DOWNTOWN DUBLIN SPECIFIC PLAN

Draft Environmental Impact Report

September 2010

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Executive Summary

This summary provides a brief description of the proposed project, project alternatives, and all potentially significant impacts identified during the course of the environmental analysis. This summary is intended as an overview and should be used in conjunction with a thorough reading of the Draft EIR (EIR). The text of this report, including figures, tables and appendices, serves as the basis for this summary.

Summary of Alternatives

CEQA Guidelines require that an EIR describe and evaluate alternatives to the project that could eliminate significant adverse project impacts or reduce them to a less-than-significant level. The following alternatives are evaluated in this EIR in the Chapter 4 – CEQA Considerations.

- Alternative #1 – No Project Alternative
- Alternative #2 – Reduced Development Alternative
- Alternative #3 – Alternate Use Alternative

Summary of Environmental Impacts

All impacts identified in the subsequent environmental analysis are summarized in this section. The summary includes all impacts analyzed in this EIR by each technical area.

Table S-1: Executive Summary of Project Impacts

Project Impacts	Level of Significance Without Mitigation	Summary of Mitigation Measures	Resulting Level of Significance
Aesthetics and Visual Character			
Impact 3.1-1: Portions of the project area are visible from a designated State Scenic Highway and locally designated scenic routes. However, no scenic resources would be adversely affected as a result of Specific Plan implementation.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.1-2: Implementation of the Specific Plan would alter the existing aesthetic character of the Downtown by intensifying commercial and mixed-use development within the area. However, the intensification of development is consistent with the guiding policies of the General Plan. In addition, the proposed DDSP includes design standards and guidelines that are designed to create a more visually appealing environment within the Downtown districts.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.1-3: The project area and its surroundings are currently developed with buildings and site improvements that generate daytime and night-time light and glare. Additional sources of daytime glare and nighttime lighting would be introduced as the downtown is intensified with new commercial and mixed-use developments. The proposed Specific Plan includes design standards and design guidelines to reduce these impacts.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Air Quality and Greenhouse Gases			
Impact 3.2-1: The proposed project would result in short-term air quality impacts associated with construction activities, including grading, operation of equipment, and demolition of existing structures within the project area. However, future development within the project area would be required to comply with the BAAQMD Control Measures for particulate matter during construction activities.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact

Project Impacts	Level of Significance Without Mitigation	Summary of Mitigation Measures	Resulting Level of Significance
Impact 3.2-2: The proposed project is consistent with population growth assumptions in the Clean Air Plan, is anticipated to result in reduced VMT compared to population growth, and is consistent with the Plan's Transportation Control Measures.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.2-3: No major existing stationary or area sources of toxic air contaminants (TACs) were identified in the vicinity of the project area. The DDSP would result in the development of mixed-use and commercial uses at the project site, which may generate sources of TACs from stationary sources. The proposed project would not result in increased exposure of sensitive land uses in excess of applicable standards.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.2-4: Carbon monoxide concentrations are low in the project vicinity and the proposed project would result in carbon monoxide concentrations that would be well below the State and Federal standards. Therefore, the proposed project would have a less than significant impact on localized carbon monoxide concentrations.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.2-5: The DDSP would allow some uses which generate odors, including restaurants and other uses, however limited exposure and compliance with applicable regulatory requirements will ensure that any impact is less than significant.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.2-6: The DDSP would generate greenhouse gas emissions but would not conflict with or obstruct the implementation of greenhouse gas reduction measures under AB 32.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Geology, Soils, & Seismicity			
Impact 3.3-1: Active or potentially active faults are located within the project area and the Calaveras Fault traverses the western portion of the project area. However, future development associated with the proposed project will be performed in accordance with the latest edition of the CBC, in addition to the goals and policies of the *City of*	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact

Project Impacts	Level of Significance Without Mitigation	Summary of Mitigation Measures	Resulting Level of Significance
Dublin General Plan.			
Impact 3.3-2: Ground shaking is likely to occur in the project area in the even of a major earthquake on one of the nearby faults resulting in the exposure of people and/or structures to potentially significant adverse effects, including the risk of loss, injury or death.	Potentially Significant Impact	**MM 3.3-1:** Project applicants shall consult with a registered geotechnical engineer to prepare a design level geotechnical report that addresses the affects of seismic ground shaking and includes a quantitative evaluation of liquefaction and liquefaction-induced lateral spreading for future development in the DDSP project area. The design level geotechnical report shall specify foundations and structural elements that are designed to resist forces and potential ground settlement for liquefaction and lateral spreading. This report shall be submitted in conjunction with a Building Permit application.	Less than Significant Impact
Impact 3.3-3: Future development associated with the proposed project is not anticipated to expose people or structures to potential substantial adverse effects of liquefaction.	Potentially Significant Impact	**Implement MM 3.3-1**. Future development within the DDSP area would be required to comply with the City's Building Code, liquefaction regulations of the CBC, and the City's standard engineering practices and design criteria. In addition, mitigation measure **MM 3.3-1** would require properties developing within this zone to prepare a design level geotechnical report.	Less than Significant Impact
Impact 3.3-4: Implementation of the proposed project may result in soil erosion or the loss of topsoil during short-term construction activities within the DDSP project area.	Potentially Significant Impact	**Implement 3.5-1a and 3.5-1b.** Future development within the DDSP area would be required to comply with the City of Dublin Public Works Department policies, NPDES permit process, and the City's Building Code requirements as described in **MM 3.5-1a and 3.5-1b**.	Less than Significant Impact
Impact 3.3-5: Implementation of the proposed project would not lead to development on expansive soil. With adherence to the City's Building Code and CBC requirements, this is considered a less than significant impact.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Hazards and Hazardous Materials			
Impact 3.4-1: Future development within the project area may involve the use of hazardous materials including cleaning solvents, fertilizers, pesticides, and other hazardous materials typical of future retail and residential uses within the project area.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.4-2: During construction of the proposed project, there is the potential for the transport, use, or disposal of hazardous materials, which could create a hazard to the public or the environment.	Potentially Significant Impact	**Implement 3.5-1a and 3.5-1b.** Prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that specifies how the discharger will protect water quality during construction activities as required by **Mitigation Measures MM 3.5-1a and 3.5-1b**. Compliance with the appropriate hazardous materials handling measures and acquisition of the NPDES General Permit for	Less than Significant Impact

Project Impacts	Level of Significance Without Mitigation	Summary of Mitigation Measures	Resulting Level of Significance
		construction activities would ensure that potential hazardous materials impacts during short-term construction activities associated with future development within the project area would be **less than significant**.	
Impact 3.4-3: The proposed project may result in the demolition and removal of structures within the project area which may contain asbestos and/or lead based paint (LBPs).	Potentially Significant Impact	**MM 3.4-1:** Prior to demolition of existing structures that were constructed prior to 1980 within the project area, project applicants shall have structures proposed for demolition inspected by a qualified environmental specialist for the presence of LBPs and Asbestos (ACM) contaminating materials prior to obtaining a demolition permit from the City of Dublin. If found to be present, samples shall be collected and analyzed for ACM and lead using EPA testing methods. If actionable levels of lead and or ACM are within the structures, a remediation plan shall be prepared by a qualified consultant and implemented. Necessary permits and approvals shall be obtained from appropriate regulatory agencies including the Bay Area Air Quality Management District. Worker safety plans shall be included in any remediation plans. Any hazardous materials that are removed from the structures shall be disposed of at an approved landfill facility in accordance with federal, state, and local laws and regulations.	Less than Significant Impact
Impact 3.4-4: The project area is not located on a hazardous material site pursuant to Government Code Section 65962.5. Based on a search of the State Water Resources Control Board's GeoTracker database, there are approximately seven sites within the project area that are currently being investigated.	Potentially Significant Impact	**MM 3.4-2:** Future development or substantial redevelopment within the project area shall prepare a Phase I Environmental Site Assessment to determine whether or not a particular development site contains any hazardous materials as a result of historic contamination within the project area subject to review and approval by the City of Dublin. In the event that the Phase I recommends subsequent testing, the potential health risks shall be evaluated and a work plan prepared to remediate the soil and/or groundwater in accordance with all applicable federal, state, and local regulations. This assessment shall be submitted to the City in conjunction with the Building and Grading/Site work permit and shall be found acceptable by the City prior to ground disturbance.	Less than Significant Impact
Hydrology and Water Quality			
Impact 3.5-1: Future construction associated with the proposed project may violate water quality standards or waste discharge requirements.	Potentially Significant Impact	**MM 3.5-1a:** Prior to issuance of grading permit, the project proponent shall file a Notice of Intent as required by Regional Water Quality Control Board regarding storm water discharges associated with construction activities. Upon completion of construction activities, a Notice of Termination shall be filed. **MM 3.5-1b:** Prior to issuance of any building or grading permits, a Storm Water Pollution Prevention Plan (SWPPP) shall be prepared by the project contractors and submitted to the Regional Water	Less than Significant Impact

