. Cuyamaca Street from Project Site to Magnolia Avenue – LOS E
- Segment #42. Cuyamaca Street from Magnolia Avenue to Princess Joann Road – LOS E
- **Segment #45. Cuyamaca Street from Woodglen Vista Drive to El Nopal – LOS E**
- **Segment #46. Cuyamaca Street from El Nopal to Mast Boulevard – LOS F**

Based on the established significance criteria, **two (2) significant direct impacts** were calculated with the addition of Project traffic at study area locations above since the Project-induced change in V/C is greater than 0.02 for LOS E or F operating street segments. The significant impact on Segment #45 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under Year 2035 conditions. The significant impact on Segment #46 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under near-term conditions.

Segments #41 and #42 are not deemed to be significant impacts as the intersections operations bookending each segment and the peak hour arterial analyses are calculated to operate at LOS B or better based on standards of practice in the industry and per methodologies for calculating LOS as described in the Highway Capacity Manual (HCM). Further details on this approach to evaluating street segment operations using peak hour intersection results are provided below.

Peak Hour Arterial Analysis

Using the volume-to-capacity (V/C) methodology, the section of Cuyamaca Street between the first Project on-site roundabout at Street “A”/Street “Y” and Princess Joann Road is forecasted to operate at LOS E under Existing + Project and Existing + Project + Cumulative Project conditions. The LOS E threshold for a Two-Lane Parkway lies between 13,000 and 15,000 ADT, and this segment of Cuyamaca Street has a forecast volume of 13,920 ADT

Volume-to-capacity street segment analysis lacks the precision of peak hour intersection analysis, which takes into account more detailed traffic flow patterns, intersection controls, and roadway features. Peak hour analysis also represents the highest accumulation of traffic volumes throughout a 24-hour period and analyzes peak commute periods. The intersection calculations are based on complex

computerized traffic models utilizing methodology from the HCM that has been refined over decades. By contrast, the V/C segment analysis is comprised of two variables; volume obtained from a 24-hour count, and capacity based on the City's published guidelines, which necessarily present a homogenized, "one-size fits all" summary of theoretical capacities for roads based generally on the number of lanes and presence of parking maneuvers. Between these two methods, the peak hour analysis is the superior and more accurate method to determine actual roadway calculations.

The Cuyamaca Street intersections with Princess Joann Road and Woodglen Vista Drive would be improved from stop controls to traffic signals as part of the Project mitigation detailed in the EIR. **Table 3** shows the results of the mitigated intersection LOS results without the connection of the Magnolia Avenue extension. Based on the computed intersection analysis, the signalized intersections will operate at LOS B or better, and thus the roadway would be expected to operate very efficiently since LOS B is calculated at the intersections on either end of each segment with the proposed mitigation.

Table 4 summarizes the Existing + Cumulative Projects + Project peak hour arterial operations of Cuyamaca Street without the Magnolia Avenue Extension, allowing full access movements to local streets. The section of Cuyamaca Street from the Project Site to Woodglen Vista Drive serves as an access route to a major roadway (Mast Boulevard) ultimately connecting to daily commuter routes, which classifies as a Class III Arterial, per the *Highway Capacity Manual (HCM)*. **Table 4** shows travel speeds (mph) in both directions on Cuyamaca Street along this section operating at LOS B or better.

Attachment C contains the Existing + Cumulative Projects + Project (No Magnolia Avenue Extension) with EIR mitigation intersection and peak hour arterial analysis worksheets.

Mitigated Operations

Implementation of the mitigation measures proposed in the EIR Traffic Study would fully mitigate the impacts associated with the deletion of the Magnolia Avenue Extension project.

Table 5 shows the mitigated operations for intersections and street segments applying the improvements from the EIR Traffic Study.

Attachment C contains the post-mitigation intersection analysis worksheets.

Mitigation Phasing

Utilizing the methodology in the EIR, an analysis was conducted at each of the impacted locations with the deletion of the Magnolia Avenue Extension to determine the number of units that could be built before a significant Project impact would occur.

Table 6 summarizes the number of equivalent dwelling units (EDUs) that may be built and occupied, before each mitigation measure is required at intersections and street segments.

Attachment D contains the intersection analysis sheets associated with the threshold operations identified for each intersection.

TABLE 1
INTERSECTION OPERATIONS
(NO MAGNOLIA AVENUE EXTENSION – FULL ACCESS)

Intersection	Jur.	Control Type	Peak Hour	Existing		Existing + Project		Δ ^c Delay	Sig?	EIR Impact w/ Magnolia Avenue Extension? ^d	Existing + Cumulative Projects		Existing + Cumulative Projects + Project		Δ ^c Delay	Sig?	EIR Impact w/ Magnolia Avenue Extension? ^d
				Delay ^a	LOS ^b	Delay	LOS				Delay	LOS	Delay	LOS			
1. Princess Joann Road / Cuyamaca Street <i>(future intersection)</i>	Santee	DNE/MSSC	AM	—	—	11.4	B	—	No	No	—	—	11.4	B	—	No	No
			PM	—	—	21.6	C	—	No	No	—	—	21.6	C	—	No	No
2. Princess Joann Road / Magnolia Avenue	Santee	AWSC	AM	7.6	A	8.9	A	1.3	No	No	7.7	A	9.0	A	1.3	No	No
			PM	7.9	A	10.3	B	2.4	No	No	7.9	A	10.3	B	2.4	No	No
4. Woodglen Vista Drive / Cuyamaca Street	Santee	AWSC	AM	8.9	A	80.2	F	71.3	Yes	Yes	8.9	A	81.9	F	73.0	Yes	Yes
			PM	9.0	A	>100.0	F	>2.0	Yes	Yes	9.1	A	>100.0	F	>2.0	Yes	Yes
5. Woodglen Vista Drive / Magnolia Avenue	Santee	Signal	AM	11.9	B	14.9	B	3.0	No	No	12.0	B	15.0	B	3.0	No	No
			PM	10.7	B	11.6	B	0.9	No	No	10.7	B	11.6	B	0.9	No	No
6. El Nopal / Cuyamaca Street	Santee	AWSC	AM	12.0	B	>100.0	F	>2.0	Yes	Yes	12.3	B	>100.0	F	>2.0	Yes	Yes
			PM	11.8	B	>100.0	F	>2.0	Yes	Yes	12.1	B	>100.0	F	>2.0	Yes	Yes
7. El Nopal / Magnolia Avenue	Santee	Signal	AM	23.9	C	27.8	C	3.9	No	No	24.3	C	28.4	C	4.1	No	No
			PM	18.3	B	22.3	C	4.0	No	No	18.6	C	22.8	C	4.2	No	No
12. Beck Drive / Cuyamaca Street	Santee	AWSC	AM	22.4	C	>100.0	F	>2.0	Yes	Yes	24.1	C	>100.0	F	>2.0	Yes	Yes
			PM	13.3	B	>100.0	F	>2.0	Yes	Yes	13.7	B	>100.0	F	>2.0	Yes	Yes
13. 2 nd Street / Magnolia Avenue	Santee	Signal	AM	8.0	A	8.0	A	0.0	No	No	8.2	A	8.2	A	0.0	No	No
			PM	6.6	A	6.7	A	0.1	No	No	6.7	A	6.8	C	0.1	No	No
14. Carefree Drive / Magnolia Avenue	Santee	Signal	AM	17.4	B	20.3	C	2.9	No	No	17.8	B	21.0	C	3.2	No	No
			PM	9.2	A	9.6	A	0.4	No	No	9.3	A	9.7	A	0.4	No	No
25. Mast Boulevard / Cuyamaca Street	Santee	Signal	AM	36.9	D	72.4	E	35.5	Yes	Yes	38.0	D	75.4	E	37.4	Yes	Yes
			PM	33.3	C	50.7	D	17.4	Yes	Yes	33.7	D	53.6	D	19.9	Yes	Yes
26. Mast Boulevard / Park Center Drive	Santee	Signal	AM	7.1	A	7.2	A	0.1	No	No	7.1	A	7.1	A	0.0	No	No
			PM	8.7	A	8.7	A	0.0	No	No	8.9	A	8.9	A	0.0	No	No
27. Mast Boulevard / Magnolia Avenue	Santee	Signal	AM	32.9	C	37.5	D	4.6	No	No	36.6	D	41.6	D	5.0	No	No
			PM	26.8	C	28.6	C	1.8	No	No	28.1	D	30.6	C	2.5	No	No

Footnotes:

- Average delay expressed in seconds per vehicle.
- Level of Service
- Δ denotes the increase in delay due to Project.
- See Tables 8-1 and 10-1 in the EIR traffic study (EIR Appendix N) for the “with Magnolia Avenue Extension” analysis.

General Notes:

- Sig = Significant impact, yes or no.
- Jur. = Jurisdiction

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 2
SEGMENT OPERATIONS
(NO MAGNOLIA AVENUE EXTENSION – FULL ACCESS TO/FROM CUYAMACA STREET)

Street Segment	Jur.	Existing Capacity (LOS E) ^a	Existing			Existing + Project			Project Volumes	Δ ^e V/C	Sig?	EIR Impact w/ Magnolia Avenue Extension? ^f	Existing + Cumulative Projects			Existing + Cumulative Projects + Project			Project Volumes	Δ ^e V/C	Sig?	EIR Impact w/ Magnolia Avenue Extension? ^f
			ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C					ADT	LOS	V/C	ADT	LOS	V/C				
Princess Joann Road																						
1. Cuyamaca St to Magnolia Ave	Santee	8,000	530	A	0.066	3,160	B	0.395	2,630	0.329	No	No	685	A	0.086	3,315	B	0.414	2,630	0.328	No	No
Woodglen Vista Drive																						
2. Cuyamaca St to Magnolia Ave	Santee	8,000	1,700	A	0.213	3,010	B	0.376	1,310	0.163	No	No	1,759	A	0.220	3,069	B	0.384	1,310	0.164	No	No
El Nopal																						
3. Cuyamaca St to Magnolia Ave	Santee	8,000	3,780	C	0.473	5,090	D	0.636	1,310	0.163	No	No	3,886	C	0.486	5,196	D	0.650	1,310	0.164	No	No
Mast Boulevard																						
12. Cuyamaca St to Magnolia Ave	Santee	40,000	18,490	B	0.462	19,280	B	0.482	790	0.020	No	No	19,616	B	0.490	20,406	B	0.510	790	0.020	No	No
Cuyamaca Street																						
41. Project Site to Magnolia Ave ^g	Santee	DNE/ 15,000	—	—	—	13,920	E ^h	0.928	13,920	—	No ^h	No ^h	—	—	—	13,920	E ^h	1.000	13,920	—	No ^h	No ^h
42. Magnolia Ave to Princess Joann Rd ^g	Santee	DNE/ 15,000	—	—	—	13,920	E ^h	0.928	13,920	—	No ^h	No ^h	—	—	—	13,920	E ^h	1.000	13,920	—	No ^h	No ^h
43. Princess Joann Rd to Chaparral Dr ^g	Santee	DNE/ 15,000	—	—	—	11,300	D	0.753	11,300	—	No	No	—	—	—	11,300	D	1.000	11,300	—	No	No
44. Chaparral Dr to Woodglen Vista Dr ⁱ	Santee	15,000/ 40,000	670	A	0.045	11,970	A ⁱ	0.299	11,300	0.254	No	No	683	A	0.6c/046	11,983	A ⁱ	0.300	11,300	0.283	No	No
45. Woodglen Vista Dr to El Nopal	Santee	15,000	4,360	A	0.291	14,340	E	0.956	9,980	0.665	Yes	Yes ^j	4,472	A	0.298	14,452	E	0.963	9,980	0.665	Yes	Yes ^j
46. El Nopal to Mast Blvd	Santee	15,000	8,860	C	0.591	17,530	F	1.169	8,670	0.578	Yes	Yes	9,173	C	0.612	17,843	F	1.190	8,670	0.578	Yes	Yes
Magnolia Avenue																						
54. Cuyamaca St to Princess Joann Rd	Santee	DNE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
55. Princess Joann Rd to Woodglen Vista Dr	Santee	40,000	2,020	A	0.051	4,650	A	0.116	2,630	0.065	No	No	2,204	A	0.055	4,834	A	0.121	2,630	0.066	No	No
56. Woodglen Vista Dr to El Nopal	Santee	40,000	9,030	A	0.226	12,970	A	0.324	3,940	0.098	No	No	9,415	A	0.235	13,355	A	0.334	3,940	0.099	No	No
57. El Nopal to Mast Blvd	Santee	40,000	13,690	A	0.342	16,320	B	0.408	2,630	0.066	No	No	14,291	A	0.357	16,921	B	0.423	2,630	0.066	No	No

Footnotes:

- Capacities based on City of Santee Roadway Classification & LOS table.
- Average Daily Traffic
- Level of Service
- Volume to Capacity ratio
- Δ denotes a Project-induced increase in the Volume to Capacity ratio
- See *Tables 8-2 and 10-2* in the EIR traffic study (EIR Appendix N) for the “with Magnolia Avenue Extension” analysis.
- The 15,000 ADT capacity for the existing sections of Cuyamaca Street was continued along this future section providing access to the Project.
- The intersection operations at both ends of the Cuyamaca Street road segment between the Project Site and Woodglen Vista Drive report LOS C or better operations and the peak hour arterial operations indicate LOS B or better operations with the mitigation proposed by the Project. Therefore, adequate operations are expected along this roadway. See *Tables 3 and 4*.
- As part of the Project Design Features for this Project, Cuyamaca Street from Chaparral Drive to Woodglen Vista Drive is proposed to be improved to four-lane Major Road standards. Therefore, an LOS E capacity of 40,000 ADT was used in the “Plus Project” analyses.
- Without the connection of the Magnolia Avenue Extension, this segment impact would be a direct impact instead of a cumulative impact, as identified in the EIR traffic study. The mitigation recommended in the EIR of improving Cuyamaca Street between Woodglen Vista Drive and El Nopal to four lanes would still be recommended. Therefore, no new impacts would occur without the extension of Magnolia Avenue and the mitigation would be unchanged.

General Notes:

- Sig = Significant impact, yes or no.
- DNE, “—” = Does not exist.

**TABLE 3
 MITIGATED INTERSECTION OPERATIONS
 (NO MAGNOLIA AVENUE EXTENSION –
 FULL ACCESS TO/FROM CUYAMACA STREET)**

Intersection	Existing + Cumulative Projects + Project			
	Control Type	Peak Hour	Delay ^a	LOS ^b
A. Cuyamaca Street/ Street A/ Street Y	Round- about	AM PM	11.7 24.8	B C
1. Cuyamaca Street/ Princess Joann Road	Signal	AM PM	7.8 12.7	A B
4. Cuyamaca Street/ Woodglen Vista Road	Signal	AM PM	11.3 10.3	B B

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service

SIGNALIZED	
DELAY/LOS THRESHOLDS	
Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

**TABLE 4
 PEAK HOUR ARTERIAL ANALYSIS
 (NO MAGNOLIA AVENUE EXTENSION – FULL ACCESS TO/FROM CUYAMACA STREET)**

Dir.	Dir.	Roadway Classification with EIR Improvements	Existing + Cumulative Projects + Project			
			AM		PM	
			Speed ^a	LOS ^b	Speed	LOS
NB	Woodglen Vista Dr to Chaparral Dr	4-ln w/ Raised Median	29.0	B	28.6	B
	Chaparral Dr to Princess Joann Rd	2-ln w/ Raised Median	29.0	B	28.6	B
	Princess Joann Rd to Project Site (Street “Y”)	2-ln w/ Raised Median	31.2	A	29.0	B
SB	Project Site (Street “Y”) to Princess Joann Rd	2-ln w/ Raised Median	33.1	A	33.5	A
	Princess Joann Rd to Chaparral Dr	2-ln w/ Raised Median	33.1	A	33.5	A
	Chaparral Dr to Woodglen Vista Dr	4-ln w/ Raised Median	27.2	B	30.7	A

Footnotes:

- a. Speed measured in miles per hour.
- b. LOS = Level of Service

General Notes

- 1. Dir. = Direction
- 2. NB = Northbound
- 3. SB = Southbound

SPEED (MPH) / LOS THRESHOLDS

LOS	Class I	Class II	Class III	Class IV
A	>42	>35	>30	>25
B	>34-42	>28-35	>24-30	>19-25
C	>27-34	>22-28	>18-24	>13-19
D	>21-27	>17-22	>14-18	>9-13
E	>16-21	>13-17	>10-14	>7-9
F	≤ 16	≤ 13	≤ 10	≤ 7

**TABLE 5
POST-MITIGATION ANALYSIS
(NO MAGNOLIA AVENUE EXTENSION – FULL ACCESS TO/FROM CUYAMACA STREET)**

EIR MM#	Intersection	Jur.	Control Type: Pre/Post Mitigation	Peak Hour	Pre-Mitigation Operations ^c				Post-EIR Mitigation	
					Without Project		With Project		Delay	LOS
					Delay ^a	LOS ^b	Delay	LOS		
TRA-4	#4. Woodglen Vista Drive/ Cuyamaca Street	Santee	AWSC/ Signal	AM	8.9	A	81.9	F	11.3	B
				PM	9.1	A	>100.0	F	10.3	B
TRA-5	#6. El Nopal/ Cuyamaca Street	Santee	AWSC/ Signal	AM	12.3	B	>100.0	F	12.7	B
				PM	12.1	B	>100.0	F	9.9	A
TRA-8	#12. Beck Drive/ Cuyamaca Street	Santee	AWSC/ Signal	AM	24.1	C	>100.0	F	5.8	A
				PM	13.7	B	>100.0	F	5.4	A
TRA-12	#25. Mast Boulevard/ Cuyamaca Street ^d	Santee	Signal	AM	38.0	D	75.4	E	51.3	D
				PM	—	—	—	—	—	—
MM#	Street Segment	Jur.	Capacity	Pre-Mitigation Operations				Post Mitigation		
				Without Project		With Project		Capacity	LOS	
				ADT	LOS	ADT	LOS			
TRA-25	#45. Cuyamaca Street: Woodglen Vista Drive to El Nopal	Santee	15,000	4,472	A	14,452	E	40,000	A	
TRA-26	#46. Cuyamaca Street: El Nopal to Mast Boulevard	Santee	15,000	9,173	C	17,843	F	40,000	B	

Footnotes:

- Average delay expressed in second per vehicle.
- Level of service.
- Existing + Cumulative Projects and Existing + Cumulative Projects + Project conditions LOS is provided.
- “—” = Intersection is not impacted in the PM peak hour. Therefore, no delay/LOS are shown.

General Notes:

- EIR MM# = EIR Traffic Study Mitigation Measure number.
- Sig = Significant impact post-mitigation?
- Mitigation provided for locations currently operating at LOS E or F are required to improve operations to better than or equal to pre-Project conditions only.
- Jur. = Jurisdiction
- Control Type: “TWSC”/“Signal” indicates pre- and post-mitigation control type.

**TABLE 6
 MITIGATION PHASING ANALYSIS
 (NO MAGNOLIA AVENUE EXTENSION – FULL ACCESS TO/FROM CUYAMACA STREET)**

MM#	ID	Location	Without Magnolia Avenue		With Magnolia Avenue EIR Analysis	
			Total Project Generated ADT	EDU	Total Project Generated ADT	EDU
INTERSECTIONS						
TRA-4	#4.	Woodglen Vista Drive/ Cuyamaca Street	14,187	1,592	19,704	2,212
TRA-5	#6.	El Nopal/ Cuyamaca Street	10,246	1,150	11,822	1,327
TRA-8	#12.	Beck Drive/ Cuyamaca Street	2,102	236	2,364	265
TRA-12	#25.	Mast Boulevard/ Cuyamaca Street	17,865	2,005	19,704	2,212
STREET SEGMENTS						
TRA-25	#45.	Cuyamaca Street: Woodglen Vista Drive to El Nopal	1,053	118	1,379	155
TRA-26	#46.	Cuyamaca Street: El Nopal to Mast Boulevard	11,597	1,302	13,197	1,481

General Notes:

1. MM# = Mitigation Measure number
2. ADT = Average daily trips by the Project
3. EDU = Equivalent dwelling units calculated per *Section 21.4* of the EIR Traffic Study (EIR Appendix N)

NO MAGNOLIA AVENUE EXTENSION PROHIBITING SOUTHBOUND LEFT-TURNS ON CUYAMACA STREET – CAPACITY ANALYSIS

Existing + Project Peak Hour Intersections

Table 7 summarizes the Existing + Project intersection operations without the Magnolia Avenue Extension, prohibiting southbound left-turning movements from Cuyamaca Street to local streets. As seen in *Table 7*, the following intersections are calculated to operate at LOS E or F with the addition of Project traffic:

- **Intersection #4. Woodglen Vista Drive / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #6. El Nopal / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #12. Beck Drive / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #25. Mast Boulevard / Cuyamaca Street – LOS F/E (AM/PM peak hours)**

Based on the established significance criteria, **four (4) significant direct impacts** were calculated with the addition of Project traffic at the study area locations above since the Project-induced change in delay is greater than 2.0 seconds for LOS E or F operating intersections.

These impacts are also calculated to occur under the proposed Project (i.e. “With Magnolia Avenue Extension”) condition analyzed in the EIR.

Attachment E contains the Existing + Project (No Magnolia Avenue Extension) peak hour intersection calculation worksheets.

Existing + Cumulative Projects + Project Peak Hour Intersections

Table 7 summarizes the Existing + Cumulative Projects + Project intersection operations without the Magnolia Avenue Extension, prohibiting southbound left-turning movements from Cuyamaca Street to local streets. As seen in *Table 7*, the following intersections are calculated to operate at LOS E or F with the addition of cumulative traffic and Project traffic:

- **Intersection #4. Woodglen Vista Drive / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #6. El Nopal / Cuyamaca Street – LOS F (AM/PM peak hours)**
- **Intersection #12. Beck Drive / Cuyamaca Street – LOS F (AM/PM peak hours)**

- **Intersection #25. Mast Boulevard / Cuyamaca Street – LOS F (AM/PM peak hours)**

Based on the established significance criteria, **four (4) significant direct impacts** were calculated with the addition of Project traffic at the study area locations above since the Project-induced change in delay is greater than 2.0 seconds for LOS E or F operating intersections.

These impacts are also calculated to occur under the proposed Project (i.e. “With Magnolia Avenue Extension”) condition analyzed in the EIR.

Attachment F contains the Existing + Cumulative Projects + Project (No Magnolia Avenue Extension) peak hour intersection calculation worksheets.

Existing + Project Daily Segment Operations

Table 8 summarizes the Existing + Project street segment operations without the Magnolia Avenue Extension, prohibiting southbound left-turning movements from Cuyamaca Street to local streets. As seen in *Table 8*, the following street segments are calculated to operate at LOS E or F with the addition of Project traffic:

- Segment #41. Cuyamaca Street from Project Site to Magnolia Avenue – LOS E
- Segment #42. Cuyamaca Street from Magnolia Avenue to Princess Joann Road – LOS E
- **Segment #45. Cuyamaca Street from Woodglen Vista Drive to El Nopal – LOS F**
- **Segment #46. Cuyamaca Street from El Nopal to Mast Boulevard – LOS F**

Based on the established significance criteria, **two (2) significant direct impacts** were calculated with the addition of Project traffic at study area locations above since the Project-induced change in V/C is greater than 0.02 for LOS E or F operating street segments. The significant impact on Segment #45 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under Year 2035 conditions. The significant impact on Segment #46 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under near-term conditions.

Segments #41 and #42 are not deemed to be significant impacts as the intersections operations bookending each segment and the peak hour arterial analyses are calculated to operate at LOS B or better based on standards of practice in the industry and per methodologies for calculating LOS as described in the HCM. Further details on this approach to evaluating street segment operations using peak hour results are provided later on in this letter report.

Existing + Cumulative Projects + Project Daily Segment Operations

Table 8 summarizes the Existing + Cumulative Projects + Project street segment operations without the Magnolia Avenue Extension, prohibiting southbound left-turning movements from Cuyamaca Street to local streets. As seen in Table 8, the following street segments are calculated to operate at LOS E or F with the addition of Project traffic:

- Segment #41. Cuyamaca Street from Project Site to Magnolia Avenue – LOS E
- Segment #42. Cuyamaca Street from Magnolia Avenue to Princess Joann Road – LOS E
- **Segment #45. Cuyamaca Street from Woodglen Vista Drive to El Nopal – LOS F**
- **Segment #46. Cuyamaca Street from El Nopal to Mast Boulevard – LOS F**

Based on the established significance criteria, **two (2) significant direct impacts** were calculated with the addition of Project traffic at study area locations above since the Project-induced change in V/C is greater than 0.02 for LOS E or F operating street segments. The significant impact on Segment #45 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under Year 2035 conditions. The significant impact on Segment #46 is also calculated to occur with the connection of Magnolia Avenue analyzed in the EIR under near-term conditions.

Segments #41 and #42 are not deemed to be significant impacts as the intersections operations bookending each segment and the peak hour arterial analyses are calculated to operate at LOS B or better based on standards of practice in the industry and per methodologies for calculating LOS as described in the HCM. Further details on this approach to evaluating street segment operations using peak hour results are provided below.

Peak Hour Arterial Analysis

Using the volume-to-capacity (V/C) methodology, the section of Cuyamaca Street between the first Project on-site roundabout at Street “A”/Street “Y” and Woodglen Vista Drive is forecasted to operate at LOS E under Existing + Project and Existing + Project + Cumulative Project conditions. The LOS E threshold for a Two-Lane Parkway lies between 13,000 and 15,000 ADT, and this segment of Cuyamaca Street has at most a forecast volume of 13,920 ADT

Volume-to-capacity street segment analysis lacks the precision of peak hour intersection analysis, which takes into account more detailed traffic flow patterns, intersection controls, and roadway features. Peak hour analysis also represents the

highest accumulation of traffic volumes throughout a 24-hour period and analyzes peak commute periods. The intersection calculations are based on complex computerized traffic models utilizing methodology from the HCM that has been refined over decades. By contrast, the V/C segment analysis is comprised of two variables; volume obtained from a 24-hour count, and capacity based on the City's published guidelines, which necessarily present a homogenized, "one-size fits all" summary of theoretical capacities for roads based generally on the number of lanes and presence of parking maneuvers. Between these two methods, the peak hour analysis is the superior and more accurate method to determine actual roadway calculations.

The Cuyamaca Street intersections with Princess Joann Road and Woodglen Vista Drive would be improved from stop controls to traffic signals as part of the Project mitigation detailed in the EIR. **Table 9** shows the results of the mitigated intersection LOS results without Magnolia Avenue and with restricted southbound left-turn movements. Based on the computed intersection analysis, the signalized intersections will operate at LOS B or better, and thus the roadway would be expected to operate very efficiently since LOS B is calculated at the intersections on either end of each segment with the proposed mitigation.

Table 10 summarizes the Existing + Cumulative Projects + Project peak hour arterial operations of Cuyamaca Street without the Magnolia Avenue extension, restricting southbound left-turns from Cuyamaca Street. The section of Cuyamaca Street from the Project Site to Woodglen Vista Drive serves as an access route to a major roadway (Mast Boulevard) ultimately connecting to daily commuter routes, which classifies as a Class III Arterial, per the *Highway Capacity Manual (HCM)*. **Table 8** shows travel speeds (mph) in both directions on Cuyamaca Street along this section operating at LOS B or better.

Attachment G contains the Existing + Cumulative Projects + Project (No Magnolia Avenue Extension) with EIR mitigation intersection and peak hour arterial analysis worksheets.

Mitigated Operations

Implementation of the mitigation measures proposed in the EIR Traffic Study would fully mitigate the impacts associated with the deletion of the Magnolia Avenue Extension project.

Table 11 shows the mitigated operations for intersections and street segments applying the improvements from the EIR Traffic Study.

Attachment G contains the post-mitigation intersection analysis worksheets.

Mitigation Phasing

Utilizing the methodology in the EIR, an analysis was conducted at each of the impacted locations with the deletion of the Magnolia Avenue Extension to determine the number of units that could be built before a significant Project impact would occur.

Table 12 summarizes the number of equivalent dwelling units (EDUs) that may be built and occupied, before each mitigation measure is required at intersections and street segments.

Attachment H contains the intersection analysis sheets associated with the threshold operations identified for each intersection.

TABLE 7
INTERSECTION OPERATIONS
(NO MAGNOLIA AVENUE EXTENSION – PROHIBITED SOUTHBOUND LEFT-TURNS FROM CUYAMACA STREET)

Intersection	Jur.	Control Type	Peak Hour	Existing		Existing + Project		Δ ^c Delay	Sig?	EIR Impact w/ Magnolia Avenue Extension? ^d	Existing + Cumulative Projects		Existing + Cumulative Projects + Project		Δ ^c Delay	Sig?	EIR Impact w/ Magnolia Avenue Extension? ^d
				Delay ^a	LOS ^b	Delay	LOS				Delay	LOS	Delay	LOS			
1. Princess Joann Road / Cuyamaca Street <i>(future intersection)</i>	Santee	DNE/MSSC	AM	—	—	11.4	B	—	No	No	—	—	11.4	B	—	No	No
			PM	—	—	21.6	C	—	No	No	—	—	21.6	C	—	No	No
2. Princess Joann Road / Magnolia Avenue	Santee	AWSC	AM	7.6	A	8.5	A	0.9	No	No	7.7	A	8.5	A	0.8	No	No
			PM	7.9	A	10.1	B	2.2	No	No	7.9	A	10.1	B	2.2	No	No
4. Woodglen Vista Drive / Cuyamaca Street	Santee	AWSC	AM	8.9	A	>100.0	F	>2.0	Yes	Yes	8.9	A	>100.0	F	>2.0	Yes	Yes
			PM	9.0	A	>100.0	F	>2.0	Yes	Yes	9.1	A	>100.0	F	>2.0	Yes	Yes
5. Woodglen Vista Drive / Magnolia Avenue	Santee	Signal	AM	11.9	B	13.4	B	1.5	No	No	12.0	B	13.5	B	1.5	No	No
			PM	10.7	B	11.2	B	0.5	No	No	10.7	B	11.2	B	0.5	No	No
6. El Nopal / Cuyamaca Street	Santee	AWSC	AM	12.0	B	>100.0	F	>2.0	Yes	Yes	12.3	B	>100.0	F	>2.0	Yes	Yes
			PM	11.8	B	>100.0	F	>2.0	Yes	Yes	12.1	B	>100.0	F	>2.0	Yes	Yes
7. El Nopal / Magnolia Avenue	Santee	Signal	AM	23.9	C	25.8	C	1.9	No	No	24.3	C	26.3	C	2.0	No	No
			PM	18.3	B	22.2	C	3.9	No	No	18.6	C	23.0	C	4.4	No	No
12. Beck Drive / Cuyamaca Street	Santee	AWSC	AM	22.4	C	>100.0	F	>2.0	Yes	Yes	24.1	C	>100.0	F	>2.0	Yes	Yes
			PM	13.3	B	>100.0	F	>2.0	Yes	Yes	13.7	B	>100.0	F	>2.0	Yes	Yes
13. 2 nd Street / Magnolia Avenue	Santee	Signal	AM	8.0	A	8.8	A	0.8	No	No	8.2	A	9.1	A	0.9	No	No
			PM	6.6	A	8.6	A	2.0	No	No	6.7	A	9.3	A	2.6	No	No
14. Carefree Drive / Magnolia Avenue	Santee	Signal	AM	17.4	B	17.6	B	0.2	No	No	17.8	B	18.0	B	0.2	No	No
			PM	9.2	A	9.4	A	0.2	No	No	9.3	A	9.6	A	0.3	No	No
25. Mast Boulevard / Cuyamaca Street	Santee	Signal	AM	36.9	D	98.3	F	61.4	Yes	Yes	38.0	D	>100.0	F	>2.0	Yes	Yes
			PM	33.3	C	62.9	E	29.6	Yes	Yes	33.7	D	64.3	E	30.6	Yes	Yes
26. Mast Boulevard / Park Center Drive	Santee	Signal	AM	7.1	A	7.7	A	0.6	No	No	7.1	A	7.8	A	0.7	No	No
			PM	8.7	A	9.1	A	0.4	No	No	8.9	A	9.4	A	0.5	No	No
27. Mast Boulevard / Magnolia Avenue	Santee	Signal	AM	32.9	C	52.0	D	19.1	No	No	36.6	D	54.4	D	17.8	No	No
			PM	26.8	C	31.3	C	4.5	No	No	28.1	D	33.9	C	5.8	No	No

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service
c. Δ denotes the increase in delay due to Project.
d. See Tables 8-1 and 10-1 in the EIR traffic study (EIR Appendix N) for the “with Magnolia Avenue Extension” analysis.

General Notes:
1. Sig = Significant impact, yes or no.
2. Jur. = Jurisdiction

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 8
SEGMENT OPERATIONS
(NO MAGNOLIA AVENUE EXTENSION – PROHIBITED SOUTHBOUND LEFT-TURNS FROM CUYAMACA STREET)

Street Segment	Jur.	Existing Capacity (LOS E) ^a	Existing			Existing + Project			Project Volumes	Δ ^e V/C	Sig?	EIR Impact w/ Magnolia Avenue Extension? ^f	Existing + Cumulative Projects			Existing + Cumulative Projects + Project			Project Volumes	Δ ^e V/C	Sig?	EIR Impact w/ Magnolia Avenue Extension? ^f
			ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C					ADT	LOS	V/C	ADT	LOS	V/C				
Princess Joann Road																						
1. Cuyamaca St to Magnolia Ave	Santee	8,000	530	A	0.066	1,840	A	0.230	1,310	0.164	No	No	685	A	0.086	1,995	A	0.249	1,310	0.163	No	No
Woodglen Vista Drive																						
2. Cuyamaca St to Magnolia Ave	Santee	8,000	1,700	A	0.213	2,360	A	0.295	660	0.082	No	No	1,759	A	0.220	2,419	A	0.302	660	0.082	No	No
El Nopal																						
3. Cuyamaca St to Magnolia Ave	Santee	8,000	3,780	C	0.473	4,440	C	0.555	660	0.082	No	No	3,886	C	0.486	4,546	C	0.568	660	0.082	No	No
Mast Boulevard																						
13. Cuyamaca St to Magnolia Ave	Santee	40,000	18,490	B	0.462	21,910	C	0.548	3,420	0.086	No	No	19,616	B	0.490	23,036	C	0.576	3,420	0.086	No	No
Cuyamaca Street																						
41. Project Site to Magnolia Ave ^g	Santee	DNE/15,000	—	—	—	13,920	E ^h	0.928	13,920	—	No ^h	No ^h	—	—	—	13,920	E ^h	1.000	13,920	—	No ^h	No ^h
42. Magnolia Ave to Princess Joann Rd ^g	Santee	DNE/15,000	—	—	—	13,920	E ^h	0.928	13,920	—	No ^h	No ^h	—	—	—	13,920	E ^h	1.000	13,920	—	No ^h	No ^h
43. Princess Joann Rd to Chaparral Dr ^g	Santee	DNE/15,000	—	—	—	12,610	D	0.841	12,610	—	No	No	—	—	—	12,610	D	1.000	12,610	—	No	No
44. Chaparral Dr to Woodglen Vista Dr ⁱ	Santee	15,000/40,000	670	A	0.045	13,280	A ⁱ	0.332	12,610	0.287	No	No	683	A	0.046	13,293	A ⁱ	0.332	12,610	0.315	No	No
45. Woodglen Vista Dr to El Nopal	Santee	15,000	4,360	A	0.291	16,310	F	1.087	11,950	0.796	Yes	Yes ^j	4,472	A	0.298	16,422	F	1.095	11,950	0.797	Yes	Yes ^j
46. El Nopal to Mast Blvd	Santee	15,000	8,860	C	0.591	20,160	F	1.344	11,300	0.753	Yes	Yes	9,173	C	0.612	20,473	F	1.365	11,300	0.753	Yes	Yes
Magnolia Avenue																						
54. Cuyamaca St to Princess Joann Rd	Santee	DNE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
55. Princess Joann Rd to Woodglen Vista Dr	Santee	40,000	2,020	A	0.051	3,330	A	0.083	1,310	0.032	No	No	2,204	A	0.055	3,514	A	0.088	1,310	0.033	No	No
56. Woodglen Vista Dr to El Nopal	Santee	40,000	9,030	A	0.226	11,000	A	0.275	1,970	0.049	No	No	9,415	A	0.235	11,385	A	0.285	1,970	0.050	No	No
57. El Nopal to Mast Blvd	Santee	40,000	13,690	A	0.342	16,320	B	0.408	2,630	0.066	No	No	14,291	A	0.357	16,921	B	0.423	2,630	0.066	No	No

Footnotes:

- Capacities based on City of Santee Roadway Classification & LOS table.
- Average Daily Traffic
- Level of Service
- Volume to Capacity ratio
- Δ denotes a Project-induced increase in the Volume to Capacity ratio
- See Table 8-2 in the EIR traffic study for the “with Magnolia Avenue Extension” analysis.
- The 15,000 ADT capacity for the existing sections of Cuyamaca Street was continued along this future section providing access to the Project.
- The intersection operations at both ends of the Cuyamaca Street road segment between the Project Site and Woodglen Vista Drive report LOS C or better operations and the peak hour arterial operations indicate LOS B or better operations. Therefore, adequate operations are expected along this roadway. See Tables 7 and 8.
- As part of the Project Design Features for this Project, Cuyamaca Street from Chaparral Drive to Woodglen Vista Drive is proposed to be improved to four-lane Major Road standards. Therefore, an LOS E capacity of 40,000 ADT was used in the “Plus Project” analyses.
- Without the connection of the Magnolia Avenue Extension, this segment impact would be a direct impact instead of a cumulative impact, as identified in the EIR traffic study. The mitigation recommended in the EIR of improving Cuyamaca Street between Woodglen Vista Drive and El Nopal to four lanes would still be recommended. Therefore, no new impacts would occur without the extension of Magnolia Avenue and the mitigation would be unchanged.

General Notes:

- Sig = Significant impact, yes or no.
- DNE, “—” = Does not exist.

**TABLE 9
 MITIGATED INTERSECTION OPERATIONS
 (NO MAGNOLIA AVENUE EXTENSION –
 PROHIBITED SOUTHBOUND LEFT-TURNS FROM CUYAMACA STREET)**

Intersection	Existing + Cumulative Projects + Project			
	Control Type	Peak Hour	Delay ^a	LOS ^b
A. Cuyamaca Street/ Street A/ Street Y	Round- about	AM PM	11.7 24.8	B C
1. Cuyamaca Street/ Princess Joann Road	Signal	AM PM	5.3 6.4	A A
4. Cuyamaca Street/ Woodglen Vista Road	Signal	AM PM	9.9 7.0	A A

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service

SIGNALIZED	
DELAY/LOS THRESHOLDS	
Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

**TABLE 10
 PEAK HOUR ARTERIAL ANALYSIS
 (NO MAGNOLIA AVENUE EXTENSION – PROHIBITED SOUTHBOUND LEFT-TURNS FROM CUYAMACA
 STREET)**

Dir.	Dir.	Roadway Classification with EIR Improvements	Existing + Cumulative Projects + Project			
			AM		PM	
			Speed ^a	LOS ^b	Speed	LOS
NB	Woodglen Vista Dr to Chaparral Dr	4-ln w/ Raised Median	33.7	A	31.3	A
	Chaparral Dr to Princess Joann Rd	2-ln w/ Raised Median	33.7	A	31.3	A
	Princess Joann Rd to Project Site (Street “Y”)	2-ln w/ Raised Median	31.2	A	29.0	B
SB	Project Site (Street “Y”) to Princess Joann Rd	2-ln w/ Raised Median	32.8	A	33.0	A
	Princess Joann Rd to Chaparral Dr	2-ln w/ Raised Median	32.8	A	33.0	A
	Chaparral Dr to Woodglen Vista Dr	4-ln w/ Raised Median	29.1	B	29.9	B

Footnotes:

- a. Speed measured in miles per hour.
- b. LOS = Level of Service

General Notes

- 1. Dir. = Direction
- 2. NB = Northbound
- 3. SB = Southbound

SPEED (MPH) / LOS THRESHOLDS

LOS	Class I	Class II	Class III	Class IV
A	>42	>35	>30	>25
B	>34-42	>28-35	>24-30	>19-25
C	>27-34	>22-28	>18-24	>13-19
D	>21-27	>17-22	>14-18	>9-13
E	>16-21	>13-17	>10-14	>7-9
F	≤ 16	≤ 13	≤ 10	≤ 7

**TABLE 11
POST-MITIGATION ANALYSIS
(NO MAGNOLIA AVENUE EXTENSION – PROHIBITED SOUTHBOUND LEFT-TURNS FROM CUYAMACA STREET)**

EIR MM#	Intersection	Jur.	Control Type: Pre/Post Mitigation	Peak Hour	Pre-Mitigation Operations ^c				Post-EIR Mitigation	
					Without Project		With Project		Delay	LOS
					Delay ^a	LOS ^b	Delay	LOS		
TRA-4	#4. Woodglen Vista Drive/ Cuyamaca Street	Santee	AWSC/ Signal	AM	8.9	A	>100.0	F	9.9	A
				PM	9.1	A	>100.0	F	7.0	A
TRA-5	#6. El Nopal/ Cuyamaca Street	Santee	AWSC/ Signal	AM	12.3	B	>100.0	F	12.5	B
				PM	12.1	B	>100.0	F	6.9	A
TRA-8	#12. Beck Drive/ Cuyamaca Street	Santee	AWSC/ Signal	AM	24.1	C	>100.0	F	5.8	A
				PM	13.7	B	>100.0	F	5.4	A
TRA-12	#25. Mast Boulevard/ Cuyamaca Street	Santee	Signal	AM	38.0	D	>100.0	F	52.6	D
				PM	33.7	D	64.3	E	43.8	D
MM#	Street Segment	Jur.	Capacity	Pre-Mitigation Operations				Post Mitigation		
				Without Project		With Project		Capacity	LOS	
				ADT	LOS	ADT	LOS			
TRA-25	#45. Cuyamaca Street: Woodglen Vista Drive to El Nopal	Santee	15,000	4,472	A	16,422	F	40,000	A	
TRA-26	#46. Cuyamaca Street: El Nopal to Mast Boulevard	Santee	15,000	9,173	C	20,473	F	40,000	B	

Footnotes:

- a. Average delay expressed in second per vehicle.
- b. Level of service.
- c. Existing + Cumulative Projects and Existing + Cumulative Projects + Project conditions LOS is provided.

General Notes:

- 1. EIR MM# = EIR Traffic Study Mitigation Measure number.
- 2. Sig = Significant impact post-mitigation?
- 3. Mitigation provided for locations currently operating at LOS E or F are required to improve operations to better than or equal to pre-Project conditions only.
- 4. Jur. = Jurisdiction
- 5. Control Type: "TWSC"/"Signal" indicates pre- and post-mitigation control type.

**TABLE 12
 MITIGATION PHASING ANALYSIS
 (NO MAGNOLIA AVENUE EXTENSION – PROHIBITED SOUTHBOUND LEFT-TURNS FROM CUYAMACA STREET)**

MM#	ID	Location	Without Magnolia Avenue		With Magnolia Avenue EIR Analysis	
			Total Project Generated ADT	EDU	Total Project Generated ADT	EDU
INTERSECTIONS						
TRA-4	#4.	Woodglen Vista Drive/ Cuyamaca Street	13,924	1,563	19,704	2,212
TRA-5	#6.	El Nopal/ Cuyamaca Street	9,721	1,091	11,822	1,327
TRA-8	#12.	Beck Drive/ Cuyamaca Street	2,102	236	2,364	265
TRA-12	#25.	Mast Boulevard/ Cuyamaca Street	11,297	1,268	19,704	2,212
STREET SEGMENTS						
TRA-25	#45.	Cuyamaca Street: Woodglen Vista Drive to El Nopal	1,053	118	1,379	155
TRA-26	#46.	Cuyamaca Street: El Nopal to Mast Boulevard	11,597	1,302	13,197	1,481

General Notes:

1. MM# = Mitigation Measure number
2. ADT = Average daily trips by the Project
3. EDU = Equivalent dwelling units calculated per *Section 21.4* of the EIR Traffic Study (EIR Appendix N)

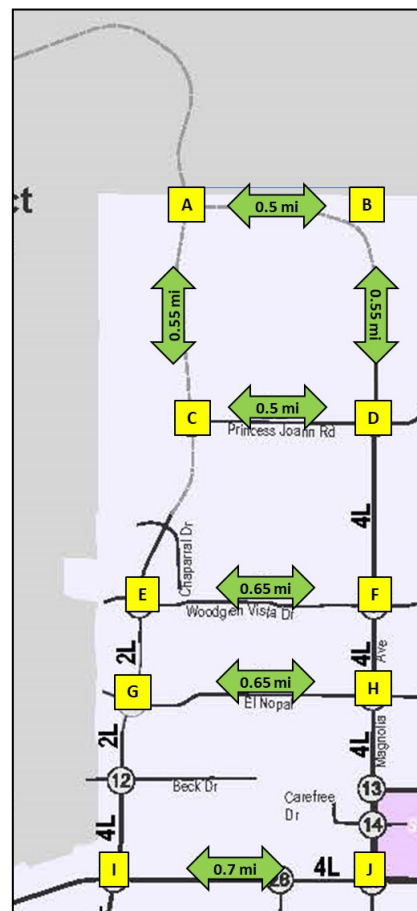
VEHICLE MILES TRAVELED

The EIR Traffic Study analyzed the Project's VMT using data science under existing baseline conditions and using the SANDAG travel demand model for Year 2035 conditions.

The existing data science method categorized the Project into land use types which included Residential, Active Adult age-restricted living, Retail, K-8 Charter School, Recreation Center, Farm, Park and Trails, and RV Parking and Solar Farms. Given there is no existing development on the Project site, proxy sites in the immediate vicinity with similar characteristics were used to determine average trip lengths using Navigation GPS Analytics. Average trip lengths were based on GPS data obtained from daily, weekday trip data for a one-year time period between November 1, 2017 and October 31, 2018. The total data sample size for the proxy sites is approximately 35,000 devices.

The Fanita Ranch Project population estimates were used along with the trip generation estimates for auto mode splits and daily auto trips. Given this method utilized proxy site trip lengths to apply to Project land uses, the changes to the VMT results with or without the Magnolia Avenue extension would be negligible.

For the Year 2035 VMT analysis, the SANDAG model VMT results were reported. The north/south routes of Cuyamaca Street and Magnolia Avenue run parallel to each other for their existing entirety. Without the future extension of Magnolia Avenue coded into the model, any trip destined to/from Magnolia would travel virtually the same distance along Princess Joann Road, Woodglen Vista Drive, El Nopal, or Mast Boulevard (with restricted southbound lefts on Cuyamaca Street), thus also negligibly affecting the results of the VMT analysis.



The exhibit inserted in this section shows the approximate distances between Cuyamaca Street and Magnolia Avenue. Between Routes A → B → D or using Route A → C → D the distance is very similar calculating to approximately 1.0-1.05 miles. Using Woodglen Vista Drive, El Nopal or Mast Boulevard would also result in similar distances traveled. It would therefore be expected that any change to the VMT as a result of the deleting the Magnolia Avenue extension would be de minimis. This is attributable to the grid-like network characteristics of the roadways.

For the scenario with left-turns prohibited, additional VMT would occur for drivers oriented to/from El Nopal to the east. Since only 10% of the total trip generation is oriented to/from El Nopal and only a small amount of additional trip length would occur with this scenario, the overall Project increase in VMT would be de minimis.

In addition, it should be noted that the VMT impact was found to be significant and unavoidable in the EIR and no changes to those conclusions would occur without the connection of Magnolia Avenue, under both scenarios.

SUMMARY AND CONCLUSIONS

As shown in the analysis presented in this letter report, without the connection of the Magnolia Avenue Extension, one segment impact would be a direct impact instead of a cumulative impact (Cuyamaca Street between Woodglen Vista Drive and El Nopal). The mitigation recommended in the EIR of improving Cuyamaca Street between Woodglen Vista Drive and El Nopal to four lanes would fully mitigate this impact. Therefore, no new impacts would occur by deleting the extension of Magnolia Avenue and the previously recommended mitigation would be unchanged.

The VMT analysis and conclusion would not change as a result of the deletion of the extension of Magnolia Avenue. For the reasons explained herein, the grid-like pattern of the north/south corridors of Cuyamaca Street and Magnolia Street intersecting with the east/west roadways of Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard would result in a de minimis change in the distances traveled between the Project site and destinations to the south. Therefore, no changes to the conclusions of significance would occur without the connection of Magnolia Avenue, under both scenarios.

It should also be noted that any change in the travel distance is temporary in nature until Magnolia Avenue is extended per the City's Mobility Element.

Sincerely,

Linscott, Law & Greenspan, Engineers



John Boarman, P.E.
Principal



Cara Hilgesen
Senior Transportation Planner

cc: File

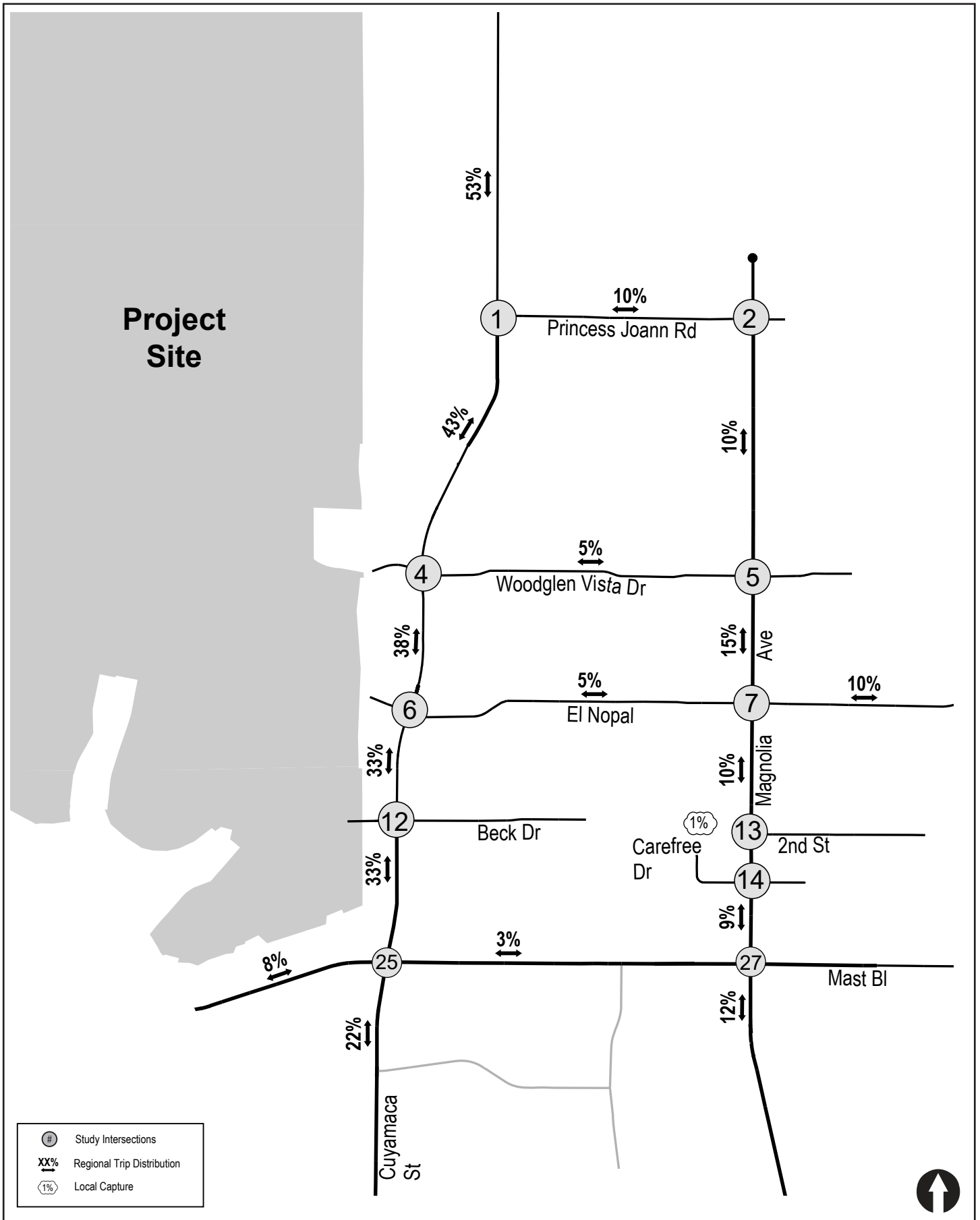


Figure 1

**Project Traffic Distribution
(No Magnolia Avenue Extension)**

FANITA RANCH

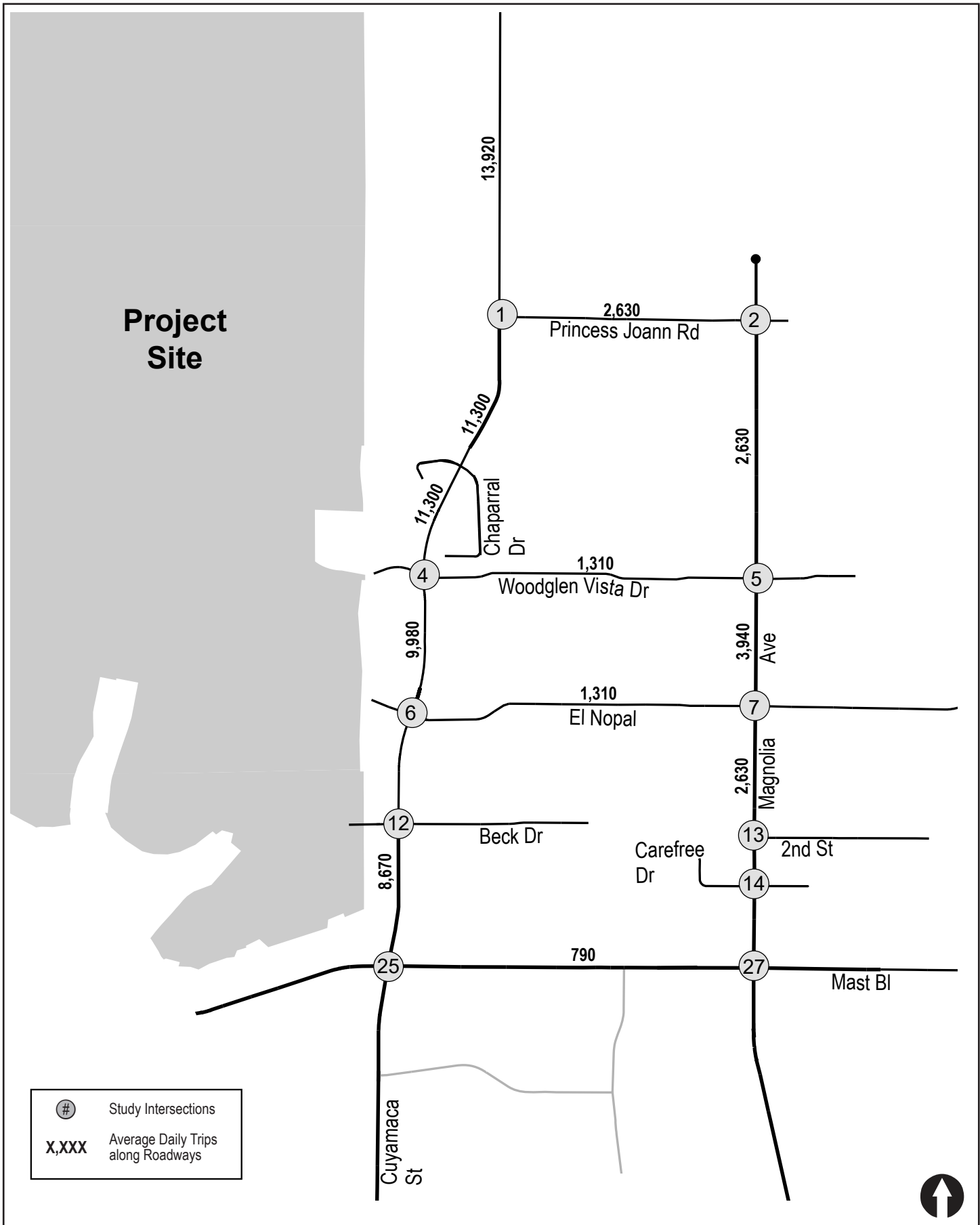
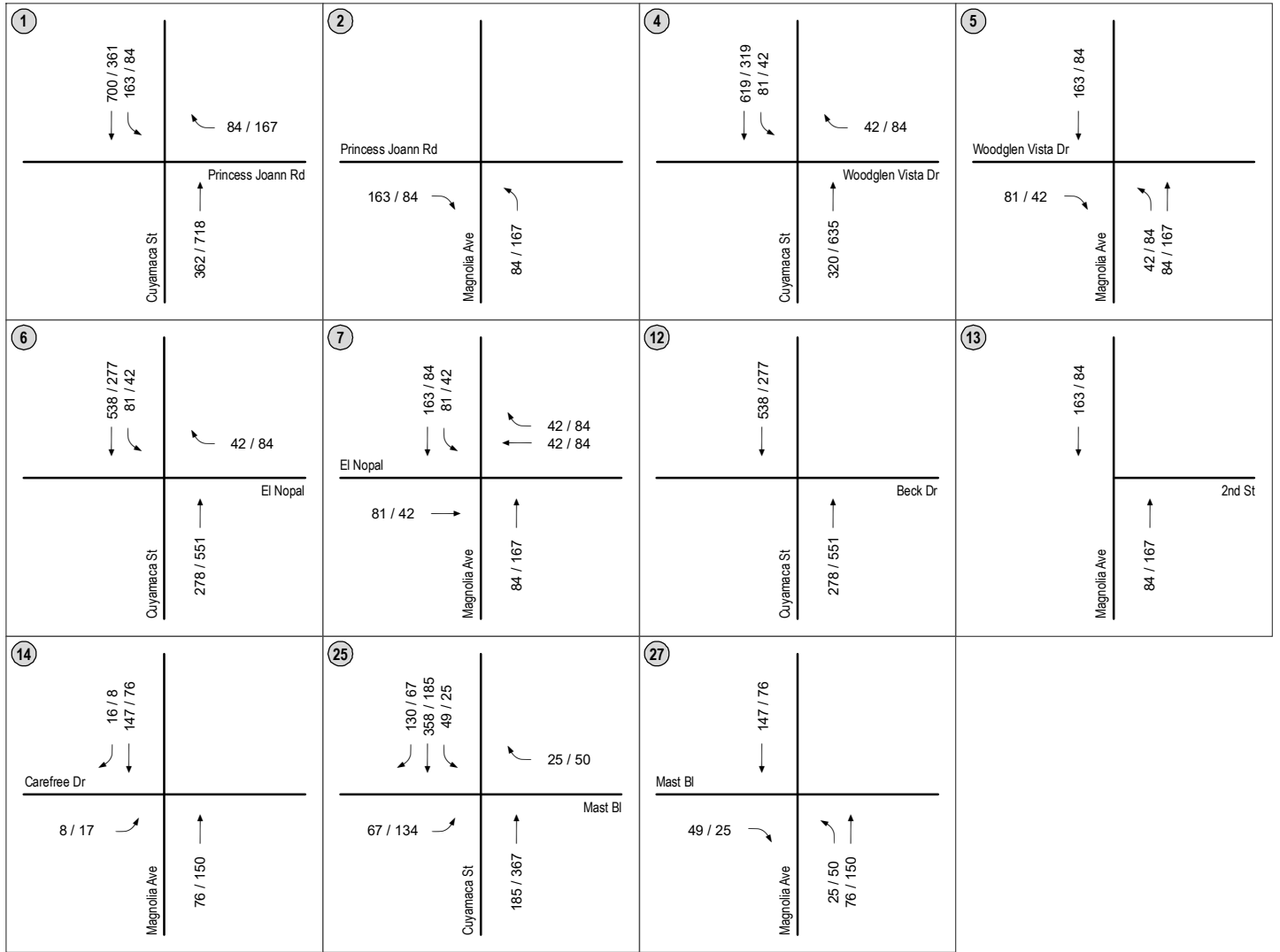


Figure 2a

Project Traffic Volumes
(No Magnolia Avenue Extension)

FANITA RANCH



Study Intersections
 AM / PM Intersection Peak Hour Volumes



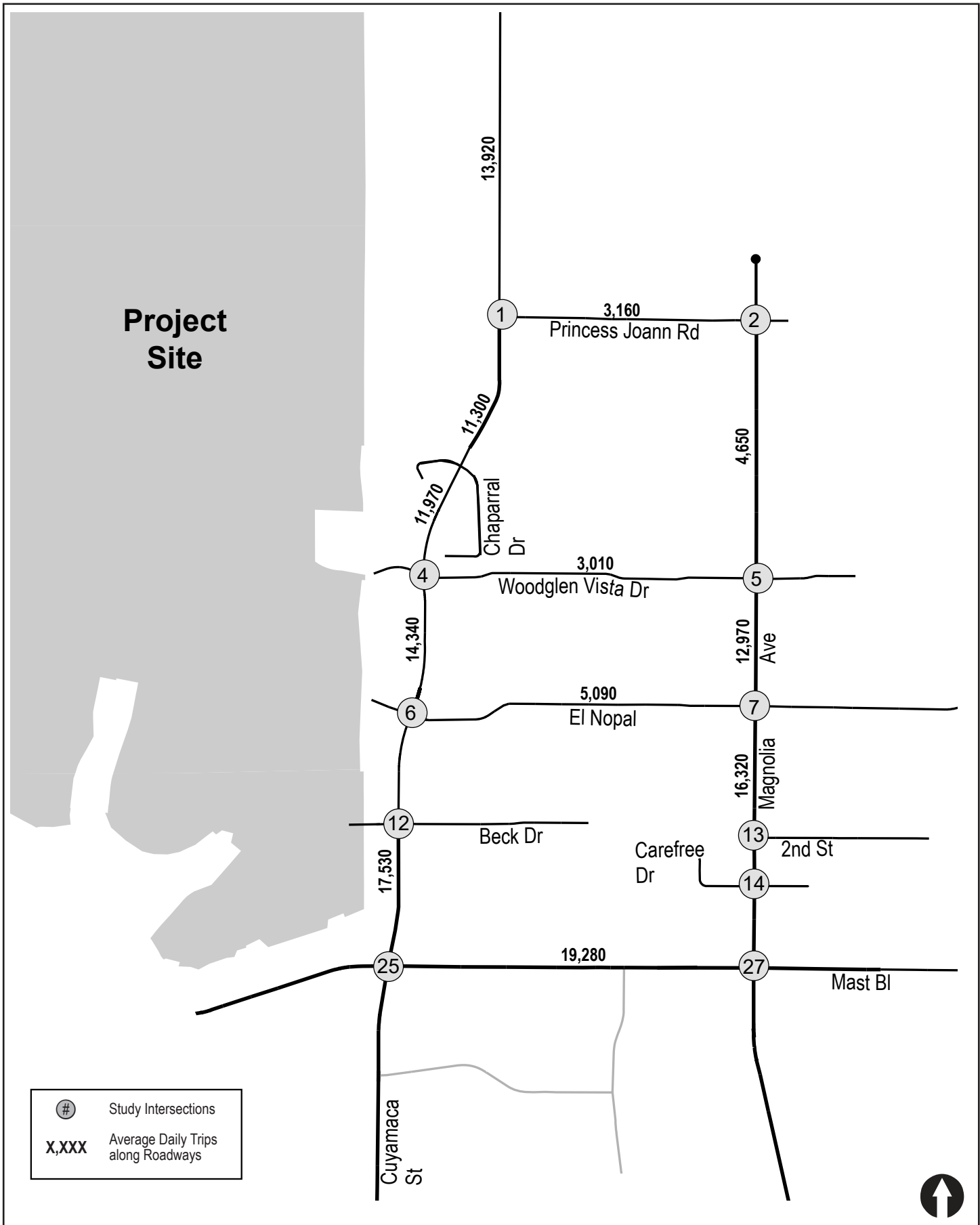
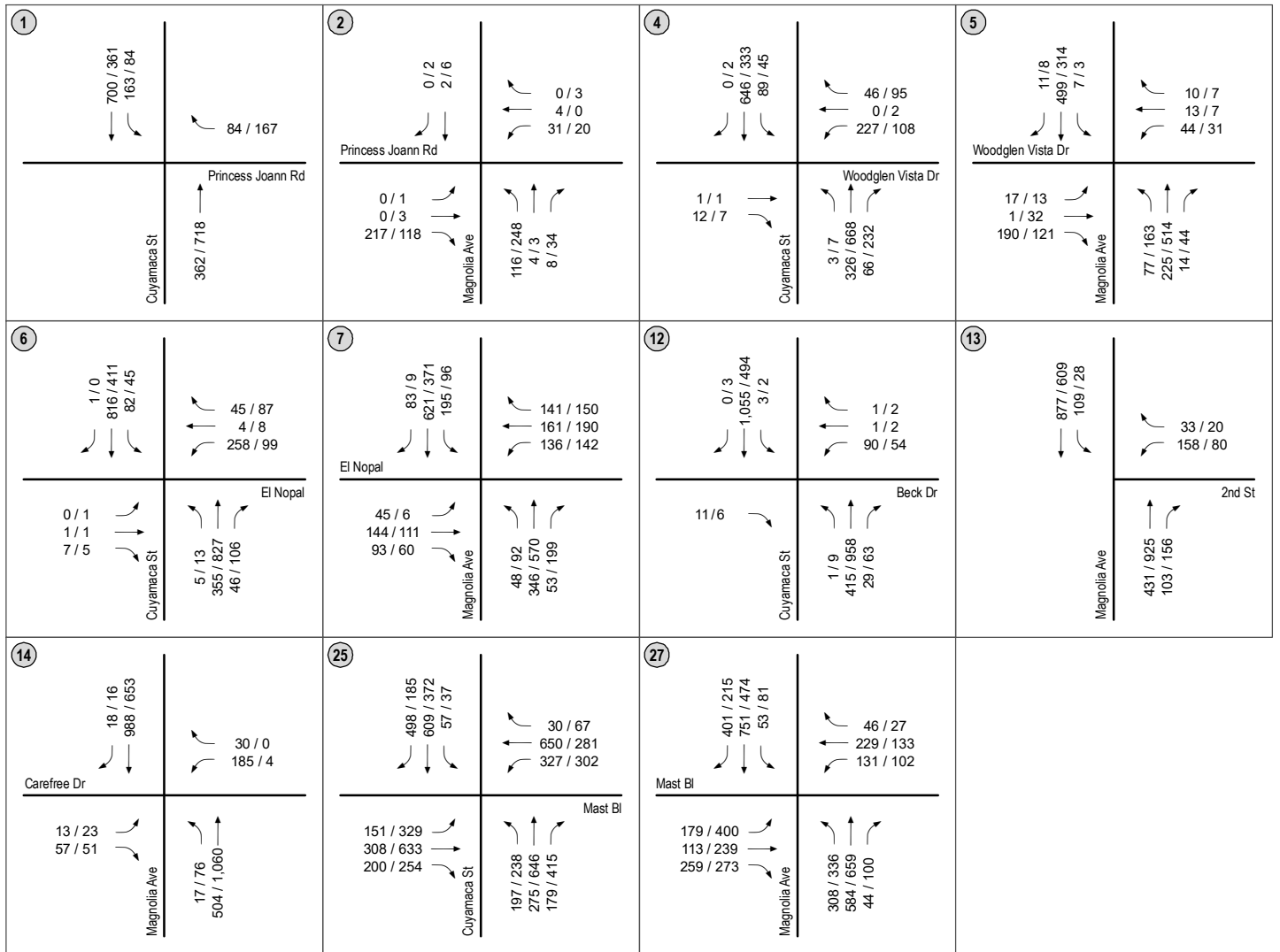


Figure 3a

Existing + Project Traffic Volumes
 (No Magnolia Avenue Extension)

FANITA RANCH



Study Intersections
 AM / PM Intersection Peak Hour Volumes



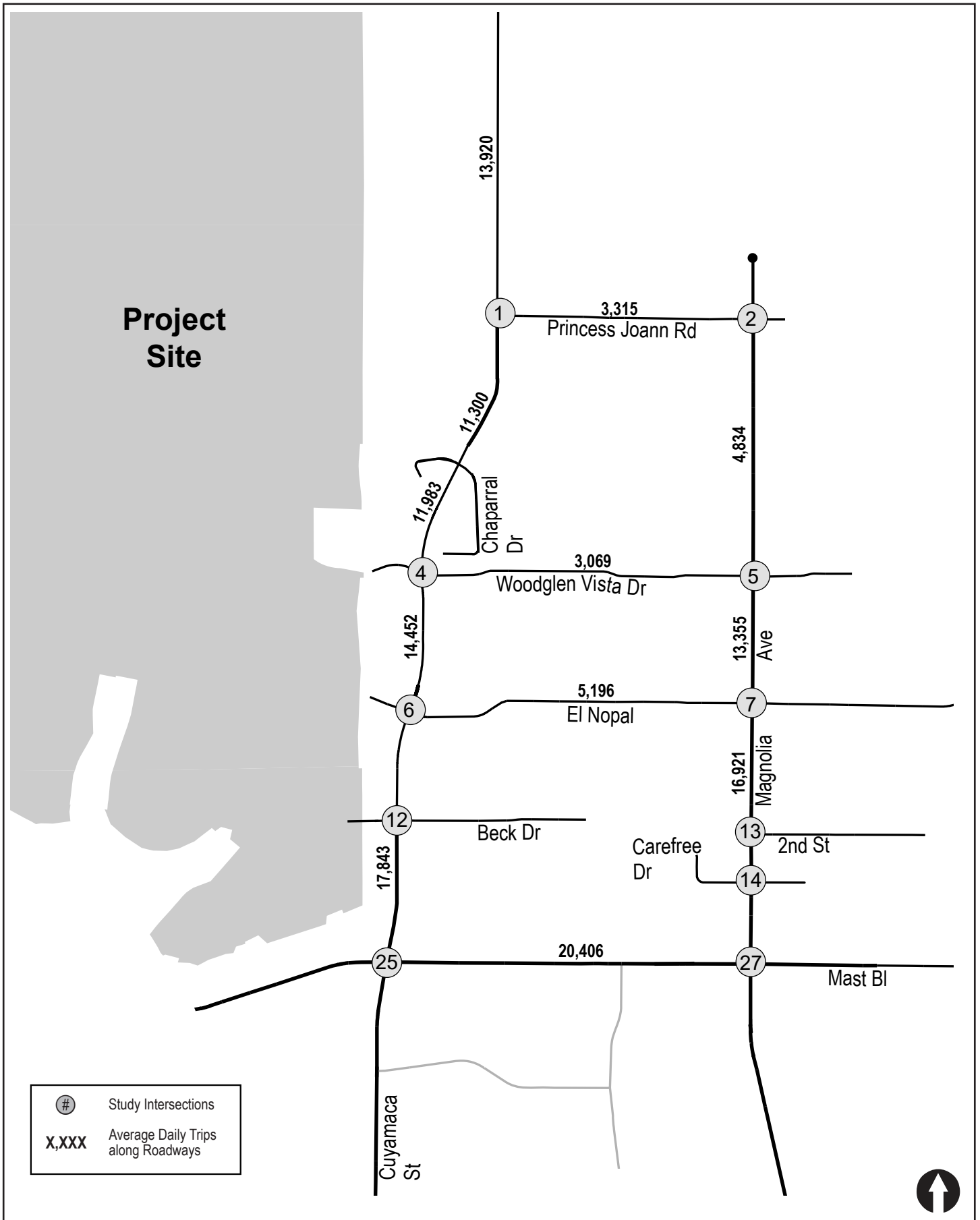
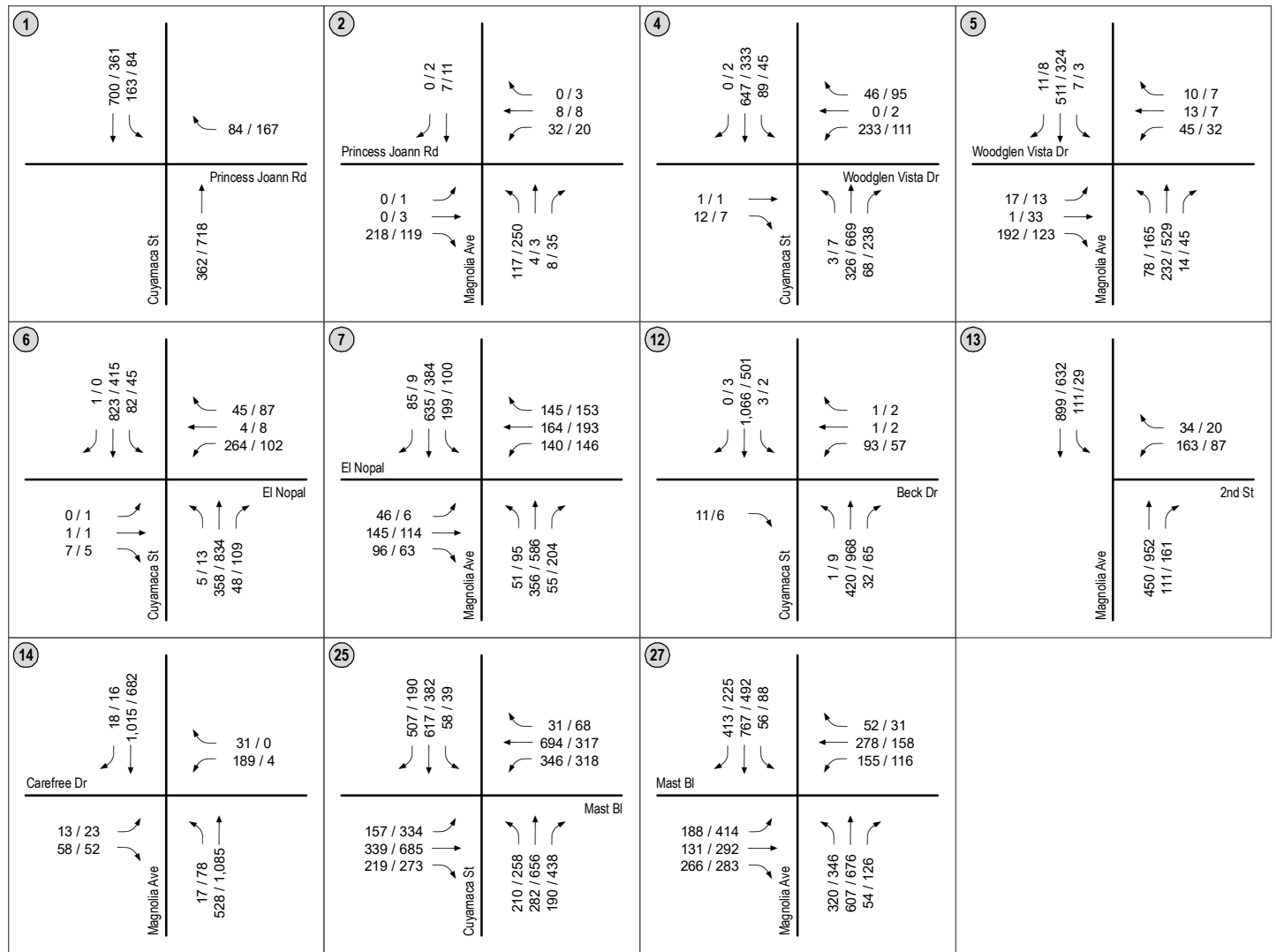


Figure 4a

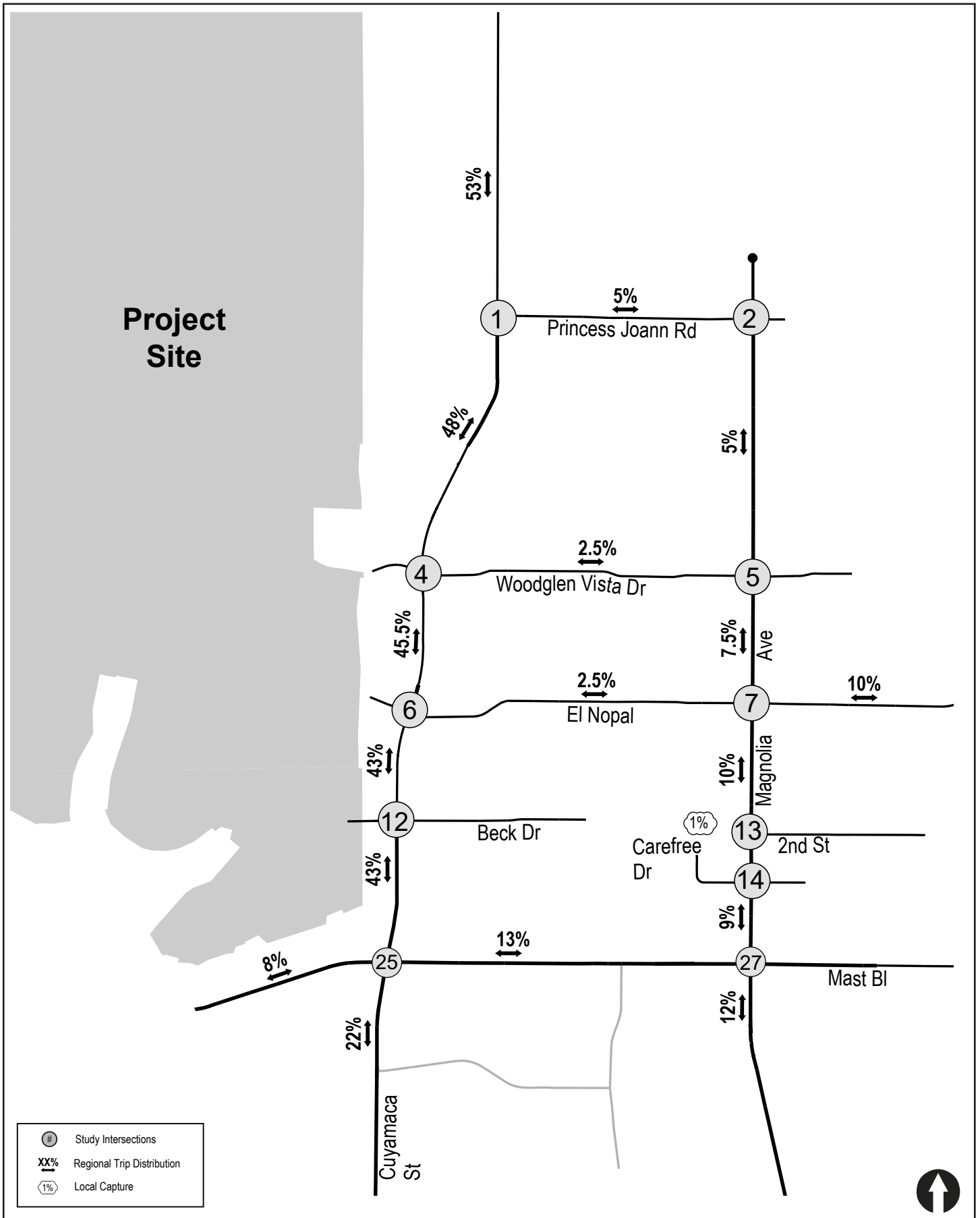
Existing + Cumulative Projects + Project Traffic Volumes
 (No Magnolia Avenue Extension)



Study Intersections

AM / PM
 AM / PM Intersection
 Peak Hour Volumes





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Date: 08/28/20

Figure 5

Project Traffic Distribution
(No Magnolia Avenue Extension - Prohibited Southbound Left-Turns from Cuyamaca Street)

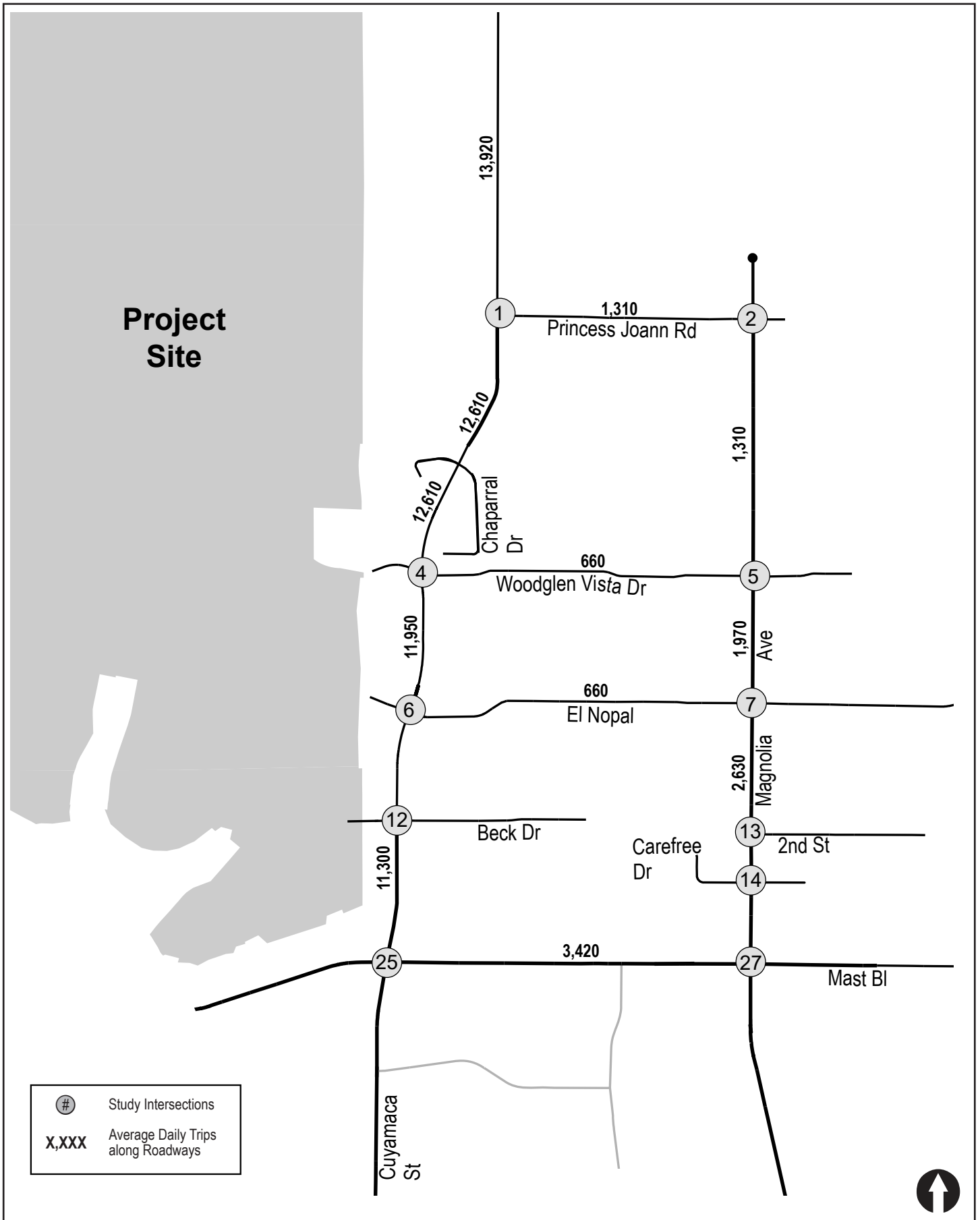
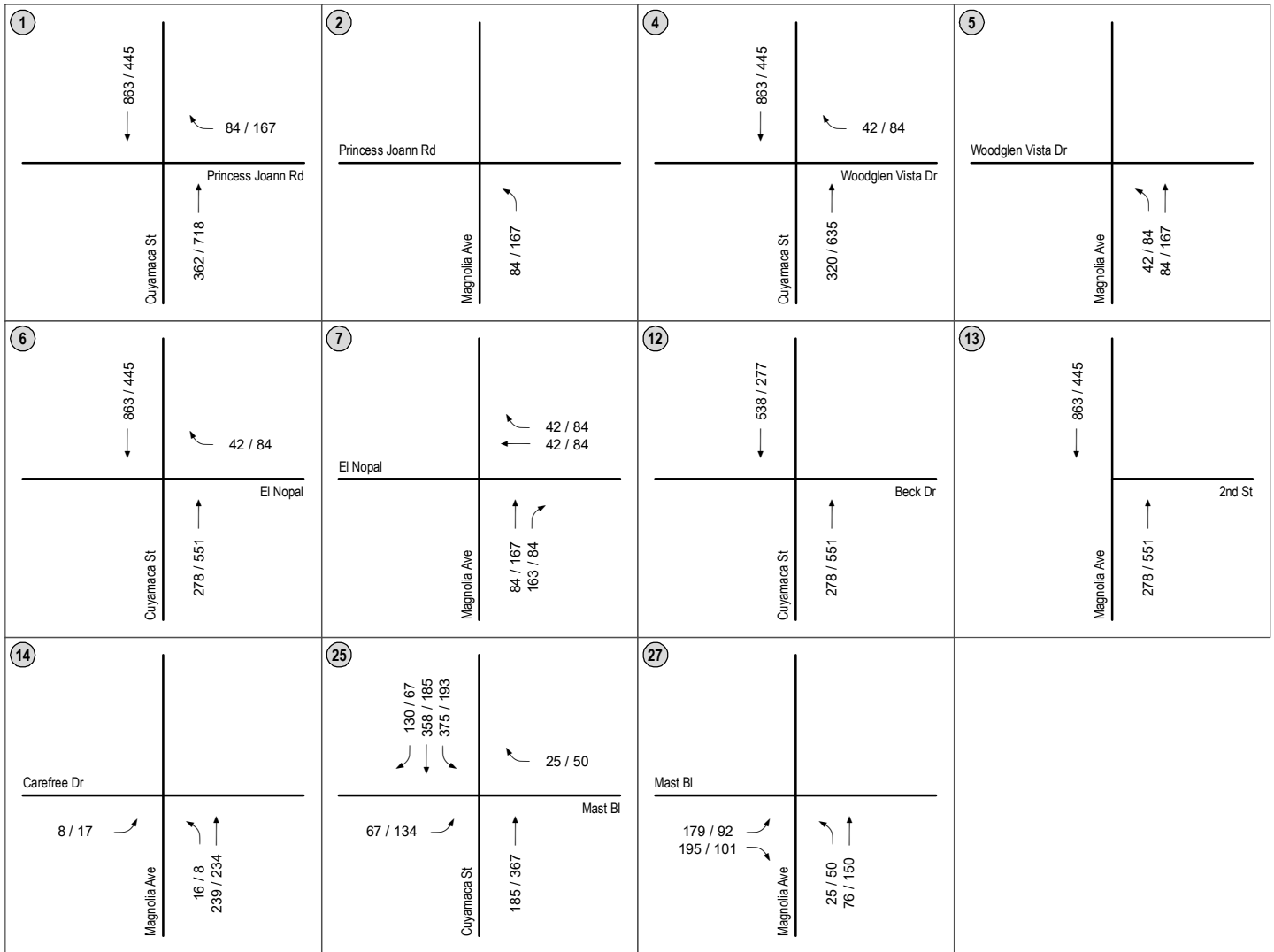


Figure 6a

Project Traffic Volumes

(No Magnolia Avenue Extension - Prohibited Southbound Left-Turns from Cuyamaca Street)



Study Intersections
 AM / PM → AM / PM Intersection Peak Hour Volumes



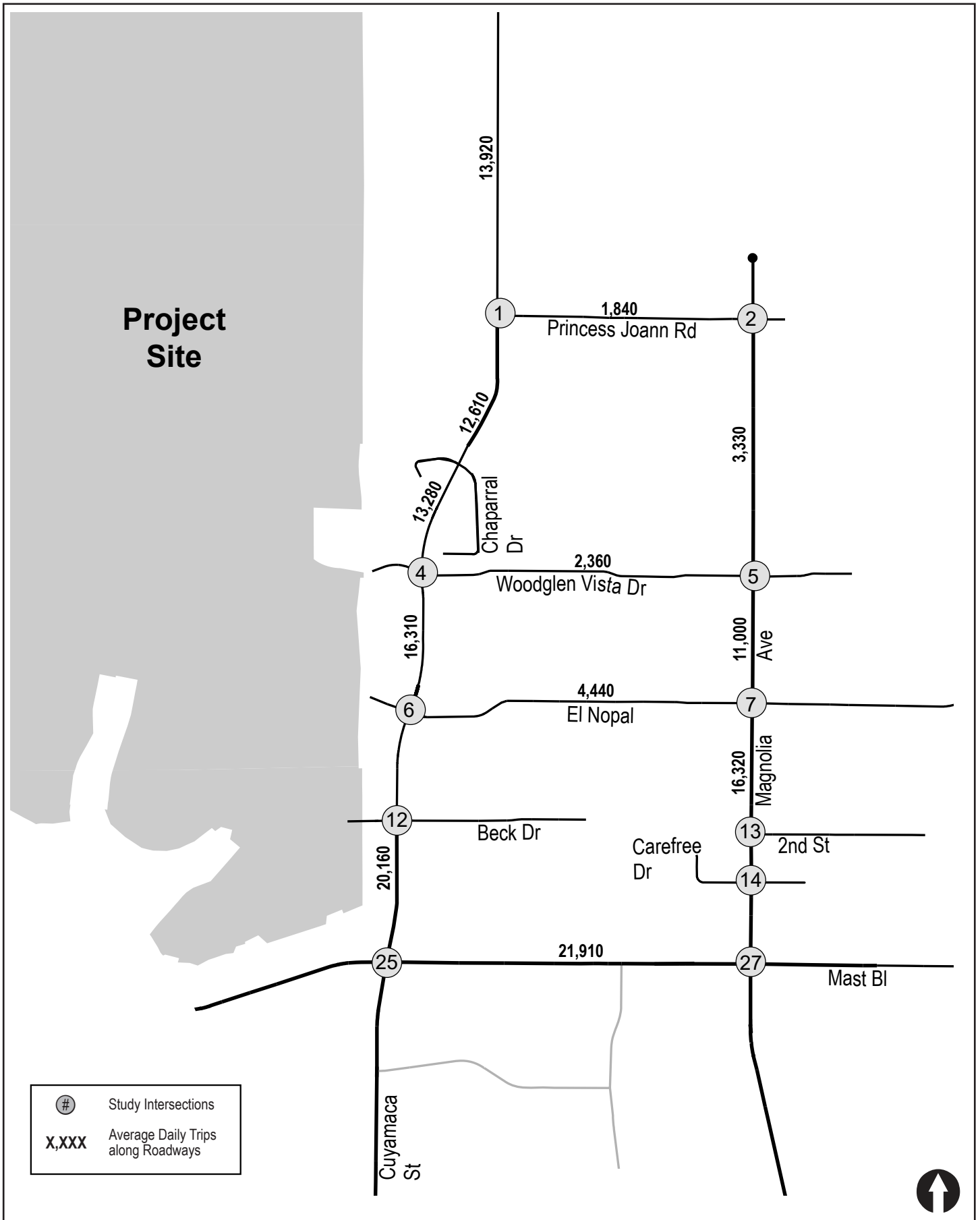
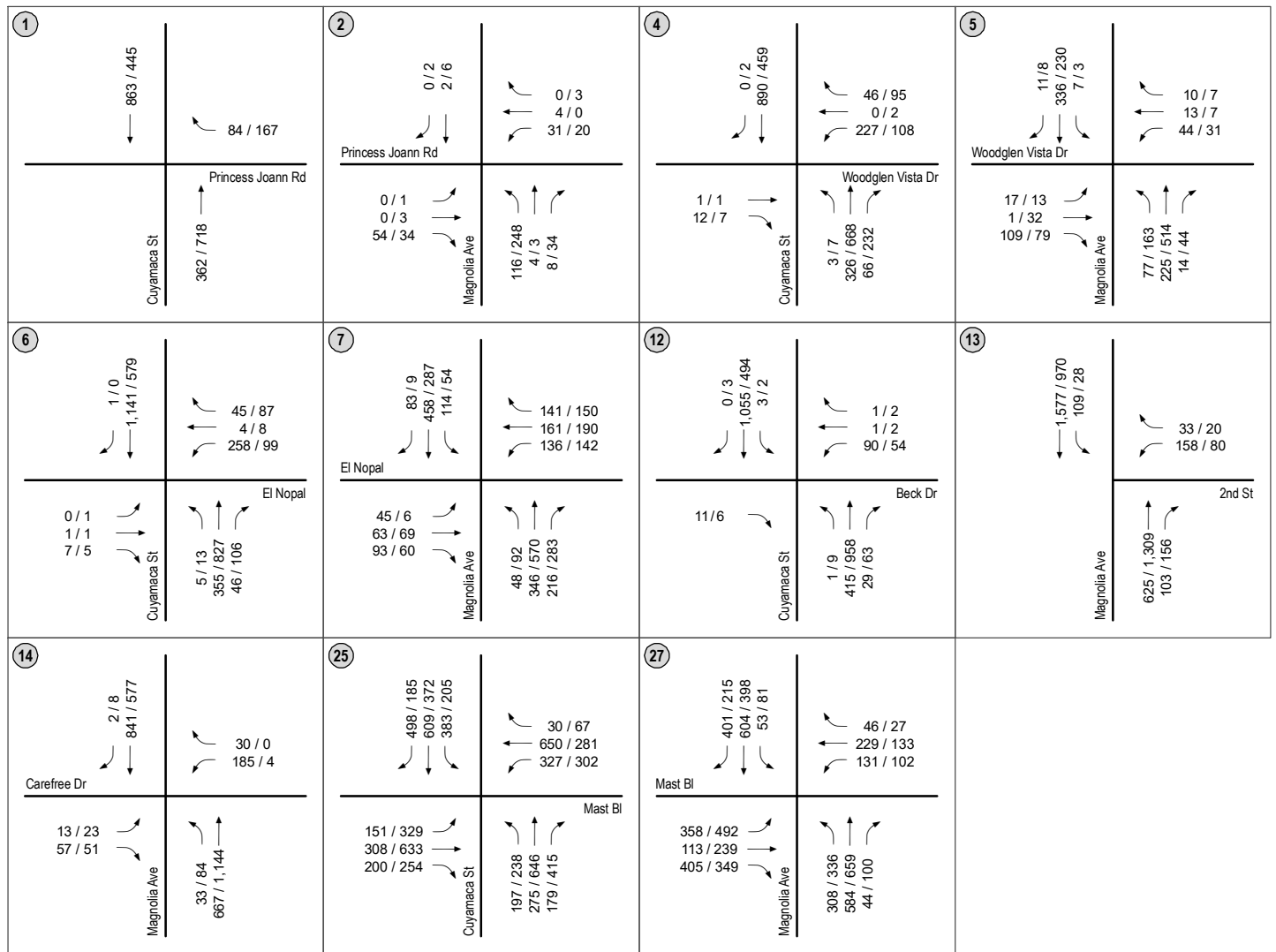


Figure 7a

Existing + Project Traffic Volumes
 (No Magnolia Avenue Extension - Prohibited Southbound Left-Turns from Cuyamaca Street)

FANITA RANCH



Study Intersections
 AM / PM Intersection Peak Hour Volumes



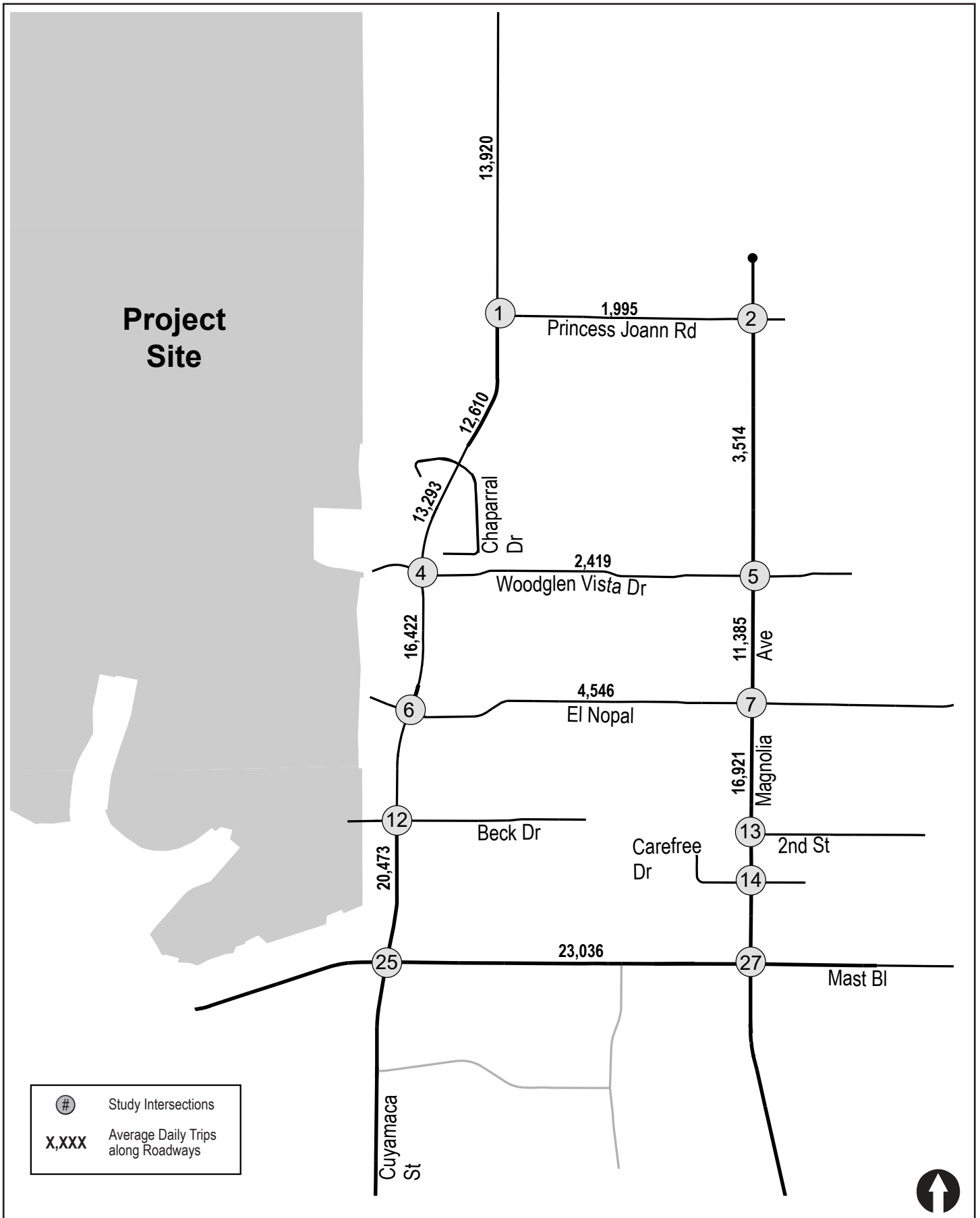
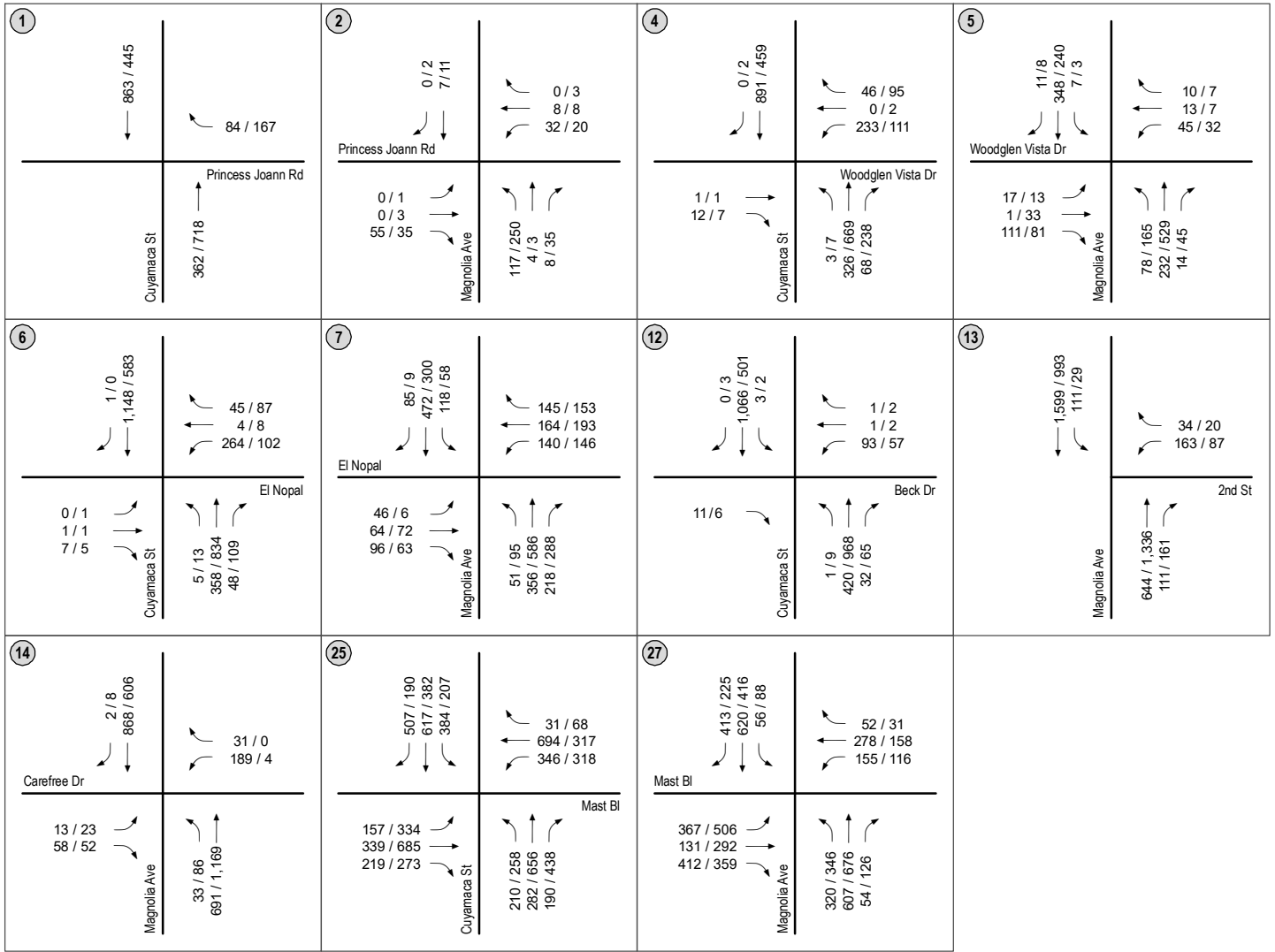


Figure 8a

Existing + Cumulative Projects + Project Traffic Volumes
 (No Magnolia Avenue Extension - Prohibited Southbound Left-Turns from Cuyamaca Street)



Study Intersections
AM / PM Intersection Peak Hour Volumes



ATTACHMENT A
EXISTING + PROJECT (NO MAGNOLIA AVENUE EXTENSION) PEAK HOUR INTERSECTION ANALYSIS
WORKSHEETS

HCM 6th TWSC
 1: Cuyamaca Street & Princess Joann Road

08/27/2020

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	84	362	0	163	700
Future Vol, veh/h	0	84	362	0	163	700
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	91	393	0	177	761

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1508	393	0	0	393
Stage 1	393	-	-	-	-
Stage 2	1115	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	133	656	-	-	1166
Stage 1	682	-	-	-	-
Stage 2	314	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	113	656	-	-	1166
Mov Cap-2 Maneuver	113	-	-	-	-
Stage 1	682	-	-	-	-
Stage 2	266	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	656	1166
HCM Lane V/C Ratio	-	-	0.139	0.152
HCM Control Delay (s)	-	-	11.4	8.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.5	0.5

HCM 6th AWSC
 2: Magnolia Avenue & Princess Joann Road

08/27/2020

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↑	↑	↑	↑
Traffic Vol, veh/h	0	0	217	31	4	0	116	4	8	0	2	0
Future Vol, veh/h	0	0	217	31	4	0	116	4	8	0	2	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	236	34	4	0	126	4	9	0	2	0
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	8.6	8.6	9.6	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	0%	89%	0%	0%	0%
Vol Thru, %	0%	100%	0%	0%	11%	100%	100%	100%
Vol Right, %	0%	0%	100%	100%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	116	4	8	217	35	0	2	0
LT Vol	116	0	0	0	31	0	0	0
Through Vol	0	4	0	0	4	0	2	0
RT Vol	0	0	8	217	0	0	0	0
Lane Flow Rate	126	4	9	236	38	0	2	0
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.199	0.006	0.011	0.28	0.059	0	0.003	0
Departure Headway (Hd)	5.669	5.166	4.462	4.268	5.564	5.337	5.337	5.337
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	634	693	802	844	645	0	670	0
Service Time	3.396	2.893	2.189	1.983	3.286	3.072	3.072	3.072
HCM Lane V/C Ratio	0.199	0.006	0.011	0.28	0.059	0	0.003	0
HCM Control Delay	9.8	7.9	7.2	8.6	8.6	8.1	8.1	8.1
HCM Lane LOS	A	A	A	A	A	N	A	N
HCM 95th-tile Q	0.7	0	0	1.1	0.2	0	0	0