Project Impacts	Level of Significance Without Mitigation	Summary of Mitigation Measures	Resulting Level of Significance
		Quality Control Board for review and comment and to the City of Dublin in conjunction with the Building/Grading/Site work permit and shall be found to be acceptable by the City prior to ground disturbance. The SWPPP shall be prepared to Regional Water Quality Control Board standards and Alameda Countywide Clean Water Program requirements, and shall identify erosion minimization and control provisions, pollution detection provisions, and pollution elimination/ minimization provisions appropriate to the development project and its site for construction and post-construction activities. The SWPPP shall include best available technology, engineering, and design solutions such as the use of silt screens, hay bales, modern trash screens, energy dissipaters, and/or absorbent devices. Stormwater runoff water quality monitoring procedures shall be clearly detailed in the SWPPP.	
Impact 3.5-2: The proposed project would not result in adverse impacts to the amount of available groundwater available, degrade groundwater quality, or decrease groundwater recharge in the project area.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.5-3: Construction and operation of the DDSP would not substantially alter the existing drainage patterns of the area or result in substantial erosion or siltation on- or offsite, nor would it increase the rate or amount of surface runoff in a manner that would result in flooding on or off site.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.5-4: The DDSP area is largely built-out and stormwater flows with implementation of the proposed project are expected to be similar or slightly reduced due to improved management practices proposed within the proposed Specific Plan. In addition, compliance with existing regulations would ensure that impacts are minimized.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.5-5: The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. Structures and personnel would not be subject to greater risk with implementation of the proposed project as compared to existing conditions.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact

Project Impacts	Level of Significance Without Mitigation	Summary of Mitigation Measures	Resulting Level of Significance
Land Use and Planning			
Impact 3.6-1: Implementation of the proposed project would amend the City's General Plan land uses within the DDSP project area and could involve new uses and structures that may result in intensification of development within the project area. However, the proposed project is not anticipated to create incompatibilities with adjacent land uses or physically divide an established community.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.6-2: Implementation of the proposed project would not conflict with goals and policy of the City of Dublin General Plan, nor the City of Dublin Zoning Code.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Noise			
Impact 3.7-1: The proposed project could result in short-term construction-related noise and vibration that would exceed applicable noise standards at nearby noise sensitive land uses.	Potentially Significant Impact	**MM 3.7-1a:** Project applicants within the project area shall prepare a construction noise management plan that identifies measures to be taken to minimize construction noise on surrounding sensitive receptors (e.g. residential uses and schools) and includes specific noise management measures to be included into project plans and specifications subject to review and approval by the City. These measures shall I include, but not be limited to the following: Construction activities, including the maintenance and warming of equipment, shall be limited to Monday through Friday, and non-City holidays, between the hours of 7:30 AM and 5:30 PM except as otherwise approved by the City Engineer. All construction equipment shall be equipped with mufflers and sound control devices (e.g., intake silencers and noise shrouds) no less effective than those provided on the original equipment and no equipment shall have an un-muffled exhaust. The City shall require that the contractor maintain and tune-up all construction equipment to minimize noise emissions. Stationary equipment shall be placed so as to maintain the greatest possible distance to the sensitive receptors. All equipment servicing shall be performed so as to maintain the greatest possible distance to the sensitive receptors. The construction contractor shall provide an on-site name and telephone number of a contact person. In the event that construction noise is intrusive to an educational process, the construction liaison	Less than Significant Impact

Project Impacts	Level of Significance Without Mitigation	Summary of Mitigation Measures	Resulting Level of Significance
		will revise the construction schedule to preserve the learning environment. Select demolition methods to minimize vibration, where possible (e.g., sawing masonry into sections rather than demolishing it by pavement breakers). **MM 3.7-1b:** Should potential future development facilitated by the proposed project require off-site import/export of fill material during construction, trucks shall utilize a route that is least disruptive to sensitive receptors, preferably major roadways (Interstate 580, Interstate 680, San Ramon Road, Dublin Boulevard, and Amador Valley Boulevard). Construction trucks should, to the extent practical, avoid the weekday and Saturday a.m. and p.m. peak hours (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.).	
Impact 3.7-2: Compliance with design guidelines and development standards contained within the DDSP will ensure that potential future development within the project does not exceed established noise standards.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.7-3: Development in the project area facilitated by the proposed project could permanently increase noise levels from mobile sources (vehicular traffic) at existing and future uses within the DDSP project area.	Potentially Significant Impact	**MM 3.7-3:** Future development within the DDSP project area that is located adjacent to Highway 580; Amador Plaza (between Dublin Boulevard and Saint Patrick Way); and Dublin Boulevard (between Amador Plaza Road and Village Parkway; between Regional Street and Golden Gate Drive and between San Ramon Road and Regional Street) shall prepare a site-specific acoustical analysis subject to review and approval by the City of Dublin. The acoustical analysis prepared for future development shall evaluate resultant noise impacts in comparison to the City's noise criteria for Land Use Compatibility for Community Noise Environments. Feasible project specific mitigation measures shall be required as part of the project design to reduce noise impacts at future noise sensitive land uses, including but not limited to the following: 1) site design, 2) operational restrictions; 3) barriers,4) setbacks, and 5) insulation, No development permits or approval of land use applications shall be issued until the acoustical analysis is received and approved by City staff and any project design features are incorporated into the future development project.	Less than Significant Impact
Public Services and Utilities			
Impact 3.8-1: The proposed project would not significantly increase the need for fire protection	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact

Project Impacts	Level of Significance Without Mitigation	Summary of Mitigation Measures	Resulting Level of Significance
services and result in the need for or the construction of new or physically altered facilities in order to meet the City's response times for fire protection services.			
Impact 3.8-2: The proposed project would not significantly increase the need for law enforcement services, which would result in the need for the construction of new or physically altered facilities in order to meet the City's response times.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.8-3: Implementation of the DDSP would increase the number of students in the Dublin Unified School District (DUSD) with the construction of approximately 1,300 multifamily residential units, which would increase the capacity of the schools with serve the project area, which are operating above optimum capacity. However, future development within the project area would be required to pay school impact fees as required under State law to the DUSD. Payment of development impact fees would reduce the impact to DUSD to a less than significant level.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.8-4: The proposed project would increase the demand for park and recreational uses within the DDSP area. However, development projects within the project area would be required to pay the City's Public Facilities Fee prior to Building Permit issuance.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.8-5: The proposed project would result in an increase in demand for library services. However, existing library facilities have adequate capacity to serve the proposed project. In addition, the proposed project would not physically impact other public facilities.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.8-6: Implementation of the DDSP would not require the construction of new wastewater treatment facilities, or the expansion of existing facilities. Additionally, the existing service provider has an adequate capacity to meet this demand.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.8-7: Implementation of the DDSP would	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is	Less than Significant Impact

Project Impacts	Level of Significance Without Mitigation	Summary of Mitigation Measures	Resulting Level of Significance
generate an additional demand for water; however, the additional demand would be adequately served by anticipated water entitlements and resources.		proposed.	
Impact 3.8-8: Implementation of the proposed project may result in the increase in demand or expansion of stormwater services. Future development within the planning area would be required to pay applicable impact fees at the time of issuance of the building permits.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.8-9: Implementation of the proposed project would increase the generation of solid waste, but would be served by landfills with adequate capacity to accommodate the increase.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Impact 3.8-10: The proposed project may result in the expansion of electricity, gas, and telecommunications on-site; however, the majority of the DDSP area is already built-out.	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact
Transportation and Circulation			
Impact 3.9-1: In the Near-Term, the Base FAR Project results in sub-standard LOS on one Metropolitan Transportation System roadway segment, when compared to the Near-Term Without Project scenario.	Significant Impact	**MM 3.9-1:** As required by the Alameda County Congestion Management Agency, the City of Dublin will do the following to help reduce traffic congestion on the MTS system: Support Alameda County's projects and programs which are aimed at reducing traffic congestion. Encourage developers to voluntarily develop a Transportation Demand Management (TDM) Program to reduce trips associated with their project. Strategies that could be included in the program could include additional bicycle parking, shower facilities, HOV parking, direct building access for pedestrians, commute alternative incentives and convenient transit waiting areas. Implement the policies outlined in the City's Bicycle Master Plan and General Plan Land Use and Circulation Element related to bikeways. Support public transit improvements, including but not limited to rerouting, schedule adjustments, new vehicles, upgraded waiting areas, and transit information signs, to encourage use of alternative modes. Collect fees from developers in the Specific Plan Area for the Tri-Valley Transportation Development Fee as well as the Downtown TIF programs prior to issuance of Building Permits, which fund local and regional transportation improvements.	Significant and Unavoidable Impact

Project Impacts	Level of Significance Without Mitigation	Summary of Mitigation Measures	Resulting Level of Significance
Impact 3.9-2: In the Near-Term, the Maximum FAR Project results in sub-standard LOS on five Metropolitan Transportation System roadway segments, when compared to the Near- Term Without Project scenario.	Significant Impact	**Implement MM 3.9-1.** As required under **MM 3.9-1**, the City of Dublin will incorporate several measures to help reduce traffic congestion on the MTS system. Because the City is unable to implement these mitigation measures at this time, and its ability to restore acceptable LOS on the identified roadways/freeways cannot be assured, this impact remains significant and unavoidable after mitigation.	Significant and Unavoidable Impact
Impact 3.9-3: In the Cumulative scenario, the Maximum FAR Project results in substandard LOS on eight Metropolitan Transportation System roadway segments, when compared to the Cumulative Without Project case.	Significant Impact	**Implement MM 3.9-1.** As required under **MM 3.9-1**, the City of Dublin will incorporate several measures to help reduce traffic congestion on the MTS system. Because the City is unable to implement these strategies at this time, and its ability to restore acceptable LOS on the identified roadways/freeways cannot be assured, this impact remains significant and unavoidable after mitigation.	Significant and Unavoidable Impact
Impact 3.9-4: The Base FAR Project will increase transit demand, generating an estimated 2,200 weekday daily transit trips (bus and BART combined). This will create the need for bus route adjustments and increased bus frequency.	Significant Impact	**MM 3.9-4:** The City will continue to support and work with LAVTA to define route changes and increased service as needed as the Plan area develops.	Less than Significant Impact
Impact 3.9-5: The Plan contains Guiding Principles to "create a pedestrian-friendly downtown that minimizes potential conflicts between vehicles, pedestrians and bicyclists" and to "enhance the multi-modal circulation network to better accommodate alternative transportation choices including BART, bus, bicycle and pedestrian transportation."	Less than Significant Impact	No significant impact has been identified; therefore no mitigation is proposed.	Less than Significant Impact

1. Introduction

1.1. Purpose

This programmatic Environmental Impact Report (EIR) addresses the potential environmental effects of the proposed Downtown Dublin Specific Plan (the proposed project) in accordance with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines. A full description of the proposed project is described in Chapter 2: Project Description.

This EIR focuses on evaluation of the following environmental issue areas: aesthetics and visual resources; air quality (including climate change); geology, soils and seismicity; hazards and hazardous materials; hydrology and water quality; land use and planning; noise and vibration; public services, utilities and recreation, and transportation and traffic.

This EIR has been prepared in accordance with State CEQA Guidelines and the City of Dublin Environmental Guidelines. As stated in the CEQA Guidelines, an EIR is an "informational document" with the intended purpose to: "inform public agency decision-makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project." Although the EIR does not control the ultimate decision on the proposed project, the City must consider the information in the EIR and respond to each significant effect identified in the EIR through findings in conjunction with any project approval. As defined in Section 15382 of the CEQA Guidelines, a "significant effect on the environment" is:

> "...a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether a physical change is significant."

1.2. Environmental Review Process

The review and certification process for the EIR will involve the following procedural steps:

Notice of Preparation

In accordance with Section 15063(a) of the CEQA Guidelines, the City of Dublin determined that an EIR would be necessary for the proposed project; therefore an Initial Study was not prepared. In accordance with Section 15082(a) of the CEQA Guidelines, the City of Dublin Community Development Department circulated a Notice of Preparation (NOP) to responsible and trustee agencies and to the Alameda County Clerk for a period of 30-days in order to solicit comments on the scope of the EIR regarding the proposed project (See Appendix A). The comment period of the NOP was from

February 1, 2010 to March 3, 2010. A total of four comments letters were received on the NOP from the following agencies: Alameda Flood Control and Water Conservation District (Zone 7); Alameda County Congestion Management Agency; California Energy Commission; and Caltrans. Concerns raised in response to the NOP were considered during preparation of the Draft EIR and the comment letters are included in Appendix A of this Draft EIR.

Draft EIR

The Draft EIR contains a description of the proposed project, description of the environmental setting, identification of project impacts and effects found not to be significant, mitigation measures for impacts found to be significant, and an analysis of project alternatives.

Upon completion of the Draft EIR, the City filed a Notice of Completion (NOC) with the State Office of Planning and Research, in accordance with Section 15085 of the CEQA Guidelines.

Public Notice/Public Review

The Draft EIR will be published and circulated for review and comment by the public and other interested parties, agencies and organizations for a 45-day review period from September 20, 2010 through November 4, 2010. Concurrent with the Notice of Completion (NOC), the City provided a public notice of the availability of the Draft EIR for public review in accordance with CEQA Guidelines Section 15087(a), and invited comments from the general public, Responsible and Trustee Agencies, organizations, and other interested parties. The review period for the Draft EIR is 45 days. Notice of the time and location of a City meeting to receive comments on the Draft EIR will be published prior to the hearing.

All comments or questions regarding the Draft EIR should be addressed to:

Kristi Bascom, Principal Planner
City of Dublin
Community Development Department
100 Civic Plaza
Dublin, California 94568

Response to Comments/Final EIR

Following the public review and comment period for the Draft EIR, a Final EIR will be prepared. The Final EIR will respond to comments received during the public review and comment period. The City will review and consider the Final EIR prior to the decision to approve, revise, or reject the proposed project or an alternative to the proposed project.

Certification of the Final EIR

If the City of Dublin finds that the Final EIR is "adequate and complete," the City of Dublin may certify the Final EIR. The rule of adequacy generally holds that the EIR can be certified

if: 1) it shows a good faith effort at full disclosure of environmental information, and 2) provides sufficient analysis to allow decisions to be made regarding the project in contemplation of environmental considerations.

Project Consideration

After review and consideration of the Final EIR, the City of Dublin may act upon the proposed project. A decision to approve the proposed project would be accompanied by written Findings in accordance with CEQA Guidelines Section 15091 and, if applicable, Section 15093 (Statement of Overriding Considerations).

1.3. Report Organization

Sections 15122 through 15132 of the CEQA Guidelines identify the content requirements for Environmental Impact Reports. Among other things, an EIR must include: description of the project and environmental setting; an environmental impact analysis; mitigation measures; alternatives to the proposed project; identification of significant irreversible environmental changes; growth-inducing impacts; and cumulative impacts.

The environmental issues addressed in the Draft EIR were established through the preparation of environmental documentation and supporting technical reports developed for the proposed project, public agency responses to the NOP and comments received. Based upon documentation, technical reports, NOP responses, consultation with the City of Dublin, and review of the proposed Specific Plan, the City of Dublin has determined the scope for this EIR. This Draft EIR is organized in the following manner:

Section S – Executive Summary

This section summarizes the characteristics of the proposed project and provides a concise summary matrix of the project's environmental impacts, associated mitigation measures.

Section 1.0 – Introduction

This section provides an introduction and overview of the EIR review and certification process.

Section 2.0 – Project Description

The project description provides a detailed description of the proposed project, including project location, site conditions, intended objectives, background information and physical and technical characteristics of the proposed project.

Section 3.0 – Environmental Setting, Impacts and Mitigation Measures

This section contains an analysis of environmental topic areas to be addressed, as identified below. Each subsection contains a description of the existing setting of the planning area and surrounding area and identifies project-related impacts and recommends mitigation measures where necessary. The following major environmental topics shall be addressed within various subsections of the EIR:

Aesthetics and Visual Resources: The potential change in character of the planning area as measured against the existing setting and visual conditions and surrounding land uses is discussed within subsection 3.1: Aesthetics and Visual Resources. Project visibility, scale, additional light and glare, and visual character are considered relative to the predominantly urban nature of the planning area. The analysis is based on a site reconnaissance, photo documentation of the planning area, and existing policy documents (e.g. *City of Dublin General Plan*).