HCM 6th AWSC
4: Cuyamaca Street & Woodglen Vista Drive

08/27/2020

Intersection												
Intersection Delay, s/veh	80.2											
Intersection LOS	F											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	12	227	0	46	3	326	66	89	646	0
Future Vol, veh/h	0	1	12	227	0	46	3	326	66	89	646	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	13	247	0	50	3	354	72	97	702	0
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	11.3	19.3	29.3	131.4
HCM LOS	B	C	D	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	83%	100%	0%
Vol Thru, %	0%	83%	8%	0%	0%	100%
Vol Right, %	0%	17%	92%	17%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	392	13	273	89	646
LT Vol	3	0	0	227	89	0
Through Vol	0	326	1	0	0	646
RT Vol	0	66	12	46	0	0
Lane Flow Rate	3	426	14	297	97	702
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.006	0.774	0.029	0.564	0.186	1.25
Departure Headway (Hd)	7.533	6.898	8.051	7.291	6.917	6.407
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	478	528	447	499	518	569
Service Time	5.233	4.598	6.051	5.291	4.671	4.16
HCM Lane V/C Ratio	0.006	0.807	0.031	0.595	0.187	1.234
HCM Control Delay	10.3	29.4	11.3	19.3	11.3	147.9
HCM Lane LOS	B	D	B	C	B	F
HCM 95th-tile Q	0	7	0.1	3.4	0.7	27.1

HCM 6th Signalized Intersection Summary

5: Magnolia Avenue & Woodglen Vista Drive/Len Street

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	17	1	190	44	13	10	77	225	14	7	499	11
Future Volume (veh/h)	17	1	190	44	13	10	77	225	14	7	499	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	0.95		0.98	1.00		0.97	1.00		0.83
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	18	1	207	48	14	11	84	245	15	8	542	12
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	595	2	452	290	82	44	174	897	55	249	1083	24
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.10	0.26	0.26	0.14	0.31	0.31
Sat Flow, veh/h	1382	7	1421	527	258	139	1781	3396	207	1781	3536	78
Grp Volume(v), veh/h	18	0	208	73	0	0	84	127	133	8	272	282
Grp Sat Flow(s),veh/h/ln	1382	0	1428	924	0	0	1781	1777	1826	1781	1777	1837
Q Serve(g_s), s	0.0	0.0	5.7	0.8	0.0	0.0	2.2	2.8	2.8	0.2	6.1	6.1
Cycle Q Clear(g_c), s	0.4	0.0	5.7	6.4	0.0	0.0	2.2	2.8	2.8	0.2	6.1	6.1
Prop In Lane	1.00		1.00	0.66		0.15	1.00		0.11	1.00		0.04
Lane Grp Cap(c), veh/h	595	0	454	417	0	0	174	470	483	249	544	563
V/C Ratio(X)	0.03	0.00	0.46	0.18	0.00	0.00	0.48	0.27	0.27	0.03	0.50	0.50
Avail Cap(c_a), veh/h	1108	0	984	885	0	0	568	1517	1559	421	1371	1417
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.4	0.0	13.2	12.9	0.0	0.0	20.8	14.2	14.2	18.1	13.8	13.8
Incr Delay (d2), s/veh	0.0	0.0	0.7	0.2	0.0	0.0	2.1	0.3	0.3	0.1	0.7	0.7
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	0.1	0.0	1.7	0.5	0.0	0.0	0.9	0.9	1.0	0.1	2.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	0.0	13.9	13.0	0.0	0.0	22.8	14.5	14.5	18.1	14.5	14.5
LnGrp LOS	B	A	B	B	A	A	C	B	B	B	B	B
Approach Vol, veh/h		226			73			344			562	
Approach Delay, s/veh		13.7			13.0			16.5			14.6	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	1.3	17.3		20.0	9.2	19.4		20.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	1.5	41.5		33.5	15.5	37.5		33.5				
Max Q Clear Time (g_c+1/2), s	1.2	4.8		7.7	4.2	8.1		8.4				
Green Ext Time (p_c), s	0.0	1.4		1.6	0.1	3.3		0.4				

Intersection Summary

HCM 6th Ctrl Delay	14.9
HCM 6th LOS	B

Intersection

Intersection Delay, s/veh 170.5
Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	7	258	4	45	5	355	46	82	816	1
Future Vol, veh/h	0	1	7	258	4	45	5	355	46	82	816	1
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	8	280	4	49	5	386	50	89	887	1
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	12.2	23.6	35.1	283.2
HCM LOS	B	C	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	84%	100%	0%
Vol Thru, %	0%	89%	12%	1%	0%	100%
Vol Right, %	0%	11%	88%	15%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	401	8	307	82	817
LT Vol	5	0	0	258	82	0
Through Vol	0	355	1	4	0	816
RT Vol	0	46	7	45	0	1
Lane Flow Rate	5	436	9	334	89	888
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.011	0.815	0.019	0.639	0.177	1.633
Departure Headway (Hd)	8.067	7.468	9.062	7.787	7.132	6.619
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	446	488	397	467	502	551
Service Time	5.767	5.168	7.062	5.787	4.887	4.374
HCM Lane V/C Ratio	0.011	0.893	0.023	0.715	0.177	1.612
HCM Control Delay	10.9	35.4	12.2	23.6	11.4	310.5
HCM Lane LOS	B	E	B	C	B	F
HCM 95th-tile Q	0	7.8	0.1	4.4	0.6	49.4

HCM 6th Signalized Intersection Summary
 7: Magnolia Avenue & El Nopal

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	45	144	93	136	161	141	48	346	53	195	621	83
Future Volume (veh/h)	45	144	93	136	161	141	48	346	53	195	621	83
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
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	49	157	101	148	175	153	52	376	58	212	675	90
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	105	199	128	188	214	187	109	1013	155	255	1290	172
Arrive On Green	0.06	0.19	0.19	0.11	0.23	0.23	0.06	0.33	0.33	0.14	0.41	0.41
Sat Flow, veh/h	1781	1057	680	1781	913	798	1781	3084	472	1781	3142	418
Grp Volume(v), veh/h	49	0	258	148	0	328	52	215	219	212	381	384
Grp Sat Flow(s),veh/h/ln	1781	0	1736	1781	0	1711	1781	1777	1778	1781	1777	1784
Q Serve(g_s), s	2.0	0.0	10.9	6.2	0.0	13.9	2.2	7.1	7.2	8.9	12.4	12.4
Cycle Q Clear(g_c), s	2.0	0.0	10.9	6.2	0.0	13.9	2.2	7.1	7.2	8.9	12.4	12.4
Prop In Lane	1.00		0.39	1.00		0.47	1.00		0.27	1.00		0.23
Lane Grp Cap(c), veh/h	105	0	326	188	0	401	109	584	584	255	730	732
V/C Ratio(X)	0.47	0.00	0.79	0.79	0.00	0.82	0.48	0.37	0.37	0.83	0.52	0.52
Avail Cap(c_a), veh/h	197	0	532	430	0	747	197	584	584	360	730	732
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	0.0	29.7	33.5	0.0	27.8	34.8	19.7	19.7	32.0	17.0	17.0
Incr Delay (d2), s/veh	3.2	0.0	4.3	7.0	0.0	4.1	3.2	1.8	1.8	10.8	2.7	2.7
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	0.0	0.0	4.8	3.0	0.0	6.0	1.0	3.0	3.0	4.4	5.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.1	0.0	34.0	40.5	0.0	31.9	38.1	21.5	21.6	42.7	19.6	19.7
LnGrp LOS	D	A	C	D	A	C	D	C	C	D	B	B
Approach Vol, veh/h		307			476			486			977	
Approach Delay, s/veh		34.7			34.6			23.3			24.7	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.5	29.7	12.6	18.9	9.2	36.0	9.0	22.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	15.5	24.5	18.5	23.5	8.5	31.5	8.5	33.5				
Max Q Clear Time (g_c+110), s	11.0	9.2	8.2	12.9	4.2	14.4	4.0	15.9				
Green Ext Time (p_c), s	0.2	2.1	0.3	1.1	0.0	4.2	0.0	2.0				

Intersection Summary

HCM 6th Ctrl Delay	27.8
HCM 6th LOS	C

HCM 6th AWSC
12: Cuyamaca Street & Beck Drive

08/27/2020

Intersection

Intersection Delay, s/veh 297.7

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕	↕	↕	↕	
Traffic Vol, veh/h	0	0	11	90	1	1	1	415	29	3	1055	0
Future Vol, veh/h	0	0	11	90	1	1	1	415	29	3	1055	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	12	98	1	1	1	451	32	3	1147	0
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	11.5	14.5	21.8	441.3
HCM LOS	B	B	C	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	98%	100%	0%
Vol Thru, %	0%	100%	0%	0%	1%	0%	100%
Vol Right, %	0%	0%	100%	100%	1%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	415	29	11	92	3	1055
LT Vol	1	0	0	0	90	3	0
Through Vol	0	415	0	0	1	0	1055
RT Vol	0	0	29	11	1	0	0
Lane Flow Rate	1	451	32	12	100	3	1147
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.002	0.704	0.043	0.023	0.215	0.006	1.936
Departure Headway (Hd)	6.884	6.373	5.659	8.606	9.295	6.582	6.078
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	523	573	637	418	389	540	596
Service Time	4.584	4.073	3.359	6.306	6.995	4.372	3.868
HCM Lane V/C Ratio	0.002	0.787	0.05	0.029	0.257	0.006	1.924
HCM Control Delay	9.6	22.8	8.6	11.5	14.5	9.4	442.5
HCM Lane LOS	A	C	A	B	B	A	F
HCM 95th-tile Q	0	5.6	0.1	0.1	0.8	0	74

HCM 6th Signalized Intersection Summary
 13: Magnolia Avenue & 2nd Street

08/27/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	158	33	431	103	109	877
Future Volume (veh/h)	158	33	431	103	109	877
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	172	36	468	112	118	953
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	256	228	879	209	150	1949
Arrive On Green	0.14	0.14	0.31	0.31	0.08	0.55
Sat Flow, veh/h	1781	1585	2931	674	1781	3647
Grp Volume(v), veh/h	172	36	292	288	118	953
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1735	1781	1777
Q Serve(g_s), s	2.7	0.6	4.0	4.0	1.9	4.8
Cycle Q Clear(g_c), s	2.7	0.6	4.0	4.0	1.9	4.8
Prop In Lane	1.00	1.00		0.39	1.00	
Lane Grp Cap(c), veh/h	256	228	551	538	150	1949
V/C Ratio(X)	0.67	0.16	0.53	0.54	0.79	0.49
Avail Cap(c_a), veh/h	1098	977	1095	1069	335	3406
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	11.9	11.0	8.3	8.3	13.1	4.1
Incr Delay (d2), s/veh	3.1	0.3	0.8	0.8	8.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.9	0.9	0.9	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.9	11.3	9.1	9.2	21.8	4.3
LnGrp LOS	B	B	A	A	C	A
Approach Vol, veh/h	208		580			1071
Approach Delay, s/veh	14.3		9.1			6.2
Approach LOS	B		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.0	13.6			20.5	8.7
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	5.5	18.0			28.0	18.0
Max Q Clear Time (g_c+1), s	13.5	6.0			6.8	4.7
Green Ext Time (p_c), s	0.0	2.6			6.5	0.5
Intersection Summary						
HCM 6th Ctrl Delay			8.0			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

14: Magnolia Avenue & Carefree Drive

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↖	↗	↖	↕			↕	
Traffic Volume (veh/h)	13	0	57	185	0	30	17	504	0	0	988	18
Future Volume (veh/h)	13	0	57	185	0	30	17	504	0	0	988	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	1.00		1.00	1.00		1.00	1.00		0.95
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		No		No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	14	0	62	201	0	33	18	548	0	0	1074	20
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	0	0	2	2
Cap, veh/h	55	0	242	342	0	152	31	1632	0	0	1300	24
Arrive On Green	0.21	0.00	0.21	0.10	0.00	0.10	0.02	0.46	0.00	0.00	0.36	0.36
Sat Flow, veh/h	257	0	1137	3563	0	1585	1781	3647	0	0	3659	66
Grp Volume(v), veh/h	76	0	0	201	0	33	18	548	0	0	535	559
Grp Sat Flow(s),veh/h/ln1393	0	0	0	1781	0	1585	1781	1777	0	0	1777	1855
Q Serve(g_s), s	2.6	0.0	0.0	3.1	0.0	1.1	0.6	5.7	0.0	0.0	15.9	15.9
Cycle Q Clear(g_c), s	2.6	0.0	0.0	3.1	0.0	1.1	0.6	5.7	0.0	0.0	15.9	15.9
Prop In Lane	0.18		0.82	1.00		1.00	1.00		0.00	0.00		0.04
Lane Grp Cap(c), veh/h	296	0	0	342	0	152	31	1632	0	0	648	676
V/C Ratio(X)	0.26	0.00	0.00	0.59	0.00	0.22	0.58	0.34	0.00	0.00	0.83	0.83
Avail Cap(c_a), veh/h	431	0	0	980	0	436	123	1986	0	0	733	765
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	0.0	0.0	25.2	0.0	24.3	28.4	10.1	0.0	0.0	16.8	16.8
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.6	0.0	0.7	16.1	0.1	0.0	0.0	7.0	6.7
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/ln0.8	0.0	0.0	0.0	1.3	0.0	0.4	0.4	1.8	0.0	0.0	6.6	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.5	0.0	0.0	26.8	0.0	25.0	44.5	10.2	0.0	0.0	23.8	23.5
LnGrp LOS	B	A	A	C	A	C	D	B	A	A	C	C
Approach Vol, veh/h		76		234		566		1094				
Approach Delay, s/veh		19.5		26.5		11.3		23.7				
Approach LOS		B		C		B		C				
Timer - Assigned Phs		2		4		5		6				8
Phs Duration (G+Y+Rc), s		31.2		16.9		5.5		25.7				10.1
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				4.5
Max Green Setting (Gmax), s		32.5		18.0		4.0		24.0				16.0
Max Q Clear Time (g_c+11), s		7.7		4.6		2.6		17.9				5.1
Green Ext Time (p_c), s		3.5		0.3		0.0		3.3				0.6

Intersection Summary

HCM 6th Ctrl Delay	20.3
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	308	200	327	650	30	197	275	179	57	609	498
Future Volume (veh/h)	151	308	200	327	650	30	197	275	179	57	609	498
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
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	164	335	217	355	707	33	214	299	195	62	662	541
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	195	1084	473	411	1086	51	270	1201	715	71	555	449
Arrive On Green	0.11	0.31	0.31	0.12	0.31	0.31	0.08	0.34	0.34	0.04	0.30	0.30
Sat Flow, veh/h	1781	3554	1549	3456	3454	161	3456	3554	1559	1781	1849	1498
Grp Volume(v), veh/h	164	335	217	355	364	376	214	299	195	62	636	567
Grp Sat Flow(s),veh/h/ln	1781	1777	1549	1728	1777	1838	1728	1777	1559	1781	1777	1570
Q Serve(g_s), s	9.0	7.2	11.3	10.1	17.6	17.7	6.1	6.1	7.8	3.5	30.0	30.0
Cycle Q Clear(g_c), s	9.0	7.2	11.3	10.1	17.6	17.7	6.1	6.1	7.8	3.5	30.0	30.0
Prop In Lane	1.00		1.00	1.00		0.09	1.00		1.00	1.00		0.95
Lane Grp Cap(c), veh/h	195	1084	473	411	559	578	270	1201	715	71	533	471
V/C Ratio(X)	0.84	0.31	0.46	0.86	0.65	0.65	0.79	0.25	0.27	0.87	1.19	1.20
Avail Cap(c_a), veh/h	233	1087	474	411	559	578	270	1201	715	71	533	471
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	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	26.7	28.1	43.3	29.5	29.6	45.3	23.9	16.9	47.7	35.0	35.0
Incr Delay (d2), s/veh	17.7	0.7	3.2	15.5	5.5	5.3	13.9	0.2	0.3	62.3	104.3	110.5
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	4.8	3.1	4.5	5.1	8.0	8.3	3.1	2.5	2.7	2.7	27.9	25.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	27.4	31.3	58.8	35.0	34.8	59.2	24.1	17.1	110.1	139.3	145.5
LnGrp LOS	E	C	C	E	C	C	E	C	B	F	F	F
Approach Vol, veh/h	716			1095			708			1265		
Approach Delay, s/veh	36.3			42.7			32.8			140.6		
Approach LOS	D			D			C			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	36.8	12.0	35.1	15.2	37.7	8.2	38.9				
Change Period (Y+Rc), s	4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	30.6	* 7.8	* 30	* 13	* 30	* 4	33.7					
Max Q Clear Time (g_c+ll), s	13.3	8.1	32.0	11.0	19.7	5.5	9.8					
Green Ext Time (p_c), s	0.0	3.8	0.0	0.0	0.0	3.9	0.0	3.7				

Intersection Summary

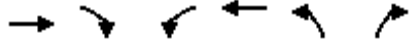
HCM 6th Ctrl Delay	72.4
HCM 6th LOS	E

Notes

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

HCM 6th Signalized Intersection Summary
 26: Park Center Drive & Mast Blvd

08/27/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (veh/h)	500	67	116	910	21	90
Future Volume (veh/h)	500	67	116	910	21	90
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.95	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	543	73	126	989	23	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1054	141	162	2094	156	138
Arrive On Green	0.34	0.34	0.09	0.59	0.09	0.09
Sat Flow, veh/h	3222	419	1781	3647	1781	1585
Grp Volume(v), veh/h	307	309	126	989	23	98
Grp Sat Flow(s),veh/h/ln	1777	1777	1781	1777	1781	1585
Q Serve(g_s), s	3.9	3.9	1.9	4.4	0.3	1.7
Cycle Q Clear(g_c), s	3.9	3.9	1.9	4.4	0.3	1.7
Prop In Lane		0.24	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	598	596	162	2094	156	138
V/C Ratio(X)	0.51	0.52	0.78	0.47	0.15	0.71
Avail Cap(c_a), veh/h	1194	1189	627	4214	1152	1025
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	7.4	7.4	12.4	3.3	11.7	12.4
Incr Delay (d2), s/veh	0.7	0.7	7.9	0.2	0.4	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.8	0.9	0.0	0.1	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.1	8.1	20.3	3.4	12.2	18.8
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	616			1115	121	
Approach Delay, s/veh	8.1			5.3	17.6	
Approach LOS	A			A	B	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.0	13.9			20.9	6.9
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	18.7	18.7			33.0	18.0
Max Q Clear Time (g_c+1), s	5.9	5.9			6.4	3.7
Green Ext Time (p_c), s	0.1	2.9			7.4	0.3
Intersection Summary						
HCM 6th Ctrl Delay			7.0			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 27: Magnolia Avenue & Mast Blvd

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↗	↑↑	↗	↔↔	↑↑		↗	↑↑	↗
Traffic Volume (veh/h)	179	113	259	131	229	46	308	584	44	53	751	401
Future Volume (veh/h)	179	113	259	131	229	46	308	584	44	53	751	401
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.94	1.00		0.98	1.00		0.98
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	195	123	282	142	249	50	335	635	48	58	816	436
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	424	924	399	174	815	343	330	1213	92	107	1163	508
Arrive On Green	0.12	0.26	0.26	0.10	0.23	0.23	0.10	0.36	0.36	0.06	0.33	0.33
Sat Flow, veh/h	3456	3554	1534	1781	3554	1496	3456	3343	252	1781	3554	1553
Grp Volume(v), veh/h	195	123	282	142	249	50	335	337	346	58	816	436
Grp Sat Flow(s),veh/h/ln	1728	1777	1534	1781	1777	1496	1728	1777	1818	1781	1777	1553
Q Serve(g_s), s	4.7	2.4	14.8	6.9	5.2	2.4	8.5	13.3	13.3	2.8	17.8	23.4
Cycle Q Clear(g_c), s	4.7	2.4	14.8	6.9	5.2	2.4	8.5	13.3	13.3	2.8	17.8	23.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	424	924	399	174	815	343	330	645	660	107	1163	508
V/C Ratio(X)	0.46	0.13	0.71	0.82	0.31	0.15	1.01	0.52	0.52	0.54	0.70	0.86
Avail Cap(c_a), veh/h	428	1275	551	182	1179	496	330	645	660	178	1239	541
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	36.3	25.2	29.8	39.3	28.4	27.3	40.2	22.3	22.3	40.6	26.1	28.0
Incr Delay (d2), s/veh	0.9	0.1	3.0	21.6	0.3	0.2	53.1	0.8	0.8	1.6	1.7	12.5
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	1.9	1.0	5.5	4.0	2.2	0.8	5.9	5.3	5.4	1.2	7.3	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	25.3	32.8	60.9	28.6	27.5	93.3	23.0	23.0	42.2	27.8	40.4
LnGrp LOS	D	C	C	E	C	C	F	C	C	D	C	D
Approach Vol, veh/h		600			441			1018			1310	
Approach Delay, s/veh		32.7			38.9			46.1			32.6	
Approach LOS		C			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	32.2	28.6	13.0	34.1	15.9	25.9	9.8	37.3				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.0	5.0	5.5	4.5	5.0				
Max Green Setting (Gmax), s	31.9	8.5	31.0	11.0	29.5	8.9	30.6					
Max Q Clear Time (g_c+1/3), s	16.8	10.5	25.4	6.7	7.2	4.8	15.3					
Green Ext Time (p_c), s	0.0	1.8	0.0	3.2	0.3	2.0	0.0	3.5				

Intersection Summary

HCM 6th Ctrl Delay	37.5
HCM 6th LOS	D

HCM 6th TWSC
 1: Cuyamaca Street & Princess Joann Road

08/27/2020

Intersection						
Int Delay, s/veh	3.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	167	718	0	84	361
Future Vol, veh/h	0	167	718	0	84	361
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	182	780	0	91	392

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1354	780	0	0	780	0
Stage 1	780	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	165	395	-	-	837	-
Stage 1	452	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	147	395	-	-	837	-
Mov Cap-2 Maneuver	147	-	-	-	-	-
Stage 1	452	-	-	-	-	-
Stage 2	502	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	1.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	395	837
HCM Lane V/C Ratio	-	-	0.46	0.109
HCM Control Delay (s)	-	-	21.6	9.8
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	2.3	0.4

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↑	↑	↑	↑
Traffic Vol, veh/h	1	3	118	20	0	3	248	3	34	0	6	2
Future Vol, veh/h	1	3	118	20	0	3	248	3	34	0	6	2
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	3	128	22	0	3	270	3	37	0	7	2
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	8.4	8.8	11.3	7.8
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	1%	87%	0%	0%	0%
Vol Thru, %	0%	100%	0%	2%	0%	100%	100%	0%
Vol Right, %	0%	0%	100%	97%	13%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	248	3	34	122	23	0	6	2
LT Vol	248	0	0	1	20	0	0	0
Through Vol	0	3	0	3	0	0	6	0
RT Vol	0	0	34	118	3	0	0	2
Lane Flow Rate	270	3	37	133	25	0	7	2
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.407	0.004	0.043	0.174	0.041	0	0.009	0.003
Departure Headway (Hd)	5.437	4.935	4.232	4.716	5.843	5.229	5.229	4.524
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	663	725	846	763	613	0	683	789
Service Time	3.166	2.664	1.961	2.437	3.573	2.97	2.97	2.265
HCM Lane V/C Ratio	0.407	0.004	0.044	0.174	0.041	0	0.01	0.003
HCM Control Delay	11.9	7.7	7.2	8.4	8.8	8	8	7.3
HCM Lane LOS	B	A	A	A	A	N	A	A
HCM 95th-tile Q	2	0	0.1	0.6	0.1	0	0	0

HCM 6th AWSC
 4: Cuyamaca Street & Woodglen Vista Drive

08/27/2020

Intersection

Intersection Delay, s/veh 172.4

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	7	108	2	95	7	668	232	45	333	2
Future Vol, veh/h	0	1	7	108	2	95	7	668	232	45	333	2
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	8	117	2	103	8	726	252	49	362	2
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	11.2	15.1	273.9	18.2
HCM LOS	B	C	F	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	53%	100%	0%
Vol Thru, %	0%	74%	12%	1%	0%	99%
Vol Right, %	0%	26%	88%	46%	0%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	900	8	205	45	335
LT Vol	7	0	0	108	45	0
Through Vol	0	668	1	2	0	333
RT Vol	0	232	7	95	0	2
Lane Flow Rate	8	978	9	223	49	364
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.014	1.561	0.017	0.395	0.089	0.609
Departure Headway (Hd)	6.435	5.744	8.078	7.393	7.177	6.66
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	559	646	446	490	502	546
Service Time	4.137	3.446	6.078	5.393	4.877	4.36
HCM Lane V/C Ratio	0.014	1.514	0.02	0.455	0.098	0.667
HCM Control Delay	9.2	276	11.2	15.1	10.6	19.2
HCM Lane LOS	A	F	B	C	B	C
HCM 95th-tile Q	0	51.1	0.1	1.9	0.3	4.1

HCM 6th Signalized Intersection Summary

5: Magnolia Avenue & Woodglen Vista Drive/Len Street

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↕		↖	↕		↖	↕	
Traffic Volume (veh/h)	13	32	121	31	7	7	163	514	44	3	314	8
Future Volume (veh/h)	13	32	121	31	7	7	163	514	44	3	314	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.98	1.00		0.96	1.00		0.95
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	14	35	132	34	8	8	177	559	48	3	341	9
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	536	70	264	283	66	33	297	1070	92	128	810	21
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.17	0.32	0.32	0.07	0.23	0.23
Sat Flow, veh/h	1388	336	1267	506	317	157	1781	3301	283	1781	3532	93
Grp Volume(v), veh/h	14	0	167	50	0	0	177	300	307	3	171	179
Grp Sat Flow(s),veh/h/ln	1388	0	1603	979	0	0	1781	1777	1807	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	3.1	0.1	0.0	0.0	3.1	4.7	4.7	0.1	2.8	2.8
Cycle Q Clear(g_c), s	0.2	0.0	3.1	3.2	0.0	0.0	3.1	4.7	4.7	0.1	2.8	2.8
Prop In Lane	1.00		0.79	0.68		0.16	1.00		0.16	1.00		0.05
Lane Grp Cap(c), veh/h	536	0	334	381	0	0	297	576	586	128	407	424
V/C Ratio(X)	0.03	0.00	0.50	0.13	0.00	0.00	0.60	0.52	0.52	0.02	0.42	0.42
Avail Cap(c_a), veh/h	1407	0	1339	1217	0	0	862	2526	2569	496	2161	2249
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	11.9	11.1	0.0	0.0	13.1	9.4	9.4	14.7	11.2	11.2
Incr Delay (d2), s/veh	0.0	0.0	1.2	0.2	0.0	0.0	1.9	0.7	0.7	0.1	0.7	0.7
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	0.1	0.0	1.0	0.3	0.0	0.0	1.1	1.2	1.2	0.0	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.8	0.0	13.1	11.2	0.0	0.0	15.1	10.1	10.1	14.8	11.9	11.9
LnGrp LOS	B	A	B	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h		181			50			784			353	
Approach Delay, s/veh		12.9			11.2			11.2			11.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	15.6		11.6	10.2	12.3		11.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	45	48.5		28.5	16.5	41.5		28.5				
Max Q Clear Time (g_c+1/2), s	12.5	6.7		5.1	5.1	4.8		5.2				
Green Ext Time (p_c), s	0.0	3.8		1.1	0.3	2.0		0.2				

Intersection Summary

HCM 6th Ctrl Delay	11.6
HCM 6th LOS	B

Intersection

Intersection Delay, s/veh 197.8

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	1	1	5	99	8	87	13	827	106	45	411	0
Future Vol, veh/h	1	1	5	99	8	87	13	827	106	45	411	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	5	108	9	95	14	899	115	49	447	0
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	11.7	15.3	319.9	24.9
HCM LOS	B	C	F	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	14%	51%	100%	0%
Vol Thru, %	0%	89%	14%	4%	0%	100%
Vol Right, %	0%	11%	71%	45%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	933	7	194	45	411
LT Vol	13	0	1	99	45	0
Through Vol	0	827	1	8	0	411
RT Vol	0	106	5	87	0	0
Lane Flow Rate	14	1014	8	211	49	447
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.026	1.67	0.015	0.383	0.088	0.745
Departure Headway (Hd)	6.515	5.927	8.571	7.661	7.233	6.72
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	553	619	420	472	498	541
Service Time	4.215	3.627	6.571	5.661	4.933	4.42
HCM Lane V/C Ratio	0.025	1.638	0.019	0.447	0.098	0.826
HCM Control Delay	9.4	324.2	11.7	15.3	10.6	26.5
HCM Lane LOS	A	F	B	C	B	D
HCM 95th-tile Q	0.1	57.5	0	1.8	0.3	6.4

HCM 6th Signalized Intersection Summary
 7: Magnolia Avenue & El Nopal

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	111	60	142	190	150	92	570	199	96	371	9
Future Volume (veh/h)	6	111	60	142	190	150	92	570	199	96	371	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.97
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		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	7	121	65	154	207	163	100	620	216	104	403	10
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	23	196	105	200	262	206	167	835	291	170	1153	29
Arrive On Green	0.01	0.17	0.17	0.11	0.27	0.27	0.09	0.32	0.32	0.10	0.33	0.33
Sat Flow, veh/h	1781	1139	612	1781	963	759	1781	2575	896	1781	3541	88
Grp Volume(v), veh/h	7	0	186	154	0	370	100	428	408	104	202	211
Grp Sat Flow(s),veh/h/ln	1781	0	1751	1781	0	1722	1781	1777	1694	1781	1777	1852
Q Serve(g_s), s	0.2	0.0	6.0	5.1	0.0	12.1	3.3	13.0	13.1	3.4	5.3	5.3
Cycle Q Clear(g_c), s	0.2	0.0	6.0	5.1	0.0	12.1	3.3	13.0	13.1	3.4	5.3	5.3
Prop In Lane	1.00		0.35	1.00		0.44	1.00		0.53	1.00		0.05
Lane Grp Cap(c), veh/h	23	0	301	200	0	468	167	576	549	170	579	603
V/C Ratio(X)	0.31	0.00	0.62	0.77	0.00	0.79	0.60	0.74	0.74	0.61	0.35	0.35
Avail Cap(c_a), veh/h	220	0	676	513	0	949	395	920	877	278	803	837
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	23.3	26.2	0.0	20.5	26.5	18.3	18.3	26.4	15.6	15.6
Incr Delay (d2), s/veh	7.3	0.0	2.1	6.1	0.0	3.0	3.4	1.9	2.0	3.6	0.4	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	0.1	0.0	2.5	2.4	0.0	4.9	1.4	4.8	4.6	1.5	1.9	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.1	0.0	25.4	32.3	0.0	23.6	29.9	20.2	20.3	30.0	16.0	16.0
LnGrp LOS	D	A	C	C	A	C	C	C	C	C	B	B
Approach Vol, veh/h		193		524		936		517				
Approach Delay, s/veh		25.8		26.2		21.3		18.8				
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	24.2	11.3	15.0	10.2	24.3	5.3	21.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	31.5	31.5	17.5	23.5	13.5	27.5	7.5	33.5				
Max Q Clear Time (g_c+1), s	15.4	15.1	7.1	8.0	5.3	7.3	2.2	14.1				
Green Ext Time (p_c), s	0.1	4.7	0.3	0.9	0.1	2.1	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay				22.3								
HCM 6th LOS				C								

HCM 6th AWSC
 12: Cuyamaca Street & Beck Drive

08/27/2020

Intersection

Intersection Delay, s/veh 183.7

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕	↕	↕	↕	
Traffic Vol, veh/h	0	0	6	54	2	2	9	958	63	2	494	3
Future Vol, veh/h	0	0	6	54	2	2	9	958	63	2	494	3
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	7	59	2	2	10	1041	68	2	537	3
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	10.8	13	255.9	56.5
HCM LOS	B	B	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	93%	100%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	99%
Vol Right, %	0%	0%	100%	100%	3%	0%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	958	63	6	58	2	497
LT Vol	9	0	0	0	54	2	0
Through Vol	0	958	0	0	2	0	494
RT Vol	0	0	63	6	2	0	3
Lane Flow Rate	10	1041	68	7	63	2	540
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.016	1.56	0.089	0.013	0.14	0.004	0.956
Departure Headway (Hd)	5.899	5.394	4.687	8.038	8.892	7.753	7.245
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	604	677	760	448	406	464	502
Service Time	3.657	3.151	2.444	5.738	6.592	5.453	4.945
HCM Lane V/C Ratio	0.017	1.538	0.089	0.016	0.155	0.004	1.076
HCM Control Delay	8.8	274.5	7.9	10.8	13	10.5	56.7
HCM Lane LOS	A	F	A	B	B	B	F
HCM 95th-tile Q	0	53.5	0.3	0	0.5	0	12.1

HCM 6th Signalized Intersection Summary
 13: Magnolia Avenue & 2nd Street

08/27/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	80	20	925	156	28	609
Future Volume (veh/h)	80	20	925	156	28	609
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	22	1005	170	30	662
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	135	120	1498	253	52	2337
Arrive On Green	0.08	0.08	0.50	0.50	0.03	0.66
Sat Flow, veh/h	1781	1585	3119	511	1781	3647
Grp Volume(v), veh/h	87	22	590	585	30	662
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1760	1781	1777
Q Serve(g_s), s	1.6	0.4	8.5	8.5	0.6	2.6
Cycle Q Clear(g_c), s	1.6	0.4	8.5	8.5	0.6	2.6
Prop In Lane	1.00	1.00		0.29	1.00	
Lane Grp Cap(c), veh/h	135	120	880	871	52	2337
V/C Ratio(X)	0.64	0.18	0.67	0.67	0.58	0.28
Avail Cap(c_a), veh/h	955	850	1258	1246	237	3464
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	15.2	14.6	6.4	6.4	16.2	2.4
Incr Delay (d2), s/veh	5.0	0.7	0.9	0.9	9.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.2	1.4	1.4	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.2	15.3	7.3	7.4	26.0	2.5
LnGrp LOS	C	B	A	A	C	A
Approach Vol, veh/h	109		1175			692
Approach Delay, s/veh	19.2		7.3			3.5
Approach LOS	B		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	5.5	21.2			26.7	7.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	4.5	23.9			32.9	18.1
Max Q Clear Time (g_c+1), s	12.6	10.5			4.6	3.6
Green Ext Time (p_c), s	0.0	6.2			4.6	0.2
Intersection Summary						
HCM 6th Ctrl Delay			6.7			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

14: Magnolia Avenue & Carefree Drive

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↖	↗	↖	↕			↕	
Traffic Volume (veh/h)	23	0	51	4	0	0	76	1060	0	0	653	16
Future Volume (veh/h)	23	0	51	4	0	0	76	1060	0	0	653	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		1.00	1.00		1.00	1.00		0.96
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	0	0	1870	1870
Adj Flow Rate, veh/h	25	0	55	4	0	0	83	1152	0	0	710	17
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	0	0	2	2
Cap, veh/h	52	0	115	16	0	7	112	1819	0	0	1148	27
Arrive On Green	0.11	0.00	0.11	0.00	0.00	0.00	0.06	0.51	0.00	0.00	0.32	0.32
Sat Flow, veh/h	484	0	1065	3563	0	1585	1781	3647	0	0	3636	85
Grp Volume(v), veh/h	80	0	0	4	0	0	83	1152	0	0	356	371
Grp Sat Flow(s),veh/h/ln1549	0	0	1781	0	1585	1781	1777	0	0	1777	1850	
Q Serve(g_s), s	1.7	0.0	0.0	0.0	0.0	0.0	1.6	8.4	0.0	0.0	6.1	6.1
Cycle Q Clear(g_c), s	1.7	0.0	0.0	0.0	0.0	0.0	1.6	8.4	0.0	0.0	6.1	6.1
Prop In Lane	0.31		0.69	1.00		1.00	1.00		0.00	0.00		0.05
Lane Grp Cap(c), veh/h	168	0	0	16	0	7	112	1819	0	0	576	599
V/C Ratio(X)	0.48	0.00	0.00	0.26	0.00	0.00	0.74	0.63	0.00	0.00	0.62	0.62
Avail Cap(c_a), veh/h	776	0	0	1536	0	683	223	2768	0	0	939	978
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	0.0	17.8	0.0	0.0	16.6	6.3	0.0	0.0	10.3	10.3
Incr Delay (d2), s/veh	2.1	0.0	0.0	8.5	0.0	0.0	9.3	0.4	0.0	0.0	1.1	1.0
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/ln0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.4	0.0	0.0	1.7	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.2	0.0	0.0	26.3	0.0	0.0	25.9	6.7	0.0	0.0	11.4	11.3
LnGrp LOS	B	A	A	C	A	A	C	A	A	A	B	B
Approach Vol, veh/h		80			4			1235			727	
Approach Delay, s/veh		17.2			26.3			8.0			11.3	
Approach LOS		B			C			A			B	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		22.9		8.4	6.8	16.1		4.7				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		28.0		18.0	4.5	19.0		15.5				
Max Q Clear Time (g_c+11), s		10.4		3.7	3.6	8.1		2.0				
Green Ext Time (p_c), s		7.5		0.3	0.0	3.2		0.0				

Intersection Summary

HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary

25: Cuyamaca Street & Mast Blvd

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	329	633	254	302	281	67	238	646	415	37	372	185
Future Volume (veh/h)	329	633	254	302	281	67	238	646	415	37	372	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.98
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	358	688	276	328	305	73	259	702	451	40	404	201
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	299	1296	565	394	884	208	235	1047	648	51	586	288
Arrive On Green	0.17	0.36	0.36	0.11	0.31	0.31	0.07	0.29	0.29	0.03	0.26	0.26
Sat Flow, veh/h	1781	3554	1550	3456	2844	669	3456	3554	1585	1781	2295	1127
Grp Volume(v), veh/h	358	688	276	328	189	189	259	702	451	40	311	294
Grp Sat Flow(s),veh/h/ln	1781	1777	1550	1728	1777	1737	1728	1777	1585	1781	1777	1645
Q Serve(g_s), s	16.8	15.2	13.8	9.3	8.2	8.4	6.8	17.4	23.5	2.2	15.8	16.2
Cycle Q Clear(g_c), s	16.8	15.2	13.8	9.3	8.2	8.4	6.8	17.4	23.5	2.2	15.8	16.2
Prop In Lane	1.00		1.00	1.00		0.39	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	299	1296	565	394	552	540	235	1047	648	51	453	420
V/C Ratio(X)	1.20	0.53	0.49	0.83	0.34	0.35	1.10	0.67	0.70	0.79	0.69	0.70
Avail Cap(c_a), veh/h	299	1296	565	442	552	540	235	1127	683	71	515	477
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	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	25.0	24.5	43.4	26.6	26.7	46.6	31.0	24.4	48.3	33.6	33.8
Incr Delay (d2), s/veh	116.2	1.6	3.0	10.3	1.6	1.8	88.8	1.7	3.3	21.2	4.1	4.8
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	16.8	6.4	5.3	4.4	3.6	3.6	5.8	7.5	9.0	1.3	7.1	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	157.8	26.6	27.5	53.6	28.2	28.4	135.4	32.6	27.7	69.5	37.7	38.5
LnGrp LOS	F	C	C	D	C	C	F	C	C	E	D	D
Approach Vol, veh/h		1322			706			1412			645	
Approach Delay, s/veh		62.3			40.1			49.9			40.0	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.6	42.8	11.0	30.6	21.0	37.4	7.0	34.6				
Change Period (Y+Rc), s	4.2	6.3	*4.2	*5.1	*4.2	*6.3	*4.2	5.1				
Max Green Setting (Gmax), s	31.7	*31.7	*6.8	*29	*17	*29	*4	31.7				
Max Q Clear Time (g_c+ll), s	17.2	17.2	8.8	18.2	18.8	10.4	4.2	25.5				
Green Ext Time (p_c), s	0.1	6.5	0.0	3.9	0.0	2.5	0.0	4.0				

Intersection Summary

HCM 6th Ctrl Delay	50.7
HCM 6th LOS	D

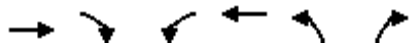
Notes

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

HCM 6th Signalized Intersection Summary

26: Park Center Drive & Mast Blvd

08/27/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (veh/h)	1001	28	103	633	16	117
Future Volume (veh/h)	1001	28	103	633	16	117
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1088	30	112	688	17	127
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1705	47	147	2397	194	172
Arrive On Green	0.48	0.48	0.08	0.67	0.11	0.11
Sat Flow, veh/h	3622	97	1781	3647	1781	1585
Grp Volume(v), veh/h	548	570	112	688	17	127
Grp Sat Flow(s),veh/h/ln	1777	1849	1781	1777	1781	1585
Q Serve(g_s), s	9.6	9.6	2.6	3.2	0.4	3.2
Cycle Q Clear(g_c), s	9.6	9.6	2.6	3.2	0.4	3.2
Prop In Lane		0.05	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	859	894	147	2397	194	172
V/C Ratio(X)	0.64	0.64	0.76	0.29	0.09	0.74
Avail Cap(c_a), veh/h	2163	2250	665	6038	880	783
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.0	8.0	18.6	2.7	16.6	17.9
Incr Delay (d2), s/veh	0.8	0.8	7.8	0.1	0.2	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	2.4	1.2	0.2	0.1	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.8	8.8	26.5	2.8	16.8	24.0
LnGrp LOS	A	A	C	A	B	C
Approach Vol, veh/h	1118			800	144	
Approach Delay, s/veh	8.8			6.1	23.1	
Approach LOS	A			A	C	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	7.9	24.6		32.5	9.0	
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	
Max Green Setting (Gmax), s	15.5	50.5		70.5	20.5	
Max Q Clear Time (g_c+1), s	14.6	11.6		5.2	5.2	
Green Ext Time (p_c), s	0.2	8.5		5.1	0.3	
Intersection Summary						
HCM 6th Ctrl Delay			8.7			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 27: Magnolia Avenue & Mast Blvd

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖↗	↑↑		↖	↑↑	↖
Traffic Volume (veh/h)	400	239	273	102	133	27	336	659	100	81	474	215
Future Volume (veh/h)	400	239	273	102	133	27	336	659	100	81	474	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.95	1.00		0.98	1.00		0.96
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		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	435	260	297	111	145	29	365	716	109	88	515	234
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	568	992	430	145	674	287	461	973	148	135	917	391
Arrive On Green	0.16	0.28	0.28	0.08	0.19	0.19	0.13	0.32	0.32	0.08	0.26	0.26
Sat Flow, veh/h	3456	3554	1541	1781	3554	1510	3456	3084	469	1781	3554	1515
Grp Volume(v), veh/h	435	260	297	111	145	29	365	412	413	88	515	234
Grp Sat Flow(s),veh/h/ln	1728	1777	1541	1781	1777	1510	1728	1777	1777	1781	1777	1515
Q Serve(g_s), s	9.5	4.5	13.5	4.8	2.7	1.2	8.0	16.3	16.3	3.8	9.9	10.6
Cycle Q Clear(g_c), s	9.5	4.5	13.5	4.8	2.7	1.2	8.0	16.3	16.3	3.8	9.9	10.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	568	992	430	145	674	287	461	560	560	135	917	391
V/C Ratio(X)	0.77	0.26	0.69	0.77	0.21	0.10	0.79	0.74	0.74	0.65	0.56	0.60
Avail Cap(c_a), veh/h	968	1682	730	340	1343	571	761	810	810	283	1402	598
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	31.4	22.0	25.3	35.4	26.9	26.3	33.0	24.0	24.0	35.3	25.3	25.6
Incr Delay (d2), s/veh	2.6	0.2	2.4	3.2	0.2	0.2	1.2	2.0	2.0	2.0	0.5	1.5
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	8.9	1.8	4.8	2.1	1.1	0.4	3.3	6.5	6.6	1.6	3.9	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.0	22.2	27.7	38.6	27.1	26.5	34.2	26.0	26.0	37.2	25.8	27.0
LnGrp LOS	C	C	C	D	C	C	C	C	C	D	C	C
Approach Vol, veh/h		992			285			1190			837	
Approach Delay, s/veh		29.0			31.5			28.5			27.4	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	27.4	15.0	25.3	17.9	20.4	10.5	29.8				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.0	5.0	5.5	4.5	5.0				
Max Green Setting (Gmax), s	15.0	37.2	17.3	31.0	22.0	29.7	12.5	35.8				
Max Q Clear Time (g_c+1), s	10.8	15.5	10.0	12.6	11.5	4.7	5.8	18.3				
Green Ext Time (p_c), s	0.1	3.2	0.4	3.9	1.4	1.1	0.0	4.6				
Intersection Summary												
HCM 6th Ctrl Delay				28.6								
HCM 6th LOS				C								

ATTACHMENT B
EXISTING + CUMULATIVE PROJECTS + PROJECT (NO MAGNOLIA AVENUE EXTENSION) PEAK HOUR
INTERSECTION ANALYSIS WORKSHEETS

HCM 6th TWSC
 1: Cuyamaca Street & Princess Joann Road

08/27/2020

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	84	362	0	163	700
Future Vol, veh/h	0	84	362	0	163	700
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	91	393	0	177	761

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1508	393	0	0	393	0
Stage 1	393	-	-	-	-	-
Stage 2	1115	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	133	656	-	-	1166	-
Stage 1	682	-	-	-	-	-
Stage 2	314	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	113	656	-	-	1166	-
Mov Cap-2 Maneuver	113	-	-	-	-	-
Stage 1	682	-	-	-	-	-
Stage 2	266	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	656	1166
HCM Lane V/C Ratio	-	-	0.139	0.152
HCM Control Delay (s)	-	-	11.4	8.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.5	0.5

HCM 6th AWSC
 2: Magnolia Avenue & Princess Joann Road

08/27/2020

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↑	↕	↕	↑	↕
Traffic Vol, veh/h	0	0	218	32	8	0	117	4	8	0	7	0
Future Vol, veh/h	0	0	218	32	8	0	117	4	8	0	7	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	237	35	9	0	127	4	9	0	8	0
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	8.7	8.7	9.7	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	0%	80%	0%	0%	0%
Vol Thru, %	0%	100%	0%	0%	20%	100%	100%	100%
Vol Right, %	0%	0%	100%	100%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	117	4	8	218	40	0	7	0
LT Vol	117	0	0	0	32	0	0	0
Through Vol	0	4	0	0	8	0	7	0
RT Vol	0	0	8	218	0	0	0	0
Lane Flow Rate	127	4	9	237	43	0	8	0
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.201	0.006	0.011	0.282	0.067	0	0.011	0
Departure Headway (Hd)	5.692	5.189	4.485	4.291	5.542	5.357	5.357	5.357
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	631	690	798	839	647	0	668	0
Service Time	3.42	2.917	2.213	2.007	3.265	3.094	3.094	3.094
HCM Lane V/C Ratio	0.201	0.006	0.011	0.282	0.066	0	0.012	0
HCM Control Delay	9.9	7.9	7.3	8.7	8.7	8.1	8.2	8.1
HCM Lane LOS	A	A	A	A	A	N	A	N
HCM 95th-tile Q	0.7	0	0	1.2	0.2	0	0	0

HCM 6th AWSC
 4: Cuyamaca Street & Woodglen Vista Drive

08/27/2020

Intersection

Intersection Delay, s/veh 81.9

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	12	233	0	46	3	326	68	89	647	0
Future Vol, veh/h	0	1	12	233	0	46	3	326	68	89	647	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	13	253	0	50	3	354	74	97	703	0
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	11.4	19.9	30	134.6
HCM LOS	B	C	D	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	84%	100%	0%
Vol Thru, %	0%	83%	8%	0%	0%	100%
Vol Right, %	0%	17%	92%	16%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	394	13	279	89	647
LT Vol	3	0	0	233	89	0
Through Vol	0	326	1	0	0	647
RT Vol	0	68	12	46	0	0
Lane Flow Rate	3	428	14	303	97	703
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.007	0.781	0.029	0.578	0.187	1.259
Departure Headway (Hd)	7.579	6.941	8.117	7.313	6.956	6.445
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	475	527	444	497	515	563
Service Time	5.279	4.641	6.117	5.313	4.714	4.203
HCM Lane V/C Ratio	0.006	0.812	0.032	0.61	0.188	1.249
HCM Control Delay	10.3	30.1	11.4	19.9	11.3	151.6
HCM Lane LOS	B	D	B	C	B	F
HCM 95th-tile Q	0	7.1	0.1	3.6	0.7	27.4

HCM 6th Signalized Intersection Summary
 5: Magnolia Avenue & Woodglen Vista Drive/Len Street

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	17	1	192	45	13	10	78	232	14	7	511	11
Future Volume (veh/h)	17	1	192	45	13	10	78	232	14	7	511	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	0.95		0.98	1.00		0.97	1.00		0.83
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	18	1	209	49	14	11	85	252	15	8	555	12
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	593	2	452	290	80	43	175	896	53	254	1088	23
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.10	0.26	0.26	0.14	0.31	0.31
Sat Flow, veh/h	1382	7	1421	525	252	136	1781	3403	201	1781	3538	76
Grp Volume(v), veh/h	18	0	210	74	0	0	85	131	136	8	278	289
Grp Sat Flow(s),veh/h/ln	1382	0	1428	913	0	0	1781	1777	1827	1781	1777	1838
Q Serve(g_s), s	0.0	0.0	5.7	0.9	0.0	0.0	2.2	2.9	2.9	0.2	6.3	6.3
Cycle Q Clear(g_c), s	0.4	0.0	5.7	6.6	0.0	0.0	2.2	2.9	2.9	0.2	6.3	6.3
Prop In Lane	1.00		1.00	0.66		0.15	1.00		0.11	1.00		0.04
Lane Grp Cap(c), veh/h	593	0	454	413	0	0	175	468	481	254	547	565
V/C Ratio(X)	0.03	0.00	0.46	0.18	0.00	0.00	0.49	0.28	0.28	0.03	0.51	0.51
Avail Cap(c_a), veh/h	1101	0	978	875	0	0	565	1509	1551	419	1363	1410
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.5	0.0	13.3	13.1	0.0	0.0	20.9	14.3	14.3	18.1	13.9	13.9
Incr Delay (d2), s/veh	0.0	0.0	0.7	0.2	0.0	0.0	2.1	0.3	0.3	0.0	0.7	0.7
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	0.1	0.0	1.7	0.6	0.0	0.0	0.9	1.0	1.0	0.1	2.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	0.0	14.1	13.3	0.0	0.0	23.0	14.6	14.7	18.1	14.6	14.6
LnGrp LOS	B	A	B	B	A	A	C	B	B	B	B	B
Approach Vol, veh/h		228			74			352			575	
Approach Delay, s/veh		13.9			13.3			16.7			14.7	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	17.4		20.0	9.3	19.5		20.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	41.5	41.5		33.5	15.5	37.5		33.5				
Max Q Clear Time (g_c+1/2), s	4.9	4.9		7.7	4.2	8.3		8.6				
Green Ext Time (p_c), s	0.0	1.5		1.6	0.1	3.3		0.4				

Intersection Summary

HCM 6th Ctrl Delay	15.0
HCM 6th LOS	B

Intersection

Intersection Delay, s/veh 176.5
Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	7	264	4	45	5	358	48	82	823	1
Future Vol, veh/h	0	1	7	264	4	45	5	358	48	82	823	1
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	8	287	4	49	5	389	52	89	895	1
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	12.4	24.4	36.9	293.9
HCM LOS	B	C	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	84%	100%	0%
Vol Thru, %	0%	88%	12%	1%	0%	100%
Vol Right, %	0%	12%	88%	14%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	406	8	313	82	824
LT Vol	5	0	0	264	82	0
Through Vol	0	358	1	4	0	823
RT Vol	0	48	7	45	0	1
Lane Flow Rate	5	441	9	340	89	896
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.011	0.829	0.019	0.653	0.178	1.659
Departure Headway (Hd)	8.132	7.53	9.181	7.834	7.182	6.67
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	443	485	392	466	499	546
Service Time	5.832	5.23	7.181	5.834	4.938	4.425
HCM Lane V/C Ratio	0.011	0.909	0.023	0.73	0.178	1.641
HCM Control Delay	10.9	37.2	12.4	24.4	11.5	322
HCM Lane LOS	B	E	B	C	B	F
HCM 95th-tile Q	0	8.1	0.1	4.6	0.6	50.7

HCM 6th Signalized Intersection Summary
 7: Magnolia Avenue & El Nopal

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	145	96	140	164	145	51	356	55	199	635	85
Future Volume (veh/h)	46	145	96	140	164	145	51	356	55	199	635	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
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		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	50	158	104	152	178	158	55	387	60	216	690	92
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	106	199	131	193	216	192	112	998	153	259	1277	170
Arrive On Green	0.06	0.19	0.19	0.11	0.24	0.24	0.06	0.32	0.32	0.15	0.41	0.41
Sat Flow, veh/h	1781	1046	689	1781	906	804	1781	3081	474	1781	3142	418
Grp Volume(v), veh/h	50	0	262	152	0	336	55	222	225	216	390	392
Grp Sat Flow(s),veh/h/ln	1781	0	1735	1781	0	1710	1781	1777	1778	1781	1777	1784
Q Serve(g_s), s	2.1	0.0	11.2	6.4	0.0	14.4	2.3	7.5	7.6	9.1	12.9	13.0
Cycle Q Clear(g_c), s	2.1	0.0	11.2	6.4	0.0	14.4	2.3	7.5	7.6	9.1	12.9	13.0
Prop In Lane	1.00		0.40	1.00		0.47	1.00		0.27	1.00		0.23
Lane Grp Cap(c), veh/h	106	0	330	193	0	409	112	576	576	259	722	725
V/C Ratio(X)	0.47	0.00	0.79	0.79	0.00	0.82	0.49	0.39	0.39	0.83	0.54	0.54
Avail Cap(c_a), veh/h	195	0	526	425	0	739	195	576	576	356	722	725
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	29.9	33.7	0.0	27.9	35.1	20.2	20.3	32.2	17.5	17.5
Incr Delay (d2), s/veh	3.2	0.0	4.3	7.0	0.0	4.2	3.3	1.9	2.0	11.6	2.9	2.9
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	0.0	0.0	5.0	3.1	0.0	6.2	1.1	3.2	3.2	4.5	5.3	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	0.0	34.3	40.7	0.0	32.1	38.5	22.2	22.3	43.8	20.4	20.4
LnGrp LOS	D	A	C	D	A	C	D	C	C	D	C	C
Approach Vol, veh/h		312		488		502		998				
Approach Delay, s/veh		34.9		34.8		24.0		25.4				
Approach LOS		C		C		C		C				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.8	29.6	12.9	19.2	9.4	36.0	9.1	23.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	15.5	24.5	18.5	23.5	8.5	31.5	8.5	33.5				
Max Q Clear Time (g_c+ll), s	11.1	9.6	8.4	13.2	4.3	15.0	4.1	16.4				
Green Ext Time (p_c), s	0.2	2.1	0.3	1.1	0.0	4.2	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay				28.4								
HCM 6th LOS				C								

HCM 6th AWSC
12: Cuyamaca Street & Beck Drive

08/27/2020

Intersection												
Intersection Delay, s/veh	306											
Intersection LOS	F											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↕	↕	↕	
Traffic Vol, veh/h	0	0	11	93	1	1	1	420	32	3	1066	0
Future Vol, veh/h	0	0	11	93	1	1	1	420	32	3	1066	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	12	101	1	1	1	457	35	3	1159	0
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	11.6	14.7	22.5	455
HCM LOS	B	B	C	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	98%	100%	0%
Vol Thru, %	0%	100%	0%	0%	1%	0%	100%
Vol Right, %	0%	0%	100%	100%	1%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	420	32	11	95	3	1066
LT Vol	1	0	0	0	93	3	0
Through Vol	0	420	0	0	1	0	1066
RT Vol	0	0	32	11	1	0	0
Lane Flow Rate	1	457	35	12	103	3	1159
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.002	0.715	0.048	0.023	0.222	0.006	1.967
Departure Headway (Hd)	6.93	6.42	5.705	8.688	9.351	6.615	6.111
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	519	566	632	415	386	537	603
Service Time	4.63	4.12	3.405	6.388	7.051	4.41	3.905
HCM Lane V/C Ratio	0.002	0.807	0.055	0.029	0.267	0.006	1.922
HCM Control Delay	9.6	23.6	8.7	11.6	14.7	9.5	456.3
HCM Lane LOS	A	C	A	B	B	A	F
HCM 95th-tile Q	0	5.8	0.2	0.1	0.8	0	75.8

HCM 6th Signalized Intersection Summary

13: Magnolia Avenue & 2nd Street

08/27/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	163	34	450	111	111	899
Future Volume (veh/h)	163	34	450	111	111	899
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	177	37	489	121	121	977
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	262	233	891	219	152	1963
Arrive On Green	0.15	0.15	0.32	0.32	0.09	0.55
Sat Flow, veh/h	1781	1585	2909	692	1781	3647
Grp Volume(v), veh/h	177	37	307	303	121	977
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1731	1781	1777
Q Serve(g_s), s	2.8	0.6	4.3	4.3	2.0	5.1
Cycle Q Clear(g_c), s	2.8	0.6	4.3	4.3	2.0	5.1
Prop In Lane	1.00	1.00		0.40	1.00	
Lane Grp Cap(c), veh/h	262	233	562	548	152	1963
V/C Ratio(X)	0.67	0.16	0.55	0.55	0.79	0.50
Avail Cap(c_a), veh/h	1071	953	1068	1041	327	3322
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	12.1	11.2	8.5	8.5	13.4	4.1
Incr Delay (d2), s/veh	3.0	0.3	0.8	0.9	9.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	1.0	1.0	0.9	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.1	11.5	9.3	9.3	22.5	4.3
LnGrp LOS	B	B	A	A	C	A
Approach Vol, veh/h	214		610			1098
Approach Delay, s/veh	14.5		9.3			6.3
Approach LOS	B		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.1	14.0			21.0	8.9
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	5.5	18.0			28.0	18.0
Max Q Clear Time (g_c+14), s	14.0	6.3			7.1	4.8
Green Ext Time (p_c), s	0.0	2.7			6.7	0.5
Intersection Summary						
HCM 6th Ctrl Delay			8.2			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

14: Magnolia Avenue & Carefree Drive

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↖	↗	↖	↕			↕	↕
Traffic Volume (veh/h)	13	0	58	189	0	31	17	528	0	0	1015	18
Future Volume (veh/h)	13	0	58	189	0	31	17	528	0	0	1015	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	1.00		1.00	1.00		1.00	1.00		0.96
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	0	0	1870	1870
Adj Flow Rate, veh/h	14	0	63	205	0	34	18	574	0	0	1103	20
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	0	0	2	2
Cap, veh/h	54	0	241	345	0	154	31	1642	0	0	1313	24
Arrive On Green	0.21	0.00	0.21	0.10	0.00	0.10	0.02	0.46	0.00	0.00	0.37	0.37
Sat Flow, veh/h	253	0	1139	3563	0	1585	1781	3647	0	0	3661	65
Grp Volume(v), veh/h	77	0	0	205	0	34	18	574	0	0	549	574
Grp Sat Flow(s),veh/h/ln	1392	0	0	1781	0	1585	1781	1777	0	0	1777	1855
Q Serve(g_s), s	2.7	0.0	0.0	3.2	0.0	1.2	0.6	6.1	0.0	0.0	16.6	16.7
Cycle Q Clear(g_c), s	2.7	0.0	0.0	3.2	0.0	1.2	0.6	6.1	0.0	0.0	16.6	16.7
Prop In Lane	0.18		0.82	1.00		1.00	1.00		0.00	0.00		0.03
Lane Grp Cap(c), veh/h	295	0	0	345	0	154	31	1642	0	0	654	683
V/C Ratio(X)	0.26	0.00	0.00	0.59	0.00	0.22	0.58	0.35	0.00	0.00	0.84	0.84
Avail Cap(c_a), veh/h	425	0	0	968	0	431	121	1962	0	0	724	756
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	0.0	25.5	0.0	24.5	28.7	10.2	0.0	0.0	17.0	17.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.6	0.0	0.7	16.2	0.1	0.0	0.0	8.1	7.8
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	0.9	0.0	0.0	1.4	0.0	0.4	0.4	1.9	0.0	0.0	7.0	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.8	0.0	0.0	27.1	0.0	25.3	45.0	10.3	0.0	0.0	25.1	24.8
LnGrp LOS	B	A	A	C	A	C	D	B	A	A	C	C
Approach Vol, veh/h		77			239			592			1123	
Approach Delay, s/veh		19.8			26.8			11.3			24.9	
Approach LOS		B			C			B			C	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		31.7		17.0	5.5	26.2		10.2				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		32.5		18.0	4.0	24.0		16.0				
Max Q Clear Time (g_c+1), s		8.1		4.7	2.6	18.7		5.2				
Green Ext Time (p_c), s		3.7		0.3	0.0	3.0		0.6				

Intersection Summary

HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	339	219	346	694	31	210	282	190	58	617	507
Future Volume (veh/h)	157	339	219	346	694	31	210	282	190	58	617	507
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
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	368	238	376	754	34	228	307	207	63	671	551
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	202	1084	473	411	1074	48	270	1201	715	71	554	450
Arrive On Green	0.11	0.30	0.30	0.12	0.31	0.31	0.08	0.34	0.34	0.04	0.30	0.30
Sat Flow, veh/h	1781	3554	1549	3456	3460	156	3456	3554	1559	1781	1846	1500
Grp Volume(v), veh/h	171	368	238	376	387	401	228	307	207	63	646	576
Grp Sat Flow(s),veh/h/ln	1781	1777	1549	1728	1777	1839	1728	1777	1559	1781	1777	1569
Q Serve(g_s), s	9.4	8.0	12.6	10.8	19.2	19.2	6.5	6.3	8.3	3.5	30.0	30.0
Cycle Q Clear(g_c), s	9.4	8.0	12.6	10.8	19.2	19.2	6.5	6.3	8.3	3.5	30.0	30.0
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		0.96
Lane Grp Cap(c), veh/h	202	1084	473	411	552	571	270	1201	715	71	533	471
V/C Ratio(X)	0.85	0.34	0.50	0.91	0.70	0.70	0.85	0.26	0.29	0.88	1.21	1.22
Avail Cap(c_a), veh/h	233	1087	474	411	552	571	270	1201	715	71	533	471
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	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.5	26.9	28.5	43.5	30.4	30.4	45.5	24.0	17.0	47.8	35.0	35.0
Incr Delay (d2), s/veh	19.4	0.9	3.8	22.9	6.8	6.6	20.3	0.2	0.3	66.6	111.6	118.6
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	5.1	3.4	5.0	5.8	8.9	9.2	3.5	2.6	2.9	2.9	29.0	26.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.8	27.8	32.3	66.5	37.2	37.0	65.8	24.1	17.3	114.4	146.6	153.6
LnGrp LOS	E	C	C	E	D	D	E	C	B	F	F	F
Approach Vol, veh/h	777			1164			742			1285		
Approach Delay, s/veh	36.9			46.6			35.0			148.1		
Approach LOS	D			D			D			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	36.1	36.8	12.0	35.1	15.6	37.3	8.2	38.9				
Change Period (Y+Rc), s	4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	30.6	* 7.8	* 30	* 13	* 30	* 4	33.7					
Max Q Clear Time (g_c+1/2R), s	14.6	8.5	32.0	11.4	21.2	5.5	10.3					
Green Ext Time (p_c), s	0.0	4.1	0.0	0.0	0.0	3.8	0.0	3.9				

Intersection Summary

HCM 6th Ctrl Delay	75.4
HCM 6th LOS	E

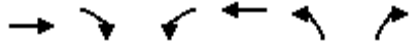
Notes

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

HCM 6th Signalized Intersection Summary

26: Park Center Drive & Mast Blvd

08/27/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↗
Traffic Volume (veh/h)	529	68	118	966	21	92
Future Volume (veh/h)	529	68	118	966	21	92
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.95	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	575	74	128	1050	23	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1084	139	165	2116	156	139
Arrive On Green	0.34	0.34	0.09	0.60	0.09	0.09
Sat Flow, veh/h	3241	404	1781	3647	1781	1585
Grp Volume(v), veh/h	324	325	128	1050	23	100
Grp Sat Flow(s),veh/h/ln	1777	1774	1781	1777	1781	1585
Q Serve(g_s), s	4.1	4.2	2.0	4.8	0.3	1.7
Cycle Q Clear(g_c), s	4.1	4.2	2.0	4.8	0.3	1.7
Prop In Lane		0.23	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	612	611	165	2116	156	139
V/C Ratio(X)	0.53	0.53	0.78	0.50	0.15	0.72
Avail Cap(c_a), veh/h	1170	1168	615	4130	1129	1005
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	7.5	7.5	12.6	3.3	12.0	12.6
Incr Delay (d2), s/veh	0.7	0.7	7.7	0.2	0.4	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.9	0.9	0.1	0.1	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.2	8.2	20.3	3.5	12.4	19.4
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	649			1178	123	
Approach Delay, s/veh	8.2			5.3	18.1	
Approach LOS	A			A	B	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	7.1	14.3		21.4	7.0	
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	
Max Green Setting (Gmax), s	18.7	18.7		33.0	18.0	
Max Q Clear Time (g_c+1/3), s	6.2	6.2		6.8	3.7	
Green Ext Time (p_c), s	0.1	3.0		7.9	0.3	
Intersection Summary						
HCM 6th Ctrl Delay			7.1			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 27: Magnolia Avenue & Mast Blvd

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↖	↑↑	↗	↔↔	↑↑		↖	↑↑	↗
Traffic Volume (veh/h)	188	131	266	155	278	52	320	607	54	56	767	413
Future Volume (veh/h)	188	131	266	155	278	52	320	607	54	56	767	413
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.94	1.00		0.98	1.00		0.98
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	204	142	289	168	302	57	348	660	59	61	834	449
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	418	929	401	179	837	353	325	1191	106	108	1167	510
Arrive On Green	0.12	0.26	0.26	0.10	0.24	0.24	0.09	0.36	0.36	0.06	0.33	0.33
Sat Flow, veh/h	3456	3554	1535	1781	3554	1498	3456	3292	294	1781	3554	1553
Grp Volume(v), veh/h	204	142	289	168	302	57	348	356	363	61	834	449
Grp Sat Flow(s),veh/h/ln	1728	1777	1535	1781	1777	1498	1728	1777	1809	1781	1777	1553
Q Serve(g_s), s	5.0	2.8	15.5	8.5	6.4	2.7	8.5	14.5	14.5	3.0	18.6	24.7
Cycle Q Clear(g_c), s	5.0	2.8	15.5	8.5	6.4	2.7	8.5	14.5	14.5	3.0	18.6	24.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	418	929	401	179	837	353	325	643	654	108	1167	510
V/C Ratio(X)	0.49	0.15	0.72	0.94	0.36	0.16	1.07	0.55	0.55	0.56	0.71	0.88
Avail Cap(c_a), veh/h	420	1254	541	179	1159	489	325	643	654	175	1218	532
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	37.1	25.7	30.4	40.4	28.9	27.5	41.0	23.0	23.0	41.3	26.6	28.7
Incr Delay (d2), s/veh	1.1	0.1	3.5	48.7	0.3	0.3	70.2	1.0	1.0	1.7	1.9	15.3
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	2.1	1.1	5.8	6.0	2.7	1.0	6.6	5.8	6.0	1.3	7.7	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	25.8	33.9	89.1	29.2	27.7	111.1	24.1	24.1	43.0	28.6	44.0
LnGrp LOS	D	C	C	F	C	C	F	C	C	D	C	D
Approach Vol, veh/h		635			527			1067			1344	
Approach Delay, s/veh		33.5			48.1			52.5			34.4	
Approach LOS		C			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	3.6	29.1	13.0	34.7	15.9	26.8	10.0	37.7				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.0	5.0	5.5	4.5	5.0				
Max Green Setting (Gmax), s	31.9	8.5	31.0	11.0	29.5	8.9	30.6					
Max Q Clear Time (g_c+I), s	17.5	10.5	26.7	7.0	8.4	5.0	16.5					
Green Ext Time (p_c), s	0.0	1.9	0.0	2.6	0.3	2.4	0.0	3.6				
Intersection Summary												
HCM 6th Ctrl Delay			41.6									
HCM 6th LOS			D									

HCM 6th TWSC
 1: Cuyamaca Street & Princess Joann Road

08/27/2020

Intersection						
Int Delay, s/veh	3.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	167	718	0	84	361
Future Vol, veh/h	0	167	718	0	84	361
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	182	780	0	91	392

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1354	780	0	0	780	0
Stage 1	780	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	165	395	-	-	837	-
Stage 1	452	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	147	395	-	-	837	-
Mov Cap-2 Maneuver	147	-	-	-	-	-
Stage 1	452	-	-	-	-	-
Stage 2	502	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	1.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	395	837
HCM Lane V/C Ratio	-	-	0.46	0.109
HCM Control Delay (s)	-	-	21.6	9.8
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	2.3	0.4

HCM 6th AWSC
 2: Magnolia Avenue & Princess Joann Road

08/27/2020

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↑	↑	↑	↑
Traffic Vol, veh/h	1	3	119	20	8	3	250	3	35	0	11	2
Future Vol, veh/h	1	3	119	20	8	3	250	3	35	0	11	2
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	3	129	22	9	3	272	3	38	0	12	2
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	8.5	8.8	11.4	8
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	1%	65%	0%	0%	0%
Vol Thru, %	0%	100%	0%	2%	26%	100%	100%	0%
Vol Right, %	0%	0%	100%	97%	10%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	3	35	123	31	0	11	2
LT Vol	250	0	0	1	20	0	0	0
Through Vol	0	3	0	3	8	0	11	0
RT Vol	0	0	35	119	3	0	0	2
Lane Flow Rate	272	3	38	134	34	0	12	2
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.413	0.005	0.045	0.176	0.054	0	0.017	0.003
Departure Headway (Hd)	5.471	4.969	4.266	4.752	5.783	5.267	5.267	4.562
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	658	720	839	755	619	0	678	782
Service Time	3.201	2.698	1.995	2.476	3.516	3.01	3.01	2.305
HCM Lane V/C Ratio	0.413	0.004	0.045	0.177	0.055	0	0.018	0.003
HCM Control Delay	12	7.7	7.2	8.5	8.8	8	8.1	7.3
HCM Lane LOS	B	A	A	A	A	N	A	A
HCM 95th-tile Q	2	0	0.1	0.6	0.2	0	0.1	0

HCM 6th AWSC
 4: Cuyamaca Street & Woodglen Vista Drive

08/27/2020

Intersection

Intersection Delay, s/veh 176.8

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	7	111	2	95	7	669	238	45	333	2
Future Vol, veh/h	0	1	7	111	2	95	7	669	238	45	333	2
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	8	121	2	103	8	727	259	49	362	2
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	11.3	15.3	280.9	18.3
HCM LOS	B	C	F	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	53%	100%	0%
Vol Thru, %	0%	74%	12%	1%	0%	99%
Vol Right, %	0%	26%	88%	46%	0%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	907	8	208	45	335
LT Vol	7	0	0	111	45	0
Through Vol	0	669	1	2	0	333
RT Vol	0	238	7	95	0	2
Lane Flow Rate	8	986	9	226	49	364
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.014	1.577	0.017	0.401	0.089	0.611
Departure Headway (Hd)	6.451	5.757	8.129	7.424	7.209	6.693
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	558	641	443	488	500	543
Service Time	4.153	3.459	6.129	5.424	4.909	4.393
HCM Lane V/C Ratio	0.014	1.538	0.02	0.463	0.098	0.67
HCM Control Delay	9.2	283	11.3	15.3	10.6	19.3
HCM Lane LOS	A	F	B	C	B	C
HCM 95th-tile Q	0	52.2	0.1	1.9	0.3	4.1

HCM 6th Signalized Intersection Summary
 5: Magnolia Avenue & Woodglen Vista Drive/Len Street

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	33	123	32	7	7	165	529	45	3	324	8
Future Volume (veh/h)	13	33	123	32	7	7	165	529	45	3	324	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.98	1.00		0.96	1.00		0.95
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	14	36	134	35	8	8	179	575	49	3	352	9
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	537	71	264	282	64	31	298	1092	93	117	809	21
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.17	0.33	0.33	0.07	0.23	0.23
Sat Flow, veh/h	1388	340	1264	502	307	151	1781	3303	281	1781	3536	90
Grp Volume(v), veh/h	14	0	170	51	0	0	179	309	315	3	176	185
Grp Sat Flow(s),veh/h/ln	1388	0	1604	960	0	0	1781	1777	1807	1781	1777	1849
Q Serve(g_s), s	0.0	0.0	3.2	0.1	0.0	0.0	3.2	4.8	4.8	0.1	2.9	2.9
Cycle Q Clear(g_c), s	0.2	0.0	3.2	3.3	0.0	0.0	3.2	4.8	4.8	0.1	2.9	2.9
Prop In Lane	1.00		0.79	0.69		0.16	1.00		0.16	1.00		0.05
Lane Grp Cap(c), veh/h	537	0	335	378	0	0	298	587	597	117	407	423
V/C Ratio(X)	0.03	0.00	0.51	0.13	0.00	0.00	0.60	0.53	0.53	0.03	0.43	0.44
Avail Cap(c_a), veh/h	1405	0	1337	1208	0	0	860	2521	2565	495	2158	2245
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	12.0	11.1	0.0	0.0	13.2	9.3	9.3	14.9	11.3	11.3
Incr Delay (d2), s/veh	0.0	0.0	1.2	0.2	0.0	0.0	1.9	0.7	0.7	0.1	0.7	0.7
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	0.1	0.0	1.0	0.3	0.0	0.0	1.1	1.2	1.3	0.0	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.8	0.0	13.2	11.2	0.0	0.0	15.1	10.0	10.0	15.0	12.0	12.0
LnGrp LOS	B	A	B	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h		184			51			803			364	
Approach Delay, s/veh		13.0			11.2			11.1			12.0	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	15.8		11.6	10.2	12.3		11.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	4.5	48.5		28.5	16.5	41.5		28.5				
Max Q Clear Time (g_c+1/2), s	12.5	6.8		5.2	5.2	4.9		5.3				
Green Ext Time (p_c), s	0.0	3.9		1.1	0.3	2.0		0.2				

Intersection Summary

HCM 6th Ctrl Delay	11.6
HCM 6th LOS	B

Intersection

Intersection Delay, s/veh 204.3

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	1	1	5	102	8	87	13	834	109	45	415	0
Future Vol, veh/h	1	1	5	102	8	87	13	834	109	45	415	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	5	111	9	95	14	907	118	49	451	0
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	11.8	15.5	330.5	25.8
HCM LOS	B	C	F	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	14%	52%	100%	0%
Vol Thru, %	0%	88%	14%	4%	0%	100%
Vol Right, %	0%	12%	71%	44%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	943	7	197	45	415
LT Vol	13	0	1	102	45	0
Through Vol	0	834	1	8	0	415
RT Vol	0	109	5	87	0	0
Lane Flow Rate	14	1025	8	214	49	451
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.026	1.694	0.015	0.389	0.089	0.755
Departure Headway (Hd)	6.539	5.949	8.65	7.709	7.272	6.76
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	551	625	416	471	496	541
Service Time	4.239	3.649	6.65	5.709	4.972	4.46
HCM Lane V/C Ratio	0.025	1.64	0.019	0.454	0.099	0.834
HCM Control Delay	9.4	334.9	11.8	15.5	10.7	27.4
HCM Lane LOS	A	F	B	C	B	D
HCM 95th-tile Q	0.1	59	0	1.8	0.3	6.6

HCM 6th Signalized Intersection Summary
 7: Magnolia Avenue & El Nopal

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	6	114	63	146	193	153	95	586	204	100	384	9
Future Volume (veh/h)	6	114	63	146	193	153	95	586	204	100	384	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.97
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		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	7	124	68	159	210	166	103	637	222	109	417	10
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	23	193	106	206	263	208	167	847	295	170	1173	28
Arrive On Green	0.01	0.17	0.17	0.12	0.27	0.27	0.09	0.33	0.33	0.10	0.33	0.33
Sat Flow, veh/h	1781	1130	619	1781	962	760	1781	2574	896	1781	3544	85
Grp Volume(v), veh/h	7	0	192	159	0	376	103	439	420	109	209	218
Grp Sat Flow(s),veh/h/ln	1781	0	1749	1781	0	1722	1781	1777	1694	1781	1777	1852
Q Serve(g_s), s	0.2	0.0	6.4	5.4	0.0	12.6	3.5	13.7	13.8	3.7	5.5	5.6
Cycle Q Clear(g_c), s	0.2	0.0	6.4	5.4	0.0	12.6	3.5	13.7	13.8	3.7	5.5	5.6
Prop In Lane	1.00		0.35	1.00		0.44	1.00		0.53	1.00		0.05
Lane Grp Cap(c), veh/h	23	0	299	206	0	472	167	584	557	170	588	613
V/C Ratio(X)	0.31	0.00	0.64	0.77	0.00	0.80	0.62	0.75	0.75	0.64	0.36	0.36
Avail Cap(c_a), veh/h	214	0	660	500	0	926	386	899	857	272	785	818
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	0.0	24.0	26.7	0.0	21.0	27.2	18.6	18.6	27.1	15.8	15.8
Incr Delay (d2), s/veh	7.4	0.0	2.3	6.1	0.0	3.1	3.7	2.0	2.1	4.0	0.4	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	0.1	0.0	2.7	2.6	0.0	5.2	1.5	5.1	4.9	1.6	2.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.8	0.0	26.3	32.8	0.0	24.1	30.9	20.6	20.7	31.2	16.2	16.2
LnGrp LOS	D	A	C	C	A	C	C	C	C	C	B	B
Approach Vol, veh/h		199		535		962		536				
Approach Delay, s/veh		26.7		26.7		21.8		19.2				
Approach LOS		C		C		C		B				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	25.0	11.7	15.2	10.3	25.1	5.3	21.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	31.5	17.5	23.5	13.5	27.5	7.5	33.5				
Max Q Clear Time (g_c+1/2), s	15.8	15.8	7.4	8.4	5.5	7.6	2.2	14.6				
Green Ext Time (p_c), s	0.1	4.7	0.3	0.9	0.1	2.2	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay				22.8								
HCM 6th LOS				C								

HCM 6th AWSC
12: Cuyamaca Street & Beck Drive

08/27/2020

Intersection

Intersection Delay, s/veh 91.3

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕	↕	↕	↕	
Traffic Vol, veh/h	0	0	6	57	2	2	9	968	65	2	501	3
Future Vol, veh/h	0	0	6	57	2	2	9	968	65	2	501	3
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	7	62	2	2	10	1052	71	2	545	3
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	10.9	13.2	266.3	60.6
HCM LOS	B	B	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	93%	100%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	99%
Vol Right, %	0%	0%	100%	100%	3%	0%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	968	65	6	61	2	504
LT Vol	9	0	0	0	57	2	0
Through Vol	0	968	0	0	2	0	501
RT Vol	0	0	65	6	2	0	3
Lane Flow Rate	10	1052	71	7	66	2	548
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.016	1.586	0.093	0.013	0.148	0.004	0.973
Departure Headway (Hd)	5.93	5.425	4.719	8.11	8.943	7.811	7.302
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	601	673	755	444	404	461	499
Service Time	3.689	3.184	2.477	5.81	6.643	5.511	5.002
HCM Lane V/C Ratio	0.017	1.563	0.094	0.016	0.163	0.004	1.098
HCM Control Delay	8.8	286	8	10.9	13.2	10.5	60.8
HCM Lane LOS	A	F	A	B	B	B	F
HCM 95th-tile Q	0	55.2	0.3	0	0.5	0	12.6

HCM 6th Signalized Intersection Summary
 13: Magnolia Avenue & 2nd Street

08/27/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↕	↷	↶	↷
Traffic Volume (veh/h)	87	20	952	161	29	632
Future Volume (veh/h)	87	20	952	161	29	632
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	22	1035	175	32	687
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	140	125	1513	255	55	2348
Arrive On Green	0.08	0.08	0.50	0.50	0.03	0.66
Sat Flow, veh/h	1781	1585	3120	511	1781	3647
Grp Volume(v), veh/h	95	22	607	603	32	687
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1760	1781	1777
Q Serve(g_s), s	1.8	0.4	9.0	9.0	0.6	2.8
Cycle Q Clear(g_c), s	1.8	0.4	9.0	9.0	0.6	2.8
Prop In Lane	1.00	1.00		0.29	1.00	
Lane Grp Cap(c), veh/h	140	125	888	880	55	2348
V/C Ratio(X)	0.68	0.18	0.68	0.69	0.59	0.29
Avail Cap(c_a), veh/h	934	831	1230	1218	232	3385
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	15.5	14.9	6.6	6.6	16.5	2.5
Incr Delay (d2), s/veh	5.6	0.7	0.9	1.0	9.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.2	1.6	1.6	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.1	15.5	7.5	7.5	26.2	2.5
LnGrp LOS	C	B	A	A	C	A
Approach Vol, veh/h	117		1210			719
Approach Delay, s/veh	20.1		7.5			3.6
Approach LOS	C		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	5.6	21.8			27.3	7.2
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	4.5	23.9			32.9	18.1
Max Q Clear Time (g_c+1), s	12.6	11.0			4.8	3.8
Green Ext Time (p_c), s	0.0	6.2			4.8	0.2

Intersection Summary

HCM 6th Ctrl Delay		6.8				
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

14: Magnolia Avenue & Carefree Drive

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↖	↗	↖	↕			↕	
Traffic Volume (veh/h)	23	0	52	4	0	0	78	1085	0	0	682	16
Future Volume (veh/h)	23	0	52	4	0	0	78	1085	0	0	682	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		1.00	1.00		1.00	1.00		0.96
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	0	0	1870	1870
Adj Flow Rate, veh/h	25	0	57	4	0	0	85	1179	0	0	741	17
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	0	0	2	2
Cap, veh/h	52	0	118	16	0	7	113	1836	0	0	1172	27
Arrive On Green	0.11	0.00	0.11	0.00	0.00	0.00	0.06	0.52	0.00	0.00	0.33	0.33
Sat Flow, veh/h	471	0	1075	3563	0	1585	1781	3647	0	0	3640	81
Grp Volume(v), veh/h	82	0	0	4	0	0	85	1179	0	0	371	387
Grp Sat Flow(s),veh/h/ln	1546	0	0	1781	0	1585	1781	1777	0	0	1777	1851
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	1.7	8.8	0.0	0.0	6.5	6.5
Cycle Q Clear(g_c), s	1.8	0.0	0.0	0.0	0.0	0.0	1.7	8.8	0.0	0.0	6.5	6.5
Prop In Lane	0.30		0.70	1.00		1.00	1.00		0.00	0.00		0.04
Lane Grp Cap(c), veh/h	170	0	0	16	0	7	113	1836	0	0	587	612
V/C Ratio(X)	0.48	0.00	0.00	0.26	0.00	0.00	0.75	0.64	0.00	0.00	0.63	0.63
Avail Cap(c_a), veh/h	761	0	0	1509	0	672	219	2720	0	0	923	961
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.3	0.0	0.0	18.2	0.0	0.0	16.9	6.4	0.0	0.0	10.4	10.4
Incr Delay (d2), s/veh	2.1	0.0	0.0	8.5	0.0	0.0	9.7	0.4	0.0	0.0	1.1	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	0.0	0.0	0.0	0.0	0.0	0.9	1.5	0.0	0.0	1.8	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.4	0.0	0.0	26.6	0.0	0.0	26.6	6.8	0.0	0.0	11.5	11.5
LnGrp LOS	B	A	A	C	A	A	C	A	A	A	B	B
Approach Vol, veh/h		82			4			1264			758	
Approach Delay, s/veh		17.4			26.6			8.1			11.5	
Approach LOS		B			C			A			B	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		23.4		8.5	6.8	16.6		4.7				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		28.0		18.0	4.5	19.0		15.5				
Max Q Clear Time (g_c+I1), s		10.8		3.8	3.7	8.5		2.0				
Green Ext Time (p_c), s		7.6		0.3	0.0	3.2		0.0				

Intersection Summary

HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	334	685	273	318	317	68	258	656	438	39	382	190
Future Volume (veh/h)	334	685	273	318	317	68	258	656	438	39	382	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.98
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	363	745	297	346	345	74	280	713	476	42	415	207
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	299	1250	545	411	880	186	235	1071	666	53	604	298
Arrive On Green	0.17	0.35	0.35	0.12	0.30	0.30	0.07	0.30	0.30	0.03	0.26	0.26
Sat Flow, veh/h	1781	3554	1549	3456	2909	616	3456	3554	1585	1781	2292	1130
Grp Volume(v), veh/h	363	745	297	346	209	210	280	713	476	42	321	301
Grp Sat Flow(s),veh/h/ln	1781	1777	1549	1728	1777	1747	1728	1777	1585	1781	1777	1645
Q Serve(g_s), s	16.8	17.2	15.4	9.8	9.3	9.5	6.8	17.5	24.9	2.3	16.2	16.5
Cycle Q Clear(g_c), s	16.8	17.2	15.4	9.8	9.3	9.5	6.8	17.5	24.9	2.3	16.2	16.5
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		0.69
Lane Grp Cap(c), veh/h	299	1250	545	411	538	529	235	1071	666	53	468	433
V/C Ratio(X)	1.21	0.60	0.54	0.84	0.39	0.40	1.19	0.67	0.71	0.79	0.68	0.70
Avail Cap(c_a), veh/h	299	1250	545	442	538	529	235	1127	691	71	515	477
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	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	26.6	26.0	43.1	27.6	27.6	46.6	30.5	24.0	48.2	33.1	33.2
Incr Delay (d2), s/veh	122.6	2.1	3.9	11.7	2.0	2.2	120.3	1.6	3.7	24.5	4.1	4.7
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	7.3	7.3	6.1	4.7	4.1	4.1	6.8	7.5	9.5	1.4	7.3	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	164.2	28.7	29.9	54.8	29.6	29.8	166.9	32.1	27.7	72.7	37.2	38.0
LnGrp LOS	F	C	C	D	C	C	F	C	C	E	D	D
Approach Vol, veh/h		1405			765			1469			664	
Approach Delay, s/veh		64.0			41.1			56.4			39.8	
Approach LOS		E			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	41.5	11.0	31.4	21.0	36.6	7.2	35.3				
Change Period (Y+Rc), s	4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	31.7	31.7	* 6.8	* 29	* 17	* 29	* 4	31.7				
Max Q Clear Time (g_c+ll), s	19.2	19.2	8.8	18.5	18.8	11.5	4.3	26.9				
Green Ext Time (p_c), s	0.1	6.4	0.0	3.9	0.0	2.7	0.0	3.3				

Intersection Summary

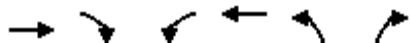
HCM 6th Ctrl Delay	53.6
HCM 6th LOS	D

Notes

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

HCM 6th Signalized Intersection Summary
 26: Park Center Drive & Mast Blvd

08/27/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (veh/h)	1068	29	105	670	16	119
Future Volume (veh/h)	1068	29	105	670	16	119
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1161	32	114	728	17	129
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1768	49	150	2441	196	174
Arrive On Green	0.50	0.50	0.08	0.69	0.11	0.11
Sat Flow, veh/h	3622	97	1781	3647	1781	1585
Grp Volume(v), veh/h	584	609	114	728	17	129
Grp Sat Flow(s),veh/h/ln	1777	1849	1781	1777	1781	1585
Q Serve(g_s), s	10.8	10.8	2.8	3.6	0.4	3.5
Cycle Q Clear(g_c), s	10.8	10.8	2.8	3.6	0.4	3.5
Prop In Lane		0.05	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	890	926	150	2441	196	174
V/C Ratio(X)	0.66	0.66	0.76	0.30	0.09	0.74
Avail Cap(c_a), veh/h	2026	2108	623	5656	824	734
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.2	8.2	19.8	2.7	17.7	19.1
Incr Delay (d2), s/veh	0.8	0.8	7.6	0.1	0.2	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.8	1.3	0.3	0.1	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.1	9.0	27.5	2.8	17.9	25.1
LnGrp LOS	A	A	C	A	B	C
Approach Vol, veh/h	1193			842	146	
Approach Delay, s/veh	9.0			6.1	24.3	
Approach LOS	A			A	C	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	8.2	26.7		34.9	9.4	
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	
Max Green Setting (Gmax), s	15.5	50.5		70.5	20.5	
Max Q Clear Time (g_c+1), s	14.8	12.8		5.6	5.5	
Green Ext Time (p_c), s	0.2	9.3		5.5	0.3	
Intersection Summary						
HCM 6th Ctrl Delay			8.9			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 27: Magnolia Avenue & Mast Blvd

08/27/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖↗	↑↑		↖	↑↑	↖
Traffic Volume (veh/h)	414	292	283	116	158	31	346	676	126	88	492	225
Future Volume (veh/h)	414	292	283	116	158	31	346	676	126	88	492	225
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.95	1.00		0.98	1.00		0.96
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	450	317	308	126	172	34	376	735	137	96	535	245
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	575	999	433	159	703	299	466	952	177	134	923	393
Arrive On Green	0.17	0.28	0.28	0.09	0.20	0.20	0.13	0.32	0.32	0.08	0.26	0.26
Sat Flow, veh/h	3456	3554	1542	1781	3554	1512	3456	2981	555	1781	3554	1515
Grp Volume(v), veh/h	450	317	308	126	172	34	376	438	434	96	535	245
Grp Sat Flow(s),veh/h/ln	1728	1777	1542	1781	1777	1512	1728	1777	1760	1781	1777	1515
Q Serve(g_s), s	10.3	5.8	14.9	5.7	3.4	1.5	8.8	18.5	18.5	4.4	10.9	11.8
Cycle Q Clear(g_c), s	10.3	5.8	14.9	5.7	3.4	1.5	8.8	18.5	18.5	4.4	10.9	11.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	575	999	433	159	703	299	466	568	562	134	923	393
V/C Ratio(X)	0.78	0.32	0.71	0.79	0.24	0.11	0.81	0.77	0.77	0.72	0.58	0.62
Avail Cap(c_a), veh/h	917	1594	692	322	1273	542	721	767	760	269	1329	567
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	33.1	23.5	26.8	37.0	28.0	27.3	34.8	25.5	25.5	37.5	26.7	27.1
Incr Delay (d2), s/veh	2.9	0.2	2.6	3.4	0.2	0.2	1.9	3.4	3.4	2.7	0.6	1.6
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	4.3	2.3	5.4	2.6	1.4	0.5	3.6	7.7	7.6	1.9	4.4	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.0	23.7	29.4	40.4	28.2	27.5	36.7	28.9	28.9	40.2	27.3	28.7
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1075			332			1248			876	
Approach Delay, s/veh		30.5			32.8			31.3			29.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.9	28.8	15.7	26.5	18.8	21.9	10.7	31.5				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.0	5.0	5.5	4.5	5.0				
Max Green Setting (Gmax), s	15.0	37.2	17.3	31.0	22.0	29.7	12.5	35.8				
Max Q Clear Time (g_c+1), s	17.5	16.9	10.8	13.8	12.3	5.4	6.4	20.5				
Green Ext Time (p_c), s	0.1	3.6	0.4	4.0	1.4	1.3	0.0	4.7				

Intersection Summary

HCM 6th Ctrl Delay	30.6
HCM 6th LOS	C

ATTACHMENT C
EXISTING + CUMULATIVE PROJECTS + PROJECT (NO MAGNOLIA AVENUE EXTENSION) MITIGATED
PEAK HOUR INTERSECTION AND ARTERIAL ANALYSIS WORKSHEETS

HCM 6th Signalized Intersection Summary
 4: Cuyamaca Street & Woodglen Vista Drive

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	0	1	12	233	0	46	3	326	68	89	647	0
Future Volume (veh/h)	0	1	12	233	0	46	3	326	68	89	647	0
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		0.97	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	0	1	13	253	0	50	3	354	74	97	703	0
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	0	34	438	527	12	70	6	869	179	125	1298	0
Arrive On Green	0.00	0.30	0.30	0.30	0.00	0.30	0.00	0.30	0.30	0.07	0.37	0.00
Sat Flow, veh/h	0	114	1484	1157	39	236	1781	2916	601	1781	3647	0
Grp Volume(v), veh/h	0	0	14	303	0	0	3	214	214	97	703	0
Grp Sat Flow(s),veh/h/ln	0	0	1598	1433	0	0	1781	1777	1741	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.2	6.4	0.0	0.0	0.1	3.4	3.5	1.9	5.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.2	6.7	0.0	0.0	0.1	3.4	3.5	1.9	5.6	0.0
Prop In Lane	0.00		0.93	0.83		0.17	1.00		0.35	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	472	608	0	0	6	530	519	125	1298	0
V/C Ratio(X)	0.00	0.00	0.03	0.50	0.00	0.00	0.51	0.40	0.41	0.77	0.54	0.00
Avail Cap(c_a), veh/h	0	0	1882	1864	0	0	250	1495	1464	799	4086	0
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	8.9	11.2	0.0	0.0	17.7	10.0	10.0	16.3	9.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.0	55.8	0.5	0.5	9.7	0.4	0.0
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	0.0	0.0	0.1	1.8	0.0	0.0	0.1	1.0	1.0	1.0	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	9.0	11.8	0.0	0.0	73.5	10.5	10.5	26.0	9.3	0.0
LnGrp LOS	A	A	A	B	A	A	E	B	B	C	A	A
Approach Vol, veh/h		14			303			431			800	
Approach Delay, s/veh		9.0			11.8			11.0			11.3	
Approach LOS		A			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	14.6		14.5	4.1	17.0		14.5				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	16.0	30.0		42.0	5.0	41.0		42.0				
Max Q Clear Time (g_c+I1), s	3.9	5.5		2.2	2.1	7.6		8.7				
Green Ext Time (p_c), s	0.2	2.5		0.0	0.0	5.3		2.1				
Intersection Summary												
HCM 6th Ctrl Delay				11.3								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary
6: Cuyamaca Street & El Nopal

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	0	1	7	264	4	45	5	358	48	82	823	1
Future Volume (veh/h)	0	1	7	264	4	45	5	358	48	82	823	1
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		0.98	1.00		0.99	1.00		0.99
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	0	1	8	287	4	49	5	389	52	89	895	1
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	0	56	452	534	9	65	10	1055	140	114	1434	2
Arrive On Green	0.00	0.32	0.32	0.32	0.32	0.32	0.01	0.34	0.34	0.06	0.39	0.39
Sat Flow, veh/h	0	179	1430	1190	29	205	1781	3150	418	1781	3642	4
Grp Volume(v), veh/h	0	0	9	340	0	0	5	218	223	89	437	459
Grp Sat Flow(s),veh/h/ln	0	0	1608	1425	0	0	1781	1777	1791	1781	1777	1870
Q Serve(g_s), s	0.0	0.0	0.2	8.9	0.0	0.0	0.1	3.9	4.0	2.1	8.3	8.3
Cycle Q Clear(g_c), s	0.0	0.0	0.2	9.0	0.0	0.0	0.1	3.9	4.0	2.1	8.3	8.3
Prop In Lane	0.00		0.89	0.84		0.14	1.00		0.23	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	508	608	0	0	10	595	600	114	700	736
V/C Ratio(X)	0.00	0.00	0.02	0.56	0.00	0.00	0.52	0.37	0.37	0.78	0.62	0.62
Avail Cap(c_a), veh/h	0	0	1604	1581	0	0	169	1435	1446	508	1772	1865
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	9.9	13.0	0.0	0.0	20.9	10.6	10.6	19.4	10.3	10.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	0.0	37.4	0.4	0.4	10.8	0.9	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	0.0	0.0	0.1	2.5	0.0	0.0	0.1	1.2	1.2	1.1	2.5	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	9.9	13.8	0.0	0.0	58.3	11.0	11.0	30.3	11.2	11.1
LnGrp LOS	A	A	A	B	A	A	E	B	B	C	B	B
Approach Vol, veh/h		9			340			446			985	
Approach Delay, s/veh		9.9			13.8			11.5			12.9	
Approach LOS		A			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	18.1		17.3	4.2	20.6		17.3				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	12.0	34.0		42.0	4.0	42.0		42.0				
Max Q Clear Time (g_c+I1), s	4.1	6.0		2.2	2.1	10.3		11.0				
Green Ext Time (p_c), s	0.1	2.6		0.0	0.0	6.3		2.4				

Intersection Summary

HCM 6th Ctrl Delay	12.7
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary
 12: Cuyamaca Street & Beck Drive

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	0	0	11	93	1	1	1	420	32	3	1066	0
Future Volume (veh/h)	0	0	11	93	1	1	1	420	32	3	1066	0
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		0.99	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	0	0	12	101	1	1	1	457	35	3	1159	0
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	0	0	162	327	1	1	5	1894	145	6	2020	0
Arrive On Green	0.00	0.00	0.10	0.10	0.10	0.10	0.00	0.57	0.57	0.00	0.57	0.00
Sat Flow, veh/h	0	0	1581	1284	13	13	1781	3344	255	1781	3647	0
Grp Volume(v), veh/h	0	0	12	103	0	0	1	242	250	3	1159	0
Grp Sat Flow(s),veh/h/ln	0	0	1581	1310	0	0	1781	1777	1823	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.3	2.6	0.0	0.0	0.0	2.5	2.5	0.1	7.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.3	2.9	0.0	0.0	0.0	2.5	2.5	0.1	7.6	0.0
Prop In Lane	0.00		1.00	0.98		0.01	1.00		0.14	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	162	329	0	0	5	1006	1032	6	2020	0
V/C Ratio(X)	0.00	0.00	0.07	0.31	0.00	0.00	0.21	0.24	0.24	0.51	0.57	0.00
Avail Cap(c_a), veh/h	0	0	907	990	0	0	292	2961	3037	292	5921	0
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	14.9	16.1	0.0	0.0	18.2	4.0	4.0	18.2	5.1	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.5	0.0	0.0	19.6	0.1	0.1	55.8	0.3	0.0
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	0.0	0.0	0.1	0.8	0.0	0.0	0.0	0.4	0.4	0.1	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	15.0	16.7	0.0	0.0	37.8	4.1	4.1	74.0	5.3	0.0
LnGrp LOS	A	A	B	B	A	A	D	A	A	E	A	A
Approach Vol, veh/h		12			103			493			1162	
Approach Delay, s/veh		15.0			16.7			4.2			5.5	
Approach LOS		B			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.1	24.7		7.8	4.0	24.8		7.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	61.0		21.0	6.0	61.0		21.0				
Max Q Clear Time (g_c+I1), s	2.1	4.5		2.3	2.0	9.6		4.9				
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	11.2		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				5.8								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑		↔↔	↑↑	↗	↖	↑↑	↗
Traffic Volume (veh/h)	157	339	219	346	694	31	210	282	190	58	617	507
Future Volume (veh/h)	157	339	219	346	694	31	210	282	190	58	617	507
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
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	368	238	376	754	34	228	307	207	63	671	551
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	237	1064	464	441	1240	56	293	1170	716	81	1031	452
Arrive On Green	0.07	0.30	0.30	0.13	0.36	0.36	0.08	0.33	0.33	0.05	0.29	0.29
Sat Flow, veh/h	3456	3554	1549	3456	3460	156	3456	3554	1559	1781	3554	1558
Grp Volume(v), veh/h	171	368	238	376	387	401	228	307	207	63	671	551
Grp Sat Flow(s),veh/h/ln	1728	1777	1549	1728	1777	1839	1728	1777	1559	1781	1777	1558
Q Serve(g_s), s	4.8	8.1	12.7	10.6	17.9	17.9	6.5	6.3	8.3	3.5	16.5	29.0
Cycle Q Clear(g_c), s	4.8	8.1	12.7	10.6	17.9	17.9	6.5	6.3	8.3	3.5	16.5	29.0
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	237	1064	464	441	637	659	293	1170	716	81	1031	452
V/C Ratio(X)	0.72	0.35	0.51	0.85	0.61	0.61	0.78	0.26	0.29	0.78	0.65	1.22
Avail Cap(c_a), veh/h	335	1064	464	484	637	659	318	1170	716	162	1031	452
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	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	27.4	29.0	42.7	26.3	26.3	44.8	24.6	17.0	47.2	31.1	35.5
Incr Delay (d2), s/veh	1.9	0.9	4.0	11.0	4.0	3.9	9.4	0.2	0.3	5.8	1.7	117.5
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	3.4	5.1	5.1	7.9	8.1	3.1	2.6	2.9	1.7	7.1	25.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.5	28.3	33.0	53.7	30.3	30.2	54.2	24.8	17.3	53.1	32.8	153.0
LnGrp LOS	D	C	C	D	C	C	D	C	B	D	C	F
Approach Vol, veh/h		777			1164			742			1285	
Approach Delay, s/veh		34.0			37.8			31.8			85.4	
Approach LOS		C			D			C			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	36.2	12.7	34.1	11.1	42.2	8.8	38.0				
Change Period (Y+Rc), s	* 4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	* 14	28.1	* 9.2	* 29	* 9.7	* 33	* 9.1	29.0				
Max Q Clear Time (g_c+I1), s	12.6	14.7	8.5	31.0	6.8	19.9	5.5	10.3				
Green Ext Time (p_c), s	0.1	3.7	0.0	0.0	0.1	4.8	0.0	3.6				

Intersection Summary

HCM 6th Ctrl Delay	51.3
HCM 6th LOS	D

Notes

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

Arterial Level of Service: NB Cuyamaca Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
El Nopal	III	35	13.2	19.0	32.2	0.10	11.0	E
Woodglen Vista Drive	III	35	31.1	14.7	45.8	0.26	20.4	C
Princess Joann Road	III	35	54.7	11.3	66.0	0.53	29.0	B
Street Y	III	35	70.6	8.6	79.2	0.69	31.2	A
Total	III		169.6	53.6	223.2	1.58	25.4	B

Arterial Level of Service: SB Cuyamaca Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Street A	III	35	19.6	11.6	31.2	0.15	17.7	D
Princess Joann Road	III	35	70.6	4.1	74.7	0.69	33.1	A
Woodglen Vista Drive	III	35	54.7	15.6	70.3	0.53	27.2	B
El Nopal	III	35	31.1	13.9	45.0	0.26	20.8	C
Total	III		176.0	45.2	221.2	1.63	26.5	B

HCM 6th Signalized Intersection Summary
 4: Cuyamaca Street & Woodglen Vista Drive

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↔		↗	↕↔	
Traffic Volume (veh/h)	0	1	7	111	2	95	7	669	238	45	333	2
Future Volume (veh/h)	0	1	7	111	2	95	7	669	238	45	333	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.98
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	0	1	8	121	2	103	8	727	259	49	362	2
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	0	37	298	282	26	145	15	1159	413	74	1768	10
Arrive On Green	0.00	0.21	0.21	0.21	0.21	0.21	0.01	0.45	0.45	0.04	0.49	0.49
Sat Flow, veh/h	0	176	1411	698	123	688	1781	2548	908	1781	3623	20
Grp Volume(v), veh/h	0	0	9	226	0	0	8	507	479	49	177	187
Grp Sat Flow(s),veh/h/ln	0	0	1587	1509	0	0	1781	1777	1679	1781	1777	1866
Q Serve(g_s), s	0.0	0.0	0.2	4.6	0.0	0.0	0.2	8.9	8.9	1.1	2.3	2.3
Cycle Q Clear(g_c), s	0.0	0.0	0.2	5.6	0.0	0.0	0.2	8.9	8.9	1.1	2.3	2.3
Prop In Lane	0.00		0.89	0.54		0.46	1.00		0.54	1.00		0.01
Lane Grp Cap(c), veh/h	0	0	335	453	0	0	15	808	764	74	867	911
V/C Ratio(X)	0.00	0.00	0.03	0.50	0.00	0.00	0.53	0.63	0.63	0.66	0.20	0.20
Avail Cap(c_a), veh/h	0	0	1160	1222	0	0	174	2121	2004	390	2337	2455
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	12.8	14.9	0.0	0.0	20.3	8.5	8.5	19.4	6.0	6.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	0.0	25.7	0.8	0.9	9.5	0.1	0.1
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	0.0	0.0	0.1	1.8	0.0	0.0	0.2	2.4	2.3	0.6	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	12.9	15.8	0.0	0.0	46.0	9.3	9.4	28.9	6.1	6.1
LnGrp LOS	A	A	B	B	A	A	D	A	A	C	A	A
Approach Vol, veh/h		9			226			994				413
Approach Delay, s/veh		12.9			15.8			9.7				8.8
Approach LOS		B			B			A				A
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	22.7		12.7	4.3	24.0		12.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	9.0	49.0		30.0	4.0	54.0		30.0				
Max Q Clear Time (g_c+I1), s	3.1	10.9		2.2	2.2	4.3		7.6				
Green Ext Time (p_c), s	0.0	7.7		0.0	0.0	2.2		1.4				
Intersection Summary												
HCM 6th Ctrl Delay				10.3								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary
6: Cuyamaca Street & El Nopal

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	1	1	5	102	8	87	13	834	109	45	415	0
Future Volume (veh/h)	1	1	5	102	8	87	13	834	109	45	415	0
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		0.98	1.00		0.97	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	1	1	5	111	9	95	14	907	118	49	451	0
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	115	79	233	269	35	135	26	1457	190	74	1741	0
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.01	0.46	0.46	0.04	0.49	0.00
Sat Flow, veh/h	70	394	1160	669	176	669	1781	3150	410	1781	3647	0
Grp Volume(v), veh/h	7	0	0	215	0	0	14	512	513	49	451	0
Grp Sat Flow(s),veh/h/ln	1624	0	0	1513	0	0	1781	1777	1783	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	4.3	0.0	0.0	0.3	8.9	8.9	1.1	3.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	5.3	0.0	0.0	0.3	8.9	8.9	1.1	3.0	0.0
Prop In Lane	0.14		0.71	0.52		0.44	1.00		0.23	1.00		0.00
Lane Grp Cap(c), veh/h	428	0	0	438	0	0	26	822	825	74	1741	0
V/C Ratio(X)	0.02	0.00	0.00	0.49	0.00	0.00	0.55	0.62	0.62	0.66	0.26	0.00
Avail Cap(c_a), veh/h	1225	0	0	1195	0	0	175	2179	2187	393	4795	0
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.1	0.0	0.0	15.1	0.0	0.0	20.0	8.3	8.3	19.2	6.1	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.9	0.0	0.0	16.9	0.8	0.8	9.5	0.1	0.0
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	0.0	0.0	0.0	1.7	0.0	0.0	0.2	2.3	2.3	0.6	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	0.0	0.0	15.9	0.0	0.0	36.8	9.0	9.0	28.7	6.1	0.0
LnGrp LOS	B	A	A	B	A	A	D	A	A	C	A	A
Approach Vol, veh/h		7			215			1039				500
Approach Delay, s/veh		13.1			15.9			9.4				8.4
Approach LOS		B			B			A				A
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	22.9		12.2	4.6	24.0		12.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	9.0	50.0		29.0	4.0	55.0		29.0				
Max Q Clear Time (g_c+I1), s	3.1	10.9		2.1	2.3	5.0		7.3				
Green Ext Time (p_c), s	0.0	8.0		0.0	0.0	3.2		1.3				