Air Quality: This subsection addresses the requirements of the Bay Area Air Quality Management District (BAAQMD) and analyzes local and regional air quality and greenhouse gases impacts associated with project implementation including both short-term construction impacts and long-term operational impacts from mobile and stationary sources. It also addresses the potential for exposure to objectionable odors from surrounding uses. This analysis is based on air quality modeling performed for the proposed project by RBF Consulting based on the traffic impact analysis prepared by Fehr and Peers, which is included as Appendix D of the Draft EIR.

Geology, Soils & Seismicity: This subsection examines potential geologic and seismic hazards, as well as any engineering constraints and general soil suitability for the land uses proposed as part of the proposed Specific Plan. Information contained in this section is based on various planning documents including the *Soil Survey of Alameda County.*

Hazards and Hazardous Materials: This subsection evaluates the potential presence of hazardous materials and contaminated soil within the planning area. The potential for onsite sources of contamination such as leaking hazardous waste containers; lead-based paints; and asbestos-containing building materials, among other items is also addressed within this subsection of the EIR. The potential risk of these conditions in proximity proposed development and human activities is evaluated.

Hydrology and Water Quality: The impacts of the proposed project on hydrology, storm drainage, water resources and water quality are discussed within this section. The analysis also identifies existing drainage patterns, potential flood hazards and stormwater retention requirements of the City of Dublin. Several properties are located within the Federal Emergency Management Agency (FEMA) 100-year floodplain, which would be subject to floodplain regulations. To comply with the requirements of CEQA, the potential effects of the proposed project on flooding is evaluated. Mitigation measures are included to address any significant surface water hydrology impacts.

Land Use and Planning: The relationship of the proposed project to relevant regional and local plans, including the *City of Dublin General Plan* and other local planning documents, is discussed in this subsection. The analysis focuses on project consistency with adopted plans and policies, project relationship to the *City of Dublin General Plan*.

Noise & Vibration: Compatibility between the existing noise environment and anticipated noise levels generated by the project-generated traffic, by on-site activities and cumulative noise from area roadways upon completion of the proposed project are examined within

this subsection of the EIR. This section is based on noise modeling conducted for the proposed project by RBF Consulting, which is included in the appendices of the Draft EIR. Construction and long-term operation impacts associated with vibration from Interstates 680 and 580 and the BART railway line are also addressed.

Public Services, Utilities, and Recreation: This subsection addresses the availability of existing public facilities and services, and calculates demand generated by the proposed project for additional facilities such as schools, parks/recreation facilities, police, and fire services. It also provides a general assessment of additional system requirements and physical improvements needed to serve the buildout demands of the proposed project. The provision of potable water service, wastewater treatment and disposal, natural gas and electric service, and solid waste impacts are also addressed in this subsection of the EIR.

Transportation and Traffic: This subsection examines potential impacts on the area roadway network, including roadway segments and intersections. Scenarios evaluated include: existing conditions, background conditions, background plus project conditions, and cumulative conditions based on *City of Dublin General Plan* buildout. This subsection also addresses alternatives transportation (e.g. public transit, pedestrian access, and bicycle routes). This subsection is based on a traffic impact analysis prepared by Fehr & Peers, which is included in the appendices of this Draft EIR.

Section 4.0 – CEQA Considerations

This section of the EIR addresses the required discussions and analyses of various topical issues mandated by CEQA Guidelines Section 15126.2, including: significant and unavoidable environmental effects; growth inducing impacts; significant irreversible environmental changes and effects found not to be significant.

This section also addresses alternatives to the proposed project and cumulative impacts. CEQA Guidelines Section 15126.6 requires that an EIR describe a range of reasonable alternatives to the proposed project, which could feasibly attain the basic objectives of the project and avoid and/or lessen the environmental effects of the project. The alternatives analysis compares the proposed project with three selected alternatives, which include the following:

- Alternative #1 – No Project Alternative;
- Alternative #2 – Reduced Development Alternative; and
- Alternative #3 – Alternate Use Plan

Impacts associated with cumulative development were analyzed based on the project's effects in combination with a summary of projections in the adopted *City of Dublin General Plan*.

Section 5.0 – Report Preparers and References

The purpose of this section is to provide a list of all authors and agencies that assisted in the preparation of the report by name, title, and company or agency affiliation. It also itemizes supporting and reference data used in the preparation of the Draft EIR and lists all governmental agencies, organizations, and other individuals consulted in preparing the EIR.

Appendices

This section includes all notices and other procedural documents pertinent to the EIR as well as all technical reports prepared in support of the analysis.

1.4. Impact Terminology

This Draft EIR uses the following terminology to describe environmental effects of the proposed project:

- Standards of Significance: A set of criteria used by the lead agency to determine at what level, or "threshold", an impact would be considered significant. Significance criteria used in this EIR include the CEQA Guidelines and Statutes; factual or scientific information; regulatory performance standards of local, state, and federal agencies; and the goals, objectives, and policies of the City of Dublin General Plan.
- Less Than Significant Impact: A less than significant impact would cause no substantial change in the environment and no mitigation is required.
- Potentially Significant Impact: A potentially significant impact may cause a substantial adverse change in the physical conditions of the environment. Mitigation measures and/or project alternatives are identified to reduce project effects to the environment.
- Significant Impact: Significant impacts are identified by the evaluation of project effects using specified standards of significance. Mitigation measures and/or project alternatives are identified to reduce project effects to the environment.
- Significant Unavoidable Impact: A significant and unavoidable impact would result in a substantial change in the environment for which no feasible mitigation is available to reduce the impact to a less than significant level, although mitigation may be available to lessen the degree of the impact.
- Cumulative Impact: Cumulative impacts refer to two or more individual affects which, when considered together, are considerable or which compound or increase other environmental impacts.

2. Project Description

A Specific Plan is a planning tool that combines traditional zoning with general design and development standards tailored to the unique conditions of a particular site. It contains policies, development standards, and implementing regulations necessary for development within a particular designated area.

The purpose of the Downtown Dublin Specific Plan (hereinafter "DDSP," "proposed Specific Plan," or proposed project) is to guide development and design within approximately 284 acres located in downtown Dublin. This will be accomplished by a set of regulations, design principles, and related implementing actions designed to foster quality development. These regulations, guidelines, and standards build upon the goals, objectives, and policies of the *City of Dublin General Plan* (hereinafter "General Plan") and the objectives of the DDSP, recognizing the DDSP area's strategic location in the City and the region.

The DDSP is organized into the following chapters:

- Introduction
- Site and Context
- Land Use and Development Plan
- Development Standards and Design Guidelines
- Mobility and Infrastructure
- Implementation and Administration

2.1. Project Location

The DDSP project area (hereinafter "project area") is located in the City of Dublin in eastern Alameda County, just south of the border of Contra Costa County. Regional access to the City is from Interstate 580, Interstate 680, and the Dublin/Pleasanton line of Bay Area Rapid Transit (BART). Cities that border Dublin include San Ramon to the north (in Contra Costa County), Pleasanton to the south, and Livermore to the south and east. The regional location is shown in Figure 2-1: Regional Location.

2.2. Project Area

The project area is located in the southwestern portion of the City and is approximately 284 acres in size. The DDSP Project area is generally bound by Village Parkway to the east, Interstate 580 to the south, San Ramon Road to the west, and Amador Valley Boulevard to the north. There are some areas that extend beyond those roadways, most notably a portion of San Ramon Road, a portion of Amador Valley Boulevard, and all of Village Parkway. The project vicinity is shown in Figure 2-2: Specific Plan Area.

The majority of the land uses include regional serving retail in the center of the project area. These include: Target, Toys R Us, Burlington Coat Factory, Ranch 99 Market, Orchard Supply Hardware, Ross, and Marshall's. Several large scale retailers have closed recently (2009) due to the current economic recession and/or other factors.

There are two auto dealerships in the Specific Plan area. One dealership is located in the southeast corner of Dublin Boulevard and Golden State Drive, and the other is located at the southeast corner of Saint Patrick Way and Amador Plaza Road.

Smaller specialty retail, convenience retail, and services are generally located west of Regional Street and along Amador Valley Boulevard, Amador Plaza Road, and Village Parkway.

Office uses within the project area include the Corrie Center (located southeast of Dublin Boulevard and Regional Street), the Chase Bank Building (southwest of Dublin Boulevard and Golden Gate Drive) and the Hites office complex (located at the south end of Amador Plaza Road).

Other notable land uses include the 238-room Holiday Inn, Earl Anthony's Dublin Bowl, Dublin Post Office, Dublin Iceland, and a senior center with an associated 54-unit Wicklow Square apartment complex.