Intersection Summary

HCM 6th Ctrl Delay	9.9
HCM 6th LOS	A

HCM 6th Signalized Intersection Summary
 12: Cuyamaca Street & Beck Drive

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	0	0	6	57	2	2	9	968	65	2	501	3
Future Volume (veh/h)	0	0	6	57	2	2	9	968	65	2	501	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.97	1.00		0.97
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	0	0	7	62	2	2	10	1052	71	2	545	3
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	0	0	105	301	3	3	19	1878	127	6	1988	11
Arrive On Green	0.00	0.00	0.07	0.07	0.07	0.07	0.01	0.56	0.56	0.00	0.55	0.55
Sat Flow, veh/h	0	0	1550	1243	40	40	1781	3372	227	1781	3623	20
Grp Volume(v), veh/h	0	0	7	66	0	0	10	554	569	2	267	281
Grp Sat Flow(s),veh/h/ln	0	0	1550	1323	0	0	1781	1777	1822	1781	1777	1866
Q Serve(g_s), s	0.0	0.0	0.1	1.5	0.0	0.0	0.2	6.5	6.5	0.0	2.6	2.6
Cycle Q Clear(g_c), s	0.0	0.0	0.1	1.6	0.0	0.0	0.2	6.5	6.5	0.0	2.6	2.6
Prop In Lane	0.00		1.00	0.94		0.03	1.00		0.12	1.00		0.01
Lane Grp Cap(c), veh/h	0	0	105	306	0	0	19	990	1015	6	975	1024
V/C Ratio(X)	0.00	0.00	0.07	0.22	0.00	0.00	0.53	0.56	0.56	0.36	0.27	0.27
Avail Cap(c_a), veh/h	0	0	964	1089	0	0	332	3426	3513	332	3426	3598
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	14.0	14.8	0.0	0.0	15.8	4.6	4.6	16.0	3.9	3.9
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.3	0.0	0.0	20.9	0.5	0.5	35.3	0.2	0.1
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	0.0	0.0	0.0	0.4	0.0	0.0	0.2	0.8	0.8	0.1	0.3	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	14.3	15.1	0.0	0.0	36.8	5.1	5.1	51.3	4.0	4.0
LnGrp LOS	A	A	B	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		7			66			1133			550	
Approach Delay, s/veh		14.3			15.1			5.4			4.2	
Approach LOS		B			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.1	21.9		6.2	4.3	21.6		6.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	62.0		20.0	6.0	62.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	8.5		2.1	2.2	4.6		3.6				
Green Ext Time (p_c), s	0.0	9.5		0.0	0.0	3.5		0.2				

Intersection Summary

HCM 6th Ctrl Delay	5.4
HCM 6th LOS	A

Arterial Level of Service: NB Cuyamaca Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Woodglen Vista Drive	III	35	31.1	17.4	48.5	0.26	19.3	C
Princess Joann Road	III	35	54.7	12.3	67.0	0.53	28.6	B
Street Y	III	35	70.6	14.7	85.3	0.69	29.0	B
Total	III		156.4	44.4	200.8	1.48	26.5	B

Arterial Level of Service: SB Cuyamaca Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Street A	III	35	19.6	9.4	29.0	0.15	19.0	C
Princess Joann Road	III	35	70.6	3.1	73.7	0.69	33.5	A
Woodglen Vista Drive	III	35	54.7	7.7	62.4	0.53	30.7	A
Total	III		144.9	20.2	165.1	1.37	29.9	B

ATTACHMENT D
MITIGATION PHASING PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS
(NO MAGNOLIA AVENUE EXTENSION)

Intersection	
Intersection Delay, s/veh	34.4
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↑	↑	↑	↑
Traffic Vol, veh/h	0	0	11	93	1	1	1	164	32	3	571	0
Future Vol, veh/h	0	0	11	93	1	1	1	164	32	3	571	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	12	101	1	1	1	178	35	3	621	0
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	9.2	11.8	10.1	47
HCM LOS	A	B	B	E

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	98%	100%	0%
Vol Thru, %	0%	100%	0%	0%	1%	0%	100%
Vol Right, %	0%	0%	100%	100%	1%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	164	32	11	95	3	571
LT Vol	1	0	0	0	93	3	0
Through Vol	0	164	0	0	1	0	571
RT Vol	0	0	32	11	1	0	0
Lane Flow Rate	1	178	35	12	103	3	621
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.002	0.279	0.047	0.021	0.207	0.005	0.952
Departure Headway (Hd)	6.131	5.625	4.916	6.302	7.21	6.027	5.523
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	585	640	729	567	498	597	664
Service Time	3.858	3.352	2.643	4.053	4.953	3.727	3.223
HCM Lane V/C Ratio	0.002	0.278	0.048	0.021	0.207	0.005	0.935
HCM Control Delay	8.9	10.5	7.9	9.2	11.8	8.8	47.2
HCM Lane LOS	A	B	A	A	B	A	E
HCM 95th-tile Q	0	1.1	0.1	0.1	0.8	0	13.4

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

09/03/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘↗	↑↑	↗	↘	↑↑	
Traffic Volume (veh/h)	136	339	219	346	694	23	210	223	190	42	503	466
Future Volume (veh/h)	136	339	219	346	694	23	210	223	190	42	503	466
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
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	148	368	238	376	754	25	228	242	207	46	547	507
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	179	1084	473	411	1135	38	270	1226	727	59	533	467
Arrive On Green	0.10	0.31	0.31	0.12	0.32	0.32	0.08	0.35	0.35	0.03	0.30	0.30
Sat Flow, veh/h	1781	3554	1549	3456	3508	116	3456	3554	1559	1781	1777	1558
Grp Volume(v), veh/h	148	368	238	376	382	397	228	242	207	46	547	507
Grp Sat Flow(s),veh/h/ln	1781	1777	1549	1728	1777	1847	1728	1777	1559	1781	1777	1558
Q Serve(g_s), s	8.2	8.0	12.6	10.8	18.5	18.5	6.5	4.8	8.2	2.6	30.0	30.0
Cycle Q Clear(g_c), s	8.2	8.0	12.6	10.8	18.5	18.5	6.5	4.8	8.2	2.6	30.0	30.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	179	1084	473	411	575	598	270	1226	727	59	533	467
V/C Ratio(X)	0.83	0.34	0.50	0.91	0.66	0.66	0.85	0.20	0.28	0.78	1.03	1.08
Avail Cap(c_a), veh/h	233	1087	474	411	575	598	270	1226	727	71	533	467
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	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	26.9	28.5	43.5	29.1	29.1	45.5	23.0	16.6	48.0	35.0	35.0
Incr Delay (d2), s/veh	13.5	0.9	3.8	22.9	5.5	5.4	20.3	0.1	0.3	29.8	45.8	66.5
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	3.4	5.0	5.8	8.4	8.7	3.5	2.0	2.9	1.6	19.2	19.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.6	27.8	32.3	66.5	34.7	34.5	65.8	23.1	16.9	77.8	80.8	101.5
LnGrp LOS	E	C	C	E	C	C	E	C	B	E	F	F
Approach Vol, veh/h		754			1155			677			1100	
Approach Delay, s/veh		35.1			45.0			35.6			90.2	
Approach LOS		D			D			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.1	36.8	12.0	35.1	14.2	38.7	7.5	39.6				
Change Period (Y+Rc), s	* 4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	* 12	30.6	* 7.8	* 30	* 13	* 30	* 4	33.7				
Max Q Clear Time (g_c+I1), s	12.8	14.6	8.5	32.0	10.2	20.5	4.6	10.2				
Green Ext Time (p_c), s	0.0	4.1	0.0	0.0	0.0	3.9	0.0	3.2				

Intersection Summary

HCM 6th Ctrl Delay	54.7
HCM 6th LOS	D

Notes

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

HCM 6th AWSC
4: Cuyamaca Street & Woodglen Vista Drive

09/03/2020

Intersection	
Intersection Delay, s/veh	33.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	7	111	2	56	7	377	238	26	186	2
Future Vol, veh/h	0	1	7	111	2	56	7	377	238	26	186	2
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	8	121	2	61	8	410	259	28	202	2
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9.4	12.1	47.4	11.3
HCM LOS	A	B	E	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	66%	100%	0%
Vol Thru, %	0%	61%	12%	1%	0%	99%
Vol Right, %	0%	39%	88%	33%	0%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	615	8	169	26	188
LT Vol	7	0	0	111	26	0
Through Vol	0	377	1	2	0	186
RT Vol	0	238	7	56	0	2
Lane Flow Rate	8	668	9	184	28	204
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.013	0.963	0.015	0.315	0.05	0.335
Departure Headway (Hd)	5.963	5.185	6.22	6.173	6.41	5.895
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	601	702	573	582	558	609
Service Time	3.691	2.912	4.288	4.221	4.151	3.635
HCM Lane V/C Ratio	0.013	0.952	0.016	0.316	0.05	0.335
HCM Control Delay	8.8	47.8	9.4	12.1	9.5	11.6
HCM Lane LOS	A	E	A	B	A	B
HCM 95th-tile Q	0	14.3	0	1.3	0.2	1.5

Intersection	
Intersection Delay, s/veh	34.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	1	1	5	102	8	36	13	498	109	19	246	0
Future Vol, veh/h	1	1	5	102	8	36	13	498	109	19	246	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	5	111	9	39	14	541	118	21	267	0
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9.6	11.9	50	12.7
HCM LOS	A	B	E	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	14%	70%	100%	0%
Vol Thru, %	0%	82%	14%	5%	0%	100%
Vol Right, %	0%	18%	71%	25%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	607	7	146	19	246
LT Vol	13	0	1	102	19	0
Through Vol	0	498	1	8	0	246
RT Vol	0	109	5	36	0	0
Lane Flow Rate	14	660	8	159	21	267
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.023	0.974	0.014	0.281	0.036	0.433
Departure Headway (Hd)	5.949	5.317	6.457	6.367	6.337	5.83
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	603	686	552	563	565	618
Service Time	3.675	3.043	4.521	4.412	4.073	3.566
HCM Lane V/C Ratio	0.023	0.962	0.014	0.282	0.037	0.432
HCM Control Delay	8.8	50.9	9.6	11.9	9.3	13
HCM Lane LOS	A	F	A	B	A	B
HCM 95th-tile Q	0.1	14.6	0	1.1	0.1	2.2

ATTACHMENT E
**EXISTING + PROJECT (NO MAGNOLIA AVENUE EXTENSION – PROHIBITED SOUTHBOUND LEFT-
TURNS FROM CUYAMACA STREET) PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS**

HCM 6th TWSC
 1: Cuyamaca Street & Princess Joann Road

08/31/2020

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	84	362	0	0	863
Future Vol, veh/h	0	84	362	0	0	863
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	91	393	0	0	938

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1331	393	0	0	393
Stage 1	393	-	-	-	-
Stage 2	938	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	170	656	-	-	1166
Stage 1	682	-	-	-	-
Stage 2	381	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	170	656	-	-	1166
Mov Cap-2 Maneuver	170	-	-	-	-
Stage 1	682	-	-	-	-
Stage 2	381	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	656	1166
HCM Lane V/C Ratio	-	-	0.139	-
HCM Control Delay (s)	-	-	11.4	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.5	0

HCM 6th AWSC
 2: Magnolia Avenue & Princess Joann Road

08/31/2020

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↑	↑	↑	↑
Traffic Vol, veh/h	0	0	54	31	4	0	116	4	8	0	2	0
Future Vol, veh/h	0	0	54	31	4	0	116	4	8	0	2	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	59	34	4	0	126	4	9	0	2	0
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	7.3	8.4	9	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	0%	89%	0%	0%	0%
Vol Thru, %	0%	100%	0%	0%	11%	100%	100%	100%
Vol Right, %	0%	0%	100%	100%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	116	4	8	54	35	0	2	0
LT Vol	116	0	0	0	31	0	0	0
Through Vol	0	4	0	0	4	0	2	0
RT Vol	0	0	8	54	0	0	0	0
Lane Flow Rate	126	4	9	59	38	0	2	0
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.182	0.006	0.01	0.069	0.057	0	0.003	0
Departure Headway (Hd)	5.204	4.703	4.002	4.246	5.399	4.895	4.895	4.895
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	683	753	883	849	667	0	734	0
Service Time	2.983	2.481	1.78	1.947	3.1	2.604	2.604	2.604
HCM Lane V/C Ratio	0.184	0.005	0.01	0.069	0.057	0	0.003	0
HCM Control Delay	9.2	7.5	6.8	7.3	8.4	7.6	7.6	7.6
HCM Lane LOS	A	A	A	A	A	N	A	N
HCM 95th-tile Q	0.7	0	0	0.2	0.2	0	0	0

HCM 6th AWSC
 4: Cuyamaca Street & Woodglen Vista Drive

08/31/2020

Intersection

Intersection Delay, s/veh 208.7

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	12	227	0	46	3	326	66	0	890	0
Future Vol, veh/h	0	1	12	227	0	46	3	326	66	0	890	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	13	247	0	50	3	354	72	0	967	0
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	12.4	21	29.4	348.8
HCM LOS	B	C	D	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	83%	0%	0%
Vol Thru, %	0%	83%	8%	0%	100%	100%
Vol Right, %	0%	17%	92%	17%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	392	13	273	0	890
LT Vol	3	0	0	227	0	0
Through Vol	0	326	1	0	0	890
RT Vol	0	66	12	46	0	0
Lane Flow Rate	3	426	14	297	0	967
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.006	0.761	0.029	0.565	0	1.722
Departure Headway (Hd)	7.899	7.261	9.119	8.059	6.408	6.408
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	456	503	395	451	0	571
Service Time	5.599	4.961	7.119	6.059	4.15	4.15
HCM Lane V/C Ratio	0.007	0.847	0.035	0.659	0	1.694
HCM Control Delay	10.6	29.5	12.4	21	9.2	348.8
HCM Lane LOS	B	D	B	C	N	F
HCM 95th-tile Q	0	6.6	0.1	3.4	0	56.7

HCM 6th Signalized Intersection Summary
 5: Magnolia Avenue & Woodglen Vista Drive/Len Street

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	17	1	109	44	13	10	77	225	14	7	336	11
Future Volume (veh/h)	17	1	109	44	13	10	77	225	14	7	336	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	0.93		0.98	1.00		0.97	1.00		0.82
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	18	1	118	48	14	11	84	245	15	8	365	12
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	614	4	433	346	98	55	181	951	58	198	1009	33
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.10	0.28	0.28	0.11	0.29	0.29
Sat Flow, veh/h	1381	12	1412	691	319	179	1781	3397	207	1781	3483	114
Grp Volume(v), veh/h	18	0	119	73	0	0	84	127	133	8	185	192
Grp Sat Flow(s),veh/h/ln	1381	0	1424	1189	0	0	1781	1777	1826	1781	1777	1820
Q Serve(g_s), s	0.0	0.0	2.8	0.5	0.0	0.0	2.0	2.5	2.5	0.2	3.7	3.7
Cycle Q Clear(g_c), s	0.3	0.0	2.8	3.3	0.0	0.0	2.0	2.5	2.5	0.2	3.7	3.7
Prop In Lane	1.00		0.99	0.66		0.15	1.00		0.11	1.00		0.06
Lane Grp Cap(c), veh/h	614	0	437	498	0	0	181	498	512	198	515	527
V/C Ratio(X)	0.03	0.00	0.27	0.15	0.00	0.00	0.46	0.26	0.26	0.04	0.36	0.36
Avail Cap(c_a), veh/h	1226	0	1067	1085	0	0	618	1650	1696	458	1491	1527
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	11.7	11.5	0.0	0.0	18.9	12.5	12.5	17.7	12.6	12.6
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.1	0.0	0.0	1.9	0.3	0.3	0.1	0.4	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	0.1	0.0	0.8	0.5	0.0	0.0	0.8	0.8	0.8	0.1	1.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.9	0.0	12.1	11.6	0.0	0.0	20.8	12.7	12.8	17.8	13.0	13.0
LnGrp LOS	B	A	B	B	A	A	C	B	B	B	B	B
Approach Vol, veh/h		137			73			344			385	
Approach Delay, s/veh		11.9			11.6			14.7			13.1	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	17.0		18.2	9.0	17.4		18.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	1.5	41.5		33.5	15.5	37.5		33.5				
Max Q Clear Time (g_c+1), s	1.2	4.5		4.8	4.0	5.7		5.3				
Green Ext Time (p_c), s	0.0	1.4		0.9	0.1	2.1		0.4				

Intersection Summary

HCM 6th Ctrl Delay	13.4
HCM 6th LOS	B

Intersection

Intersection Delay, s/veh 78.8

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	7	258	4	45	5	355	46	0	1141	1
Future Vol, veh/h	0	1	7	258	4	45	5	355	46	0	1141	1
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	8	280	4	49	5	386	50	0	1240	1
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	13.9	26.3	36.1	597.9
HCM LOS	B	D	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	84%	0%	0%
Vol Thru, %	0%	89%	12%	1%	100%	100%
Vol Right, %	0%	11%	88%	15%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	401	8	307	0	1142
LT Vol	5	0	0	258	0	0
Through Vol	0	355	1	4	0	1141
RT Vol	0	46	7	45	0	1
Lane Flow Rate	5	436	9	334	0	1241
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.011	0.803	0.019	0.639	0	2.282
Departure Headway (Hd)	8.689	8.084	10.695	8.888	6.619	6.618
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	414	453	337	410	0	559
Service Time	6.389	5.784	8.695	6.888	4.363	4.362
HCM Lane V/C Ratio	0.012	0.962	0.027	0.815	0	2.22
HCM Control Delay	11.5	36.4	13.9	26.3	9.4	597.9
HCM Lane LOS	B	E	B	D	N	F
HCM 95th-tile Q	0	7.3	0.1	4.3	0	91.6

HCM 6th Signalized Intersection Summary
 7: Magnolia Avenue & El Nopal

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	63	93	136	161	141	48	346	216	114	458	83
Future Volume (veh/h)	45	63	93	136	161	141	48	346	216	114	458	83
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
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		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	49	68	101	148	175	153	52	376	235	124	498	90
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	105	126	188	188	214	187	109	803	494	159	1230	221
Arrive On Green	0.06	0.19	0.19	0.11	0.23	0.23	0.06	0.38	0.38	0.09	0.41	0.41
Sat Flow, veh/h	1781	673	1000	1781	913	798	1781	2102	1293	1781	2997	539
Grp Volume(v), veh/h	49	0	169	148	0	328	52	317	294	124	294	294
Grp Sat Flow(s),veh/h/ln	1781	0	1673	1781	0	1711	1781	1777	1618	1781	1777	1759
Q Serve(g_s), s	2.0	0.0	7.0	6.2	0.0	13.9	2.2	10.3	10.5	5.2	9.0	9.1
Cycle Q Clear(g_c), s	2.0	0.0	7.0	6.2	0.0	13.9	2.2	10.3	10.5	5.2	9.0	9.1
Prop In Lane	1.00		0.60	1.00		0.47	1.00		0.80	1.00		0.31
Lane Grp Cap(c), veh/h	105	0	314	188	0	401	109	679	618	159	730	722
V/C Ratio(X)	0.47	0.00	0.54	0.79	0.00	0.82	0.48	0.47	0.48	0.78	0.40	0.41
Avail Cap(c_a), veh/h	197	0	512	430	0	747	197	679	618	360	730	722
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	0.0	28.1	33.5	0.0	27.8	34.8	17.8	17.9	34.2	16.0	16.0
Incr Delay (d2), s/veh	3.2	0.0	1.4	7.0	0.0	4.1	3.2	2.3	2.6	7.9	1.7	1.7
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	0.0	0.0	2.9	3.0	0.0	6.0	1.0	4.2	4.0	2.5	3.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.1	0.0	29.6	40.5	0.0	31.9	38.1	20.1	20.5	42.1	17.6	17.7
LnGrp LOS	D	A	C	D	A	C	D	C	C	D	B	B
Approach Vol, veh/h		218		476		663		712				
Approach Delay, s/veh		31.5		34.6		21.7		21.9				
Approach LOS		C		C		C		C				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.4	33.8	12.6	18.9	9.2	36.0	9.0	22.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	15.5	24.5	18.5	23.5	8.5	31.5	8.5	33.5				
Max Q Clear Time (g_c+1), s	17.2	12.5	8.2	9.0	4.2	11.1	4.0	15.9				
Green Ext Time (p_c), s	0.2	2.8	0.3	0.8	0.0	3.3	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay				25.8								
HCM 6th LOS				C								

Intersection

Intersection Delay, s/veh 297.7

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕	↕	↕	↕	
Traffic Vol, veh/h	0	0	11	90	1	1	1	415	29	3	1055	0
Future Vol, veh/h	0	0	11	90	1	1	1	415	29	3	1055	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	12	98	1	1	1	451	32	3	1147	0
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	11.5	14.5	21.8	441.3
HCM LOS	B	B	C	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	98%	100%	0%
Vol Thru, %	0%	100%	0%	0%	1%	0%	100%
Vol Right, %	0%	0%	100%	100%	1%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	415	29	11	92	3	1055
LT Vol	1	0	0	0	90	3	0
Through Vol	0	415	0	0	1	0	1055
RT Vol	0	0	29	11	1	0	0
Lane Flow Rate	1	451	32	12	100	3	1147
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.002	0.704	0.043	0.023	0.215	0.006	1.936
Departure Headway (Hd)	6.884	6.373	5.659	8.606	9.295	6.582	6.078
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	523	573	637	418	389	540	596
Service Time	4.584	4.073	3.359	6.306	6.995	4.372	3.868
HCM Lane V/C Ratio	0.002	0.787	0.05	0.029	0.257	0.006	1.924
HCM Control Delay	9.6	22.8	8.6	11.5	14.5	9.4	442.5
HCM Lane LOS	A	C	A	B	B	A	F
HCM 95th-tile Q	0	5.6	0.1	0.1	0.8	0	74

HCM 6th Signalized Intersection Summary

13: Magnolia Avenue & 2nd Street

08/31/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	158	33	625	103	109	1577
Future Volume (veh/h)	158	33	625	103	109	1577
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	172	36	679	112	118	1714
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	247	220	1308	215	150	2237
Arrive On Green	0.14	0.14	0.43	0.43	0.08	0.63
Sat Flow, veh/h	1781	1585	3141	502	1781	3647
Grp Volume(v), veh/h	172	36	396	395	118	1714
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1772	1781	1777
Q Serve(g_s), s	3.6	0.8	6.3	6.4	2.5	13.4
Cycle Q Clear(g_c), s	3.6	0.8	6.3	6.4	2.5	13.4
Prop In Lane	1.00	1.00		0.28	1.00	
Lane Grp Cap(c), veh/h	247	220	763	761	150	2237
V/C Ratio(X)	0.70	0.16	0.52	0.52	0.79	0.77
Avail Cap(c_a), veh/h	826	735	824	822	252	2563
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	15.9	14.7	8.1	8.1	17.4	5.2
Incr Delay (d2), s/veh	3.5	0.3	0.5	0.6	8.7	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.3	1.5	1.5	1.2	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.4	15.1	8.7	8.7	26.2	6.4
LnGrp LOS	B	B	A	A	C	A
Approach Vol, veh/h	208		791			1832
Approach Delay, s/veh	18.7		8.7			7.7
Approach LOS	B		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.8	21.2			28.9	9.9
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	5.5	18.0			28.0	18.0
Max Q Clear Time (g_c+1), s	14.5	8.4			15.4	5.6
Green Ext Time (p_c), s	0.0	3.3			9.0	0.5
Intersection Summary						
HCM 6th Ctrl Delay			8.8			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

14: Magnolia Avenue & Carefree Drive

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕	↕	↕	↕			↕	↕
Traffic Volume (veh/h)	13	0	57	185	0	30	33	667	0	0	841	2
Future Volume (veh/h)	13	0	57	185	0	30	33	667	0	0	841	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	1.00		1.00	1.00		1.00	1.00		0.95
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		No		No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	14	0	62	201	0	33	36	725	0	0	914	2
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	0	0	2	2
Cap, veh/h	56	0	248	348	0	155	55	1568	0	0	1197	3
Arrive On Green	0.22	0.00	0.22	0.10	0.00	0.10	0.03	0.44	0.00	0.00	0.33	0.33
Sat Flow, veh/h	258	0	1141	3563	0	1585	1781	3647	0	0	3731	8
Grp Volume(v), veh/h	76	0	0	201	0	33	36	725	0	0	446	470
Grp Sat Flow(s),veh/h/ln1398	0	0	0	1781	0	1585	1781	1777	0	0	1777	1868
Q Serve(g_s), s	2.5	0.0	0.0	3.0	0.0	1.1	1.1	7.9	0.0	0.0	12.5	12.5
Cycle Q Clear(g_c), s	2.5	0.0	0.0	3.0	0.0	1.1	1.1	7.9	0.0	0.0	12.5	12.5
Prop In Lane	0.18		0.82	1.00		1.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	304	0	0	348	0	155	55	1568	0	0	585	615
V/C Ratio(X)	0.25	0.00	0.00	0.58	0.00	0.21	0.66	0.46	0.00	0.00	0.76	0.76
Avail Cap(c_a), veh/h	455	0	0	1030	0	458	129	2087	0	0	771	810
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	0.0	0.0	23.9	0.0	23.0	26.5	10.9	0.0	0.0	16.6	16.6
Incr Delay (d2), s/veh	0.4	0.0	0.0	1.5	0.0	0.7	12.6	0.2	0.0	0.0	3.3	3.1
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/ln0.8	0.0	0.0	0.0	1.2	0.0	0.4	0.6	2.4	0.0	0.0	4.7	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.3	0.0	0.0	25.4	0.0	23.7	39.2	11.1	0.0	0.0	19.9	19.8
LnGrp LOS	B	A	A	C	A	C	D	B	A	A	B	B
Approach Vol, veh/h		76		234		761		916				
Approach Delay, s/veh		18.3		25.2		12.4		19.8				
Approach LOS		B		C		B		B				
Timer - Assigned Phs		2		4		5		6				8
Phs Duration (G+Y+Rc), s		28.9		16.5		6.2		22.7				9.9
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				4.5
Max Green Setting (Gmax), s		32.5		18.0		4.0		24.0				16.0
Max Q Clear Time (g_c+11), s		9.9		4.5		3.1		14.5				5.0
Green Ext Time (p_c), s		4.8		0.3		0.0		3.8				0.6

Intersection Summary

HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘↗	↑↑	↗	↘	↑↑	
Traffic Volume (veh/h)	151	308	200	327	650	30	197	275	179	383	609	498
Future Volume (veh/h)	151	308	200	327	650	30	197	275	179	383	609	498
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
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	164	335	217	355	707	33	214	299	195	416	662	541
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	121	1048	457	270	1053	49	256	999	561	264	657	532
Arrive On Green	0.07	0.30	0.30	0.08	0.31	0.31	0.07	0.28	0.28	0.15	0.35	0.35
Sat Flow, veh/h	1781	3554	1549	3456	3454	161	3456	3554	1557	1781	1850	1499
Grp Volume(v), veh/h	164	335	217	355	364	376	214	299	195	416	636	567
Grp Sat Flow(s),veh/h/ln	1781	1777	1549	1728	1777	1838	1728	1777	1557	1781	1777	1571
Q Serve(g_s), s	6.8	7.3	11.5	7.8	17.9	17.9	6.1	6.6	9.2	14.8	35.5	35.5
Cycle Q Clear(g_c), s	6.8	7.3	11.5	7.8	17.9	17.9	6.1	6.6	9.2	14.8	35.5	35.5
Prop In Lane	1.00		1.00	1.00		0.09	1.00		1.00	1.00		0.95
Lane Grp Cap(c), veh/h	121	1048	457	270	542	561	256	999	561	264	631	558
V/C Ratio(X)	1.35	0.32	0.47	1.32	0.67	0.67	0.84	0.30	0.35	1.58	1.01	1.02
Avail Cap(c_a), veh/h	121	1052	458	270	561	581	256	999	561	264	631	558
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	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.6	27.4	28.9	46.1	30.4	30.4	45.7	28.2	23.5	42.6	32.3	32.3
Incr Delay (d2), s/veh	203.7	0.8	3.5	165.2	6.1	5.9	19.9	0.2	0.5	277.5	37.8	42.4
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	0.8	3.1	4.6	9.4	8.2	8.5	3.3	2.8	3.4	26.7	21.1	19.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	250.3	28.2	32.4	211.3	36.5	36.3	65.6	28.5	24.0	320.1	70.0	74.7
LnGrp LOS	F	C	C	F	D	D	E	C	C	F	F	F
Approach Vol, veh/h		716			1095			708			1619	
Approach Delay, s/veh		80.4			93.1			38.5			135.9	
Approach LOS		F			F			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	2.0	35.8	11.6	40.6	11.0	36.8	19.0	33.2				
Change Period (Y+Rc), s	4.2	6.3	*4.2	*5.1	*4.2	*6.3	*4.2	5.1				
Max Green Setting (Gmax), s	7.8	29.6	*7.4	*36	*6.8	*32	*15	28.0				
Max Q Clear Time (g_c+1.9), s	19.8	13.5	8.1	37.5	8.8	19.9	16.8	11.2				
Green Ext Time (p_c), s	0.0	3.7	0.0	0.0	0.0	4.1	0.0	3.3				

Intersection Summary

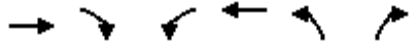
HCM 6th Ctrl Delay	98.3
HCM 6th LOS	F

Notes

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

HCM 6th Signalized Intersection Summary
 26: Park Center Drive & Mast Blvd

08/31/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (veh/h)	850	67	116	886	21	90
Future Volume (veh/h)	850	67	116	886	21	90
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	924	73	126	963	23	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1385	109	163	2287	154	137
Arrive On Green	0.42	0.42	0.09	0.64	0.09	0.09
Sat Flow, veh/h	3417	263	1781	3647	1781	1585
Grp Volume(v), veh/h	494	503	126	963	23	98
Grp Sat Flow(s),veh/h/ln	1809	1781	1777	1781	1585	
Q Serve(g_s), s	7.5	7.5	2.3	4.4	0.4	2.0
Cycle Q Clear(g_c), s	7.5	7.5	2.3	4.4	0.4	2.0
Prop In Lane		0.15	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	741	754	163	2287	154	137
V/C Ratio(X)	0.67	0.67	0.77	0.42	0.15	0.72
Avail Cap(c_a), veh/h	998	1016	524	3522	963	857
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	7.8	7.8	14.8	2.9	14.1	14.8
Incr Delay (d2), s/veh	1.0	1.0	7.6	0.1	0.4	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.7	1.0	0.0	0.1	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.9	8.9	22.4	3.0	14.5	21.7
LnGrp LOS	A	A	C	A	B	C
Approach Vol, veh/h	997			1089	121	
Approach Delay, s/veh	8.9			5.3	20.3	
Approach LOS	A			A	C	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	7.5	18.4		25.9	7.4	
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	
Max Green Setting (Gmax), s	9.8	18.7		33.0	18.0	
Max Q Clear Time (g_c+1), s	14.3	9.5		6.4	4.0	
Green Ext Time (p_c), s	0.1	4.1		7.1	0.3	

Intersection Summary

HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A

HCM 6th Signalized Intersection Summary

27: Magnolia Avenue & Mast Blvd

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↗	↑↑	↗	↔↔	↑↑		↗	↑↑	↗
Traffic Volume (veh/h)	358	113	405	131	229	46	308	584	44	53	604	401
Future Volume (veh/h)	358	113	405	131	229	46	308	584	44	53	604	401
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.95	1.00		0.98	1.00		0.98
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		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	389	123	440	142	249	50	335	635	48	58	657	436
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	392	1092	473	167	1004	426	303	1138	86	102	1101	481
Arrive On Green	0.11	0.31	0.31	0.09	0.28	0.28	0.09	0.34	0.34	0.06	0.31	0.31
Sat Flow, veh/h	3456	3554	1539	1781	3554	1509	3456	3342	252	1781	3554	1552
Grp Volume(v), veh/h	389	123	440	142	249	50	335	337	346	58	657	436
Grp Sat Flow(s),veh/h/ln	1728	1777	1539	1781	1777	1509	1728	1777	1818	1781	1777	1552
Q Serve(g_s), s	10.9	2.4	26.9	7.6	5.2	2.4	8.5	15.0	15.0	3.1	15.2	26.1
Cycle Q Clear(g_c), s	10.9	2.4	26.9	7.6	5.2	2.4	8.5	15.0	15.0	3.1	15.2	26.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	392	1092	473	167	1004	426	303	605	619	102	1101	481
V/C Ratio(X)	0.99	0.11	0.93	0.85	0.25	0.12	1.11	0.56	0.56	0.57	0.60	0.91
Avail Cap(c_a), veh/h	392	1170	507	167	1082	459	303	605	619	164	1137	496
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	42.9	24.1	32.6	43.2	26.8	25.8	44.2	26.0	26.0	44.5	28.3	32.1
Incr Delay (d2), s/veh	43.1	0.1	23.4	30.2	0.2	0.1	82.9	1.1	1.1	1.9	0.8	20.0
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	6.8	1.0	12.5	4.7	2.2	0.8	7.0	6.2	6.4	1.4	6.3	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.0	24.1	56.0	73.4	27.0	25.9	127.1	27.1	27.2	46.4	29.1	52.0
LnGrp LOS	F	C	E	E	C	C	F	C	C	D	C	D
Approach Vol, veh/h		952			441			1018			1151	
Approach Delay, s/veh		64.2			41.8			60.1			38.7	
Approach LOS		E			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	3.6	35.3	13.0	35.0	16.0	32.9	10.0	38.0				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.0	5.0	5.5	4.5	5.0				
Max Green Setting (Gmax), s	31.9	8.5	31.0	11.0	29.5	8.9	30.6					
Max Q Clear Time (g_c+1.6), s	19.6	28.9	10.5	28.1	12.9	7.2	5.1	17.0				
Green Ext Time (p_c), s	0.0	0.9	0.0	1.6	0.0	2.0	0.0	3.3				
Intersection Summary												
HCM 6th Ctrl Delay			52.0									
HCM 6th LOS			D									

HCM 6th TWSC
 1: Cuyamaca Street & Princess Joann Road

08/31/2020

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	167	718	0	0	445
Future Vol, veh/h	0	167	718	0	0	445
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	182	780	0	0	484

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1264	780	0	0	780	0
Stage 1	780	-	-	-	-	-
Stage 2	484	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	187	395	-	-	837	-
Stage 1	452	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	187	395	-	-	837	-
Mov Cap-2 Maneuver	187	-	-	-	-	-
Stage 1	452	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	395	837
HCM Lane V/C Ratio	-	-	0.46	-
HCM Control Delay (s)	-	-	21.6	0
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	2.3	0

HCM 6th AWSC
2: Magnolia Avenue & Princess Joann Road

08/31/2020

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↑	↑	↑	↑	↑
Traffic Vol, veh/h	1	3	34	20	0	3	248	3	34	0	6	2
Future Vol, veh/h	1	3	34	20	0	3	248	3	34	0	6	2
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	3	37	22	0	3	270	3	37	0	7	2
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	7.7	8.7	10.6	7.5
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	3%	87%	0%	0%	0%
Vol Thru, %	0%	100%	0%	8%	0%	100%	100%	0%
Vol Right, %	0%	0%	100%	89%	13%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	248	3	34	38	23	0	6	2
LT Vol	248	0	0	1	20	0	0	0
Through Vol	0	3	0	3	0	0	6	0
RT Vol	0	0	34	34	3	0	0	2
Lane Flow Rate	270	3	37	41	25	0	7	2
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.386	0.004	0.041	0.055	0.04	0	0.009	0.003
Departure Headway (Hd)	5.156	4.655	3.954	4.751	5.72	4.963	4.963	4.261
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	693	761	894	758	629	0	723	842
Service Time	2.929	2.428	1.727	2.454	3.425	2.677	2.677	1.975
HCM Lane V/C Ratio	0.39	0.004	0.041	0.054	0.04	0	0.01	0.002
HCM Control Delay	11.2	7.4	6.9	7.7	8.7	7.7	7.7	7
HCM Lane LOS	B	A	A	A	A	N	A	A
HCM 95th-tile Q	1.8	0	0.1	0.2	0.1	0	0	0

HCM 6th AWSC
 4: Cuyamaca Street & Woodglen Vista Drive

08/31/2020

Intersection

Intersection Delay, s/veh 180.9

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	7	108	2	95	7	668	232	0	459	2
Future Vol, veh/h	0	1	7	108	2	95	7	668	232	0	459	2
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	8	117	2	103	8	726	252	0	499	2
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	11.7	15.9	293.5	35.7
HCM LOS	B	C	F	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	53%	0%	0%
Vol Thru, %	0%	74%	12%	1%	100%	100%
Vol Right, %	0%	26%	88%	46%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	900	8	205	0	461
LT Vol	7	0	0	108	0	0
Through Vol	0	668	1	2	0	459
RT Vol	0	232	7	95	0	2
Lane Flow Rate	8	978	9	223	0	501
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.014	1.605	0.018	0.409	0	0.842
Departure Headway (Hd)	6.597	5.905	8.547	7.667	6.749	6.746
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	546	626	421	472	0	541
Service Time	4.3	3.607	6.547	5.667	4.449	4.446
HCM Lane V/C Ratio	0.015	1.562	0.021	0.472	0	0.926
HCM Control Delay	9.4	295.7	11.7	15.9	9.4	35.7
HCM Lane LOS	A	F	B	C	N	E
HCM 95th-tile Q	0	53	0.1	2	0	8.7

HCM 6th Signalized Intersection Summary
 5: Magnolia Avenue & Woodglen Vista Drive/Len Street

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	32	79	31	7	7	163	514	44	3	230	8
Future Volume (veh/h)	13	32	79	31	7	7	163	514	44	3	230	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.98	1.00		0.96	1.00		0.96
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	14	35	86	34	8	8	177	559	48	3	250	9
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	514	93	229	305	71	37	300	1078	92	132	811	29
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.17	0.33	0.33	0.07	0.23	0.23
Sat Flow, veh/h	1387	470	1156	630	358	188	1781	3301	283	1781	3493	125
Grp Volume(v), veh/h	14	0	121	50	0	0	177	300	307	3	127	132
Grp Sat Flow(s),veh/h/ln	1387	0	1626	1177	0	0	1781	1777	1807	1781	1777	1841
Q Serve(g_s), s	0.0	0.0	2.2	0.0	0.0	0.0	3.1	4.6	4.6	0.1	2.0	2.0
Cycle Q Clear(g_c), s	0.2	0.0	2.2	2.2	0.0	0.0	3.1	4.6	4.6	0.1	2.0	2.0
Prop In Lane	1.00		0.71	0.68		0.16	1.00		0.16	1.00		0.07
Lane Grp Cap(c), veh/h	514	0	322	413	0	0	300	580	590	132	413	427
V/C Ratio(X)	0.03	0.00	0.38	0.12	0.00	0.00	0.59	0.52	0.52	0.02	0.31	0.31
Avail Cap(c_a), veh/h	1415	0	1378	1305	0	0	874	2563	2606	503	2193	2272
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.9	0.0	11.7	11.1	0.0	0.0	12.9	9.2	9.2	14.4	10.7	10.7
Incr Delay (d2), s/veh	0.0	0.0	0.7	0.1	0.0	0.0	1.9	0.7	0.7	0.1	0.4	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	0.1	0.0	0.7	0.3	0.0	0.0	1.0	1.2	1.2	0.0	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.9	0.0	12.4	11.3	0.0	0.0	14.8	9.9	9.9	14.5	11.1	11.1
LnGrp LOS	B	A	B	B	A	A	B	A	A	B	B	B
Approach Vol, veh/h		135			50			784			262	
Approach Delay, s/veh		12.3			11.3			11.0			11.1	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	15.5		11.2	10.2	12.3		11.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	4.5	48.5		28.5	16.5	41.5		28.5				
Max Q Clear Time (g_c+I), s	12.5	6.6		4.2	5.1	4.0		4.2				
Green Ext Time (p_c), s	0.0	3.8		0.7	0.3	1.4		0.2				
Intersection Summary												
HCM 6th Ctrl Delay											11.2	
HCM 6th LOS											B	

Intersection

Intersection Delay, s/veh 209.3

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	1	1	5	99	8	87	13	827	106	0	579	0
Future Vol, veh/h	1	1	5	99	8	87	13	827	106	0	579	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	5	108	9	95	14	899	115	0	629	0
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	12.3	16.2	329.3	80.3
HCM LOS	B	C	F	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	14%	51%	0%	0%
Vol Thru, %	0%	89%	14%	4%	100%	100%
Vol Right, %	0%	11%	71%	45%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	933	7	194	0	579
LT Vol	13	0	1	99	0	0
Through Vol	0	827	1	8	0	579
RT Vol	0	106	5	87	0	0
Lane Flow Rate	14	1014	8	211	0	629
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.026	1.69	0.016	0.402	0	1.056
Departure Headway (Hd)	6.76	6.169	9.154	7.964	6.801	6.801
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	533	598	393	455	0	541
Service Time	4.46	3.869	7.154	5.964	4.501	4.501
HCM Lane V/C Ratio	0.026	1.696	0.02	0.464	0	1.163
HCM Control Delay	9.6	333.8	12.3	16.2	9.5	80.3
HCM Lane LOS	A	F	B	C	N	F
HCM 95th-tile Q	0.1	56.8	0	1.9	0	16.4

HCM 6th Signalized Intersection Summary

7: Magnolia Avenue & El Nopal

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	69	60	142	190	150	92	570	283	54	287	9
Future Volume (veh/h)	6	69	60	142	190	150	92	570	283	54	287	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.97
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		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	7	75	65	154	207	163	100	620	308	59	312	10
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	23	157	136	200	261	205	165	810	402	128	1170	37
Arrive On Green	0.01	0.17	0.17	0.11	0.27	0.27	0.09	0.35	0.35	0.07	0.33	0.33
Sat Flow, veh/h	1781	918	796	1781	963	759	1781	2288	1136	1781	3511	112
Grp Volume(v), veh/h	7	0	140	154	0	370	100	482	446	59	157	165
Grp Sat Flow(s),veh/h/ln	1781	0	1714	1781	0	1722	1781	1777	1647	1781	1777	1847
Q Serve(g_s), s	0.2	0.0	4.6	5.2	0.0	12.4	3.3	14.9	14.9	2.0	4.0	4.0
Cycle Q Clear(g_c), s	0.2	0.0	4.6	5.2	0.0	12.4	3.3	14.9	14.9	2.0	4.0	4.0
Prop In Lane	1.00		0.46	1.00		0.44	1.00		0.69	1.00		0.06
Lane Grp Cap(c), veh/h	23	0	293	200	0	466	165	629	583	128	592	615
V/C Ratio(X)	0.31	0.00	0.48	0.77	0.00	0.79	0.61	0.77	0.77	0.46	0.27	0.27
Avail Cap(c_a), veh/h	216	0	650	503	0	931	388	904	838	273	789	820
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	23.2	26.7	0.0	21.0	27.0	17.7	17.7	27.6	15.1	15.1
Incr Delay (d2), s/veh	7.3	0.0	1.2	6.1	0.0	3.1	3.5	2.4	2.6	2.6	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	0.1	0.0	1.9	2.5	0.0	5.1	1.5	5.6	5.2	0.9	1.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.6	0.0	24.4	32.9	0.0	24.1	30.5	20.2	20.4	30.1	15.3	15.3
LnGrp LOS	D	A	C	C	A	C	C	C	C	C	B	B
Approach Vol, veh/h		147		524		1028		381				
Approach Delay, s/veh		25.0		26.7		21.3		17.6				
Approach LOS		C		C		C		B				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	26.4	11.5	15.1	10.2	25.1	5.3	21.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	31.5	17.5	23.5	13.5	27.5	7.5	33.5				
Max Q Clear Time (g_c+14), s	14.0	16.9	7.2	6.6	5.3	6.0	2.2	14.4				
Green Ext Time (p_c), s	0.0	5.0	0.3	0.7	0.1	1.6	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay				22.2								
HCM 6th LOS				C								

HCM 6th AWSC
12: Cuyamaca Street & Beck Drive

08/31/2020

Intersection

Intersection Delay, s/veh 183.7

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕	↕	↕	↕	
Traffic Vol, veh/h	0	0	6	54	2	2	9	958	63	2	494	3
Future Vol, veh/h	0	0	6	54	2	2	9	958	63	2	494	3
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	7	59	2	2	10	1041	68	2	537	3
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	10.8	13	255.9	56.5
HCM LOS	B	B	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	93%	100%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	99%
Vol Right, %	0%	0%	100%	100%	3%	0%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	958	63	6	58	2	497
LT Vol	9	0	0	0	54	2	0
Through Vol	0	958	0	0	2	0	494
RT Vol	0	0	63	6	2	0	3
Lane Flow Rate	10	1041	68	7	63	2	540
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.016	1.56	0.089	0.013	0.14	0.004	0.956
Departure Headway (Hd)	5.899	5.394	4.687	8.038	8.892	7.753	7.245
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	604	677	760	448	406	464	502
Service Time	3.657	3.151	2.444	5.738	6.592	5.453	4.945
HCM Lane V/C Ratio	0.017	1.538	0.089	0.016	0.155	0.004	1.076
HCM Control Delay	8.8	274.5	7.9	10.8	13	10.5	56.7
HCM Lane LOS	A	F	A	B	B	B	F
HCM 95th-tile Q	0	53.5	0.3	0	0.5	0	12.1

HCM 6th Signalized Intersection Summary

13: Magnolia Avenue & 2nd Street

08/31/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	80	20	1309	156	28	970
Future Volume (veh/h)	80	20	1309	156	28	970
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	22	1423	170	30	1054
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	129	115	1771	210	51	2482
Arrive On Green	0.07	0.07	0.56	0.56	0.03	0.70
Sat Flow, veh/h	1781	1585	3282	377	1781	3647
Grp Volume(v), veh/h	87	22	787	806	30	1054
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1789	1781	1777
Q Serve(g_s), s	1.9	0.5	13.9	14.3	0.7	5.0
Cycle Q Clear(g_c), s	1.9	0.5	13.9	14.3	0.7	5.0
Prop In Lane	1.00	1.00		0.21	1.00	
Lane Grp Cap(c), veh/h	129	115	987	994	51	2482
V/C Ratio(X)	0.68	0.19	0.80	0.81	0.59	0.42
Avail Cap(c_a), veh/h	821	731	1082	1089	204	2978
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.8	17.1	7.0	7.1	18.8	2.5
Incr Delay (d2), s/veh	6.1	0.8	3.9	4.4	10.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.2	3.2	3.4	0.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.8	17.9	10.9	11.5	29.4	2.7
LnGrp LOS	C	B	B	B	C	A
Approach Vol, veh/h	109		1593			1084
Approach Delay, s/veh	22.6		11.2			3.4
Approach LOS	C		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	5.6	26.3			31.9	7.3
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	4.5	23.9			32.9	18.1
Max Q Clear Time (g_c+1), s	12.7	16.3			7.0	3.9
Green Ext Time (p_c), s	0.0	5.5			8.0	0.2
Intersection Summary						
HCM 6th Ctrl Delay			8.6			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

14: Magnolia Avenue & Carefree Drive

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↖	↗	↖	↕			↕	
Traffic Volume (veh/h)	23	0	51	4	0	0	84	1144	0	0	577	8
Future Volume (veh/h)	23	0	51	4	0	0	84	1144	0	0	577	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		1.00	1.00		1.00	1.00		0.96
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	0	0	1870	1870
Adj Flow Rate, veh/h	25	0	55	4	0	0	91	1243	0	0	627	9
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	0	0	2	2
Cap, veh/h	52	0	115	16	0	7	117	1860	0	0	1206	17
Arrive On Green	0.11	0.00	0.11	0.00	0.00	0.00	0.07	0.52	0.00	0.00	0.34	0.34
Sat Flow, veh/h	483	0	1063	3563	0	1585	1781	3647	0	0	3677	51
Grp Volume(v), veh/h	80	0	0	4	0	0	91	1243	0	0	311	325
Grp Sat Flow(s),veh/h/ln1547	0	0	1781	0	1585	1781	1777	0	0	1777	1858	
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	1.9	9.5	0.0	0.0	5.2	5.2
Cycle Q Clear(g_c), s	1.8	0.0	0.0	0.0	0.0	0.0	1.9	9.5	0.0	0.0	5.2	5.2
Prop In Lane	0.31		0.69	1.00		1.00	1.00		0.00	0.00		0.03
Lane Grp Cap(c), veh/h	167	0	0	16	0	7	117	1860	0	0	598	625
V/C Ratio(X)	0.48	0.00	0.00	0.26	0.00	0.00	0.78	0.67	0.00	0.00	0.52	0.52
Avail Cap(c_a), veh/h	751	0	0	1489	0	662	216	2683	0	0	910	952
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	0.0	18.4	0.0	0.0	17.1	6.5	0.0	0.0	9.9	9.9
Incr Delay (d2), s/veh	2.1	0.0	0.0	8.5	0.0	0.0	10.6	0.4	0.0	0.0	0.7	0.7
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/ln0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.6	0.0	0.0	1.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.7	0.0	0.0	26.9	0.0	0.0	27.6	6.9	0.0	0.0	10.6	10.6
LnGrp LOS	B	A	A	C	A	A	C	A	A	A	B	B
Approach Vol, veh/h		80			4			1334			636	
Approach Delay, s/veh		17.7			26.9			8.3			10.6	
Approach LOS		B			C			A			B	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		23.9		8.5	6.9	17.0		4.7				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		28.0		18.0	4.5	19.0		15.5				
Max Q Clear Time (g_c+11), s		11.5		3.8	3.9	7.2		2.0				
Green Ext Time (p_c), s		7.9		0.3	0.0	2.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	329	633	254	302	281	67	238	646	415	205	372	185
Future Volume (veh/h)	329	633	254	302	281	67	238	646	415	205	372	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.98
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	358	688	276	328	305	73	259	702	451	223	404	201
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	264	1143	498	366	795	187	294	982	606	175	664	326
Arrive On Green	0.15	0.32	0.32	0.11	0.28	0.28	0.09	0.28	0.28	0.10	0.29	0.29
Sat Flow, veh/h	1781	3554	1548	3456	2844	669	3456	3554	1585	1781	2296	1127
Grp Volume(v), veh/h	358	688	276	328	189	189	259	702	451	223	311	294
Grp Sat Flow(s),veh/h/ln	1781	1777	1548	1728	1777	1736	1728	1777	1585	1781	1777	1646
Q Serve(g_s), s	14.8	16.3	14.7	9.4	8.6	8.8	7.4	17.8	24.6	9.8	15.1	15.4
Cycle Q Clear(g_c), s	14.8	16.3	14.7	9.4	8.6	8.8	7.4	17.8	24.6	9.8	15.1	15.4
Prop In Lane	1.00		1.00	1.00		0.39	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	264	1143	498	366	497	486	294	982	606	175	514	476
V/C Ratio(X)	1.36	0.60	0.55	0.90	0.38	0.39	0.88	0.71	0.74	1.28	0.61	0.62
Avail Cap(c_a), veh/h	264	1143	498	366	508	497	294	995	612	175	522	484
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	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.6	28.5	28.0	44.2	29.0	29.1	45.3	32.6	26.7	45.1	30.6	30.7
Incr Delay (d2), s/veh	183.8	2.3	4.4	22.3	2.1	2.3	24.5	2.7	5.3	161.5	2.5	2.9
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	19.7	7.0	5.9	5.0	3.8	3.9	4.1	7.8	9.7	12.1	6.6	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	226.4	30.9	32.4	66.5	31.2	31.4	69.7	35.3	31.9	206.6	33.1	33.6
LnGrp LOS	F	C	C	E	C	C	E	D	C	F	C	C
Approach Vol, veh/h		1322			706			1412			828	
Approach Delay, s/veh		84.1			47.6			40.5			80.0	
Approach LOS		F			D			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.8	38.5	12.7	34.0	19.0	34.3	14.0	32.7				
Change Period (Y+Rc), s	4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	31.8	* 8.5	* 29	* 15	* 29	* 9.8	28.0					
Max Q Clear Time (g_c+ll), s	18.3	9.4	17.4	16.8	10.8	11.8	26.6					
Green Ext Time (p_c), s	0.0	6.3	0.0	4.2	0.0	2.4	0.0	1.0				