BART has begun construction of the West Dublin/Pleasanton BART Station and parking garage, which is located on the south side of the downtown area at the terminus of Golden Gate Drive. The new station platform will be located in the median of I-580. Construction of this station will be completed in 2011. Land uses in and around the DDSP project area are shown in Figure 2-3: Existing Land Uses.

2.3. Existing General Plan Land Use and Zoning Designations

The Land Use Element and Land Use Map in the *City of Dublin General Plan* establish the policy for change and growth within the City. The General Plan identifies the general locations, density and extent of land available for housing, business, industry, natural resources protection, recreation, and other uses. As shown in Figure 2-4: General Plan Land Use Designations, land use designations in and around the project area include: Residential (Single-Family to High Density), Mixed-Use, Retail/Office and Automotive, Business Park/Industrial, Parks/Public Recreation, and Public/Semi-Public.

There are five (5) existing Specific Plans that apply to the greater downtown area of the City of Dublin. They are:

- Downtown Core Specific Plan
- West Dublin BART Specific Plan
- Village Parkway Specific Plan (VPSP)
- San Ramon Road Specific Plan (SRRSP)

- Dublin Downtown Specific Plan (DDSP 87)

A description of each of these Specific Plans and their boundaries are described in the DDSP (Appendix A).

A majority of the DDSP project area is zoned Planned Development (PD). Remaining parcels are zoned Retail Commercial (C-1) and General Commercial (C-2). Zoning within the DDSP and surrounding areas are shown in Figure 2-5: Current Zoning.

2.4. Proposed Project Characteristics & Objectives

The DDSP consists of a comprehensive set of incentives, standards, and requirements that will implement the vision for the future development of downtown Dublin. The DDSP will define the physical envelope for downtown Dublin's future growth using height limits, setbacks, density, and design standards. The DDSP will act as the planning tool to guide and direct new development, economic development, transportation improvements (including pedestrian and transit-oriented development), parking, pedestrian amenities, and public open space (e.g. public plazas). The DDSP will be instrumental in promoting a more walkable, livable downtown Dublin, as well as providing incentives for development in keeping with the City's broader vision.

The DDSP project area has been divided into three districts, based on the existing building patterns and land uses within each area and the intended development envisioned for each district. These three districts, namely the Retail District, the Village Parkway District, and the Transit-Orient District, are shown in Figure 2-6: DDSP Districts/Land Use Designations A set of guiding principles were prepared as part of the DDSP and serve as the project objectives for this EIR. These guiding principles were drawn from a focused market study (Keyser Marston and Associates 2009), field observations, interviews with stakeholders, discussions with City Staff, Planning Commission, City Council, and professional urban design principles. The purpose of these guiding principles is to define a framework for future land uses, development standards and design guidelines for the project area and each district. These guiding principles are organized for the overall Specific Plan Area and each of the three districts and are described below.

Downtown Dublin Guiding Principles

The following guiding principles have been identified for the Downtown Dublin Specific Plan Area.

- Create or encourage opportunities for more nightlife activities (e.g. cinemas, restaurants, etc.).
- Support short-term incentives to promote development in downtown Dublin such as expedited permitting, and sales tax reimbursement program (the later of which currently exists).

- Consider the development of a community benefit payment in return for increased density/FAR (i.e. density bonus/incentive program) that could be used to pay for public improvements in the Planning Area.
- Increase the amount of retail sales and related economic activity throughout downtown Dublin.
- Enhance the visual quality of downtown Dublin, including public streetscape improvements (via the City's existing Streetscape Master Plan), entryways, on-site landscaping and the appearance of individual buildings.
- Create a pedestrian-friendly downtown that minimizes potential conflicts between vehicles, pedestrians and bicyclists.
- Encourage a greater joint usage of parking areas through compatible mixes of uses and enhanced pedestrian connections.
- Accept increased traffic congestion (i.e. reduced level of service) in the downtown as a result of concentrating development near BART and major transportation facilities, reducing vehicle miles traveled, and increasing pedestrian and bicycle connectivity.
- Consider more flexible and appropriate parking standards that reflect verifiable demand and consider the transit-oriented land uses in the area.
- Enhance the multi-modal circulation network to better accommodate alternative transportation choices including BART, bus, bicycle, and pedestrian transportation.
- Encourage businesses that support evening activities for adults and teenagers, such as restaurants, theaters, and bookstores.
- Work with property owners and business to achieve the goals and objectives of the Downtown Dublin Specific Plan.
- Seek other funding opportunities to help leverage city and development dollars.
- Work with local businesses and property owners to establish a business improvement district that would help to fund downtown improvements.
- The cost of infrastructure should be paid for by development.
- Encourage the use of local (Tri-Valley) labor when feasible and the support of local and regional businesses as part of any development project.
- Encourage development that will create a vibrant and dynamic downtown that is considered an attractive and distinctive amenity to the Tri-Valley Region.

Retail District Guiding Principles

In addition to the Downtown Dublin Guiding Principles, the following guiding principles have been identified for the Retail District.

- Encourage and support large-format regional retail as an important community and financial asset of the City.

- Develop design standards and guidelines that support and enhance large-format regional retail uses such as optimal building configuration and design, signage, more efficient parking, parking strategies, pedestrian amenities, landscaping, etc.
- Encourage a diverse mix of complementary land uses including civic uses, eating establishments, entertainment, and similar uses that complement existing retail land uses.
- Identify ways to improve/enhance non-vehicular and vehicular circulation and connections that are pedestrian friendly, particularly in areas that contain large, expansive parking lots.
- Support relocating the existing storm drain that extends east-west through the district to allow for greater flexibility in future development efforts.
- Allow higher density housing and additional units.

Transit-Oriented District Guiding Principles

In addition to the Downtown Dublin Guiding Principles, the following guiding principles have been identified for the Transit-Oriented District.

- Promote transit-oriented development to create a distinctive and active district.
- Retain existing auto dealerships while supporting their eventual relocation to other easterly locations within the City of Dublin.
- Identify opportunity sites for future development that incorporate mixed-use and provide public and/or private plazas and outdoor gathering areas at strategic locations.
- Encourage underground and/or above ground parking structures.
- Encourage housing along Dublin Boulevard only as part of a mixed-use development with ground floor office or retail uses.

Village Parkway District Guiding Principles

In addition to the Downtown Dublin Guiding Principles, the following guidelines have been identified for the Village Parkway District.

- Continue to support a diverse mix of complementary land uses along Village Parkway.
- Create opportunities for integrating live/work units into the Village Parkway area

2.5. Proposed General Plan Amendment and Zoning

The Dublin General Plan, including the General Plan Land Use Map, will be amended concurrent with the adoption of the DDSP to include a DDSP Land Use Designation to replace the existing General Plan land use designations for the area and to amend goals and

policies in the General Plan which relate to the Specific Plan Area. The proposed General Plan designations are shown in Figure 2-6: DDSP Districts/Land Use Designations.

The Zoning Map for the DDSP Area will be amended concurrent with the adoption of the DDSP to rezone the DDSP project area to PD, Planned Development. Where land use regulations and/or development standards in the Dublin Zoning Ordinance are inconsistent with the DDSP, the PD zoning district overlay standards and regulations shall prevail. Any issue not specifically addressed in the DDSP shall be subject to the Dublin Zoning Ordinance and/or Municipal Code. Interpretations may be made by the Community Development Director if not specifically covered in the City's existing regulations. Proposed zoning is shown in Figure 2-7: Proposed Downtown Dublin Specific Plan Zoning.

2.6. Proposed Land Uses and Development Plan

As described in the DDSP, the vision for downtown Dublin is to become a vibrant and dynamic commercial and mixed-use center that provides a wide array of opportunities for shopping, services, dining, working, living and entertainment in a pedestrian-friendly and aesthetically pleasing setting that attracts both local and regional residents. Each district will have a particular development focus, as described below.

Retail District

The Retail District is envisioned to continue to serve as the primary regional and community shopping destination in the City. Given their large building format and existing long-term leases, it is likely that many of the existing buildings will remain.

New and remodeled buildings will complement the existing uses with designs that are compatible with adjacent structures and the district as a whole. Buildings shall utilize "green" materials as well as materials that are of high quality - durable, attractive, long-lasting, and in context with the building architecture. While compatibility is important, creativity and unique designs are encouraged that can establish a signature look for the district.

Areas adjacent to buildings (including surface parking lots) will be designed to create more inviting pedestrian-friendly gathering spaces and amenities and will incorporate pathways and additional landscaping to encourage walking between businesses and improve the visual quality of the area.. A pedestrian-scale, walkable environment will be encouraged by incorporating amenities, where feasible, such as paseos (e.g. walkways, promenades), plazas, courtyards, benches, and informal gathering spaces. Connectivity within the District and to other areas outside the District will be strongly encouraged.

Businesses in the Retail District are envisioned to include a mix of retail (ranging from small independent retailers to national regional-serving retailers), service, office, civic, and limited residential uses east of Amador Plaza Road.

Areas adjacent to buildings (including surface parking lots) will be designed to create more inviting pedestrian-friendly gathering spaces and amenities and will incorporate pathways

and additional landscaping to encourage walking between businesses and improve the visual quality of the area. A pedestrian-scale, walkable environment will be encouraged by incorporating amenities, where appropriate, such as paseos (e.g. walkways, promenades), plazas, courtyards, benches, and informal gathering spaces. Connectivity within the District and to other areas outside the District will be strongly encouraged.

Transit-Oriented District

The vision for the Transit-Oriented District is to encourage the development of the area with land uses that support and complement transit uses, particularly the West Dublin/Pleasanton BART Station. These types of uses would include mixed-use that include office or residential above ground floor retail, high-density multi-family residential, office uses and are generally more urban than the surrounding area.

Land uses should provide the opportunity for a variety of activities such as offices, hotels, restaurants, shopping, etc. to encourage activity both during the day and at night for both youths and adults.

New and remodeled buildings will complement the existing uses with designs that are compatible with adjacent structures and the district as a whole. Buildings shall utilize "green" materials as well as materials that are of high quality - durable, attractive, long-lasting, and in context with the building architecture. While compatibility is important, creativity and unique designs are encouraged that can establish a signature look for the district.

A pedestrian-scale, walkable environment will be encouraged by incorporating amenities, where appropriate, such as paseos (e.g. walkways, promenades), plazas, courtyards, benches, and informal gathering spaces. Connectivity within the District and to other areas outside the District will be strongly encouraged.

Village Parkway District

Village Parkway will be a pedestrian-oriented district that also accommodates through traffic. Buildings will be sited at or near the sidewalk with parking provided at the rear to encourage walking and create a more consistent street edge.

Opportunities for live/work, mixed-use, and multi-family residential buildings will be encouraged throughout the district and compliment the predominantly commercial district, largely developed with retail, office, and certain automotive uses.

Revitalizing and continuing to upgrade the appearance and functionality of the Village Parkway District will be encouraged so that existing and new businesses, particularly those providing specialty commercial services, can continue prosper. New and remodeled buildings will complement the existing uses with designs that are compatible with adjacent structures and the district as a whole. Buildings shall utilize "green" materials as well as materials that are of high quality - durable, attractive, long-lasting, and in context with the

building architecture. While compatibility is important, creativity and unique designs are encouraged that can establish a signature look for the district.

A pedestrian-scale, walkable environment will be encouraged by incorporating amenities, where appropriate, such as paseos (e.g. walkways, promenades), plazas, courtyards, benches, and informal gathering spaces. Connectivity within the District and to other areas outside the District will be strongly encouraged.

Existing Entitled Projects

In addition to new development envisioned as part of the DDSP, there are a number of development projects within the Transit-Oriented District that are entitled but have not yet been constructed and are identified in Table 2-1: Entitled Projects. All of the project sites are located between Golden Gate Drive and Regional Street.

Table 2-1: Entitled Projects

Development Project	Existing Development	Residential (DUs)	Retail / Commercial (sf)	Office (sf)	Hotel
Essex Site	Vacant	309	--	--	--
AMB Site	208,829 sf warehouse building	308	--	--150,000	--
Hotel Future	Vacant	--	7,500		150
Custom Fireplace			29, 270		
Total		617	36,770	150,000	150
Source: City of Dublin 2009					

All of these entitled projects as well as the development potential identified in the in the DDSP are addressed on a programmatic level in this EIR.

Development Plan

The DDSP provides a development plan for the next 15 to 20 years. Each Specific Plan district identifies a broad range of land uses that can be developed, either by right or through Use Permit. These land uses include regional retail, community retail, office, residential, mixed use and public uses.

Given the uncertainty in market conditions and the fact that no particular development projects are proposed as part of the DDSP, this approach will allow greater flexibility in the ultimate development pattern, while still maintaining a common vision for function and urban character within the DDSP project area.

For each district, the DDSP identifies a specific set of development standards that will apply to all new buildings and significantly remodeled buildings. These standards include lot size and building placement, access, parking, building density or floor-area ratio (FAR), and building height and setbacks.

The actual density of development allowed on a particular parcel will be regulated by DDSP. The DDSP identifies both a base FAR that is allowed by right (for non-residential square footage only) and a maximum FAR that can be constructed based on the use and District in which it is located. If a property owner would like to develop a project beyond the base FAR or construct residential dwellings, they may obtain additional square footage up to the maximum FAR by drawing on the Development Pool that has been established for residential and non-residential development in each District. Table 2-2: DDSP Development Pool, identifies the allocation of both non-residential and residential development by district that is allocated as part of the development pool.

Table 2-2: DDSP Development Pool

District	Non-Residential (sf)	Residential (DUs)
Retail District	368,420	100
Transit-Oriented District	1,724,800	1,100
Village Parkway District	0	100

**This number assumes residential development of 1,200 square feet per unit*

When a project applicant proposes to develop using a portion of the density development pool allocation, they will be required to enter into an agreement with the City and provide a community benefit in accordance with the Community Benefit Program which will be used to construct improvements in the DDSP project area, or construct improvements as part of the project which provide a community benefit (e. g. outdoor plazas, parks, street improvements). The life of the agreement will be limited to a specific time period so that if a project is not constructed, the square footage can be returned to the density development pool and available for use by another development project within the respective district of the DDSP.

Future Build-out Development Potential

For the purposes of the DEIR, future buildout is based on existing development as of 2009 plus the Maximum FAR development potential identified in the DDSP. A breakdown of the DDSP future buildout development potential is shown in Table 2-3: DDSP Future Buildout Development Potential below.

Table 2-3: DDSP Future Buildout Development Potential *

District	Non-Residential (sf)	Residential (du)
Retail District	737,094	100
Transit-Oriented District	2,202,710 (plus 150 hotel rooms)	1,100
Village Parkway District	20,730	100
Total	3,035,540 (plus 150 hotel rooms)	1,300

**Includes projects that have been approved, but not yet constructed.*

While this represents the theoretical buildout capacity of development in the DDSP project area, the ultimate amount of future development will likely be considerably less due to non-tangibles such as market demand, ownership patterns, tenant lease terms, etc., as well as the fact that the DDSP project area is already largely developed resulting in significant physical limitations such as parcel configurations, parking, and circulation.

2.6.7 Infrastructure Improvements

Site Access and Circulation

The proposed Specific Plan does not propose any changes to the existing public roadway network; however, vehicular circulation improvements may be required on private property. Any improvements to public streets (including travel lanes, sidewalks, and landscaping), apart from those identified as mitigation measures in this EIR, will require separate environmental analysis.

Saint Patrick Way Extension

As part of future development, Saint Patrick Way will be extended as a public roadway from Golden Gate Drive to Regional Street. The extension would be necessary to more efficiently move vehicular traffic east-west through the Transit-Oriented District and would be constructed as a two-lane roadway with parking and sidewalks. This extension was planned for as part of the WDBSP and environmental analysis has been completed.

Pedestrian Easements

The existing east-west pedestrian easement on the properties extending from Regional Street to Amador Plaza Road in the Retail District may be improved to provide a better connection for pedestrians. Access to this easement would be included from sidewalks and across the rear service alley behind the existing retail establishments. This easement would be improved as a private outdoor space (such as a paseo) and follow the guidelines as described in the DDSP. Landscaping, benches, building-mounted and string lighting, small product vendors, entrances to retail establishments, projecting shade elements, and other similar elements would be included to enhance the pedestrian realm.

Pedestrian and Bicycle Circulation

The City of Dublin Bikeways Master Plan identifies existing and proposed bikeways located throughout the City. The Bikeways Master Plan recommends exploring opportunities to expand the network throughout Downtown Dublin and creating improved connections to the West Dublin/Pleasanton BART station. Bicycle facilities such as bike lockers, bike racks, and shower facilities are encouraged in or near the station. Direct access to bicycle parking should be provided throughout Downtown Dublin and turning movements at intersections and into/out of major developments should be explored. Specifically, the DDSP recommends improving Golden Gate Drive with bike lanes (Class II bikeway) between Dublin Boulevard and the West Dublin/Pleasanton BART station.