Intersection Summary

HCM 6th Ctrl Delay	62.9
HCM 6th LOS	E

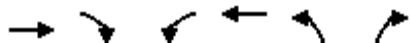
Notes

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

HCM 6th Signalized Intersection Summary

26: Park Center Drive & Mast Blvd

08/31/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (veh/h)	1144	28	103	658	16	117
Future Volume (veh/h)	1144	28	103	658	16	117
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1243	30	112	715	17	127
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1846	45	147	2487	192	171
Arrive On Green	0.52	0.52	0.08	0.70	0.11	0.11
Sat Flow, veh/h	3636	85	1781	3647	1781	1585
Grp Volume(v), veh/h	623	650	112	715	17	127
Grp Sat Flow(s),veh/h/ln	1777	1851	1781	1777	1781	1585
Q Serve(g_s), s	12.1	12.1	2.9	3.5	0.4	3.6
Cycle Q Clear(g_c), s	12.1	12.1	2.9	3.5	0.4	3.6
Prop In Lane		0.05	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	926	965	147	2487	192	171
V/C Ratio(X)	0.67	0.67	0.76	0.29	0.09	0.74
Avail Cap(c_a), veh/h	1915	1995	589	5347	779	693
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.3	8.3	21.0	2.6	18.8	20.3
Incr Delay (d2), s/veh	0.9	0.8	7.8	0.1	0.2	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	3.1	1.3	0.3	0.2	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.1	9.1	28.8	2.7	19.0	26.4
LnGrp LOS	A	A	C	A	B	C
Approach Vol, veh/h	1273			827	144	
Approach Delay, s/veh	9.1			6.2	25.6	
Approach LOS	A			A	C	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	8.4	28.9		37.3	9.6	
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	
Max Green Setting (Gmax), s	15.5	50.5		70.5	20.5	
Max Q Clear Time (g_c+14.5), s	14.5	14.1		5.5	5.6	
Green Ext Time (p_c), s	0.2	10.3		5.4	0.3	
Intersection Summary						
HCM 6th Ctrl Delay			9.1			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 27: Magnolia Avenue & Mast Blvd

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖↗	↑↑		↖	↑↑	↖
Traffic Volume (veh/h)	492	239	349	102	133	27	336	659	100	81	398	215
Future Volume (veh/h)	492	239	349	102	133	27	336	659	100	81	398	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.95	1.00		0.98	1.00		0.95
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	535	260	379	111	145	29	365	716	109	88	433	234
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	658	1094	475	141	678	288	454	946	144	130	882	376
Arrive On Green	0.19	0.31	0.31	0.08	0.19	0.19	0.13	0.31	0.31	0.07	0.25	0.25
Sat Flow, veh/h	3456	3554	1544	1781	3554	1510	3456	3084	469	1781	3554	1513
Grp Volume(v), veh/h	535	260	379	111	145	29	365	412	413	88	433	234
Grp Sat Flow(s),veh/h/ln	1728	1777	1544	1781	1777	1510	1728	1777	1777	1781	1777	1513
Q Serve(g_s), s	12.4	4.6	18.8	5.1	2.9	1.3	8.6	17.5	17.6	4.0	8.7	11.5
Cycle Q Clear(g_c), s	12.4	4.6	18.8	5.1	2.9	1.3	8.6	17.5	17.6	4.0	8.7	11.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	658	1094	475	141	678	288	454	545	545	130	882	376
V/C Ratio(X)	0.81	0.24	0.80	0.78	0.21	0.10	0.80	0.76	0.76	0.68	0.49	0.62
Avail Cap(c_a), veh/h	909	1580	686	319	1261	536	714	760	760	266	1316	560
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	32.4	21.6	26.6	37.8	28.6	27.9	35.3	26.2	26.2	37.8	26.9	28.0
Incr Delay (d2), s/veh	4.4	0.1	4.8	3.6	0.2	0.2	1.6	2.8	2.8	2.3	0.4	1.7
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	5.3	1.8	7.0	2.3	1.2	0.5	3.5	7.3	7.3	1.8	3.5	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.9	21.8	31.4	41.4	28.8	28.1	36.9	29.0	29.0	40.1	27.4	29.7
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1174			285			1190			755	
Approach Delay, s/veh		31.7			33.6			31.4			29.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	31.3	15.5	25.8	20.9	21.5	10.6	30.7				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.0	5.0	5.5	4.5	5.0				
Max Green Setting (Gmax), s	15.0	37.2	17.3	31.0	22.0	29.7	12.5	35.8				
Max Q Clear Time (g_c+1), s	17.5	20.8	10.6	13.5	14.4	4.9	6.0	19.6				
Green Ext Time (p_c), s	0.1	3.3	0.4	3.3	1.5	1.1	0.0	4.5				
Intersection Summary												
HCM 6th Ctrl Delay											31.3	
HCM 6th LOS											C	

ATTACHMENT F
EXISTING + CUMULATIVE PROJECTS + PROJECT (NO MAGNOLIA AVENUE EXTENSION – PROHIBITED
SOUTHBOUND LEFT-TURNS FROM CUYAMACA STREET) PEAK HOUR INTERSECTION ANALYSIS
WORKSHEETS

HCM 6th TWSC
 1: Cuyamaca Street & Princess Joann Road

08/31/2020

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	84	362	0	0	863
Future Vol, veh/h	0	84	362	0	0	863
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	91	393	0	0	938

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1331	393	0	0	393
Stage 1	393	-	-	-	-
Stage 2	938	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	170	656	-	-	1166
Stage 1	682	-	-	-	-
Stage 2	381	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	170	656	-	-	1166
Mov Cap-2 Maneuver	170	-	-	-	-
Stage 1	682	-	-	-	-
Stage 2	381	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	656	1166
HCM Lane V/C Ratio	-	-	0.139	-
HCM Control Delay (s)	-	-	11.4	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.5	0

HCM 6th AWSC
2: Magnolia Avenue & Princess Joann Road

08/31/2020

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↑	↑	↑	↑
Traffic Vol, veh/h	0	0	55	32	8	0	117	4	8	0	7	0
Future Vol, veh/h	0	0	55	32	8	0	117	4	8	0	7	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	60	35	9	0	127	4	9	0	8	0
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	7.3	8.4	9	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	0%	80%	0%	0%	0%
Vol Thru, %	0%	100%	0%	0%	20%	100%	100%	100%
Vol Right, %	0%	0%	100%	100%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	117	4	8	55	40	0	7	0
LT Vol	117	0	0	0	32	0	0	0
Through Vol	0	4	0	0	8	0	7	0
RT Vol	0	0	8	55	0	0	0	0
Lane Flow Rate	127	4	9	60	43	0	8	0
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.184	0.006	0.01	0.071	0.065	0	0.01	0
Departure Headway (Hd)	5.219	4.718	4.017	4.268	5.373	4.916	4.916	4.916
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	680	749	878	844	670	0	731	0
Service Time	3.006	2.505	1.803	1.969	3.076	2.626	2.626	2.626
HCM Lane V/C Ratio	0.187	0.005	0.01	0.071	0.064	0	0.011	0
HCM Control Delay	9.2	7.5	6.8	7.3	8.4	7.6	7.7	7.6
HCM Lane LOS	A	A	A	A	A	N	A	N
HCM 95th-tile Q	0.7	0	0	0.2	0.2	0	0	0

HCM 6th AWSC
 4: Cuyamaca Street & Woodglen Vista Drive

08/31/2020

Intersection

Intersection Delay, s/veh 11.5

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	12	233	0	46	3	326	68	0	891	0
Future Vol, veh/h	0	1	12	233	0	46	3	326	68	0	891	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	13	253	0	50	3	354	74	0	968	0
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	12.5	21.6	30.2	354.6
HCM LOS	B	C	D	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	84%	0%	0%
Vol Thru, %	0%	83%	8%	0%	100%	100%
Vol Right, %	0%	17%	92%	16%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	394	13	279	0	891
LT Vol	3	0	0	233	0	0
Through Vol	0	326	1	0	0	891
RT Vol	0	68	12	46	0	0
Lane Flow Rate	3	428	14	303	0	968
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.006	0.768	0.029	0.578	0	1.735
Departure Headway (Hd)	7.954	7.313	9.201	8.087	6.448	6.448
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	453	497	391	449	0	571
Service Time	5.654	5.013	7.201	6.087	4.19	4.19
HCM Lane V/C Ratio	0.007	0.861	0.036	0.675	0	1.695
HCM Control Delay	10.7	30.3	12.5	21.6	9.2	354.6
HCM Lane LOS	B	D	B	C	N	F
HCM 95th-tile Q	0	6.7	0.1	3.6	0	57.3

HCM 6th Signalized Intersection Summary

5: Magnolia Avenue & Woodglen Vista Drive/Len Street

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	1	111	45	13	10	78	232	14	7	348	11
Future Volume (veh/h)	17	1	111	45	13	10	78	232	14	7	348	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	0.93		0.98	1.00		0.97	1.00		0.82
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	18	1	121	49	14	11	85	252	15	8	378	12
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	614	4	432	344	95	53	181	950	56	203	1016	32
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.10	0.28	0.28	0.11	0.29	0.29
Sat Flow, veh/h	1381	12	1412	688	311	175	1781	3403	201	1781	3488	110
Grp Volume(v), veh/h	18	0	122	74	0	0	85	131	136	8	192	198
Grp Sat Flow(s),veh/h/ln	1381	0	1423	1174	0	0	1781	1777	1828	1781	1777	1822
Q Serve(g_s), s	0.0	0.0	2.9	0.5	0.0	0.0	2.0	2.6	2.6	0.2	3.8	3.9
Cycle Q Clear(g_c), s	0.3	0.0	2.9	3.5	0.0	0.0	2.0	2.6	2.6	0.2	3.8	3.9
Prop In Lane	1.00		0.99	0.66		0.15	1.00		0.11	1.00		0.06
Lane Grp Cap(c), veh/h	614	0	436	493	0	0	181	496	510	203	518	531
V/C Ratio(X)	0.03	0.00	0.28	0.15	0.00	0.00	0.47	0.26	0.27	0.04	0.37	0.37
Avail Cap(c_a), veh/h	1221	0	1062	1073	0	0	615	1642	1689	456	1484	1521
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.9	0.0	11.8	11.6	0.0	0.0	19.0	12.6	12.6	17.7	12.6	12.7
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.1	0.0	0.0	1.9	0.3	0.3	0.1	0.4	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	0.1	0.0	0.8	0.5	0.0	0.0	0.8	0.8	0.9	0.1	1.2	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.9	0.0	12.2	11.8	0.0	0.0	20.9	12.9	12.9	17.8	13.1	13.1
LnGrp LOS	B	A	B	B	A	A	C	B	B	B	B	B
Approach Vol, veh/h		140			74			352			398	
Approach Delay, s/veh		12.0			11.8			14.8			13.2	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	17.0		18.3	9.1	17.6		18.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	1.5	41.5		33.5	15.5	37.5		33.5				
Max Q Clear Time (g_c+1), s	1.5	4.6		4.9	4.0	5.9		5.5				
Green Ext Time (p_c), s	0.0	1.5		0.9	0.1	2.2		0.4				

Intersection Summary

HCM 6th Ctrl Delay	13.5
HCM 6th LOS	B

Intersection

Intersection Delay, s/veh 86.7

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	7	264	4	45	5	358	48	0	1148	1
Future Vol, veh/h	0	1	7	264	4	45	5	358	48	0	1148	1
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	8	287	4	49	5	389	52	0	1248	1
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	14.1	27.3	37.9	611.9
HCM LOS	B	D	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	84%	0%	0%
Vol Thru, %	0%	88%	12%	1%	100%	100%
Vol Right, %	0%	12%	88%	14%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	406	8	313	0	1149
LT Vol	5	0	0	264	0	0
Through Vol	0	358	1	4	0	1148
RT Vol	0	48	7	45	0	1
Lane Flow Rate	5	441	9	340	0	1249
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.011	0.817	0.019	0.654	0	2.313
Departure Headway (Hd)	8.776	8.169	10.852	8.942	6.669	6.668
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	410	446	332	408	0	550
Service Time	6.476	5.869	8.852	6.942	4.416	4.415
HCM Lane V/C Ratio	0.012	0.989	0.027	0.833	0	2.271
HCM Control Delay	11.6	38.2	14.1	27.3	9.4	611.9
HCM Lane LOS	B	E	B	D	N	F
HCM 95th-tile Q	0	7.6	0.1	4.5	0	93

HCM 6th Signalized Intersection Summary
 7: Magnolia Avenue & El Nopal

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	64	96	140	164	145	51	356	218	118	472	85
Future Volume (veh/h)	46	64	96	140	164	145	51	356	218	118	472	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
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		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	50	70	104	152	178	158	55	387	237	128	513	92
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	106	128	190	193	216	192	112	799	482	164	1220	218
Arrive On Green	0.06	0.19	0.19	0.11	0.24	0.24	0.06	0.38	0.38	0.09	0.41	0.41
Sat Flow, veh/h	1781	673	1000	1781	906	804	1781	2119	1279	1781	3001	535
Grp Volume(v), veh/h	50	0	174	152	0	336	55	324	300	128	303	302
Grp Sat Flow(s),veh/h/ln	1781	0	1673	1781	0	1710	1781	1777	1621	1781	1777	1759
Q Serve(g_s), s	2.1	0.0	7.3	6.4	0.0	14.4	2.3	10.7	11.0	5.4	9.4	9.5
Cycle Q Clear(g_c), s	2.1	0.0	7.3	6.4	0.0	14.4	2.3	10.7	11.0	5.4	9.4	9.5
Prop In Lane	1.00		0.60	1.00		0.47	1.00		0.79	1.00		0.30
Lane Grp Cap(c), veh/h	106	0	318	193	0	409	112	670	611	164	722	715
V/C Ratio(X)	0.47	0.00	0.55	0.79	0.00	0.82	0.49	0.48	0.49	0.78	0.42	0.42
Avail Cap(c_a), veh/h	195	0	507	425	0	739	195	670	611	356	722	715
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	28.4	33.7	0.0	27.9	35.1	18.4	18.4	34.4	16.4	16.5
Incr Delay (d2), s/veh	3.2	0.0	1.5	7.0	0.0	4.2	3.3	2.5	2.8	7.8	1.8	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	0.0	0.0	3.0	3.1	0.0	6.2	1.1	4.4	4.2	2.6	3.8	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	0.0	29.8	40.7	0.0	32.1	38.5	20.9	21.3	42.2	18.2	18.3
LnGrp LOS	D	A	C	D	A	C	D	C	C	D	B	B
Approach Vol, veh/h		224		488		679		733				
Approach Delay, s/veh		31.7		34.8		22.5		22.5				
Approach LOS		C		C		C		C				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	33.7	12.9	19.2	9.4	36.0	9.1	23.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	15.5	24.5	18.5	23.5	8.5	31.5	8.5	33.5				
Max Q Clear Time (g_c+1), s	17.4	13.0	8.4	9.3	4.3	11.5	4.1	16.4				
Green Ext Time (p_c), s	0.2	2.9	0.3	0.8	0.0	3.4	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay				26.3								
HCM 6th LOS				C								

HCM 6th AWSC
12: Cuyamaca Street & Beck Drive

08/31/2020

Intersection												
Intersection Delay, s/veh	306											
Intersection LOS	F											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↕	↕	↕	
Traffic Vol, veh/h	0	0	11	93	1	1	1	420	32	3	1066	0
Future Vol, veh/h	0	0	11	93	1	1	1	420	32	3	1066	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	12	101	1	1	1	457	35	3	1159	0
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	11.6	14.7	22.5	455
HCM LOS	B	B	C	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	98%	100%	0%
Vol Thru, %	0%	100%	0%	0%	1%	0%	100%
Vol Right, %	0%	0%	100%	100%	1%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	420	32	11	95	3	1066
LT Vol	1	0	0	0	93	3	0
Through Vol	0	420	0	0	1	0	1066
RT Vol	0	0	32	11	1	0	0
Lane Flow Rate	1	457	35	12	103	3	1159
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.002	0.715	0.048	0.023	0.222	0.006	1.967
Departure Headway (Hd)	6.93	6.42	5.705	8.688	9.351	6.615	6.111
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	519	566	632	415	386	537	603
Service Time	4.63	4.12	3.405	6.388	7.051	4.41	3.905
HCM Lane V/C Ratio	0.002	0.807	0.055	0.029	0.267	0.006	1.922
HCM Control Delay	9.6	23.6	8.7	11.6	14.7	9.5	456.3
HCM Lane LOS	A	C	A	B	B	A	F
HCM 95th-tile Q	0	5.8	0.2	0.1	0.8	0	75.8

HCM 6th Signalized Intersection Summary

13: Magnolia Avenue & 2nd Street

08/31/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	163	34	644	111	111	1599
Future Volume (veh/h)	163	34	644	111	111	1599
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	177	37	700	121	121	1738
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	253	225	1295	224	154	2236
Arrive On Green	0.14	0.14	0.43	0.43	0.09	0.63
Sat Flow, veh/h	1781	1585	3117	522	1781	3647
Grp Volume(v), veh/h	177	37	411	410	121	1738
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1768	1781	1777
Q Serve(g_s), s	3.7	0.8	6.8	6.8	2.6	14.0
Cycle Q Clear(g_c), s	3.7	0.8	6.8	6.8	2.6	14.0
Prop In Lane	1.00	1.00		0.30	1.00	
Lane Grp Cap(c), veh/h	253	225	761	758	154	2236
V/C Ratio(X)	0.70	0.16	0.54	0.54	0.78	0.78
Avail Cap(c_a), veh/h	814	725	812	808	249	2527
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	16.1	14.8	8.4	8.4	17.6	5.3
Incr Delay (d2), s/veh	3.5	0.3	0.6	0.6	8.5	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.3	1.7	1.7	1.2	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.6	15.2	9.0	9.0	26.1	6.7
LnGrp LOS	B	B	A	A	C	A
Approach Vol, veh/h	214		821			1859
Approach Delay, s/veh	18.8		9.0			8.0
Approach LOS	B		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.9	21.4			29.3	10.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	5.5	18.0			28.0	18.0
Max Q Clear Time (g_c+1), s	14.6	8.8			16.0	5.7
Green Ext Time (p_c), s	0.0	3.3			8.8	0.5
Intersection Summary						
HCM 6th Ctrl Delay			9.1			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

14: Magnolia Avenue & Carefree Drive

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↖	↗	↖	↕			↕	
Traffic Volume (veh/h)	13	0	58	189	0	31	33	691	0	0	868	2
Future Volume (veh/h)	13	0	58	189	0	31	33	691	0	0	868	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	1.00		1.00	1.00		1.00	1.00		0.95
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		No		No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	14	0	63	205	0	34	36	751	0	0	943	2
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	0	0	2	2
Cap, veh/h	55	0	247	351	0	156	55	1582	0	0	1217	3
Arrive On Green	0.22	0.00	0.22	0.10	0.00	0.10	0.03	0.45	0.00	0.00	0.33	0.33
Sat Flow, veh/h	254	0	1142	3563	0	1585	1781	3647	0	0	3731	8
Grp Volume(v), veh/h	77	0	0	205	0	34	36	751	0	0	461	484
Grp Sat Flow(s),veh/h/ln	1396	0	0	1781	0	1585	1781	1777	0	0	1777	1869
Q Serve(g_s), s	2.6	0.0	0.0	3.1	0.0	1.1	1.1	8.4	0.0	0.0	13.1	13.1
Cycle Q Clear(g_c), s	2.6	0.0	0.0	3.1	0.0	1.1	1.1	8.4	0.0	0.0	13.1	13.1
Prop In Lane	0.18		0.82	1.00		1.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	302	0	0	351	0	156	55	1582	0	0	594	625
V/C Ratio(X)	0.26	0.00	0.00	0.58	0.00	0.22	0.66	0.47	0.00	0.00	0.78	0.78
Avail Cap(c_a), veh/h	447	0	0	1014	0	451	127	2054	0	0	759	798
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	18.3	0.0	0.0	24.2	0.0	23.3	27.0	11.0	0.0	0.0	16.8	16.8
Incr Delay (d2), s/veh	0.4	0.0	0.0	1.5	0.0	0.7	12.8	0.2	0.0	0.0	3.9	3.7
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	0.8	0.0	0.0	1.3	0.0	0.4	0.6	2.6	0.0	0.0	5.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	0.0	0.0	25.8	0.0	24.0	39.8	11.2	0.0	0.0	20.7	20.5
LnGrp LOS	B	A	A	C	A	C	D	B	A	A	C	C
Approach Vol, veh/h		77		239		787		945				
Approach Delay, s/veh		18.7		25.5		12.5		20.6				
Approach LOS		B		C		B		C				
Timer - Assigned Phs		2		4		5		6				8
Phs Duration (G+Y+Rc), s		29.5		16.7		6.2		23.3				10.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				4.5
Max Green Setting (Gmax), s		32.5		18.0		4.0		24.0				16.0
Max Q Clear Time (g_c+I1), s		10.4		4.6		3.1		15.1				5.1
Green Ext Time (p_c), s		5.0		0.3		0.0		3.7				0.6

Intersection Summary

HCM 6th Ctrl Delay	18.0
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘↗	↑↑	↗	↘	↑↑	
Traffic Volume (veh/h)	157	339	219	346	694	31	210	282	190	384	617	507
Future Volume (veh/h)	157	339	219	346	694	31	210	282	190	384	617	507
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
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	368	238	376	754	34	228	307	207	417	671	551
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	121	1048	457	270	1055	48	270	999	561	264	648	527
Arrive On Green	0.07	0.30	0.30	0.08	0.31	0.31	0.08	0.28	0.28	0.15	0.35	0.35
Sat Flow, veh/h	1781	3554	1549	3456	3460	156	3456	3554	1557	1781	1847	1501
Grp Volume(v), veh/h	171	368	238	376	387	401	228	307	207	417	645	577
Grp Sat Flow(s),veh/h/ln	1781	1777	1549	1728	1777	1839	1728	1777	1557	1781	1777	1571
Q Serve(g_s), s	6.8	8.1	12.8	7.8	19.4	19.4	6.5	6.8	9.8	14.8	35.1	35.1
Cycle Q Clear(g_c), s	6.8	8.1	12.8	7.8	19.4	19.4	6.5	6.8	9.8	14.8	35.1	35.1
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		0.96
Lane Grp Cap(c), veh/h	121	1048	457	270	542	561	270	999	561	264	624	551
V/C Ratio(X)	1.41	0.35	0.52	1.39	0.71	0.71	0.85	0.31	0.37	1.58	1.03	1.05
Avail Cap(c_a), veh/h	121	1052	458	270	561	581	270	999	561	264	624	551
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	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.6	27.7	29.4	46.1	30.9	30.9	45.5	28.3	23.7	42.6	32.5	32.5
Incr Delay (d2), s/veh	226.9	0.9	4.2	197.3	7.2	7.0	20.3	0.2	0.6	279.2	45.3	50.9
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	3.5	5.2	10.6	9.0	9.3	3.5	2.9	3.6	26.8	22.2	20.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	273.5	28.6	33.6	243.4	38.1	37.9	65.8	28.5	24.3	321.8	77.8	83.3
LnGrp LOS	F	C	C	F	D	D	E	C	C	F	F	F
Approach Vol, veh/h		777			1164			742			1639	
Approach Delay, s/veh		84.0			104.3			38.8			141.8	
Approach LOS		F			F			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	35.8	12.0	40.2	11.0	36.8	19.0	33.2				
Change Period (Y+Rc), s	4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	7.8	29.6	* 7.8	* 35	* 6.8	* 32	* 15	28.0				
Max Q Clear Time (g_c+1.9), s	19.8	14.8	8.5	37.1	8.8	21.4	16.8	11.8				
Green Ext Time (p_c), s	0.0	3.9	0.0	0.0	0.0	4.1	0.0	3.4				

Intersection Summary

HCM 6th Ctrl Delay	103.6
HCM 6th LOS	F

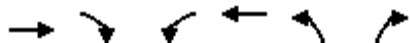
Notes

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

HCM 6th Signalized Intersection Summary

26: Park Center Drive & Mast Blvd

08/31/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (veh/h)	879	68	118	942	21	92
Future Volume (veh/h)	879	68	118	942	21	92
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	955	74	128	1024	23	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1401	109	166	2298	157	139
Arrive On Green	0.42	0.42	0.09	0.65	0.09	0.09
Sat Flow, veh/h	3423	258	1781	3647	1781	1585
Grp Volume(v), veh/h	510	519	128	1024	23	100
Grp Sat Flow(s),veh/h/ln	1810	1781	1777	1781	1585	
Q Serve(g_s), s	7.9	7.9	2.4	4.9	0.4	2.1
Cycle Q Clear(g_c), s	7.9	7.9	2.4	4.9	0.4	2.1
Prop In Lane		0.14	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	748	762	166	2298	157	139
V/C Ratio(X)	0.68	0.68	0.77	0.45	0.15	0.72
Avail Cap(c_a), veh/h	980	998	515	3457	945	841
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.0	8.0	15.0	3.0	14.3	15.1
Incr Delay (d2), s/veh	1.3	1.2	7.4	0.1	0.4	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.8	1.1	0.0	0.2	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.2	9.2	22.4	3.1	14.7	21.8
LnGrp LOS	A	A	C	A	B	C
Approach Vol, veh/h	1029			1152	123	
Approach Delay, s/veh	9.2			5.3	20.5	
Approach LOS	A			A	C	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	7.7	18.8		26.4	7.5	
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	
Max Green Setting (Gmax), s	9.8	18.7		33.0	18.0	
Max Q Clear Time (g_c+1), s	14.4	9.9		6.9	4.1	
Green Ext Time (p_c), s	0.1	4.1		7.7	0.3	
Intersection Summary						
HCM 6th Ctrl Delay			7.8			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 27: Magnolia Avenue & Mast Blvd

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖↗	↑↑		↖	↑↑	↖
Traffic Volume (veh/h)	367	131	412	155	278	52	320	607	54	56	620	413
Future Volume (veh/h)	367	131	412	155	278	52	320	607	54	56	620	413
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.95	1.00		0.98	1.00		0.98
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		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	399	142	448	168	302	57	348	660	59	61	674	449
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	379	1027	445	186	992	421	362	1168	104	102	1091	476
Arrive On Green	0.11	0.29	0.29	0.10	0.28	0.28	0.10	0.35	0.35	0.06	0.31	0.31
Sat Flow, veh/h	3456	3554	1538	1781	3554	1508	3456	3292	294	1781	3554	1552
Grp Volume(v), veh/h	399	142	448	168	302	57	348	356	363	61	674	449
Grp Sat Flow(s),veh/h/ln	1728	1777	1538	1781	1777	1508	1728	1777	1809	1781	1777	1552
Q Serve(g_s), s	11.0	3.0	29.0	9.4	6.7	2.8	10.1	16.2	16.3	3.4	16.3	28.3
Cycle Q Clear(g_c), s	11.0	3.0	29.0	9.4	6.7	2.8	10.1	16.2	16.3	3.4	16.3	28.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	379	1027	445	186	992	421	362	630	642	102	1091	476
V/C Ratio(X)	1.05	0.14	1.01	0.90	0.30	0.14	0.96	0.56	0.57	0.60	0.62	0.94
Avail Cap(c_a), veh/h	379	1027	445	186	1027	436	362	630	642	195	1098	480
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	44.7	26.4	35.7	44.4	28.5	27.1	44.7	26.1	26.1	46.2	29.7	33.9
Incr Delay (d2), s/veh	60.8	0.1	44.6	38.5	0.2	0.2	37.0	1.2	1.2	2.1	1.0	27.1
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	7.8	1.2	15.8	6.0	2.8	1.0	6.0	6.7	6.9	1.5	6.8	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	105.4	26.5	80.3	82.9	28.7	27.3	81.7	27.3	27.3	48.3	30.8	61.0
LnGrp LOS	F	C	F	F	C	C	F	C	C	D	C	E
Approach Vol, veh/h		989			527			1067			1184	
Approach Delay, s/veh		82.7			45.8			45.0			43.1	
Approach LOS		F			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	34.5	15.0	35.8	16.0	33.5	10.2	40.6				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.0	5.0	5.5	4.5	5.0				
Max Green Setting (Gmax), s	10.5	29.0	10.5	31.0	11.0	29.0	11.0	30.5				
Max Q Clear Time (g_c+I1), s	11.4	31.0	12.1	30.3	13.0	8.7	5.4	18.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.4	0.0	2.4	0.0	3.3				

Intersection Summary

HCM 6th Ctrl Delay	54.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC
 1: Cuyamaca Street & Princess Joann Road

08/31/2020

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	167	718	0	0	445
Future Vol, veh/h	0	167	718	0	0	445
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	182	780	0	0	484

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1264	780	0	0	780
Stage 1	780	-	-	-	-
Stage 2	484	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	187	395	-	-	837
Stage 1	452	-	-	-	-
Stage 2	620	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	187	395	-	-	837
Mov Cap-2 Maneuver	187	-	-	-	-
Stage 1	452	-	-	-	-
Stage 2	620	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	395	837
HCM Lane V/C Ratio	-	-	0.46	-
HCM Control Delay (s)	-	-	21.6	0
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	2.3	0

HCM 6th AWSC
 2: Magnolia Avenue & Princess Joann Road

08/31/2020

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↑	↑	↑	↑
Traffic Vol, veh/h	1	3	35	20	8	3	250	3	35	0	11	2
Future Vol, veh/h	1	3	35	20	8	3	250	3	35	0	11	2
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	3	38	22	9	3	272	3	38	0	12	2
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	7.8	8.7	10.7	7.7
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	3%	65%	0%	0%	0%
Vol Thru, %	0%	100%	0%	8%	26%	100%	100%	0%
Vol Right, %	0%	0%	100%	90%	10%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	3	35	39	31	0	11	2
LT Vol	250	0	0	1	20	0	0	0
Through Vol	0	3	0	3	8	0	11	0
RT Vol	0	0	35	35	3	0	0	2
Lane Flow Rate	272	3	38	42	34	0	12	2
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.391	0.004	0.042	0.056	0.053	0	0.017	0.003
Departure Headway (Hd)	5.176	4.676	3.975	4.781	5.655	4.999	4.999	4.297
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	688	756	888	753	637	0	718	835
Service Time	2.962	2.461	1.759	2.487	3.361	2.713	2.713	2.011
HCM Lane V/C Ratio	0.395	0.004	0.043	0.056	0.053	0	0.017	0.002
HCM Control Delay	11.3	7.5	6.9	7.8	8.7	7.7	7.8	7
HCM Lane LOS	B	A	A	A	A	N	A	A
HCM 95th-tile Q	1.9	0	0.1	0.2	0.2	0	0.1	0

HCM 6th AWSC
4: Cuyamaca Street & Woodglen Vista Drive

08/31/2020

Intersection

Intersection Delay, s/veh 185.5

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	1	7	111	2	95	7	669	238	0	459	2
Future Vol, veh/h	0	1	7	111	2	95	7	669	238	0	459	2
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	8	121	2	103	8	727	259	0	499	2
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	11.8	16.1	300.9	36.2
HCM LOS	B	C	F	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	53%	0%	0%
Vol Thru, %	0%	74%	12%	1%	100%	100%
Vol Right, %	0%	26%	88%	46%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	907	8	208	0	461
LT Vol	7	0	0	111	0	0
Through Vol	0	669	1	2	0	459
RT Vol	0	238	7	95	0	2
Lane Flow Rate	8	986	9	226	0	501
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.014	1.622	0.018	0.416	0	0.845
Departure Headway (Hd)	6.618	5.922	8.607	7.699	6.785	6.782
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	544	621	418	470	0	536
Service Time	4.32	3.625	6.607	5.699	4.485	4.482
HCM Lane V/C Ratio	0.015	1.588	0.022	0.481	0	0.935
HCM Control Delay	9.4	303.2	11.8	16.1	9.5	36.2
HCM Lane LOS	A	F	B	C	N	E
HCM 95th-tile Q	0	54.1	0.1	2	0	8.8

HCM 6th Signalized Intersection Summary
 5: Magnolia Avenue & Woodglen Vista Drive/Len Street

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	33	81	32	7	7	165	529	45	3	240	8
Future Volume (veh/h)	13	33	81	32	7	7	165	529	45	3	240	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.98	1.00		0.96	1.00		0.96
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	14	36	88	35	8	8	179	575	49	3	261	9
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	515	94	230	305	69	36	301	1099	93	121	811	28
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.17	0.33	0.33	0.07	0.23	0.23
Sat Flow, veh/h	1387	472	1154	628	347	181	1781	3303	281	1781	3499	120
Grp Volume(v), veh/h	14	0	124	51	0	0	179	309	315	3	132	138
Grp Sat Flow(s),veh/h/ln	1387	0	1627	1156	0	0	1781	1777	1807	1781	1777	1842
Q Serve(g_s), s	0.0	0.0	2.2	0.1	0.0	0.0	3.1	4.7	4.8	0.1	2.1	2.1
Cycle Q Clear(g_c), s	0.2	0.0	2.2	2.3	0.0	0.0	3.1	4.7	4.8	0.1	2.1	2.1
Prop In Lane	1.00		0.71	0.69		0.16	1.00		0.16	1.00		0.07
Lane Grp Cap(c), veh/h	515	0	324	410	0	0	301	591	601	121	412	427
V/C Ratio(X)	0.03	0.00	0.38	0.12	0.00	0.00	0.60	0.52	0.52	0.02	0.32	0.32
Avail Cap(c_a), veh/h	1412	0	1375	1295	0	0	872	2557	2600	502	2188	2268
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.9	0.0	11.7	11.2	0.0	0.0	12.9	9.1	9.1	14.7	10.7	10.8
Incr Delay (d2), s/veh	0.0	0.0	0.7	0.1	0.0	0.0	1.9	0.7	0.7	0.1	0.4	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	0.1	0.0	0.7	0.3	0.0	0.0	1.0	1.2	1.2	0.0	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.9	0.0	12.4	11.3	0.0	0.0	14.8	9.8	9.8	14.8	11.2	11.2
LnGrp LOS	B	A	B	B	A	A	B	A	A	B	B	B
Approach Vol, veh/h		138			51			803			273	
Approach Delay, s/veh		12.3			11.3			10.9			11.2	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	15.7		11.2	10.2	12.3		11.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	45	48.5		28.5	16.5	41.5		28.5				
Max Q Clear Time (g_c+I), s	12.5	6.8		4.2	5.1	4.1		4.3				
Green Ext Time (p_c), s	0.0	3.9		0.8	0.3	1.5		0.2				

Intersection Summary

HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B

Intersection

Intersection Delay, s/veh 16.6

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	1	1	5	102	8	87	13	834	109	0	583	0
Future Vol, veh/h	1	1	5	102	8	87	13	834	109	0	583	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	5	111	9	95	14	907	118	0	634	0
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	12.4	16.4	340.3	83.9
HCM LOS	B	C	F	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	14%	52%	0%	0%
Vol Thru, %	0%	88%	14%	4%	100%	100%
Vol Right, %	0%	12%	71%	44%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	943	7	197	0	583
LT Vol	13	0	1	102	0	0
Through Vol	0	834	1	8	0	583
RT Vol	0	109	5	87	0	0
Lane Flow Rate	14	1025	8	214	0	634
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.026	1.715	0.016	0.409	0	1.067
Departure Headway (Hd)	6.788	6.196	9.243	8.01	6.845	6.845
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	531	595	390	452	0	532
Service Time	4.488	3.896	7.243	6.01	4.545	4.545
HCM Lane V/C Ratio	0.026	1.723	0.021	0.473	0	1.192
HCM Control Delay	9.7	344.9	12.4	16.4	9.5	83.9
HCM Lane LOS	A	F	B	C	N	F
HCM 95th-tile Q	0.1	58.3	0	2	0	16.9

HCM 6th Signalized Intersection Summary
 7: Magnolia Avenue & El Nopal

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	6	72	63	146	193	153	95	586	288	58	300	9
Future Volume (veh/h)	6	72	63	146	193	153	95	586	288	58	300	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.97
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		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	7	78	68	159	210	166	103	637	313	63	326	10
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	23	156	136	205	262	207	164	821	403	132	1192	36
Arrive On Green	0.01	0.17	0.17	0.12	0.27	0.27	0.09	0.36	0.36	0.07	0.34	0.34
Sat Flow, veh/h	1781	916	798	1781	962	760	1781	2297	1129	1781	3517	108
Grp Volume(v), veh/h	7	0	146	159	0	376	103	493	457	63	164	172
Grp Sat Flow(s),veh/h/ln	1781	0	1714	1781	0	1722	1781	1777	1649	1781	1777	1848
Q Serve(g_s), s	0.2	0.0	4.9	5.5	0.0	12.9	3.5	15.7	15.7	2.2	4.3	4.3
Cycle Q Clear(g_c), s	0.2	0.0	4.9	5.5	0.0	12.9	3.5	15.7	15.7	2.2	4.3	4.3
Prop In Lane	1.00		0.47	1.00		0.44	1.00		0.68	1.00		0.06
Lane Grp Cap(c), veh/h	23	0	292	205	0	469	164	635	589	132	602	626
V/C Ratio(X)	0.31	0.00	0.50	0.77	0.00	0.80	0.63	0.78	0.78	0.48	0.27	0.27
Avail Cap(c_a), veh/h	210	0	634	491	0	908	378	881	817	266	769	800
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.1	0.0	23.9	27.3	0.0	21.5	27.8	18.2	18.2	28.2	15.3	15.3
Incr Delay (d2), s/veh	7.4	0.0	1.3	6.1	0.0	3.2	3.9	3.0	3.2	2.7	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	0.2	0.0	2.0	2.6	0.0	5.3	1.6	6.0	5.6	0.9	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	0.0	25.2	33.4	0.0	24.7	31.7	21.1	21.3	30.9	15.5	15.5
LnGrp LOS	D	A	C	C	A	C	C	C	C	C	B	B
Approach Vol, veh/h		153		535		1053		399				
Approach Delay, s/veh		25.9		27.3		22.2		18.0				
Approach LOS		C		C		C		B				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	27.2	11.8	15.3	10.4	26.0	5.3	21.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	31.5	17.5	23.5	13.5	27.5	7.5	33.5				
Max Q Clear Time (g_c+14.2), s	14.2	17.7	7.5	6.9	5.5	6.3	2.2	14.9				
Green Ext Time (p_c), s	0.0	5.0	0.3	0.7	0.1	1.7	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay				23.0								
HCM 6th LOS				C								

HCM 6th AWSC
12: Cuyamaca Street & Beck Drive

08/31/2020

Intersection

Intersection Delay, s/veh 91.3

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↑	↕	↕	↕
Traffic Vol, veh/h	0	0	6	57	2	2	9	968	65	2	501	3
Future Vol, veh/h	0	0	6	57	2	2	9	968	65	2	501	3
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	7	62	2	2	10	1052	71	2	545	3
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	10.9	13.2	266.3	60.6
HCM LOS	B	B	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	93%	100%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	99%
Vol Right, %	0%	0%	100%	100%	3%	0%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	968	65	6	61	2	504
LT Vol	9	0	0	0	57	2	0
Through Vol	0	968	0	0	2	0	501
RT Vol	0	0	65	6	2	0	3
Lane Flow Rate	10	1052	71	7	66	2	548
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.016	1.586	0.093	0.013	0.148	0.004	0.973
Departure Headway (Hd)	5.93	5.425	4.719	8.11	8.943	7.811	7.302
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	601	673	755	444	404	461	499
Service Time	3.689	3.184	2.477	5.81	6.643	5.511	5.002
HCM Lane V/C Ratio	0.017	1.563	0.094	0.016	0.163	0.004	1.098
HCM Control Delay	8.8	286	8	10.9	13.2	10.5	60.8
HCM Lane LOS	A	F	A	B	B	B	F
HCM 95th-tile Q	0	55.2	0.3	0	0.5	0	12.6

HCM 6th Signalized Intersection Summary
 13: Magnolia Avenue & 2nd Street

08/31/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	87	20	1336	161	29	993
Future Volume (veh/h)	87	20	1336	161	29	993
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	22	1452	175	32	1079
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	139	124	1768	211	53	2477
Arrive On Green	0.08	0.08	0.55	0.55	0.03	0.70
Sat Flow, veh/h	1781	1585	3279	380	1781	3647
Grp Volume(v), veh/h	95	22	803	824	32	1079
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1789	1781	1777
Q Serve(g_s), s	2.1	0.5	14.7	15.2	0.7	5.3
Cycle Q Clear(g_c), s	2.1	0.5	14.7	15.2	0.7	5.3
Prop In Lane	1.00	1.00		0.21	1.00	
Lane Grp Cap(c), veh/h	139	124	986	993	53	2477
V/C Ratio(X)	0.68	0.18	0.81	0.83	0.60	0.44
Avail Cap(c_a), veh/h	805	716	1060	1067	200	2917
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.0	17.3	7.2	7.4	19.2	2.6
Incr Delay (d2), s/veh	5.7	0.7	4.7	5.3	10.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	3.7	4.0	0.4	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.7	17.9	11.9	12.7	29.6	2.8
LnGrp LOS	C	B	B	B	C	A
Approach Vol, veh/h	117		1627			1111
Approach Delay, s/veh	22.6		12.3			3.5
Approach LOS	C		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	5.7	26.7			32.4	7.6
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	4.5	23.9			32.9	18.1
Max Q Clear Time (g_c+1), s	12.7	17.2			7.3	4.1
Green Ext Time (p_c), s	0.0	5.0			8.2	0.2
Intersection Summary						
HCM 6th Ctrl Delay			9.3			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary

14: Magnolia Avenue & Carefree Drive

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↖	↗	↖	↕			↕	
Traffic Volume (veh/h)	23	0	52	4	0	0	86	1169	0	0	606	8
Future Volume (veh/h)	23	0	52	4	0	0	86	1169	0	0	606	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		1.00	1.00		1.00	1.00		0.96
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	0	0	1870	1870
Adj Flow Rate, veh/h	25	0	57	4	0	0	93	1271	0	0	659	9
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	0	0	2	2
Cap, veh/h	52	0	118	16	0	7	118	1876	0	0	1228	17
Arrive On Green	0.11	0.00	0.11	0.00	0.00	0.00	0.07	0.53	0.00	0.00	0.34	0.34
Sat Flow, veh/h	471	0	1075	3563	0	1585	1781	3647	0	0	3680	49
Grp Volume(v), veh/h	82	0	0	4	0	0	93	1271	0	0	326	342
Grp Sat Flow(s),veh/h/ln	1546	0	0	1781	0	1585	1781	1777	0	0	1777	1859
Q Serve(g_s), s	1.9	0.0	0.0	0.0	0.0	0.0	1.9	9.9	0.0	0.0	5.6	5.6
Cycle Q Clear(g_c), s	1.9	0.0	0.0	0.0	0.0	0.0	1.9	9.9	0.0	0.0	5.6	5.6
Prop In Lane	0.30		0.70	1.00		1.00	1.00		0.00	0.00		0.03
Lane Grp Cap(c), veh/h	170	0	0	16	0	7	118	1876	0	0	608	636
V/C Ratio(X)	0.48	0.00	0.00	0.26	0.00	0.00	0.79	0.68	0.00	0.00	0.54	0.54
Avail Cap(c_a), veh/h	738	0	0	1465	0	652	213	2639	0	0	895	937
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.8	0.0	0.0	18.7	0.0	0.0	17.3	6.5	0.0	0.0	10.0	10.0
Incr Delay (d2), s/veh	2.1	0.0	0.0	8.5	0.0	0.0	11.2	0.4	0.0	0.0	0.7	0.7
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	0.0	0.0	0.0	0.0	0.0	1.0	1.7	0.0	0.0	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	0.0	0.0	27.2	0.0	0.0	28.5	7.0	0.0	0.0	10.7	10.7
LnGrp LOS	B	A	A	C	A	A	C	A	A	A	B	B
Approach Vol, veh/h		82			4			1364			668	
Approach Delay, s/veh		17.9			27.2			8.4			10.7	
Approach LOS		B			C			A			B	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		24.4		8.6	7.0	17.4		4.7				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		28.0		18.0	4.5	19.0		15.5				
Max Q Clear Time (g_c+I1), s		11.9		3.9	3.9	7.6		2.0				
Green Ext Time (p_c), s		8.0		0.3	0.0	2.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘↗	↑↑	↗	↘	↑↑	
Traffic Volume (veh/h)	334	685	273	318	317	68	258	656	438	207	382	190
Future Volume (veh/h)	334	685	273	318	317	68	258	656	438	207	382	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.98
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		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	363	745	297	346	345	74	280	713	476	225	415	207
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	264	1116	486	380	803	170	301	995	618	175	667	329
Arrive On Green	0.15	0.31	0.31	0.11	0.28	0.28	0.09	0.28	0.28	0.10	0.29	0.29
Sat Flow, veh/h	1781	3554	1548	3456	2908	616	3456	3554	1585	1781	2293	1130
Grp Volume(v), veh/h	363	745	297	346	209	210	280	713	476	225	320	302
Grp Sat Flow(s),veh/h/ln	1781	1777	1548	1728	1777	1747	1728	1777	1585	1781	1777	1646
Q Serve(g_s), s	14.8	18.2	16.3	9.9	9.7	9.9	8.0	18.1	26.2	9.8	15.6	15.9
Cycle Q Clear(g_c), s	14.8	18.2	16.3	9.9	9.7	9.9	8.0	18.1	26.2	9.8	15.6	15.9
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		0.69
Lane Grp Cap(c), veh/h	264	1116	486	380	490	482	301	995	618	175	517	479
V/C Ratio(X)	1.38	0.67	0.61	0.91	0.43	0.44	0.93	0.72	0.77	1.29	0.62	0.63
Avail Cap(c_a), veh/h	264	1116	486	380	508	500	301	995	618	175	519	481
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	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.6	29.8	29.1	44.0	29.7	29.8	45.4	32.4	26.6	45.1	30.7	30.8
Incr Delay (d2), s/veh	191.7	3.2	5.6	24.3	2.6	2.8	33.9	2.7	6.3	166.0	2.8	3.2
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	20.3	7.9	6.6	5.4	4.3	4.4	4.8	7.9	10.5	12.3	6.9	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	234.3	32.9	34.8	68.3	32.3	32.6	79.2	35.1	32.9	211.1	33.4	34.0
LnGrp LOS	F	C	C	E	C	C	E	D	C	F	C	C
Approach Vol, veh/h		1405			765			1469			847	
Approach Delay, s/veh		85.3			48.7			42.8			80.8	
Approach LOS		F			D			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.2	37.7	12.9	34.2	19.0	33.9	14.0	33.1				
Change Period (Y+Rc), s	4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	31.4	* 8.7	* 29	* 15	* 29	* 9.8	28.0					
Max Q Clear Time (g_c+I1), s	20.2	10.0	17.9	16.8	11.9	11.8	28.2					
Green Ext Time (p_c), s	0.0	6.0	0.0	4.1	0.0	2.7	0.0	0.0				

Intersection Summary

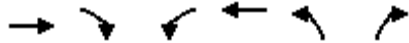
HCM 6th Ctrl Delay	64.3
HCM 6th LOS	E

Notes

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

HCM 6th Signalized Intersection Summary
 26: Park Center Drive & Mast Blvd

08/31/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (veh/h)	1211	29	105	695	16	119
Future Volume (veh/h)	1211	29	105	695	16	119
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1316	32	114	755	17	129
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1901	46	150	2527	195	173
Arrive On Green	0.54	0.54	0.08	0.71	0.11	0.11
Sat Flow, veh/h	3636	86	1781	3647	1781	1585
Grp Volume(v), veh/h	660	688	114	755	17	129
Grp Sat Flow(s),veh/h/ln	1777	1851	1781	1777	1781	1585
Q Serve(g_s), s	13.7	13.7	3.1	3.9	0.4	4.0
Cycle Q Clear(g_c), s	13.7	13.7	3.1	3.9	0.4	4.0
Prop In Lane		0.05	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	954	994	150	2527	195	173
V/C Ratio(X)	0.69	0.69	0.76	0.30	0.09	0.75
Avail Cap(c_a), veh/h	1793	1868	552	5005	730	649
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.5	8.5	22.4	2.7	20.0	21.6
Incr Delay (d2), s/veh	0.9	0.9	7.6	0.1	0.2	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	3.6	1.5	0.3	0.2	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.4	9.4	30.1	2.7	20.2	27.8
LnGrp LOS	A	A	C	A	C	C
Approach Vol, veh/h	1348			869	146	
Approach Delay, s/veh	9.4			6.3	27.0	
Approach LOS	A			A	C	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	8.7	31.4		40.1	10.0	
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	
Max Green Setting (Gmax), s	15.5	50.5		70.5	20.5	
Max Q Clear Time (g_c+I), s	15.1	15.7		5.9	6.0	
Green Ext Time (p_c), s	0.2	11.1		5.8	0.3	
Intersection Summary						
HCM 6th Ctrl Delay			9.4			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
 27: Magnolia Avenue & Mast Blvd

08/31/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖↗	↑↑		↖	↑↑	↖
Traffic Volume (veh/h)	506	292	359	116	158	31	346	676	126	88	416	225
Future Volume (veh/h)	506	292	359	116	158	31	346	676	126	88	416	225
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.95	1.00		0.98	1.00		0.95
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	550	317	390	126	172	34	376	735	137	96	452	245
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	663	1095	475	158	708	301	460	926	173	128	886	377
Arrive On Green	0.19	0.31	0.31	0.09	0.20	0.20	0.13	0.31	0.31	0.07	0.25	0.25
Sat Flow, veh/h	3456	3554	1544	1781	3554	1513	3456	2981	555	1781	3554	1513
Grp Volume(v), veh/h	550	317	390	126	172	34	376	438	434	96	452	245
Grp Sat Flow(s),veh/h/ln	1728	1777	1544	1781	1777	1513	1728	1777	1760	1781	1777	1513
Q Serve(g_s), s	13.5	6.0	20.7	6.1	3.6	1.6	9.3	19.9	19.9	4.7	9.7	12.8
Cycle Q Clear(g_c), s	13.5	6.0	20.7	6.1	3.6	1.6	9.3	19.9	19.9	4.7	9.7	12.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	663	1095	475	158	708	301	460	552	547	128	886	377
V/C Ratio(X)	0.83	0.29	0.82	0.80	0.24	0.11	0.82	0.79	0.79	0.75	0.51	0.65
Avail Cap(c_a), veh/h	861	1497	650	303	1195	509	677	720	713	252	1248	531
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	23.2	28.3	39.5	29.8	29.0	37.2	27.8	27.8	40.2	28.5	29.7
Incr Delay (d2), s/veh	5.7	0.2	6.5	3.5	0.2	0.2	3.1	4.6	4.7	3.3	0.5	1.9
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	5.9	2.4	8.0	2.8	1.5	0.6	4.0	8.6	8.5	2.1	4.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.0	23.4	34.8	42.9	30.0	29.2	40.3	32.4	32.5	43.5	29.0	31.6
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1257			332			1248			793	
Approach Delay, s/veh		34.2			34.8			34.8			31.5	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	32.7	16.2	27.0	21.9	23.1	10.8	32.4				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.0	5.0	5.5	4.5	5.0				
Max Green Setting (Gmax), s	15.0	37.2	17.3	31.0	22.0	29.7	12.5	35.8				
Max Q Clear Time (g_c+1), s	10.5	22.7	11.3	14.8	15.5	5.6	6.7	21.9				
Green Ext Time (p_c), s	0.1	3.6	0.4	3.3	1.4	1.3	0.0	4.5				
Intersection Summary												
HCM 6th Ctrl Delay											33.9	
HCM 6th LOS											C	

ATTACHMENT G
EXISTING + CUMULATIVE PROJECTS + PROJECT (NO MAGNOLIA AVENUE EXTENSION – PROHIBITED
SOUTHBOUND LEFT-TURNS FROM CUYAMACA STREET) MITIGATED PEAK HOUR INTERSECTION AND
ARTERIAL ANALYSIS WORKSHEETS

HCM 6th Signalized Intersection Summary
 4: Cuyamaca Street & Woodglen Vista Drive