Public Transportation

The proposed Specific Plan does not propose any changes to the existing transit service through Downtown Dublin. However, transit routes may be altered in the future to better connect passengers with the West Dublin/Pleasanton BART station. Such improvements should consider the timing of the BART trains, distance traveled from one transit mode to another, and facilities, such as benches, shelters, signage, and crossings. Improvements to existing and new bus stops would be improved in accordance with the City of Dublin Streetscape Master Plan.

Water

Water infrastructure within the DDSP project area is provided by the Dublin San Ramon Services District (DSRSD). New development would tie into the existing service lines which have adequate capacity to serve the DDSP project area. Other than minor construction to improve/expand existing connections, no major upgrades to water infrastructure will be required.

Sanitary Sewer

DSRSD also provides wastewater collection services in the DDSP project area. Sewer improvements were recently made in the project area to accommodate existing and future demand. These included the Dublin Boulevard West Sever Relief project, completed in 2008 and the Orchard Supply Hardware Sewer Replacement is planned to be conducted in conjunction with Saint Patrick Way. Similar to water services, new development would tie into the existing infrastructure and no major upgrades to the sanitary sewer system are anticipated.

Stormwater Infrastructure

Design guidelines in the DDSP encourage increased percolation through the use of vegetated swales, curb extensions, reconfigured parking lots with increased landscaping, and the use of pervious materials (e.g. pervious pavers), particularly in parking lots. Implementation of these design guidelines would result in a net reduction of off-site stormwater discharge rates and would improve water quality as compared to existing conditions.

Several properties within the planning area are located within the Federal Emergency Management Agency (FEMA) 100-year floodplain. New construction will be subject to floodplain regulations. The Zone 7 Stream Management Plan contains plans to retrofit the culvert that carries water from Dublin Creek under Donlon Way. The retrofit will increase the culvert capacity and reduce the risk of flooding in the DDSP project area.

2.7. Requested Actions, Entitlements, and Required Approvals

The City is the lead agency with the authority to carry out or approve the proposed project. The City's actions include certification of the EIR for the proposed project, as well as adoption of the DDSP, associated rezoning, and General Plan Amendment; and amendment to the San Ramon Road Specific Plan. The proposed project also includes a General Plan Amendment to exempt intersections within the Project Area, including Dublin Blvd/San Ramon Road and Village Parkway/Interstate 680 on-ramp, from Guiding Policy G in the General Plan, which strives to maintain a LOS of D or better for intersections in the City:

This EIR is intended as a Program EIR, and specific development proposed made in the DDSP project area would be subject to separate environmental review. In addition to the City, federal, regional, and state responsible agencies have discretionary authority over certain aspects of development project.

Future approvals within the planning area may require additional site planning and related permits by the City of Dublin and may include, but are not limited to:

- Development Agreement;
- Demolition Permits;
- Subdivision Maps;
- Parcel Maps and boundary adjustments;
- All Final Improvement Plans;
- Utility Plans;
- Construction Phasing and Duration;
- Site Development Review;
- Landscaping and Lighting Plans; and
- Grading, paving, Engineering and Building Permits.

Subsequent development may also require obtaining a National Pollution Discharge Elimination System (NPDES) permits from the Regional Water Quality Control Board, which would be a responsible agency under CEQA.

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3. Environmental Setting, Impacts & Mitigation Measures

Each environmental section in this chapter presents information in four parts:

- Environmental Setting - The Environmental Setting section provides a general overview of the conditions on and adjacent to the planning area.
- Regulatory Setting - The Regulatory Setting presents local, state and federal regulations which are relevant to the proposed project.
- Relevant Project Characteristics - The Relevant Project Characteristics section provides a more detailed description of the elements of the proposed project that are relevant to the impact analysis for a particular topic. Relevant project information may relate to the size, characteristics and/or location of project elements. Any project elements that may cause impacts, as well as those that may serve to minimize impacts, are identified.
- Impacts and Mitigation Measures - The Impacts and Mitigation Measures section provides a brief description of standards that were used to evaluate whether an impact is considered significant based on standards identified in CEQA, the State CEQA Guidelines, and agency policy or regulations. Impacts are identified and analyzed. Mitigation measures that would reduce potentially significant or significant impacts are identified, as well as the significance of the impact after implementation of mitigation measures. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a significant unavoidable impact.

Referenced graphics are presented at the end of each section.

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3.1. Aesthetics & Visual Resources

This section describes the aesthetic and visual resources of the planning area and its surroundings, and discusses the potential aesthetic impacts that may result with implementation of the proposed Specific Plan. The primary visual and aesthetic issues are related to the intensification of commercial and mixed-use development within a commercial area that is currently dominated by automobile-oriented shopping centers. Visual impacts were evaluated using a combination of a site reconnaissance, review of photo documentation and aerial photographs, and a review of existing policy documents.

Environmental Setting

Visual Image

Visual images dominate an observer's impression of a district, city, or region. To understand how visual images influence an observer's impression, the aesthetic value of an area must first be defined. Aesthetic value is a measure of visual character and scenic quality combined with a viewer's response to the area. Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure to a viewshed varies with the number of viewers, the number of views seen, the distance of the views, and the viewing duration. Viewer sensitivity is related to the extent of the public's concern for particular visual resources.

Both natural landscapes and the built environment contribute to perceived visual images and aesthetics value of a view. Aesthetic value is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Visual images and their perceived visual quality can vary significantly seasonally and even hourly as weather, light, shadow, and the elements that compose the resource change.

Definition of Terms

Numerous methods have been developed to characterize the scenic quality of a visual resource and the viewer response to that resource. However, no standard approach to visual analysis exists. Instead, several approaches that focus on different visual aspects or issues are used. One commonly used set of criteria includes vividness, intactness, and unity.

- Vividness is the visual power or memorability of landscape components as they combine in striking or distinctive visual patterns.
- Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, as well as in natural settings.
- Unity is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape.

Regional Visual Setting

The City of Dublin is located in the Tri-Valley region of the East San Francisco Bay Area. The visual setting of the region is defined by several communities (Pleasanton, Livermore, Danville, Dublin, and San Ramon) that are surrounded by hillsides, vineyards, and natural open space.

Project Setting

The project area is characterized as a suburban commercial area that contains a variety of local and regional-serving businesses. The pattern of development is characterized by large blocks, auto-oriented streets, a variety of lot shapes and sizes, and a variety of buildings with diverse architectural styles. Most buildings are set back from the street and surrounded by surface parking lots and minimal landscaping. The pattern of development generally does not encourage pedestrian activity within the area. See Figure 3.1-1: Existing Visual Character.

Most of the commercial buildings were constructed from the early 1960s to the late 1980s and tend to have generic, nondescript quality that contributes little to establishing a distinct identity or memory for the Specific Plan Area. Building surface materials tend to be wood, concrete, cinder block or stucco construction.

Commercial buildings in the project area are predominantly one-story, ranging from 15 to 25 feet, depending on the type and function of the building. Some buildings along Village Parkway are two stories, but are generally not taller than 25 feet. Office buildings, including the Chase Bank building, the Corrie Center and the Hites property are three stories (approximately 35 feet in height).

The tallest (and only) residential building in the downtown is the Wicklow Square senior housing project, which is three stories over one level of parking at an approximate height of 50 feet. The approved 309 residential unit Windstar project will have five floors over one level of parking at a height of approximately 65 feet.

Surrounding Land Uses

The project area is surrounded by I-580 to the south, single-family residential neighborhoods and commercial uses to the east, multi-family residential and single-family residential neighborhoods to the north, and commercial and multi-family residential and single-family residential neighborhoods to the west.

Scenic Vistas

A scenic vista is a view that possesses visual and aesthetic qualities of high value to the community. Scenic vistas can provide views of natural features or significant structures and buildings. The term "vista" generally implies an expansive view, usually from an elevated point or open area. There are no designated scenic vistas in the vicinity of the planning area.

Scenic Resources and Roadways

According to the City of Dublin General Plan, I-580, I-680, San Ramon Road, and Dougherty Road were designated scenic routes by Alameda County in 1966. These are primary routes from which people traveling through Dublin gain their impression of the City. Therefore, it is important that the quality of views be protected.

I-680 is also designated as a State Scenic Highway. According to the State Scenic Highway website, "the scenic aspects of the corridor feature the rolling wooded hills of the Contra Costa range contrasted with the flat Sunol Valley ringed by distance hills to the north and east." While not officially listed, I-580 is eligible for listing as a State Scenic Highway.

The General Plan has a policy requiring the City to "exercise design review of all projects visible from a designated scenic route". Most, if not all, of the Specific Plan Area is visible from I-580, I-680, and San Ramon Road.