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	0	1	12	233	0	46	3	326	68	0	891	0
Future Volume (veh/h)	0	1	12	233	0	46	3	326	68	0	891	0
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		0.97	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	0	1	13	253	0	50	3	354	74	0	968	0
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	0	32	422	481	6	66	6	1557	321	4	1560	0
Arrive On Green	0.00	0.28	0.28	0.28	0.00	0.28	0.00	0.53	0.53	0.00	0.44	0.00
Sat Flow, veh/h	0	114	1484	1162	21	234	1781	2918	602	1781	3647	0
Grp Volume(v), veh/h	0	0	14	303	0	0	3	214	214	0	968	0
Grp Sat Flow(s),veh/h/ln	0	0	1598	1417	0	0	1781	1777	1744	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.3	8.3	0.0	0.0	0.1	2.8	2.9	0.0	9.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.3	8.6	0.0	0.0	0.1	2.8	2.9	0.0	9.2	0.0
Prop In Lane	0.00		0.93	0.83		0.17	1.00		0.35	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	454	553	0	0	6	948	930	4	1560	0
V/C Ratio(X)	0.00	0.00	0.03	0.55	0.00	0.00	0.51	0.23	0.23	0.00	0.62	0.00
Avail Cap(c_a), veh/h	0	0	1384	1381	0	0	162	1863	1828	162	3726	0
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	11.3	14.3	0.0	0.0	21.8	5.4	5.4	0.0	9.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	0.0	56.2	0.1	0.1	0.0	0.4	0.0
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	0.0	0.0	0.1	2.5	0.0	0.0	0.1	0.7	0.7	0.0	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	11.4	15.2	0.0	0.0	78.1	5.5	5.6	0.0	9.9	0.0
LnGrp LOS	A	A	B	B	A	A	E	A	A	A	A	A
Approach Vol, veh/h		14			303			431			968	
Approach Delay, s/veh		11.4			15.2			6.1			9.9	
Approach LOS		B			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	27.4		16.5	4.1	23.3		16.5				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	46.0		38.0	4.0	46.0		38.0				
Max Q Clear Time (g_c+I1), s	0.0	4.9		2.3	2.1	11.2		10.6				
Green Ext Time (p_c), s	0.0	2.7		0.0	0.0	8.0		2.0				
Intersection Summary												
HCM 6th Ctrl Delay				9.9								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
6: Cuyamaca Street & El Nopal

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	0	1	7	264	4	45	5	358	48	0	1148	1
Future Volume (veh/h)	0	1	7	264	4	45	5	358	48	0	1148	1
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		0.98	1.00		0.99	1.00		0.99
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	0	1	8	287	4	49	5	389	52	0	1248	1
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	0	53	427	473	5	61	10	1761	234	3	1757	1
Arrive On Green	0.00	0.30	0.30	0.30	0.30	0.30	0.01	0.56	0.56	0.00	0.48	0.48
Sat Flow, veh/h	0	179	1429	1189	17	203	1781	3151	418	1781	3644	3
Grp Volume(v), veh/h	0	0	9	340	0	0	5	218	223	0	609	640
Grp Sat Flow(s),veh/h/ln	0	0	1608	1408	0	0	1781	1777	1792	1781	1777	1870
Q Serve(g_s), s	0.0	0.0	0.2	12.4	0.0	0.0	0.2	3.5	3.5	0.0	15.1	15.1
Cycle Q Clear(g_c), s	0.0	0.0	0.2	12.6	0.0	0.0	0.2	3.5	3.5	0.0	15.1	15.1
Prop In Lane	0.00		0.89	0.84		0.14	1.00		0.23	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	480	539	0	0	10	993	1002	3	857	901
V/C Ratio(X)	0.00	0.00	0.02	0.63	0.00	0.00	0.53	0.22	0.22	0.00	0.71	0.71
Avail Cap(c_a), veh/h	0	0	1062	1055	0	0	127	1490	1503	127	1490	1568
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	13.9	18.3	0.0	0.0	27.8	6.2	6.2	0.0	11.4	11.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.2	0.0	0.0	38.3	0.1	0.1	0.0	1.1	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	0.0	0.0	0.1	3.9	0.0	0.0	0.2	1.0	1.0	0.0	4.9	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	13.9	19.5	0.0	0.0	66.1	6.3	6.3	0.0	12.5	12.5
LnGrp LOS	A	A	B	B	A	A	E	A	A	A	B	B
Approach Vol, veh/h		9			340			446			1249	
Approach Delay, s/veh		13.9			19.5			7.0			12.5	
Approach LOS		B			B			A			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	35.3		20.7	4.3	31.0		20.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	47.0		37.0	4.0	47.0		37.0				
Max Q Clear Time (g_c+I1), s	0.0	5.5		2.2	2.2	17.1		14.6				
Green Ext Time (p_c), s	0.0	2.8		0.0	0.0	9.9		2.2				
Intersection Summary												
HCM 6th Ctrl Delay				12.5								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary
 12: Cuyamaca Street & Beck Drive

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	0	0	11	93	1	1	1	420	32	3	1066	0
Future Volume (veh/h)	0	0	11	93	1	1	1	420	32	3	1066	0
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		0.99	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	0	0	12	101	1	1	1	457	35	3	1159	0
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	0	0	162	327	1	1	5	1894	145	6	2020	0
Arrive On Green	0.00	0.00	0.10	0.10	0.10	0.10	0.00	0.57	0.57	0.00	0.57	0.00
Sat Flow, veh/h	0	0	1581	1284	13	13	1781	3344	255	1781	3647	0
Grp Volume(v), veh/h	0	0	12	103	0	0	1	242	250	3	1159	0
Grp Sat Flow(s),veh/h/ln	0	0	1581	1310	0	0	1781	1777	1823	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.3	2.6	0.0	0.0	0.0	2.5	2.5	0.1	7.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.3	2.9	0.0	0.0	0.0	2.5	2.5	0.1	7.6	0.0
Prop In Lane	0.00		1.00	0.98		0.01	1.00		0.14	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	162	329	0	0	5	1006	1032	6	2020	0
V/C Ratio(X)	0.00	0.00	0.07	0.31	0.00	0.00	0.21	0.24	0.24	0.51	0.57	0.00
Avail Cap(c_a), veh/h	0	0	907	990	0	0	292	2961	3037	292	5921	0
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	14.9	16.1	0.0	0.0	18.2	4.0	4.0	18.2	5.1	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.5	0.0	0.0	19.6	0.1	0.1	55.8	0.3	0.0
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	0.0	0.0	0.1	0.8	0.0	0.0	0.0	0.4	0.4	0.1	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	15.0	16.7	0.0	0.0	37.8	4.1	4.1	74.0	5.3	0.0
LnGrp LOS	A	A	B	B	A	A	D	A	A	E	A	A
Approach Vol, veh/h		12			103			493			1162	
Approach Delay, s/veh		15.0			16.7			4.2			5.5	
Approach LOS		B			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.1	24.7		7.8	4.0	24.8		7.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	61.0		21.0	6.0	61.0		21.0				
Max Q Clear Time (g_c+I1), s	2.1	4.5		2.3	2.0	9.6		4.9				
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	11.2		0.4				
Intersection Summary												
HCM 6th Ctrl Delay			5.8									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑		↔↔	↑↑	↗	↖	↑↑	↗
Traffic Volume (veh/h)	157	339	219	346	694	31	210	282	190	384	617	507
Future Volume (veh/h)	157	339	219	346	694	31	210	282	190	384	617	507
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
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	368	238	376	754	34	228	307	207	417	671	551
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	228	924	402	385	1057	48	285	825	537	400	1329	583
Arrive On Green	0.07	0.26	0.26	0.11	0.31	0.31	0.08	0.23	0.23	0.22	0.37	0.37
Sat Flow, veh/h	3456	3554	1546	3456	3460	156	3456	3554	1555	1781	3554	1559
Grp Volume(v), veh/h	171	368	238	376	387	401	228	307	207	417	671	551
Grp Sat Flow(s),veh/h/ln	1728	1777	1546	1728	1777	1839	1728	1777	1555	1781	1777	1559
Q Serve(g_s), s	5.6	9.8	15.5	12.5	22.2	22.3	7.5	8.4	11.6	25.8	16.8	39.3
Cycle Q Clear(g_c), s	5.6	9.8	15.5	12.5	22.2	22.3	7.5	8.4	11.6	25.8	16.8	39.3
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	924	402	385	543	562	285	825	537	400	1329	583
V/C Ratio(X)	0.75	0.40	0.59	0.98	0.71	0.71	0.80	0.37	0.39	1.04	0.51	0.95
Avail Cap(c_a), veh/h	246	924	402	385	543	562	313	865	555	400	1344	590
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	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	35.1	37.2	51.0	35.5	35.5	51.8	37.1	28.6	44.6	27.8	34.9
Incr Delay (d2), s/veh	9.6	1.3	6.3	37.9	7.2	7.0	11.2	0.4	0.6	56.8	0.5	24.4
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	2.7	4.3	6.5	7.3	10.4	10.8	3.6	3.6	4.4	17.5	7.1	18.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.4	36.4	43.5	88.8	42.6	42.4	63.1	37.5	29.2	101.4	28.3	59.3
LnGrp LOS	E	D	D	F	D	D	E	D	C	F	C	E
Approach Vol, veh/h		777			1164			742			1639	
Approach Delay, s/veh		44.3			57.5			43.1			57.3	
Approach LOS		D			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	36.2	13.7	48.1	11.8	41.4	30.0	31.8				
Change Period (Y+Rc), s	* 4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	* 13	28.6	* 10	* 44	* 8.2	* 34	* 26	28.0				
Max Q Clear Time (g_c+I1), s	14.5	17.5	9.5	41.3	7.6	24.3	27.8	13.6				
Green Ext Time (p_c), s	0.0	3.3	0.0	1.6	0.0	4.0	0.0	3.2				

Intersection Summary

HCM 6th Ctrl Delay	52.6
HCM 6th LOS	D

Notes

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

HCM 6th Signalized Intersection Summary
 4: Cuyamaca Street & Woodglen Vista Drive

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	0	1	7	111	2	95	7	669	238	0	459	2
Future Volume (veh/h)	0	1	7	111	2	95	7	669	238	0	459	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		0.97
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	0	1	8	121	2	103	8	727	259	0	499	2
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	0	39	314	335	28	153	15	1315	468	6	1367	5
Arrive On Green	0.00	0.22	0.22	0.22	0.22	0.22	0.01	0.52	0.52	0.00	0.38	0.38
Sat Flow, veh/h	0	176	1411	695	127	688	1781	2549	908	1781	3630	15
Grp Volume(v), veh/h	0	0	9	226	0	0	8	507	479	0	244	257
Grp Sat Flow(s),veh/h/ln	0	0	1588	1510	0	0	1781	1777	1680	1781	1777	1867
Q Serve(g_s), s	0.0	0.0	0.1	3.3	0.0	0.0	0.1	5.9	5.9	0.0	3.0	3.0
Cycle Q Clear(g_c), s	0.0	0.0	0.1	4.1	0.0	0.0	0.1	5.9	5.9	0.0	3.0	3.0
Prop In Lane	0.00		0.89	0.54		0.46	1.00		0.54	1.00		0.01
Lane Grp Cap(c), veh/h	0	0	353	517	0	0	15	917	867	6	669	703
V/C Ratio(X)	0.00	0.00	0.03	0.44	0.00	0.00	0.52	0.55	0.55	0.00	0.37	0.37
Avail Cap(c_a), veh/h	0	0	1713	1784	0	0	349	2962	2801	233	2846	2991
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	9.3	10.8	0.0	0.0	15.1	5.0	5.0	0.0	6.9	6.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.0	24.9	0.5	0.6	0.0	0.3	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	0.0	0.0	0.0	1.1	0.0	0.0	0.1	0.9	0.8	0.0	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	9.3	11.4	0.0	0.0	40.0	5.5	5.6	0.0	7.2	7.2
LnGrp LOS	A	A	A	B	A	A	D	A	A	A	A	A
Approach Vol, veh/h		9			226			994				501
Approach Delay, s/veh		9.3			11.4			5.8				7.2
Approach LOS		A			B			A				A
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	19.8		10.8	4.3	15.5		10.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	51.0		33.0	6.0	49.0		33.0				
Max Q Clear Time (g_c+I1), s	0.0	7.9		2.1	2.1	5.0		6.1				
Green Ext Time (p_c), s	0.0	7.9		0.0	0.0	3.1		1.5				
Intersection Summary												
HCM 6th Ctrl Delay				7.0								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
6: Cuyamaca Street & El Nopal

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	1	1	5	102	8	87	13	834	109	0	583	0
Future Volume (veh/h)	1	1	5	102	8	87	13	834	109	0	583	0
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		0.98	1.00		0.97	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	1	1	5	111	9	95	14	907	118	0	634	0
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	152	81	244	321	37	141	26	1656	215	6	1348	0
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.01	0.53	0.53	0.00	0.38	0.00
Sat Flow, veh/h	79	384	1157	670	175	669	1781	3151	410	1781	3647	0
Grp Volume(v), veh/h	7	0	0	215	0	0	14	511	514	0	634	0
Grp Sat Flow(s),veh/h/ln	1620	0	0	1514	0	0	1781	1777	1784	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	3.1	0.0	0.0	0.2	5.8	5.8	0.0	4.1	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	3.9	0.0	0.0	0.2	5.8	5.8	0.0	4.1	0.0
Prop In Lane	0.14		0.71	0.52		0.44	1.00		0.23	1.00		0.00
Lane Grp Cap(c), veh/h	477	0	0	499	0	0	26	934	938	6	1348	0
V/C Ratio(X)	0.01	0.00	0.00	0.43	0.00	0.00	0.54	0.55	0.55	0.00	0.47	0.00
Avail Cap(c_a), veh/h	1742	0	0	1700	0	0	352	3099	3111	234	5964	0
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	9.5	0.0	0.0	11.0	0.0	0.0	14.9	4.8	4.8	0.0	7.1	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.0	16.0	0.5	0.5	0.0	0.3	0.0
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	0.0	0.0	0.0	1.1	0.0	0.0	0.2	0.8	0.8	0.0	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.5	0.0	0.0	11.5	0.0	0.0	30.8	5.3	5.3	0.0	7.4	0.0
LnGrp LOS	A	A	A	B	A	A	C	A	A	A	A	A
Approach Vol, veh/h		7			215			1039			634	
Approach Delay, s/veh		9.5			11.5			5.6			7.4	
Approach LOS		A			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	20.0		10.4	4.4	15.5		10.4				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	53.0		31.0	6.0	51.0		31.0				
Max Q Clear Time (g_c+I1), s	0.0	7.8		2.1	2.2	6.1		5.9				
Green Ext Time (p_c), s	0.0	8.1		0.0	0.0	4.8		1.4				
Intersection Summary												
HCM 6th Ctrl Delay				6.9								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
 12: Cuyamaca Street & Beck Drive

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	0	0	6	57	2	2	9	968	65	2	501	3
Future Volume (veh/h)	0	0	6	57	2	2	9	968	65	2	501	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.97	1.00		0.97
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	0	0	7	62	2	2	10	1052	71	2	545	3
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	0	0	105	301	3	3	19	1878	127	6	1988	11
Arrive On Green	0.00	0.00	0.07	0.07	0.07	0.07	0.01	0.56	0.56	0.00	0.55	0.55
Sat Flow, veh/h	0	0	1550	1243	40	40	1781	3372	227	1781	3623	20
Grp Volume(v), veh/h	0	0	7	66	0	0	10	554	569	2	267	281
Grp Sat Flow(s),veh/h/ln	0	0	1550	1323	0	0	1781	1777	1822	1781	1777	1866
Q Serve(g_s), s	0.0	0.0	0.1	1.5	0.0	0.0	0.2	6.5	6.5	0.0	2.6	2.6
Cycle Q Clear(g_c), s	0.0	0.0	0.1	1.6	0.0	0.0	0.2	6.5	6.5	0.0	2.6	2.6
Prop In Lane	0.00		1.00	0.94		0.03	1.00		0.12	1.00		0.01
Lane Grp Cap(c), veh/h	0	0	105	306	0	0	19	990	1015	6	975	1024
V/C Ratio(X)	0.00	0.00	0.07	0.22	0.00	0.00	0.53	0.56	0.56	0.36	0.27	0.27
Avail Cap(c_a), veh/h	0	0	964	1089	0	0	332	3426	3513	332	3426	3598
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	14.0	14.8	0.0	0.0	15.8	4.6	4.6	16.0	3.9	3.9
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.3	0.0	0.0	20.9	0.5	0.5	35.3	0.2	0.1
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	0.0	0.0	0.0	0.4	0.0	0.0	0.2	0.8	0.8	0.1	0.3	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	14.3	15.1	0.0	0.0	36.8	5.1	5.1	51.3	4.0	4.0
LnGrp LOS	A	A	B	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		7			66			1133			550	
Approach Delay, s/veh		14.3			15.1			5.4			4.2	
Approach LOS		B			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.1	21.9		6.2	4.3	21.6		6.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	62.0		20.0	6.0	62.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	8.5		2.1	2.2	4.6		3.6				
Green Ext Time (p_c), s	0.0	9.5		0.0	0.0	3.5		0.2				

Intersection Summary

HCM 6th Ctrl Delay	5.4
HCM 6th LOS	A

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

09/01/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖↗	↑↑		↖↗	↑↑	↖	↖	↑↑	↖
Traffic Volume (veh/h)	334	685	273	318	317	68	258	656	438	207	382	190
Future Volume (veh/h)	334	685	273	318	317	68	258	656	438	207	382	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.98
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	363	745	297	346	345	74	280	713	476	225	415	207
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	404	1009	439	373	800	169	345	995	615	232	1102	484
Arrive On Green	0.12	0.28	0.28	0.11	0.28	0.28	0.10	0.28	0.28	0.13	0.31	0.31
Sat Flow, veh/h	3456	3554	1546	3456	2908	616	3456	3554	1585	1781	3554	1560
Grp Volume(v), veh/h	363	745	297	346	209	210	280	713	476	225	415	207
Grp Sat Flow(s),veh/h/ln	1728	1777	1546	1728	1777	1747	1728	1777	1585	1781	1777	1560
Q Serve(g_s), s	10.4	19.0	17.0	9.9	9.7	9.9	7.9	18.1	26.3	12.6	9.1	10.6
Cycle Q Clear(g_c), s	10.4	19.0	17.0	9.9	9.7	9.9	7.9	18.1	26.3	12.6	9.1	10.6
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	404	1009	439	373	489	480	345	995	615	232	1102	484
V/C Ratio(X)	0.90	0.74	0.68	0.93	0.43	0.44	0.81	0.72	0.77	0.97	0.38	0.43
Avail Cap(c_a), veh/h	404	1009	439	373	506	498	373	995	615	232	1102	484
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	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.6	32.4	31.7	44.2	29.8	29.9	44.1	32.4	26.8	43.3	26.9	27.4
Incr Delay (d2), s/veh	21.6	4.8	8.1	27.9	2.6	2.8	10.8	2.7	6.5	50.7	0.3	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	5.5	8.5	7.2	5.6	4.3	4.4	3.9	7.9	10.5	8.7	3.8	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.2	37.3	39.9	72.1	32.4	32.7	54.8	35.1	33.2	94.0	27.3	28.4
LnGrp LOS	E	D	D	E	C	C	D	D	C	F	C	C
Approach Vol, veh/h		1405			765			1469			847	
Approach Delay, s/veh		45.0			50.4			38.3			45.3	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	34.7	14.2	36.1	15.9	33.8	17.2	33.1				
Change Period (Y+Rc), s	* 4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	* 11	28.4	* 11	* 30	* 12	* 29	* 13	28.0				
Max Q Clear Time (g_c+I1), s	11.9	21.0	9.9	12.6	12.4	11.9	14.6	28.3				
Green Ext Time (p_c), s	0.0	4.4	0.1	4.8	0.0	2.7	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	43.8
HCM 6th LOS	D

Notes

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

Arterial Level of Service: NB Cuyamaca Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
El Nopal	III	35	13.2	10.6	23.8	0.10	14.8	D
Woodglen Vista Drive	III	35	31.1	8.4	39.5	0.26	23.6	C
Princess Joann Road	III	35	54.7	2.1	56.8	0.53	33.7	A
Street Y	III	35	70.6	8.6	79.2	0.69	31.2	A
Total	III		169.6	29.7	199.3	1.58	28.5	B

Arterial Level of Service: SB Cuyamaca Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Street A	III	35	19.6	11.6	31.2	0.15	17.7	D
Princess Joann Road	III	35	70.6	4.6	75.2	0.69	32.8	A
Woodglen Vista Drive	III	35	54.7	11.0	65.7	0.53	29.1	B
El Nopal	III	35	31.1	16.6	47.7	0.26	19.6	C
Total	III		176.0	43.8	219.8	1.63	26.7	B

Arterial Level of Service: NB Cuyamaca Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
El Nopal	III	35	13.2	9.2	22.4	0.10	15.8	D
Woodglen Vista Drive	III	35	31.1	10.3	41.4	0.26	22.6	C
Princess Joann Road	III	35	54.7	6.4	61.1	0.53	31.3	A
Street Y	III	35	70.6	14.7	85.3	0.69	29.0	B
Total	III		169.6	40.6	210.2	1.58	27.0	B

Arterial Level of Service: SB Cuyamaca Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Street A	III	35	19.6	9.4	29.0	0.15	19.0	C
Princess Joann Road	III	35	70.6	4.2	74.8	0.69	33.0	A
Woodglen Vista Drive	III	35	54.7	9.3	64.0	0.53	29.9	B
El Nopal	III	35	31.1	7.8	38.9	0.26	24.0	B
Total	III		176.0	30.7	206.7	1.63	28.4	B

ATTACHMENT H
MITIGATION PHASING PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS
(NO MAGNOLIA AVENUE EXTENSION – PROHIBITED SOUTHBOUND LEFT-TURNS FROM CUYAMACA
STREET)

Intersection	
Intersection Delay, s/veh	34.4
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↑	↑	↑	↑
Traffic Vol, veh/h	0	0	11	93	1	1	1	164	32	3	571	0
Future Vol, veh/h	0	0	11	93	1	1	1	164	32	3	571	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	12	101	1	1	1	178	35	3	621	0
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	9.2	11.8	10.1	47
HCM LOS	A	B	B	E

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	98%	100%	0%
Vol Thru, %	0%	100%	0%	0%	1%	0%	100%
Vol Right, %	0%	0%	100%	100%	1%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	164	32	11	95	3	571
LT Vol	1	0	0	0	93	3	0
Through Vol	0	164	0	0	1	0	571
RT Vol	0	0	32	11	1	0	0
Lane Flow Rate	1	178	35	12	103	3	621
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.002	0.279	0.047	0.021	0.207	0.005	0.952
Departure Headway (Hd)	6.131	5.625	4.916	6.302	7.21	6.027	5.523
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	585	640	729	567	498	597	664
Service Time	3.858	3.352	2.643	4.053	4.953	3.727	3.223
HCM Lane V/C Ratio	0.002	0.278	0.048	0.021	0.207	0.005	0.935
HCM Control Delay	8.9	10.5	7.9	9.2	11.8	8.8	47.2
HCM Lane LOS	A	B	A	A	B	A	E
HCM 95th-tile Q	0	1.1	0.1	0.1	0.8	0	13.4

HCM 6th Signalized Intersection Summary
 25: Cuyamaca Street & Mast Blvd

09/03/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	339	219	346	694	17	210	177	190	170	413	433
Future Volume (veh/h)	119	339	219	346	694	17	210	177	190	170	413	433
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
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	129	368	238	376	754	18	228	192	207	185	449	471
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	159	1064	464	441	1199	29	293	1041	659	146	515	452
Arrive On Green	0.09	0.30	0.30	0.13	0.34	0.34	0.08	0.29	0.29	0.08	0.29	0.29
Sat Flow, veh/h	1781	3554	1549	3456	3546	85	3456	3554	1558	1781	1777	1558
Grp Volume(v), veh/h	129	368	238	376	378	394	228	192	207	185	449	471
Grp Sat Flow(s),veh/h/ln	1781	1777	1549	1728	1777	1853	1728	1777	1558	1781	1777	1558
Q Serve(g_s), s	7.1	8.1	12.7	10.6	17.9	17.9	6.5	4.0	8.9	8.2	24.0	29.0
Cycle Q Clear(g_c), s	7.1	8.1	12.7	10.6	17.9	17.9	6.5	4.0	8.9	8.2	24.0	29.0
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	159	1064	464	441	601	627	293	1041	659	146	515	452
V/C Ratio(X)	0.81	0.35	0.51	0.85	0.63	0.63	0.78	0.18	0.31	1.27	0.87	1.04
Avail Cap(c_a), veh/h	230	1064	464	484	601	627	318	1063	668	146	515	452
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	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	27.4	29.0	42.7	27.8	27.8	44.8	26.4	19.4	45.9	33.7	35.5
Incr Delay (d2), s/veh	8.6	0.9	4.0	10.9	4.5	4.4	9.4	0.1	0.4	163.0	15.5	53.9
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	3.4	3.4	5.1	5.1	8.0	8.3	3.1	1.7	3.2	10.2	12.2	17.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	28.3	33.0	53.6	32.4	32.2	54.2	26.6	19.7	208.9	49.2	89.4
LnGrp LOS	D	C	C	D	C	C	D	C	B	F	D	F
Approach Vol, veh/h		735			1148			627				1105
Approach Delay, s/veh		34.2			39.3			34.4				93.1
Approach LOS		C			D			C				F
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	36.2	12.7	34.1	13.1	40.1	12.4	34.4				
Change Period (Y+Rc), s	* 4.2	6.3	* 4.2	* 5.1	* 4.2	* 6.3	* 4.2	5.1				
Max Green Setting (Gmax), s	* 14	28.1	* 9.2	* 29	* 13	* 30	* 8.2	29.9				
Max Q Clear Time (g_c+I1), s	12.6	14.7	8.5	31.0	9.1	19.9	10.2	10.9				
Green Ext Time (p_c), s	0.1	3.7	0.0	0.0	0.0	4.0	0.0	2.6				

Intersection Summary

HCM 6th Ctrl Delay	53.8
HCM 6th LOS	D

Notes

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

Intersection	
Intersection Delay, s/veh	33.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	1	1	5	102	8	34	13	487	109	3	302	0
Future Vol, veh/h	1	1	5	102	8	34	13	487	109	3	302	0
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	5	111	9	37	14	529	118	3	328	0
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9.7	12	48.3	14.9
HCM LOS	A	B	E	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	14%	71%	100%	0%
Vol Thru, %	0%	82%	14%	6%	0%	100%
Vol Right, %	0%	18%	71%	24%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	596	7	144	3	302
LT Vol	13	0	1	102	3	0
Through Vol	0	487	1	8	0	302
RT Vol	0	109	5	34	0	0
Lane Flow Rate	14	648	8	157	3	328
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.024	0.965	0.014	0.281	0.006	0.531
Departure Headway (Hd)	5.996	5.361	6.568	6.462	6.329	5.822
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	598	680	542	556	565	620
Service Time	3.724	3.09	4.641	4.514	4.067	3.56
HCM Lane V/C Ratio	0.023	0.953	0.015	0.282	0.005	0.529
HCM Control Delay	8.9	49.2	9.7	12	9.1	15
HCM Lane LOS	A	E	A	B	A	B
HCM 95th-tile Q	0.1	14.2	0	1.1	0	3.1

Intersection	
Intersection Delay, s/veh	191.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↑	↗	↙	↗	
Traffic Vol, veh/h	0	0	6	57	2	2	9	968	65	2	501	3
Future Vol, veh/h	0	0	6	57	2	2	9	968	65	2	501	3
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	7	62	2	2	10	1052	71	2	545	3
Number of Lanes	0	1	0	0	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	1	1
HCM Control Delay	10.9	13.2	266.3	60.6
HCM LOS	B	B	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	93%	100%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	99%
Vol Right, %	0%	0%	100%	100%	3%	0%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	968	65	6	61	2	504
LT Vol	9	0	0	0	57	2	0
Through Vol	0	968	0	0	2	0	501
RT Vol	0	0	65	6	2	0	3
Lane Flow Rate	10	1052	71	7	66	2	548
Geometry Grp	7	7	7	7	7	8	8
Degree of Util (X)	0.016	1.586	0.093	0.013	0.148	0.004	0.973
Departure Headway (Hd)	5.93	5.425	4.719	8.11	8.943	7.811	7.302
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	601	673	755	444	404	461	499
Service Time	3.689	3.184	2.477	5.81	6.643	5.511	5.002
HCM Lane V/C Ratio	0.017	1.563	0.094	0.016	0.163	0.004	1.098
HCM Control Delay	8.8	286	8	10.9	13.2	10.5	60.8
HCM Lane LOS	A	F	A	B	B	B	F
HCM 95th-tile Q	0	55.2	0.3	0	0.5	0	12.6

MEMORANDUM

To: Mr. Marni Borg
City of Santee

Date: September 16, 2020

From: John Boarman, P.E. *JB*
LLG, Engineers

LLG Ref: 3-15-2462

Subject: Fanita Ranch, Supplemental VMT Analysis

The purpose of this memo is to provide calculations to support the conclusion in our memo dated September 9, 2020 that the increase in VMT from both the "No Left-Turns" and "Left-Turns Allowed" alternatives are de minimis.

Linscott, Law & Greenspan Engineers (LLG) conducted a Vehicle Miles Travelled (VMT) analysis for the Fanita Ranch project EIR and the total existing baseline project VMT was 243,266. This analysis assumed the extension of Magnolia Avenue from Cuyamaca Street to the current terminus of Magnolia Avenue. The purpose of this memo is to estimate the change in VMT if the Magnolia Avenue extension is not provided.

Two options for treating the ability to turn left from southbound Cuyamaca Street onto Princess Joann Road, Woodglen Vista Drive, and El Nopal have been proposed. The first would allow full movements at each of these locations. The north/south routes of Cuyamaca Street and Magnolia Avenue run parallel to each other for their existing entirety. Without the future extension of Magnolia Avenue, any trip destined to/from Magnolia Avenue would travel virtually the same distance along Princess Joann Road, Woodglen Vista Drive, or El Nopal due to the grid nature of this area of Santee.

The second option would prohibit southbound left-turns from Cuyamaca Street onto Princess Joann Road, Woodglen Vista Drive, and El Nopal. Under this scenario, trips from Cuyamaca Street destined for most locations would have no change in VMT since no out of direction travel is necessary. The one exception is trips destined for El Nopal east of Magnolia Avenue. Ten percent (10%) of project traffic is forecasted to utilize this road in the EIR. Project traffic destined for El Nopal without Magnolia Avenue would need to travel to Mast Boulevard, proceed east to Magnolia Avenue and then turn north to reach El Nopal. The distance is 3.0 miles instead of the 1.75 miles if Magnolia Avenue was extended. It should be noted that "inbound" traffic to Fanita Ranch would not need to make these out of direction maneuvers. The attached figure shows this path of travel graphically. This extra 1.25 miles of travel applies to 1,313 project ADT (5% of the total 26,272 trips generated). Therefore, the VMT increase is 1,643.

The total VMT would increase from 243,266 to 244,909, an increase of 0.67%, an amount considered to be de minimis.

Please call with any questions.

Thank you

LINSCOTT
LAW &
GREENSPAN

engineers

Engineers & Planners
Traffic
Transportation
Parking

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Pasadena
Irvine
San Diego
Woodland Hills

With Magnolia Avenue Extension



Ruler

Line Path Polygon Circle 3D path 3D polygon

Measure the distance between multiple points on the ground

Length: 1.75 Miles

Show Elevation Profile

Mouse Navigation

Save Clear

1.75 x 2,627 = 4,597 VMT

Without Magnolia Avenue Extension
No Southbound Lefts from
Cuyamaca Street



Ruler

Line Path Polygon Circle 3D path 3D polygon

Measure the distance between multiple points on the ground

Length: 1.75 Miles

Show Elevation Profile

Mouse Navigation

Save Clear

3.0 mi

3.0 x 1,314 = 3,940 VMT
1.75 x 1,314 = 2,300 VMT
Total = 6,240 VMT

Without Magnolia Avenue Extension Full Access

Ruler

Line Path Polygon Circle 3D path 3D polygon

Measure the distance between multiple points on the ground

Length: 1.75 Miles

Show Elevation Profile

Mouse Navigation

Save Clear

$$1.75 \times 2,627 = 4,597 \text{ VMT}$$

With Magnolia Avenue Extension

Ruler

Line Path Polygon Circle 3D path 3D polygon

Measure the distance between multiple points on the ground

Length: 1.75 Miles

Show Elevation Profile

Mouse Navigation

Save Clear

$$1.75 \times 2,627 = 4,597 \text{ VMT}$$



**Attachment 5. Removal of Magnolia Avenue from the
Fanita Ranch Project Biological Resources Memorandum**

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MEMORANDUM

To: Jeff O'Connor – HomeFed
From: Brock Ortega – Dudek
Subject: Removal of Magnolia Avenue from the Fanita Ranch Project
Date: September 9, 2020
cc: Tom Blessent – HomeFed
James Whalen – J. Whalen Associates, Inc.
Jeffrey Chine – Allen Matkins

The current Fanita Ranch Project totals 2,670.67 acres, including 2,638.07 acres on site and 32.60 acres off site. The 32.60-acre offsite area is associated with impacts resulting from both the Cuyamaca Street and Magnolia Avenue road extensions analyzed in the May 2020 Biological Technical Report (BTR) for the Fanita Ranch Project (project) (Dudek 2020). This memorandum documents the removal of the Magnolia Avenue road extension portion of the offsite impacts from the project. Removal of Magnolia Avenue would result in an overall decrease in impacts to biological resources occurring within the project site and no new significant impacts would occur. It should be noted that this revision to the project does not affect the analysis or significance conclusions associated with onsite impacts.

Impact and Mitigation Analysis

Vegetation Communities

Implementation of the May 2020 project would result in offsite impacts to 32.60 acres, including 25.32 acres of permanent impacts and 7.29 acres of temporary impacts (Table 1). Implementation of the revised August 2020 project (i.e. removal of Magnolia Avenue) would result in offsite impacts to 18.26 acres, including 14.30 acres of permanent impacts and 3.96 acres of temporary impacts (Table 1). Therefore, offsite impact totals would be reduced by a total of 14.35 acres and impacts to sensitive vegetation communities (including wetlands) would be reduced by 8.00 acres with the removal of Magnolia Avenue (Table 1).

The mitigation required for permanent offsite impacts to sensitive upland vegetation communities under the May 2020 project totals 33.00 acres (Table 2). The revised August 2020 project would reduce the mitigation requirement total for impacts to sensitive upland vegetation communities by 10.71 acres, totaling 22.29 acres (Table 2). Therefore, the project's total mitigation requirement for all permanent impacts would be reduced from 1,303.33 acres to 1,292.62 acres. No changes would occur to the total conservation occurring within the Habitat Preserve (i.e. BTR mitigation measure MM-BIO-1).

Restoration for temporary impacts occurring along the Magnolia Avenue road extension would no longer be required. Therefore, the offsite restoration requirement would be reduced from 5.86 acres to 3.24 acres (Table 3) and the project's total restoration would be reduced from 130.21 acres to 127.59 acres (see BTR Table 6-3 for details). BTR mitigation measure MM-BIO-2 would still apply to the revised August 2020 project.

Table 1. Offsite Impact Comparison

General Vegetation Community/Land Cover Category	Vegetation Type (Holland/ Oberbauer Code)	May 2020 Impacts			August 2020 Impacts		
		Perm	Temp	Total	Perm	Temp	Total
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	4.36	1.07	5.43	1.77	0.70	2.47
	Urban/Developed (12000)	3.16	0.34	3.50	0.10	0.01	0.11
<i>Disturbed and Developed Areas Subtotal</i>		<i>7.51</i>	<i>1.41</i>	<i>8.93</i>	<i>1.87</i>	<i>0.70</i>	<i>2.58</i>
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub ¹ (32500)	4.93	1.33	6.26	2.62	0.45	3.07
	Diegan Coastal Sage Scrub (fire recovered) ¹ (32500)	0.17	—	0.17	0.17	—	0.17
	Diegan Coastal Sage Scrub (disturbed) ¹ (32500)	8.70	3.28	11.99	5.65	1.54	7.20
	Diegan Coastal Sage Scrub–Valley Needlegrass Grassland ¹ (32500/42110)	0.01	0.09	0.10	0.01	0.09	0.10
	Diegan Coastal Sage Scrub–Valley Needlegrass Grassland (disturbed) ¹ (32500/42110)	1.44	0.94	2.38	1.44	0.94	2.38
<i>Scrub and Chaparral Subtotal</i>		<i>15.25</i>	<i>5.64</i>	<i>20.89</i>	<i>9.89</i>	<i>3.03</i>	<i>12.92</i>
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Non-native Grassland ¹ (42200)	2.50	0.21	2.72	2.50	0.21	2.72
	Vernal Pool (44000) ¹	0.01	—	0.01	0.01	—	0.01
<i>Grasslands, Vernal Pools, Meadows, and Other Herb Communities Subtotal</i>		<i>2.52</i>	<i>0.21</i>	<i>2.73</i>	<i>2.52</i>	<i>0.21</i>	<i>2.73</i>
Riparian and Bottomland Habitat (60000)	Non-vegetated Channel or Floodway ¹ (64200)	0.04	0.02	0.06	0.02	0.01	0.03
<i>Riparian and Bottomland Habitat Subtotal</i>		<i>0.04</i>	<i>0.02</i>	<i>0.06</i>	<i>0.02</i>	<i>0.01</i>	<i>0.03</i>
<i>Sensitive Vegetation (including Wetlands) Subtotal</i>		<i>17.80</i>	<i>5.87</i>	<i>23.68</i>	<i>12.42</i>	<i>3.25</i>	<i>15.68</i>
Grand Total²		25.32	7.29	32.60	14.30	3.96	18.26

Notes:

¹ Sensitive vegetation community in the Draft Santee MSCP Subarea Plan (City of Santee 2018).

² Totals may not sum due to rounding.

Table 2. Comparison of Mitigation Requirements for Permanent Impacts to Sensitive Upland Vegetation Communities

Vegetation Type (Holland/ Oberbauer Code)	May 2020 Impacts and Mitigation Requirement			August 2020 Impacts and Mitigation Requirement		
	Perm	Ratio ¹	Total	Perm	Ratio ¹	Total
Diegan Coastal Sage Scrub	4.93	2:1	9.86	2.62	2:1	5.24
Diegan Coastal Sage Scrub (fire recovered)	0.17	2:1	0.34	0.17	2:1	0.34
Diegan Coastal Sage Scrub (disturbed)	8.70	2:1	17.40	5.65	2:1	11.31
Diegan Coastal Sage Scrub-Valley Needlegrass Grassland	0.01	2:1	0.01	0.01	2:1	0.01
Diegan Coastal Sage Scrub-Valley Needlegrass Grassland (disturbed)	1.44	2:1	2.88	1.44	2:1	2.88
<i>Scrub and Chaparral Subtotal</i>	<i>15.25</i>	<i>—</i>	<i>30.50</i>	<i>9.89</i>	<i>—</i>	<i>19.78</i>
Non-native Grassland	2.50	1:1	2.50	2.50	1:1	2.50
<i>Grasslands, Vernal Pools, Meadows, and Other Herb Communities Subtotal</i>	<i>2.50</i>	<i>—</i>	<i>2.50</i>	<i>2.50</i>	<i>—</i>	<i>2.50</i>
Grand Total²	17.76	—	33.00	12.39	—	22.29

Notes:

¹ Mitigation ratios are based on Table 5-14 in the Draft Santee MSCP Subarea Plan (City of Santee 2018).

² Totals may not sum due to rounding.

Table 3. Comparison of Restoration Requirements for Temporary Impacts to Sensitive Upland Vegetation Communities

Vegetation Type (Holland/ Oberbauer Code)	May 2020 Impacts and Restoration Requirement			August 2020 Impacts and Restoration Requirement		
	Temp	Ratio ¹	Total	Temp	Ratio ¹	Total
Diegan Coastal Sage Scrub	1.33	1:1	1.33	0.45	1:1	0.45
Diegan Coastal Sage Scrub (disturbed)	3.28	1:1	3.28	1.54	1:1	1.54
Diegan Coastal Sage Scrub-Valley Needlegrass Grassland	0.09	1:1	0.09	0.09	1:1	0.09
Diegan Coastal Sage Scrub-Valley Needlegrass Grassland (disturbed)	0.94	1:1	0.94	0.94	1:1	0.94
<i>Scrub and Chaparral Subtotal</i>	<i>5.64</i>	<i>—</i>	<i>5.64</i>	<i>3.03</i>	<i>—</i>	<i>3.03</i>
Non-native Grassland	0.21	1:1	0.21	0.21	1:1	0.21
Grand Total²	5.86	—	5.86	3.24	—	3.24

Notes:

¹ Ratios are based on Table 5-14 in the Draft Santee MSCP Subarea Plan (City of Santee 2018).

² Totals may not sum due to rounding.

Jurisdictional Aquatic Resources

Implementation of the revised August 2020 project would reduce impacts to jurisdictional resources (i.e. non-vegetated channel) occurring along Magnolia Avenue by 0.03 acres. Therefore, assuming a 2:1 mitigation ratio for impacts to non-vegetated channel, the project's total mitigation requirements would be reduced by 0.06 acres. A total of 24.07 acres of mitigation would be required under the May 2020 project, whereas a total of 24.01 acres would be required under the revised August 2020 project.

Special-Status Plant Species

Although the Magnolia Avenue extension contains suitable habitat, albeit very limited, it was not surveyed for special-status plant species due to limited legal access. Implementation of the revised August 2020 project would not result in any change to the BTR's impact analysis for special-status plant species. However, BTR mitigation measure MM-BIO-6, which required preconstruction special-status plant surveys in all impact areas along Magnolia Avenue containing suitable habitat, would no longer be required.

Special-Status Wildlife Species

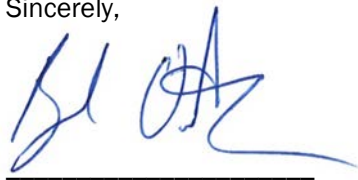
Although the Magnolia Avenue extension contains suitable habitat, albeit very limited, it was not surveyed for special-status wildlife species due to limited legal access. Implementation of the revised August 2020 project would not result in any change to the BTR's impact analysis for special-status wildlife species occurrences. There would be a reduction in impacts to suitable habitat (i.e. coastal sage scrub varieties and non-native grassland) utilized by special-status wildlife species. See the Vegetation Communities Section above for details.

Additionally, implementation of the revised August 2020 project would result in reduced impacts to both USFWS-designated Critical Habitat for coastal California gnatcatcher and USFWS-proposed Critical Habitat for the Hermes copper butterfly.

In summary, removal of Magnolia Avenue from the project would result in an overall decrease in impacts to biological resources occurring within the project site and no new significant impacts would occur.

Please contact me at bortega@dudek.com or 760.479.4254 if you have any questions, concerns, or seek additional information.

Sincerely,



Brock Ortega
Principal

References

Dudek. 2020. *Biological Technical Report for the Fanita Ranch Project*. Prepared for HomeFed Fanita Rancho LLC. May 2020. Encinitas, California: Dudek.

City of Santee. 2018. *Draft Santee Multiple Species Conservation Program (MSCP) Subarea Plan*. Wildlife Agency Review Draft available December 2018.

**Attachment 6. Addendum to the Noise Technical Report for the
Fanita Ranch Project**

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MEMORANDUM

To: Marni Borg, Principal Environmental Planner, City of Santee
From: Sharon Toland, Project Manager
RE: Addendum to the Noise Technical Report for the Fanita Ranch Project
Date: September 16, 2020
CC: Melanie Kush, Director of Planning, City of Santee
Att: 1, Revised FHWA Noise Prediction Model Results – Full Access Scenario; 2, Revised FHWA Noise Prediction Model Results – Prohibited Southbound Left-Turns from Cuyamaca Street Scenario; 3, Revised FHWA Noise Prediction Model Results – Average Construction Volumes (Full Access Scenario); 4, Revised FHWA Noise Prediction Model Results – Average Construction Volumes (Prohibited Southbound Left-Turns from Cuyamaca Street Scenario); 5, FHWA Noise Prediction Model Results – Building Construction Worst-Case Scenario (Full Access Scenario); 6, FHWA Noise Prediction Model Results – Building Construction Worst-Case Scenario (Prohibited Southbound Left-Turns from Cuyamaca Street Scenario)

At the applicant's request, the Noise Technical Report (NTR) prepared for the Fanita Ranch Project (proposed project) by Harris & Associates (May 2020) has been revised to reflect the removal of the Magnolia Avenue extension as a project feature. The following analysis revises sections of the analysis in the NTR provided as Appendix L to the Final Environmental Impact Report. The following revised analysis is listed by NTR section. Where no change to the NTR is required, no analysis is included in this memorandum. The following analysis is based on the revised traffic analysis prepared by Linscott, Law & Greenspan, Engineers (LLG) (2020), to address the removal of the Magnolia Avenue extension as a project feature. Removal of the Magnolia Avenue extension as a project feature results in the shift of traffic from Magnolia Avenue to Cuyamaca Street in the near term. The following revised NTR analysis includes the following scenarios addressed in the revised traffic analysis:

- **Full Access Scenario:** This scenario would allow full access movements from Cuyamaca Street to Princess Joann Road, Woodglen Vista Drive, and El Nopal connecting to Magnolia Avenue.
- **Prohibited Southbound Left-Turns from Cuyamaca Street Scenario:** This scenario would prohibit southbound left-turn movements from Cuyamaca Street to these local streets.

The extension of Magnolia Avenue is a Mobility Element road identified in the Santee General Plan (City of Santee 2003). The long-term (Year 2035) scenario assumes buildout of the Santee General Plan, including Mobility Element roadways. Therefore, the removal of the Magnolia Avenue extension as a project feature does not result in any changes to the long-term (Year 2035) analyses in the NTR. The Year 2035 scenarios analyzed in the NTR are not duplicated in this memorandum because no changes were required.

Project Description

This analysis assumes that the Magnolia Avenue extension has been removed from the project description. The following paragraph replaces Section 2.2.9, Mobility Improvements, in the NTR:

Mobility improvements would include the extension of two roadways identified in the Santee General Plan Mobility Element: (1) the extension of Fanita Parkway from Ganley Road through the project site and (2) the extension of Cuyamaca Street from north of Chaparral Drive through the project site. Additionally, the proposed project proposes to widen Fanita Parkway between Mast Boulevard and Lake Canyon Road and to modify Cuyamaca Street from Mast Boulevard to Chaparral Drive to consist of a four-lane divided street with two travel lanes in each direction, bicycle lanes, and sidewalks.

Existing Conditions

The removal of the Magnolia Avenue extension as a project feature would result in a change in project trip distribution in the Existing + Project and Near-Term + Project scenarios. Without the connection of Magnolia Avenue extended to Cuyamaca Street, it is expected that project trips would use streets such as Princess Joann Road, Woodglen Vista Drive, El Nopal, and Mast Boulevard to reach the same destinations from the eastern project access on Cuyamaca Street. Four roadway segments not previously modeled that would experience an increase in project traffic compared to the previous analysis have been added to the traffic noise analysis. Table 1 provides the existing average daily trips and noise level on these roadways and is a supplement to Table 8, Existing Off-Site Roadway Noise Levels, in Section 3.4.3.2 in the NTR. No changes in existing average daily trips or noise level would occur to the segments previously identified in Table 8.

Table 1. Existing Off-Site Roadway Noise Levels

Roadway	Segment	Existing Average Daily Trips	Noise Level at 50 Feet from Roadway Centerline (dBA Ldn)
Mast Boulevard	Cuyamaca Street to Magnolia Avenue	18,490	64
Princess Joann Road	Cuyamaca Street to Magnolia Avenue	530	45
Woodglen Vista Drive	Cuyamaca Street to Magnolia Avenue	1,700	50
El Nopal	Cuyamaca Street to Magnolia Avenue	3,780	55

Source: LLG 2020 (traffic data). See Attachment 1 for noise model assumptions and output.

Notes: dBA = A-weighted decibel; Ldn = day-night noise level

Methods and Significance Criteria

The following information supplements the methodology description in Section 4.1.1, Excessive Noise Levels, and Section 4.1.2, Groundborne Vibration, in the NTR.

The modeling methodology for the assessment of the proposed project to permanently increase ambient noise levels as a result of increased traffic is the same as the methodology used for the NTR. However, four roadway segments have been added to the Existing and Near-Term scenarios to address changes in project trip distribution without the Magnolia Avenue extension under the Full Access and Prohibited Southbound Left-Turns from Cuyamaca Street scenarios. As stated previously, traffic data is based on the No Magnolia Extension Analysis prepared by LLG (2020). The Magnolia Avenue extension is assumed to be constructed as part of the Santee General Plan buildout, and no changes were made to the Year 2035 analysis.

No change is made to the methodology or modeling of noise levels or groundborne vibration related to construction. However, the following analysis includes a discussion of how construction impacts would be reduced with the removal of the Magnolia Avenue extension.

Impact Analysis and Mitigation Measures

Threshold 1: Exceedance of Noise Standards

The analysis of the permanent increase in traffic noise levels in Section 5.1.1, Threshold 1: Exceedance of Noise Standards, of the NTR has been revised to reflect modified project trip distribution under the Existing + Project and Near-Term + Project scenarios. No change to the Year 2035 scenario is anticipated, and no portion of the Year 2035 analysis is revised below. The following analysis includes the four roadway segments that were not previously modeled that would experience an increase in project traffic compared to the previous analysis and 10 previously modeled segments that would experience a change in trip distribution. Segments that were included in Section 5.1.1 of the NTR that would not be affected by the change in trip distribution are not included below. The analysis provided in the NTR remains the same for these segments.

The traffic analysis prepared by LLG (2020) indicated that the difference in vehicle trips on the affected segments would be de minimis between the Preferred Land Use Plan With School and the Land Use Plan Without School. Consistent with the traffic analysis, this analysis represents the potential impacts of both land use plans. Traffic levels for each roadway are provided in the attachments to this memorandum. A substantial permanent noise increase would occur if implementation of the proposed project were to result in an ambient noise level at 50 feet from the roadway centerline that exceeds the land use compatibility limits established in the Santee General Plan (City of Santee 2003), including 65 A-weighted decibel (dBA) day-night noise level (Ldn) at the property line for residential properties and schools. For conditions where the roadway noise level exceeds the standard without project implementation, a significant impact would occur if the proposed project would result in an increase of 3 dBA or greater at 50 feet from the roadway centerline. The following presents a conservative analysis since actual noise levels at nearby receptors would decrease based on their distance from the roadway and would vary based on each individual receptor's location.

Existing + Project Scenario

Existing noise levels and future increases in traffic with implementation of the proposed project are provided in Table 2 for the Full Access scenario and Table 3 for the Prohibited Southbound Left-Turns from Cuyamaca Street scenario. As shown in these tables, 2 of the 10 existing roadway segments currently generate noise levels at 50 feet from the roadway centerline that exceed applicable thresholds, both on Magnolia Avenue. In addition, the newly modeled segment of Mast Boulevard between Cuyamaca Street and Magnolia Avenue currently generates noise levels that exceed applicable thresholds without implementation of the proposed project. The significant project-related traffic noise impact to one of these already impacted segments, Magnolia Avenue from Woodglen Vista Drive to El Nopal, identified in the NTR would be reduced to below a level of significance under either traffic flow scenario with the removal of the Magnolia Avenue extension because project traffic volume on this segment would be reduced. Additionally, the significant impact to Magnolia Avenue from Princess Joann Road to Woodglen Vista Drive identified in the NTR would be reduced to below a level of significance with the removal of the Magnolia Avenue extension. The impact to Cuyamaca Street from El Nopal to Mast Boulevard identified in the NTR is the same as the impact identified in the NTR under the Full Access scenario. The proposed project's contribution to noise level on this segment is 1 dBA Ldn higher under the Prohibited Southbound Left-Turns from Cuyamaca Street scenario.

Tables 2 and 3 also identify five segments, compared to three segments in the NTR, that exceed applicable thresholds but are not identified as significant. The segments of Cuyamaca Street from the project site to future Magnolia Avenue to Chaparral Drive currently do not exist. This extension would be constructed as part of the proposed project, and noise levels with project operation at 50 feet from the roadway would exceed the applicable threshold of 65 dBA Ldn with implementation of proposed project. However, actual noise levels at the nearest receptors to the impacted segments of Cuyamaca Street would be reduced by

distance and topography compared to the estimated noise level in Tables 2 and 3. The nearest residences, located on Dakota Ranch Road, are more than 100 feet east from the roadway centerline of Cuyamaca Street. At this distance, noise levels would be reduced to less than 65 dBA Ldn, and a significant impact would not occur. Noise levels on Cuyamaca Street from the street's existing terminus to El Nopal would exceed 65 dBA with operation of the proposed project. However, the existing residential subdivisions on Cuyamaca Street north of El Nopal were constructed with masonry and glass barriers along the edge of development on Cuyamaca Street that would reduce noise levels compared to the estimated noise level in Tables 2 and 3. The NTR assumed a minimum noise reduction of 5 dBA for these barriers in accordance with the California Department of Transportation guidance (2013). However, noise technical analysis prepared for the prior residential subdivision project indicates that the barriers were constructed to achieve at least an 8 dBA noise reduction (CEA 1994; Pacific Noise Control 1997). The existing noise barrier is not accounted for in the model and, therefore, would reduce the maximum estimated roadway noise level of 71 dBA Ldn shown in Table 3 on Cuyamaca Street from Chaparral Drive to Woodglen Vista Drive under the Prohibited Southbound Left-Turns from Cuyamaca Street scenario to the acceptable noise level of 65 dBA Ldn or below. Impacts to these segments would be less than significant under the Full Access scenario or the Prohibited Southbound Left-Turns from Cuyamaca Street scenario.

In summary, under either scenario, with the removal of the Magnolia Avenue extension, significant impacts to two roadway segments would be reduced to below a level of significance, and no new impacts are identified under the Existing + Project scenario compared to the conclusions for permanent traffic noise impacts in the NTR. The significant impact to Cuyamaca Street from El Nopal to Mast Boulevard identified in Tables 2 and 3 was previously identified in the NTR and is not a new impact as a result of the elimination of the Magnolia Avenue extension.

Table 2. Existing + Project Traffic Noise Levels – Full Access Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Existing (dBA Ldn)	Exceeds Threshold Without Project?	Existing + Project (dBA Ldn)	Increase in Noise Level from Existing	Significant Impact?
Mast Boulevard	Cuyamaca Street to Magnolia Avenue	65	69	Yes	69	0	No
Princess Joann Road	Cuyamaca Street to Magnolia Avenue	65	50	No	58	+8	No
Woodglen Vista Drive	Cuyamaca Street to Magnolia Avenue	65	55	No	57	+2	No
El Nopal	Cuyamaca Street to Magnolia Avenue	65	60	No	61	+1	No
Cuyamaca Street	On-Site Portion to Future Magnolia Avenue	65	Does Not Exist	No	67	NA	No ¹
	Future Magnolia Avenue to Princess Joann Road	65	Does Not Exist	No	67	NA	No ¹
	Princess Joann Road to Chaparral Drive	65	Does Not Exist	No	66	NA	No ¹
	Chaparral Drive to Woodglen Vista Drive	65	54	No	69	+15	No ²
	Woodglen Vista Drive to El Nopal	65	62	No	70	+8	No ²
	El Nopal to Mast Boulevard		65	65	No	71	+6

Table 2. Existing + Project Traffic Noise Levels – Full Access Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Existing (dBA Ldn)	Exceeds Threshold Without Project?	Existing + Project (dBA Ldn)	Increase in Noise Level from Existing	Significant Impact?
Magnolia Avenue	Cuyamaca Street to Princess Joann Road	65	Does Not Exist	No	Does Not Exist	NA	No
	Princess Joann Road to Woodglen Vista Drive	65	60	No	63	+3	No
	Woodglen Vista Drive to El Nopal	65	66	Yes	68	+2	No
	El Nopal to Mast Boulevard	65	68	Yes	69	+1	No

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level; NA = not applicable

Unless otherwise noted, a substantial permanent increase in vehicle traffic noise would occur if implementation of the proposed project would result in an ambient noise level that exceeds the applicable threshold established in the Santee General Plan (City of Santee 2003). If the normally acceptable standard would be exceeded without project implementation, an increase of more than 3 dBA would be considered significant.

The existing condition represents conditions in 2018. Noise levels are calculated at 50 feet from the roadway centerline. Noise levels are based on the traffic data provided by LLG (2020). Traffic levels for each roadway are included in Attachment 1. Decibel levels are rounded to the nearest whole number. Significant impacts shown are in **bold** and **shading**. See Attachment 1 for data sheets.

¹ The nearest residences to the future Cuyamaca Street extension, located on Dakota Ranch Road, are more than 100 feet east from the roadway centerline of Cuyamaca Street. At this distance, noise levels would be reduced to less than 65 dBA Ldn.

² The existing noise wall would reduce noise to an acceptable level.

Table 3. Existing + Project Traffic Noise Levels – Prohibited Southbound Left-Turns from Cuyamaca Street Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Existing (dBA Ldn)	Exceeds Threshold Without Project?	Existing + Project (dBA Ldn)	Increase in Noise Level from Existing	Significant Impact?
Mast Boulevard	Cuyamaca Street to Magnolia Avenue	65	69	Yes	70	+1	No
Princess Joann Road	Cuyamaca Street to Magnolia Avenue	65	50	No	55	+5	No
Woodglen Vista Drive	Cuyamaca Street to Magnolia Avenue	65	55	No	56	+1	No
El Nopal	Cuyamaca Street to Magnolia Avenue	65	60	No	61	+1	No
Cuyamaca Street	On-Site Portion to Future Magnolia Avenue	65	Does Not Exist	No	67	NA	No ¹
	Future Magnolia Avenue to Princess Joann Road	65	Does Not Exist	No	67	NA	No ¹
	Princess Joann Road to Chaparral Drive	65	Does Not Exist	No	66	NA	No ¹
	Chaparral Drive to Woodglen Vista Drive	65	54	No	70	+16	No ²
	Woodglen Vista Drive to El Nopal	65	62	No	71	+9	No ²
	El Nopal to Mast Boulevard		65	65	No	72	+7

Table 3. Existing + Project Traffic Noise Levels – Prohibited Southbound Left-Turns from Cuyamaca Street Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Existing (dBA Ldn)	Exceeds Threshold Without Project?	Existing + Project (dBA Ldn)	Increase in Noise Level from Existing	Significant Impact?
Magnolia Avenue	Cuyamaca Street to Princess Joann Road	65	Does Not Exist	No	Does Not Exist	NA	No
	Princess Joann Road to Woodglen Vista Drive	65	60	No	62	+2	No
	Woodglen Vista Drive to El Nopal	65	66	Yes	67	+1	No
	El Nopal to Mast Boulevard	65	68	Yes	69	+1	No

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level; NA = not applicable

Unless otherwise noted, a substantial permanent increase in vehicle traffic noise would occur if implementation of the proposed project would result in an ambient noise level that exceeds the applicable threshold established in the Santee General Plan (City of Santee 2003). If the normally acceptable standard would be exceeded without project implementation, an increase of more than 3 dBA would be considered significant.

The existing condition represents conditions in 2018. Noise levels are calculated at 50 feet from the roadway centerline. Noise levels are based on the traffic data provided by LLG (2020). Traffic levels for each roadway are included in Attachment 2. Decibel levels are rounded to the nearest whole number. Significant impacts are shown in **bold** and **shading**. See Attachment 2 for data sheets.

¹ The nearest residences to the future Cuyamaca Street extension, located on Dakota Ranch Road, are more than 100 feet east from the roadway centerline of Cuyamaca Street. At this distance, noise levels would be reduced to less than 65 dBA Ldn.

² The existing noise wall would reduce noise to an acceptable level.

Near-Term Scenario

The Near-Term scenario includes development of the proposed project and cumulative projects (LLG 2020). Near-term traffic noise levels, with and without the proposed project, are provided in Tables 4 and 5. As shown in these tables, 2 of the 10 existing roadway segments would generate noise levels at 50 feet from the roadway centerline that exceed applicable thresholds, both on Magnolia Avenue. In addition, the newly modeled segment of Mast Boulevard between Cuyamaca Street and Magnolia Avenue would generate noise levels that exceed applicable thresholds without project implementation. The significant project-related traffic noise impact to one of these already impacted segments, Magnolia Avenue from Woodglen Vista Drive to El Nopal, identified in the NTR would be reduced to below a level of significance under either scenario with the removal of the Magnolia Avenue extension because project traffic volume would be reduced. Additionally, the significant impact to Magnolia Avenue from Princess Joann Road to Woodglen Vista Drive identified in the NTR would be reduced to below a level of significance with the removal of the Magnolia Avenue extension. The impact to Cuyamaca Street from El Nopal to Mast Boulevard identified in the NTR is the same as the impact identified in the NTR under the Full Access scenario. The proposed project's contribution to noise level on this segment is 1 dBA Ldn higher under the Prohibited Southbound Left-Turns from Cuyamaca Street scenario.

Tables 4 and 5 also identify five segments, compared to three segments in the NTR, that exceed applicable thresholds but are not identified as significant. The segments of Cuyamaca Street from the project site to future Magnolia Avenue to Chaparral Drive currently do not exist. This extension would be constructed as part of the proposed project, and noise levels with project operation at 50 feet from the roadway would exceed the applicable threshold of 65 dBA Ldn with implementation of proposed project. However, actual noise levels at the nearest receptors to the impacted segments of Cuyamaca Street would be reduced by distance and topography compared to the estimated noise level in Tables 4 and 5. The nearest residences, located on Dakota Ranch Road, are more than 100 feet east from the roadway centerline of Cuyamaca Street. At this distance, noise levels would be reduced to less than 65 dBA Ldn, and a significant impact would not occur. Noise levels on Cuyamaca Street from its existing terminus to El Nopal would exceed 65 dBA with operation of the proposed project. However, the existing noise barriers at residences along Cuyamaca Street would reduce the maximum estimated roadway noise level of 71 dBA Ldn on Cuyamaca Street from Chaparral Drive to Woodglen Vista Drive to the acceptable noise level of 65 dBA Ldn or below. Impacts to these segments would be less than significant under the Full Access scenario or the Prohibited Southbound Left-Turns from Cuyamaca Street scenario.

In summary, under either scenario, with the removal of the Magnolia Avenue extension, significant impacts at two roadway segments would be reduced to below a level of significance, and no new impacts are identified under the Near-Term scenario compared to the conclusions of the NTR related to permanent noise impacts under the Near-Term scenario. The significant impact identified in Tables 4 and 5 to Cuyamaca Street from El Nopal to Mast Boulevard was previously identified in the NTR and is not a new impact as a result of the elimination of the Magnolia Avenue extension.

Table 4. Near-Term Traffic Noise Levels – Full Access Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term No Project (dBA Ldn)	Exceeds Threshold Without Project?	Near-Term + Project (dBA Ldn)	Increase in Noise Level from Near-Term No Project	Significant Impact?
Mast Boulevard	Cuyamaca Street to Magnolia Avenue	65	70	Yes	70	0	No
Princess Joann Road	Cuyamaca Street to Magnolia Avenue	65	51	No	58	+7	No
Woodglen Vista Drive	Cuyamaca Street to Magnolia Avenue	65	55	No	58	+3	No
El Nopal	Cuyamaca Street to Magnolia Avenue	65	60	No	61	+1	No
Cuyamaca Street	On-Site Portion to Magnolia Avenue	65	Does Not Exist	No	67	NA	No ¹
	Magnolia Avenue to Princess Joann Road	65	Does Not Exist	No	67	NA	No ¹
	Princess Joann Road to Chaparral Drive	65	Does Not Exist	No	66	NA	No ¹
	Chaparral Drive to Woodglen Vista Drive	65	54	No	69	+15	No ²
	Woodglen Vista Drive to El Nopal	65	62	No	70	+8	No ²
	El Nopal to Mast Boulevard		65	65	No	71	+6

Table 4. Near-Term Traffic Noise Levels – Full Access Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term No Project (dBA Ldn)	Exceeds Threshold Without Project?	Near-Term + Project (dBA Ldn)	Increase in Noise Level from Near-Term No Project	Significant Impact?
Magnolia Avenue	Cuyamaca Street to Princess Joann Road	65	Does Not Exist	No	Does Not Exist	NA	No
	Princess Joann Road to Woodglen Vista Drive	65	60	No	63	+3	No
	Woodglen Vista Drive to El Nopal	65	66	Yes	68	+2	No
	El Nopal to Mast Boulevard	65	68	Yes	69	+1	No

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level; NA = not applicable

Unless otherwise noted, a substantial permanent increase in vehicle traffic noise would occur if implementation of the proposed project would result in an ambient noise level that exceeds the applicable threshold established in the Santee General Plan (City of Santee 2003). If the normally acceptable standard would be exceeded without project implementation, an increase of more than 3 dBA would be considered significant.

Noise levels are calculated at 50 feet from the roadway centerline. Noise levels are based on the traffic data provided by LLG (2020). Traffic levels for each roadway are included in Attachment 1. Decibel levels are rounded to the nearest whole number. Significant impacts are shown in **bold** and shading. See Attachment 1 for data sheets.

¹ The nearest residences to the future Cuyamaca Street extension, located on Dakota Ranch Road, are more than 100 feet east from the roadway centerline of Cuyamaca Street. At this distance, noise levels would be reduced to less than 65 dBA Ldn.

² The existing noise wall would reduce noise to an acceptable noise level.

Table 5. Near-Term Traffic Noise Levels – Prohibited Southbound Left-Turns from Cuyamaca Street Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term No Project (dBA Ldn)	Exceeds Threshold Without Project?	Near-Term + Project (dBA Ldn)	Increase in Noise Level from Near-Term No Project	Significant Impact?
Mast Boulevard	Cuyamaca Street to Magnolia Avenue	65	70	Yes	70	0	No
Princess Joann Road	Cuyamaca Street to Magnolia Avenue	65	51	No	56	+5	No
Woodglen Vista Drive	Cuyamaca Street to Magnolia Avenue	65	55	No	57	+2	No
El Nopal	Cuyamaca Street to Magnolia Avenue	65	60	No	61	+1	No
Cuyamaca Street	On-Site Portion to Magnolia Avenue	65	Does Not Exist	No	67	NA	No ¹
	Magnolia Avenue to Princess Joann Road	65	Does Not Exist	No	67	NA	No ¹
	Princess Joann Road to Chaparral Drive	65	Does Not Exist	No	66	NA	No ¹
	Chaparral Drive to Woodglen Vista Drive	65	54	No	70	+16	No ²
	Woodglen Vista Drive to El Nopal	65	62	No	71	+9	No ²
	El Nopal to Mast Boulevard		65	65	No	72	+7

Table 5. Near-Term Traffic Noise Levels – Prohibited Southbound Left-Turns from Cuyamaca Street Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term No Project (dBA Ldn)	Exceeds Threshold Without Project?	Near-Term + Project (dBA Ldn)	Increase in Noise Level from Near-Term No Project	Significant Impact?
Magnolia Avenue	Cuyamaca Street to Princess Joann Road	65	Does Not Exist	No	Does Not Exist	NA	No
	Princess Joann Road to Woodglen Vista Drive	65	60	No	62	+2	No
	Woodglen Vista Drive to El Nopal	65	66	Yes	67	+1	No
	El Nopal to Mast Boulevard	65	68	Yes	69	+1	No

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level; NA = not applicable

Unless otherwise noted, a substantial permanent increase in vehicle traffic noise would occur if implementation of the proposed project would result in an ambient noise level that exceeds the applicable threshold established in the Santee General Plan (City of Santee 2003). If the normally acceptable standard would be exceeded without project implementation, an increase of more than 3 dBA would be considered significant.

Noise levels are calculated at 50 feet from the roadway centerline. Noise levels are based on the traffic data provided by LLG (2020). Traffic levels for each roadway are included in Attachment 2. Decibel levels are rounded to the nearest whole number. Significant impacts are shown in **bold** and shading. See Attachment 2 for data sheets.

¹ The nearest residences to the future Cuyamaca Street extension, located on Dakota Ranch Road, are more than 100 feet east from the roadway centerline of Cuyamaca Street. At this distance, noise levels would be reduced to less than 65 dBA Ldn.

² The existing noise wall would reduce noise to an acceptable noise level.

Mitigation Measures

Permanent Increase in Vehicle Noise

Table 6 replaces Table 16, Significant Permanent Vehicle Noise Impact Summary, in the NTR to provide a summary of the permanent vehicle impacts and where they would occur with the removal of the Magnolia Avenue extension from the proposed project. Significant noise impacts to Magnolia Avenue have been reduced to below a level of significance with the removal of the Magnolia Avenue extension. Therefore, mitigation to reduce noise levels on Magnolia Avenue is no longer needed. The impacts to Fanita Parkway and Cuyamaca Street would remain the same as those identified in the NTR under the Full Access scenario. Table 6 provides the worst-case scenario that would occur to Cuyamaca Street under the Prohibited Southbound Left-Turns from Cuyamaca Street scenario.

Table 6. Significant Permanent Vehicle Noise Impact Summary

Roadway	Segment	Scenario When Impact Would Occur	Maximum Noise Level at 50 Feet (dBA Ldn)
Fanita Parkway	On-Site Portion to Ganley Road	<ul style="list-style-type: none"> Existing + Project Near-Term + Project Year 2035 + Project Cumulatively Considerable 	66
	Ganley Road to Lake Canyon Road	<ul style="list-style-type: none"> Existing + Project Near-Term + Project Year 2035 + Project Cumulatively Considerable 	70
	Lake Canyon Road to Mast Boulevard	<ul style="list-style-type: none"> Existing + Project Near-Term + Project Year 2035 + Project Cumulatively Considerable 	70
Cuyamaca Street (Silver Country Estates)	El Nopal to Mast Boulevard	<ul style="list-style-type: none"> Existing + Project Near-Term + Project 	72

Source: Harris & Associates 2020.

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level

Mitigation Measure NOI-2 has been revised to remove the requirement for installation of a noise barrier on Magnolia Avenue. The following Mitigation Measure NOI-2 replaces the measure in the NTR and Final Environmental Impact Report.

NOI-2: Noise Barrier Installation. Permanent noise barriers shall be installed on the western side of Fanita Parkway from Mast Boulevard to the project site and on the eastern side of Cuyamaca Street from Mast Boulevard to El Nopal in conjunction with proposed improvements to these roadways. The noise barriers shall be designed by a qualified acoustical engineer. The applicant shall submit an analysis to the Director of Development Services prior to the start of construction that demonstrates that the proposed noise barriers would reduce traffic noise exposure at residential receptors to a 65-A-weighted-decibel community noise equivalent level or below on Fanita

Parkway and Cuyamaca Street. Noise barriers shall be installed concurrently with the following proposed roadway improvements:

- Extension and widening of Fanita Parkway prior to the commencement of building construction activity on site
- Extension and widening of Cuyamaca Street prior to issuance of the first certificate of occupancy

Additionally, Table 7 replaces Table 17, Permanent Vehicle Noise Impact with Noise Barrier Installation Mitigation, in the NTR to remove references to the impact on Magnolia Avenue. No change to the impacts to Fanita Parkway and Cuyamaca Street following mitigation would occur as a result of removal of the Magnolia Avenue extension from the proposed project. The impacts identified in Table 7 are the same as those identified in the NTR, except for the Magnolia Avenue impact, which has been eliminated.

Table 7. Permanent Vehicle Noise Impact with Noise Barrier Installation Mitigation

Roadway	Segment	Mitigation	Unmitigated Worst-Case Noise Level (dBA Ldn)	Worst-Case + Project Noise Level with Mitigation (dBA Ldn) ¹	Significant Impact?
Fanita Parkway	On-Site Portion to Ganley Road – western side of street	Noise Barrier Installation (NOI-2)	66	61	No
	On-Site Portion to Ganley Road – eastern side of street	No feasible mitigation	66	66	Yes
	Ganley Road to Lake Canyon Road – western side of street	Noise Barrier Installation (NOI-2)	70	65	No
	Ganley Road to Lake Canyon Road – eastern side of street	No feasible mitigation	70	70	Yes
	Lake Canyon Road to Mast Boulevard – western side of street	Noise Barrier Installation (NOI-2)	70	65	No
	Lake Canyon Road to Mast Boulevard – eastern side of street	No feasible mitigation	70	70	Yes
Cuyamaca Street (Silver Country Estates)	El Nopal to Mast Boulevard – western side of street	No feasible mitigation	72	72	Yes
	El Nopal to Mast Boulevard – eastern side of street	Noise Barrier Installation (NOI-2)	72	65	No

Source: Harris & Associates 2020.

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level

Significant impacts shown are in **bold** and *shading*.

¹ Due to differences in topography between receptors and roadways along the impacted segments, required noise barrier height and design will vary. As previously stated, at a minimum, a noise reduction of 5 dBA would be achieved, and up to 30 dBA is typical. Table 7 assumes the minimum noise reduction required to mitigate impacts for the segment of Cuyamaca Street from El Nopal to Mast Boulevard (7 dBA reduction). Final barrier design may achieve higher reductions.

Temporary Noise Increase

Construction of the proposed project would have the potential to result in temporary noise level increases as a result of increased traffic volumes and the operation of heavy equipment. These analyses have been revised to reflect the removal of the Magnolia Avenue extension as a project feature.

Construction Traffic Noise

Removal of the Magnolia Avenue extension as a project feature would not result in any change in traffic volumes during the Existing + Construction scenario because it was previously assumed that the Magnolia Avenue connection would not be available until after Phase 1 of construction. All construction traffic was assumed to use Fanita Parkway during the Existing + Construction scenario. Therefore, construction traffic modeling was not revised for this scenario, and no changes to the analysis or results in the NTR occurred.

However, the Near-Term + Interim Operation + Construction scenario assumes 50 percent of traffic volumes from full operation of the proposed project to determine whether construction would result in a significant temporary increase in noise level compared to noise levels without construction. The Near-Term + Interim + Construction scenario has been revised to reflect the revised interim operation trip distribution under the Full Access and Prohibited Southbound Left-Turns from Cuyamaca Street scenarios. No change to estimated construction trip generation would occur. Only roadway segments that would experience a change in trip distribution as a result of the removal of the Magnolia extension as a project feature are included in the revised analysis.

Tables 8 and 9 provide the estimated traffic noise levels for interim operation and construction activities other than building construction compared to near-term noise levels without the proposed project under each scenario. Tables 10 and 11 provide the estimated traffic noise levels compared to near-term noise levels during a building construction period and interim operation.

As shown in Tables 8 through 11, compared to existing conditions, several roadways would experience a significant increase in noise level in the Near-Term + Interim Operation + Construction scenario compared to conditions without the proposed project. However, these increases would be primarily attributable to the increase in permanent operational traffic rather than construction traffic and, therefore, are not a significant impact related to construction traffic. Significant increases in noise level attributable to operation are addressed in the analysis of permanent impacts above. As shown in Tables 8 and 9, no significant impacts associated with construction traffic noise would occur during activities without building construction under either traffic flow scenario. As shown in Tables 10 and 11, construction traffic noise levels during building construction would result in temporary significant noise impacts on one segment of Magnolia Avenue (Princess Joann Road to Woodglen Vista Drive) under either scenario. This significant and mitigated impact was previously identified in the NTR. The NTR also previously identified an impact to Magnolia Avenue from Woodglen Vista Drive to El Nopal under the Near-Term + Interim Operation + Building Construction scenario. With the elimination of the Magnolia Avenue extension, traffic noise levels with building construction would be the same on this segment under either traffic flow scenario compared to levels in the NTR. Because noise levels on this roadway segment would exceed the applicable 65 dBA Ldn threshold without the proposed project, and the increase in noise attributable to construction would be less than 3 dBA on this roadway segment, this impact would not be significant, and Tables 10 and 11 make this revision to the NTR. It should be noted that implementation of Mitigation Measure NOI-5 would continue to eliminate truck traffic on this segment regardless of significance determination because truck traffic would be prohibited on the length of Magnolia Avenue north of Mast Boulevard. No change to the impact to Fanita Parkway identified in the NTR occurred.

Table 8. Near-Term + Interim Operation and Construction Traffic Noise Levels (Construction Activities Other Than Building Construction) – Full Access Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term (dBA Ldn)	Exceeds Threshold Without Interim Operation and Construction?	Near-Term + Interim Operation (dBA Ldn)	Near-Term + Interim Operation + Construction (dBA Ldn)	Increase Attributable to Construction ¹	Significant Additional Impact?
Mast Boulevard	Cuyamaca Street to Magnolia Avenue	65	70	Yes	70	70	0	No
Princess Joann Road	Cuyamaca Street to Magnolia Avenue	65	51	No	56	56	0	No
Woodglen Vista Drive	Cuyamaca Street to Magnolia Avenue	65	55	No	57	57	0	No
El Nopal	Cuyamaca Street to Magnolia Avenue	65	60	No	61	61	0	No
Cuyamaca Street	On-Site Portion to Magnolia Avenue	65	Does Not Exist	No	64	64	0	No
	Magnolia Avenue to Princess Joann Road	65	Does Not Exist	No	64	64	0	No
	Princess Joann Road to Chaparral Drive	65	Does Not Exist	No	63	63	0	No
	Chaparral Drive to Woodglen Vista Drive	65	54	No	67	67	0	No
	Woodglen Vista Drive to El Nopal	65	62	No	68	68	0	No

Table 8. Near-Term + Interim Operation and Construction Traffic Noise Levels (Construction Activities Other Than Building Construction) – Full Access Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term (dBA Ldn)	Exceeds Threshold Without Interim Operation and Construction?	Near-Term + Interim Operation (dBA Ldn)	Near-Term + Interim Operation + Construction (dBA Ldn)	Increase Attributable to Construction ¹	Significant Additional Impact?
	El Nopal to Mast Boulevard	65	65	No	70	70	0	No
Magnolia Avenue	Cuyamaca Street to Princess Joann Road	65	Does Not Exist	No	Does Not Exist	Does Not Exist	0	No
	Princess Joann Road to Woodglen Vista Drive	65	60	No	62	62	0	No
	Woodglen Vista Drive to El Nopal	65	66	Yes	67	67	0	No
	El Nopal to Mast Boulevard	65	68	Yes	69	69	0	No

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level

Unless otherwise noted, a substantial temporary increase in vehicle traffic noise would occur if implementation of the proposed project construction would result in an ambient noise level that exceeds the applicable threshold established in the Santee General Plan (City of Santee 2003). If the normally acceptable standard would be exceeded without the addition of construction traffic, an increase of more than 3 dBA attributable to construction traffic would be considered significant.

The existing condition represents conditions in 2018. Noise levels are calculated at 50 feet from the roadway centerline. Noise levels are based on the traffic data provided by LLG (2020) and LSA (2020). Traffic levels for each roadway are included in Attachment 3. Decibel levels are rounded to the nearest whole number. See Attachment 3 for data sheets.

¹ An increase attributable to construction is the increase in noise level from Near-Term + Interim Operation to Near-Term + Interim Operation + Construction.

Table 9. Near-Term + Interim Operation and Construction Traffic Noise Levels (Construction Activities Other than Building Construction) – Prohibited Southbound Left-Turns from Cuyamaca Street Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term (dBA Ldn)	Exceeds Threshold Without Interim Operation and Construction?	Near-Term + Interim Operation (dBA Ldn)	Near-Term + Interim Operation + Construction (dBA Ldn)	Increase Attributable to Construction ¹	Significant Additional Impact?
Mast Boulevard	Cuyamaca Street to Magnolia Avenue	65	70	Yes	70	70	0	No
Princess Joann Road	Cuyamaca Street to Magnolia Avenue	65	51	No	54	54	0	No
Woodglen Vista Drive	Cuyamaca Street to Magnolia Avenue	65	55	No	56	56	0	No
El Nopal	Cuyamaca Street to Magnolia Avenue	65	60	No	60	61	+1	No
Cuyamaca Street	On-Site Portion to Magnolia Avenue	65	Does Not Exist	No	64	64	0	No
	Magnolia Avenue to Princess Joann Road	65	Does Not Exist	No	64	64	0	No
	Princess Joann Road to Chaparral Drive	65	Does Not Exist	No	63	64	+1	No
	Chaparral Drive to Woodglen Vista Drive	65	54	No	67	67	0	No
	Woodglen Vista Drive to El Nopal	65	62	No	69	69	0	No

Table 9. Near-Term + Interim Operation and Construction Traffic Noise Levels (Construction Activities Other than Building Construction) – Prohibited Southbound Left-Turns from Cuyamaca Street Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term (dBA Ldn)	Exceeds Threshold Without Interim Operation and Construction?	Near-Term + Interim Operation (dBA Ldn)	Near-Term + Interim Operation + Construction (dBA Ldn)	Increase Attributable to Construction ¹	Significant Additional Impact?
	El Nopal to Mast Boulevard	65	65	No	70	70	0	No
Magnolia Avenue	Cuyamaca Street to Princess Joann Road	65	Does Not Exist	No	Does Not Exist	Does Not Exist	0	No
	Princess Joann Road to Woodglen Vista Drive	65	60	No	61	61	0	No
	Woodglen Vista Drive to El Nopal	65	66	Yes	67	67	0	No
	El Nopal to Mast Boulevard	65	68	Yes	69	69	0	No

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level

Unless otherwise noted, a substantial temporary increase in vehicle traffic noise would occur if implementation of the proposed project construction would result in an ambient noise level that exceeds the applicable threshold established in the Santee General Plan (City of Santee 2003). If the normally acceptable standard would be exceeded without the addition of construction traffic, an increase of more than 3 dBA attributable to construction traffic would be considered significant.

The existing condition represents conditions in 2018. Noise levels are calculated at 50 feet from the roadway centerline. Noise levels are based on traffic data provided by LLG (2020) and LSA (2020). Traffic levels for each roadway are included in Attachment 4. Decibel levels are rounded to the nearest whole number. See Attachment 4 for data sheets.

¹ An increase attributable to construction is the increase in noise level from Near-Term + Interim Operation to Near-Term + Interim Operation + Construction.

Table 10. Near-Term + Interim Operation and Building Construction Traffic Noise Levels

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term (dBA Ldn)	Exceeds Threshold Without Construction?	Near-Term + Interim Operation (dBA Ldn)	Near-Term + Interim Project + Construction (dBA Ldn)	Increase Attributable to Construction ¹	Significant Additional Impact?
Mast Boulevard	Cuyamaca Street to Magnolia Avenue	65	70	Yes	70	71	+1	No
Princess Joann Road	Cuyamaca Street to Magnolia Avenue	65	51	Yes	56	63	+7	No
Woodglen Vista Drive	Cuyamaca Street to Magnolia Avenue	65	55	Yes	57	63	+6	No
El Nopal	Cuyamaca Street to Magnolia Avenue	65	60	No	61	65	+4	No
Cuyamaca Street	On-Site Portion to Magnolia Avenue	65	Does Not Exist	No	64	66	+2	No ²
	Magnolia Avenue to Princess Joann Road	65	Does Not Exist	No	64	66	+2	No
	Princess Joann Road to Chaparral Drive	65	Does Not Exist	No	63	66	+3	No ²
	Chaparral Drive to Woodglen Vista Drive	65	54	No	67	69	+2	No
	Woodglen Vista Drive to El Nopal	65	62	No	68	70	+2	No

Table 10. Near-Term + Interim Operation and Building Construction Traffic Noise Levels

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term (dBA Ldn)	Exceeds Threshold Without Construction?	Near-Term + Interim Operation (dBA Ldn)	Near-Term + Interim Project + Construction (dBA Ldn)	Increase Attributable to Construction ¹	Significant Additional Impact?
	El Nopal to Mast Boulevard	65	65	No	70	71	+1	No
Magnolia Avenue	Cuyamaca Street to Princess Joann Road	65	Does Not Exist	No	Does Not Exist	Does Not Exist	0	No
	Princess Joann Road to Woodglen Vista Drive	65	60	No	62	66	+4	Yes
	Woodglen Vista Drive to El Nopal	65	66	Yes	67	69	+2	No
	El Nopal to Mast Boulevard	65	68	Yes	69	70	+1	No

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level; NA = not applicable; SR- = State Route

Unless otherwise noted, a substantial temporary increase in vehicle traffic noise would occur if implementation of the proposed project construction would result in an ambient noise level that exceeds the applicable threshold established in the Santee General Plan (City of Santee 2003). If the normally acceptable standard would be exceeded without the addition of construction traffic, an increase of more than 3 dBA attributable to construction traffic would be considered significant.

Noise levels are calculated at 50 feet from the roadway centerline. Noise levels are based on the traffic data provided by LLG (2020) and LSA (2020). Traffic levels for each roadway are included in Attachment 5. Decibel levels are rounded to the nearest whole number. Significant impacts shown in **bold** and **shading**. See Attachment 5 for data sheets.

¹ An increase attributable to construction is the increase in noise level from Near-Term + Interim Operation to Near-Term + Interim Operation + Construction.

² The nearest residences to the proposed Cuyamaca Street extension, located on Dakota Ranch Road, are more than 100 feet east from the roadway centerline of Cuyamaca Street. At this distance, noise levels would be reduced to less than 65 dBA Ldn.

³ The existing noise wall would reduce noise to an acceptable level.

Table 11. Near-Term + Interim Operation and Building Construction Traffic Noise Levels – Prohibited Southbound Left-Turns from Cuyamaca Street Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term (dBA Ldn)	Exceeds Threshold Without Construction?	Near-Term + Interim Operation (dBA Ldn)	Near-Term + Interim Project + Construction (dBA Ldn)	Increase Attributable to Construction ¹	Significant Additional Impact?
Mast Boulevard	Cuyamaca Street to Magnolia Avenue	65	70	Yes	70	71	+1	No
Princess Joann Road	Cuyamaca Street to Magnolia Avenue	65	51	Yes	54	63	+9	No
Woodglen Vista Drive	Cuyamaca Street to Magnolia Avenue	65	55	Yes	56	63	+7	No
El Nopal	Cuyamaca Street to Magnolia Avenue	65	60	No	60	64	+4	No
Cuyamaca Street	On-Site Portion to Magnolia Avenue	65	Does Not Exist	No	64	66	+2	No ²
	Magnolia Avenue to Princess Joann Road	65	Does Not Exist	No	64	66	+2	No
	Princess Joann Road to Chaparral Drive	65	Does Not Exist	No	63	66	+3	No ²
	Chaparral Drive to Woodglen Vista Drive	65	54	No	67	69	+2	No
	Woodglen Vista Drive to El Nopal	65	62	No	69	70	+1	No

Table 11. Near-Term + Interim Operation and Building Construction Traffic Noise Levels – Prohibited Southbound Left-Turns from Cuyamaca Street Scenario

Roadway	Segment	Applicable Threshold (dBA Ldn)	Near-Term (dBA Ldn)	Exceeds Threshold Without Construction?	Near-Term + Interim Operation (dBA Ldn)	Near-Term + Interim Project + Construction (dBA Ldn)	Increase Attributable to Construction ¹	Significant Additional Impact?
	El Nopal to Mast Boulevard	65	65	No	70	71	+1	No
Magnolia Avenue	Cuyamaca Street to Princess Joann Road	65	Does Not Exist	No	Does Not Exist	Does Not Exist	0	No
	Princess Joann Road to Woodglen Vista Drive	65	60	No	61	66	+5	Yes
	Woodglen Vista Drive to El Nopal	65	66	Yes	67	69	+2	No
	El Nopal to Mast Boulevard	65	68	Yes	69	70	+1	No

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level; NA = not applicable

Unless otherwise noted, a substantial temporary increase in vehicle traffic noise would occur if implementation of the proposed project construction would result in an ambient noise level that exceeds the applicable threshold established in the Santee General Plan (City of Santee 2003). If the normally acceptable standard would be exceeded without the addition of construction traffic, an increase of more than 3 dBA attributable to construction traffic would be considered significant.

Noise levels are calculated at 50 feet from the roadway centerline. Noise levels are based on traffic data provided by LLG (2020) and LSA (2020). Traffic levels for each roadway are included in Attachment 6. Decibel levels are rounded to the nearest whole number. Significant impacts are shown in **bold** and **shading**. See Attachment 6 for data sheets.

¹ An increase attributable to construction is the increase in noise level from Near-Term + Interim Operation to Near-Term + Interim Operation + Construction.

² The nearest residences to the proposed Cuyamaca Street extension, located on Dakota Ranch Road, are more than 100 feet east from the roadway centerline of Cuyamaca Street. At this distance, noise levels would be reduced to less than 65 dBA Ldn.

³ The existing noise wall would reduce noise to an acceptable level.

A previously identified impact to Magnolia Avenue (Princess Joann Road to Woodglen Vista Drive) is identified during building construction activities under either traffic flow scenario in the Near-Term + Interim Operation + Construction analysis with the removal of the Magnolia Avenue extension. Mitigation Measure NOI-5, which prohibits construction truck trips on Magnolia Avenue, would continue to be required under either scenario and would reduce this impact to a less than significant level.

Table 12 revises the impact to Magnolia Avenue in Table 18, Interim Traffic Noise Impacts (Unmitigated), in the NTR to reflect the reduced but still significant maximum noise level on Magnolia Avenue (Princess Joann Road to Woodglen Vista Drive) and remove the impact to Magnolia Avenue from Woodglen Vista Drive to El Nopal. Table 13 revises the mitigated noise levels on Magnolia Avenue (Princess Joann Road to Woodglen Vista Drive) in Table 19, Mitigation Interim Traffic Noise Impacts, in the NTR and removes Magnolia Avenue (Woodglen Vista Drive to El Nopal) from the list of impacted segments. There is no change to Fanita Parkway in either table because impacts to this segment would be same before or after mitigation.

Table 12. Interim Traffic Noise Impacts (Unmitigated)

Roadway	Segment	Scenario When Impact Would Occur	Maximum Noise Level at 50 Feet (dBA Ldn)
Fanita Parkway	On-Site Portion to Ganley Road	Near-Term + Interim Operation + Building Construction	66
	Ganley Road to Lake Canyon Road	Existing + Building Construction	67
	Lake Canyon Road to Mast Boulevard	Existing + Building Construction	68
Magnolia Avenue	Princess Joann Road to Woodglen Vista Drive	Near-Term + Interim Operation + Building Construction (see Tables 10 and 11)	66

Sources: Harris & Associates 2020.

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level

Table 13. Mitigated Interim Traffic Noise Impacts

Roadway	Segment	Applicable Threshold (dBA Ldn)	Conditions without Construction (dBA Ldn)	Conditions Exceed Threshold Without Construction?	Mitigated Construction Noise Level (dBA Ldn)	Increase in Noise Level	Significant Impact?
Fanita Parkway	On-Site Portion to Ganley Road (NOI-5)	65	Does Not Exist	No	65	—	No
	Ganley Road to Lake Canyon Road (NOI-4 and NOI-5)	65	59	No	64	+5	No
	Lake Canyon Road to Mast Boulevard (NOI-4 and NOI-5)	65	61	No	65	+4	No
Magnolia Avenue	Princess Joann Road to Woodglen Vista Drive (NOI-5)	65	62	No	63	+1	No

Source: Harris & Associates 2020.

Notes: dBA = A-weighted decibel; Ldn = day-night average sound level

A substantial temporary increase in vehicle traffic noise would occur if implementation of the proposed project construction would result in an ambient noise level that exceeds the applicable threshold established in the Santee General Plan (City of Santee 2003). If the normally acceptable standard would be exceeded without the addition of construction traffic, an increase of more than 3 dBA attributable to construction traffic would be considered significant. With mitigation, noise levels would not exceed the applicable threshold of 65 dBA Ldn.

Construction Equipment Noise

The analysis of potential impacts from construction equipment in the NTR concluded that operation of heavy equipment during construction would have the potential to create substantial short-term noise increases to residences within 300 feet of the construction areas along Fanita Parkway, Cuyamaca Street, and Magnolia Avenue and dead-end roadway improvements on the southern boundary of the site. Impacts to residences within 300 feet of the Magnolia Avenue extension are eliminated with the removal of the extension from the proposed project. Mitigation Measures NOI-6 and NOI-7 would continue to be required for the remaining construction impacts, and no change to these measures has been made.

Threshold 2: Excessive Groundborne Vibration or Noise

The analysis in Section 5.1.2, Threshold 2: Excessive Groundborne Vibration or Noise, of the NTR concluded that operation of construction equipment equivalent to a vibratory roller would result in a potentially significant nuisance impact, including during construction of the Magnolia Avenue extension. Impacts related to the construction of the Magnolia Avenue extension are eliminated with the removal of this project feature. Mitigation Measures NOI-6 through NOI-9 would continue to be required for the remaining construction impacts, and no changes to these measures have been made.

Summary

No new significant impacts have been identified as a result of the removal of the Magnolia Avenue extension as a project feature. The significant impacts to noise levels on Magnolia Avenue from Princess Joann Road to El Nopal during project operation identified in the NTR would be eliminated with the removal of the extension. Additionally, construction noise and vibration impacts associated with construction of the Magnolia Avenue extension would be eliminated. A significant impact to the existing Magnolia Avenue roadway segment of Princess Joann Road to Woodglen Vista Drive during building construction and interim operation would continue to occur with the removal of the Magnolia Avenue extension and would be mitigated to less than significant with implementation of Mitigation Measure NOI-5. All other impacts remain the same as those identified in the NTR.

References

- Caltrans (California Department of Transportation). 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. September.
- CEA (Cooper Engineering Associates). 1994. Silver Country Estates TM 93-02, DR 93-08, GPA 93-03, R 93-03. Received February 8.
- Harris & Associates. 2020. Noise Technical Report for the Fanita Ranch Project. May.
- LLG (Linscott Law & Greenspan, Engineers). 2020. Fanita Ranch – No Magnolia Avenue Extension Analysis, Santee, California. September.
- LSA (LSA Associates). 2020. Air Quality Analysis for the Fanita Ranch Specific Plan. May.
- Pacific Noise Control. 1997. Silver Country Estates (Units 2 through 7) Project Environmental Noise Assessment. June 2.
- City of Santee. 2003. Santee General Plan. Adopted August 27.

**Attachment 1. Revised FHWA Noise Prediction Model Results –
Full Access Scenario**

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**Attachment 2. Revised FHWA Noise Prediction Model Results –
Prohibited Southbound Left-Turns from Cuyamaca Street Scenario**

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**Attachment 3. Revised FHWA Noise Prediction Model Results –
Average Construction Volumes (Full Access Scenario)**

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**Attachment 4. Revised FHWA Noise Prediction Model Results –
Average Construction Volumes (Prohibited Southbound Left-Turns from
Cuyamaca Street Scenario)**

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**Attachment 5. FHWA Noise Prediction Model Results –
Building Construction Worst-Case Scenario (Full Access Scenario)**

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TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 1501144001
 Project Name: Fanita Ranch - Full Access/Building Construction Scenario

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
 Source of Traffic Volumes: Linscott, Law, and Greenspan, September 2020
 Community Noise Descriptor: L_{dn}: X CNEL: _____

Assumed 24-Hour Traffic Distribution:

	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

"-" = contour is located within the roadway right-of-way.
 Distance is from the centerline of the roadway segment to the receptor location.

Analysis Condition	Roadway, Segment	Lanes	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway					Traffic Volumes										Ref. Energy Leve Dist										DISTANCE TO CONTOUR (2)													
							Medium Trucks	Heavy Trucks	Ldn at 50 Feet	70 Ldn	Distance to Contour	65 Ldn	60 Ldn	55 Ldn	Calc Dist	Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	A	MT	HT	Adj	A	MT	HT	Total A	MT	HT	Total A	MT	HT	Total	70 Ldn	65 Ldn	60 Ldn	55 Ldn					
Mast Boulevard																																															
	Cuyamaca Street to Magnolia Ave, Near Term	4	15	19,616	40	0.5	3.0%	2.0%	70	-	101	217	468	50	15,242	2,491	1,883	515	350	30	11	44	32	67.4	76.3	81.2	0.9	67.7	62.2	65.3	70.4	64.8	54.6	55.2	65.6	53.7	52.7	56.1	59.2	47	101	217	468				
	Cuyamaca Street to Magnolia Avenue, Near Term + 50% project	4	15	20,011	40	0.5	3.0%	2.0%	70	-	102	220	474	50	15,549	2,541	1,921	525	357	30	11	45	32	67.4	76.3	81.2	0.9	67.8	62.3	65.4	70.5	64.9	54.7	55.3	65.7	53.8	52.8	56.2	59.3	47	102	220	474				
	Cuyamaca Street to Magnolia Ave, Near Term + project	4	15	20,406	40	0.5	3.0%	2.0%	70	-	103	223	480	50	15,855	2,592	1,959	535	364	31	12	46	33	67.4	76.3	81.2	0.9	67.9	62.4	65.5	70.6	65.0	54.8	55.4	65.8	53.9	52.9	56.3	59.4	48	103	223	480				
	Cuyamaca Street to Magnolia Avenue, Near Term + 50% project	4	15	21,084	40	0.5	3.0%	3.1%	71	55	119	256	553	50	16,382	2,678	2,024	553	385	32	19	48	53	67.4	76.3	81.2	0.9	67.9	62.5	67.6	71.4	65.1	54.9	57.4	66.1	53.9	53.0	58.4	60.5	55	119	256	553				
Princess Joann Road																																															
	Cuyamaca Street to Magnolia Ave, Near Term	2	0	685	25	0.5	2.0%	2.0%	51	-	-	-	-	50	532	87	66	12	12	1	0	1	1	59.4	71.1	78.7	-0.1	46.4	41.7	49.5	51.7	43.4	34.1	39.3	45.2	30.4	32.3	40.2	41.3	3	6	13	27				
	Cuyamaca Street to Magnolia Avenue, Near Term + 50% project	2	0	2,000	25	0.5	2.0%	2.0%	56	-	-	56	50	1,554	254	192	35	36	2	1	3	3	5	59.4	71.1	78.7	-0.1	51.0	46.4	54.1	56.3	48.1	38.8	44.0	49.9	35.1	36.9	44.9	45.9	6	12	26	56				
	Cuyamaca Street to Magnolia Ave, Near Term + project	2	0	3,315	25	0.5	2.0%	2.0%	58	-	-	36	78	50	2,576	421	318	58	59	3	2	5	5	59.4	71.1	78.7	-0.1	53.2	48.6	56.3	58.5	50.3	41.0	46.1	52.1	37.3	39.1	47.1	48.1	8	17	36	78				
	Cuyamaca Street to Magnolia Avenue, Near Term + 50% project	2	0	3,073	25	0.5	2.0%	9.6%	63	-	-	37	80	50	2,388	390	295	54	264	3	8	5	24	59.4	71.1	78.7	-0.1	52.5	48.2	62.8	63.3	49.9	40.7	52.7	54.7	34.5	38.8	53.6	53.8	17	37	80	172				
Woodglen Vista Drive																																															
	Cuyamaca Street to Magnolia Ave, Near Term	2	0	1,759	25	0.5	2.0%	2.0%	55	-	-	-	51	50	1,367	223	169	31	31	2	1	3	3	59.4	71.1	78.7	-0.1	50.5	45.8	53.6	55.8	47.5	38.2	43.4	49.3	34.5	36.4	44.3	45.3	5	11	24	51				
	Cuyamaca Street to Magnolia Avenue, Near Term + 50% project	2	0	2,414	25	0.5	2.0%	2.0%	57	-	-	63	50	1,876	307	232	42	43	2	1	4	4	4	59.4	71.1	78.7	-0.1	51.8	47.2	54.9	57.1	48.9	39.6	44.8	50.7	35.9	37.7	45.7	46.7	6	14	29	63				
	Cuyamaca Street to Magnolia Ave, Near Term + project	2	0	3,069	25	0.5	2.0%	2.0%	58	-	-	34	74	50	2,385	390	295	54	55	3	2	5	5	59.4	71.1	78.7	-0.1	52.9	48.2	56.0	58.2	50.0	40.7	45.8	51.7	36.9	38.8	46.7	47.8	7	16	34	74				
	Cuyamaca Street to Magnolia Avenue, Near Term + 50% project	2	0	3,487	25	0.5	2.0%	8.7%	63	-	-	38	82	50	2,709	443	335	61	272	4	9	5	25	59.4	71.1	78.7	-0.1	53.1	48.8	62.9	63.5	50.4	41.2	52.8	55.0	35.4	39.3	53.7	53.9	18	38	82	176				
EI Nopal																																															
	Cuyamaca Street to Magnolia Ave, Near Term	2	0	3,886	35	0.5	2.0%	2.0%	60	-	-	51	110	50	3,019	494	373	68	69	4	2	6	6	65.1	74.8	80.0	-0.1	58.1	51.5	56.8	61.0	55.2	44.0	46.7	56.0	42.2	42.1	47.6	49.6	11	24	51	110				
	Cuyamaca Street to Magnolia Avenue, Near Term + 50% project	2	0	4,541	35	0.5	2.0%	2.0%	61	-	-	56	122	50	3,528	577	436	79	81	5	3	7	7	65.1	74.8	80.0	-0.1	58.8	52.2	57.5	61.7	55.9	44.6	47.4	56.7	42.9	42.8	48.3	50.2	12	26	56	122				
	Cuyamaca Street to Magnolia Ave, Near Term + project	2	0	5,196	35	0.5	2.0%	2.0%	61	-	-	62	133	50	4,037	680	499	91	93	5	3	8	8	65.1	74.8	80.0	-0.1	59.4	52.8	58.1	62.3	56.4	45.2	47.9	57.3	43.4	43.4	48.9	50.8	13	29	62	133				
	Cuyamaca Street to Magnolia Avenue, Near Term + 50% project	2	0	5,614	35	0.5	2.0%	6.2%	65	-	-	47	100	50	4,362	713	539	98	309	6	10	8	28	65.1	74.8	80.0	-0.1	59.5	53.1	63.4	65.1	56.7	45.6	53.2	58.6	42.6	43.7	54.1	54.8	22	47	100	216				
Cuyamaca Street																																															
	Project Site to Magnolia Avenue, Near Term	2	10	DNE	40	0.5	2.0%	2.0%	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	50	#####	#####	#####	#####	#####	#####	#####	#####	#####	67.4	76.3	81.2	0.1	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
	Project Site to Magnolia Avenue, Near Term + 50% project	2	10	6,960	40	0.5	2.0%	2.0%	64	-	42	90	194	50	5,408	884	668	122	124	7	4	10	11	67.4	76.3	81.2	0.1	62.4	55.1	60.0	64.9	59.5	47.5	49.9	60.2	46.5	45.6	50.8	53.0	19	42	90	194				
	Project Site to Magnolia Avenue, Near Term + Project	2	10	13,920	40	0.5	2.0%	2.0%	67	-	66	143	309	50	10,816	1,768	1,336	243	248	14	8	21	22	67.4	76.3	81.2	0.1	65.4	58.1	63.0	67.9	62.5	50.5	52.9	63.2	49.5	48.7	53.8	56.0	31	66	143	309				
	Project Site to Magnolia Avenue, Near Term + 50% project + cor	2	10	8,033	40	0.5	2.0%	4.9%	66	-	62	133	287	50	6,242	1,020	771	140	353	8	11	12	32	67.4	76.3	81.2	0.1	62.9	55.7	64.6	67.1	60.1	48.1	54.4	61.3	46.3	46.3	55.3	56.3	29	62	133	287				
Cuyamaca Street																																															
	Magnolia Avenue to Princess Joann Road, Near Term	2	10	DNE	40	0.5	2.0%	2.0%	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	50	#####	#####	#####	#####	#####	#####	#####	#####	#####	67.4	76.3	81.2	0.1	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
	Magnolia Avenue to Princess Joann Road, Near Term + 50% prc	2	10	6,960	40	0.5	2.0%	2.0%	64	-	42	90	194	50	5,408	884	668	122	124	7	4	10	11	67.4	76.3	81.2	0.1	62.4	55.1	60.0	64.9	59.5	47.5	49.9	60.2	46.5	45.6	50.8	53.0	19	42	90	194				
	Magnolia Avenue to Princess Joann Road, Near Term + Project	2	10	13,920	40	0.5	2.0%	2.0%	67	-	66	143	309	50	10,816	1,768	1,336	243	248	14	8	21	22	67.4	76.3	81.2	0.1	65.4	58.1	63.0	67.9	62.5	50.5	52.9	63.2	49.5	48.7	53.8	56.0	31	66	143	309				
	Magnolia Avenue to Princess Joann Road, Near Term + 50% prc	2	10	8,033	40	0.5	2.0%	4.9%	66	-	62	133	287	50	6,242	1,020	771	140	353	8	11	12	32	67.4	76.3	81.2	0.1	62.9	55.7	64.6	67.1	60.1	48.1	54.4	61.3	46.3	46.3	55.3	56.3	29	62	133	287				
Cuyamaca Street																																															
	Princess Joann Road to Chaparral Drive, Near Term	2	10	DNE	40	0.5	2.0%	2.0%	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	50	#####	#####	#####	#####	#####	#####	#####	#####	#####	67.4	76.3	81.2	0.1	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
	Princess Joann Road to Chaparral Drive, Near Term + 50% proj	2	10	5,650	40	0.5	2.0%	2.0%	63	-	-	79	169	50	4,390	718	542	99	101	6	3	8	9	67.4	76.3	81.2	0.1	61.5	54.2	59.1	64.0	58.6	46.6	49.0	59.3	45.6	44.7	49.9	52.1	17	36	79	169				
	Princess Joann Road to Chaparral Drive, Near Term + Project	2	10	11,300	40	0.5	2.0%	2.0%	66	-	58	125	268	50	8,780	1,435	1,085	198	201	11	6	17	18	67.4	76.3	81.2	0.1	64.5	57.2	62.1	67.0	61.6	49.6	52.0	62.3	48.6	47.7	52.9	55.1	27	58	125	268				
	Princess Joann Road to Chaparral Drive, Near Term + 50% proj	2	10	6,723	40	0.5	2.0%	5.5%	66	-	58	124	267	50	5,224	854	645	118	329	7	10	10	30	67.4	76.3	81.2	0.1	62																			

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**Attachment 6. FHWA Noise Prediction Model Results –
Building Construction Worst-Case Scenario
(Prohibited Southbound Left-Turns from Cuyamaca Street Scenario)**

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