The project area and its immediate surroundings do not have any natural resources, monuments, or unique buildings that would be classified as scenic resources.

Light and Glare

Lighting nuisances can generally be categorized by the following:

- Glare – Intense light that shines directly, or is reflected from a surface into a person's eyes;
- "Skyglow"/Nighttime Illumination – Artificial lighting from urbanized sources that alters the rural landscape in sufficient quantity to cause lighting of the nighttime sky and reduction of visibility of stars and other astronomical features; and
- "Spillover" Lighting – Artificial lighting that spills over onto adjacent properties, which could interrupt sleeping patterns or cause nuisances to neighboring residents.

The project area is part of a city and region that contributes to nighttime lighting. Buildings within the project area that have reflective surfaces can also cause glare at certain times of the day based on the location and angle of the sun.

Regulatory Setting

State

Streets and Highway Code, Section 260 et seq. - State Scenic Highway Program

The California Scenic Highway Program (CSHP) was created by the Legislature in 1963 with the purpose of preserving and protecting scenic highway corridors from change, which diminish the aesthetic value of lands adjacent to highways. The stated intent (Streets and Highway Code Section 260) of the California Scenic Highway Program is to protect and enhance California's natural beauty and to protect the social and economic values provided by the State's scenic resources. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view.

The CSHP includes a list of highways that are either eligible for designation as scenic highways or have been so designated. These highways are identified in Section 263 of the Streets and Highways Code.

State highways nominated for scenic designation must first be on the statutory list of highways eligible for scenic designation in the State Scenic Highway System. A process for adding eligible highways to the statutory list is described in Section III: Obtaining Eligibility. County highways nominated for scenic designation that are believed to have outstanding scenic values are considered eligible and do not require any legislative action. Both State and county highway nominations follow the same process and have the same requirements.

Scenic highway nominations are evaluated using the following criteria:

- The State or county highway consists of a scenic corridor that is comprised of a memorable landscape that showcases the natural scenic beauty or agriculture of California (see definition for "vividness", under Section III: Step 1, Visual Assessment).
- Existing visual intrusions do not significantly impact the scenic corridor (see definitions for "intactness" and "unity" below, under Section III. Step 1: Visual Assessment).
- Demonstration of strong local support for the proposed scenic highway designation.
- The length of the proposed scenic highway is not less than a mile and is not segmented.

The status of a state scenic highway changes from eligible to officially designated when the local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation for scenic highway approval, and receives notification from Caltrans that the highway has been designated as a Scenic Highway. According to the *California Department of Transportation (Caltrans) Scenic Highway Program (CSHP)*, Interstate 680 is officially designated as a State Scenic Highway. While not officially listed Interstate 580 is eligible for listing as a State Scenic Highway.

Local

City of Dublin General Plan

The following policies in the *City of Dublin General Plan* are applicable to aesthetics and visual character within the planning area.

2.1.5: Guiding Policy A. Intensify development and provide housing opportunities and transit-oriented uses near transit center and facilities.

2.2.1: Guiding Policy A. Intensify Downtown Dublin.

2.2.1: Implementing Policy B. Designate a Downtown Intensification Area on the General Plan Land Use Map, Figure 1-1a.

2.2.1: Implementing Policy C. Provide a downtown BART station that will serve customers and workers with and without cars. Add offices and apartments within walking distance and eventually over BART parking.

2.2.1: Implementing Policy D. Encourage mid-rise office/apartment buildings and parking structures with ground floor retail spaces. Create store-lined pedestrian connections between existing shopping centers.

2.2.1: Implementing Policy E. Make downtown more understandable to first-time visitors by installing standardized identification signs and directories.

5.6: Implementing Policy B. Exercise design review of all projects visible from a designated scenic route.

In addition to the above policies, the General Plan Community Design Element contains a number of policies related to urban design and visual character. Policies address a range of topics, including:

- Site and Building Design
- Landscaping and Natural Features
- Gathering and Open Space Areas
- Signage, Lighting, and Art
- Parking and Circulation
- Villages

Relevant Project Characteristics

Development Standards and Design Guidelines

The proposed Specific Plan includes both development standards and design guidelines to guide future development within the area. These development standards and design guidelines will be used during the design review process for project applications within the Specific Plan Area. The design guidelines apply to all new construction within the Specific Plan area. Development standards apply to all new construction that results in the increase of building size of more than 25 percent.

The design standards and guidelines within the proposed Specific Plan provide more specific design direction for the downtown districts than the design policies in the General Plan Community Design Element. For each of the three Downtown Districts (Retail District, Transit-Oriented District, and Village Parkway) development standards are provided to address the following topics:

- Lot Size and Building Placement
- Building Height
- Setbacks

- Density
- Access (vehicular and pedestrian)
- Parking Locations and Requirements
- Projections and Encroachments into Setbacks

In addition, design guidelines are provided for all projects within the Specific Plan Area and address the following topics:

- General Building Design
- Building Articulation
- Building Materials and Colors
- Roofs
- Frontages
- Signage
- Private Outdoor Spaces
- Outdoor Dining
- Lighting
- Fences, Walls, Hedges, and Gates
- Landscaping and Paving
- Parking Areas
- Loading and Refuse Areas
- Screening

Impacts and Mitigation Measures

Criteria for Determining Significance

In accordance with the CEQA, *State CEQA Guidelines*, and agency and professional standards, a project impact would be considered significant if the project would:

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resource, including, but not limited to, trees, rock outcroppings, and historic buildings, within a state scenic highway.
- Substantially degrade the existing visual character or quality of the site and surroundings, i.e., be incompatible with the scale or visual character of the surrounding area or substantially detract from the integrity, character and/or aesthetic character of the neighborhood; and/or
- Create a new source of substantial light or glare, such that it poses a hazard or nuisance.

Methodology

The analysis of potential aesthetic impacts within this section is based on a site reconnaissance of the project area and surrounding area, the *City of Dublin General Plan*, and photographs of the project area and vicinity. The site reconnaissance and photo documentation of the planning area was performed by RBF Consulting in November 2009. Photos were taken to characterize the visual character of the planning area and surrounding area.

Potential impacts were assessed by forecasting the anticipated appearance of future development at the planning area based on the maximum FAR identified in the proposed Specific Plan. Nighttime lighting and day and nighttime glare are assessed qualitatively through comparative analysis of existing and proposed conditions and evaluation of design guidelines and development standards included in the proposed Specific Plan. Existing sources of light and glare are identified and quantified where possible.

Project Impacts and Mitigation Measures

Substantial Adverse Effect on a Scenic Vista

As previously noted, a scenic vista is a view that possesses visual and aesthetic qualities of high value to the community. Scenic vistas can provide views of natural features or significant structures and buildings. The term "vista" generally implies an expansive view, usually from an elevated point or open area. Because there are no designated scenic vistas in the vicinity of the planning area, **no impacts** would occur.

Damage to Scenic Resources along Scenic Highways

Impact 3.1-1: Portions of the project area are visible from a designated State Scenic Highway and locally designated scenic routes. However, no scenic resources would be adversely affected as a result of Specific Plan implementation. This is considered a less than significant impact.

The planning area is fully developed and there are no natural or built features that are considered scenic resources. However, portions of the project area are visible from Interstate-680 (an officially designated State Scenic Highway and a locally designated scenic route), Interstate-580 (a highway eligible for designation as a State Scenic Highway and locally designated scenic route), and San Ramon Road (a locally designated scenic route). Implementation of the proposed Specific Plan would allow properties to develop with more intense commercial and mixed-use developments similarly to what is currently permitted under the five existing Specific Plans that apply in the project area.

In compliance with the General Plan, all projects that are visible from Interstate-680 and Interstate-580 would be subject to design review per the policy of the General Plan and requirements of the Specific Plan. Furthermore, specific projects would be required to comply with the development standards and generally be consistent with the design guidelines as identified in the DDSP, and thereby create a more visually appealing

environment within the Downtown. Therefore, this would be considered a **less than significant impact**, and no mitigation is required.

Degradation of the Visual Character of the Project Area and Surrounding Area

Impact 3.1-2: Implementation of the Specific Plan would alter the existing aesthetic character of the Downtown by intensifying commercial and mixed-use development within the area. However, the intensification of development is consistent with the guiding policies of the General Plan. In addition, the proposed DDSP includes design standards and guidelines that are designed to create a more visually appealing environment within the Downtown districts. This is considered a less than significant impact.

The implementation of the Specific Plan would allow for the intensification of commercial and mixed use development within the Downtown districts. Most of the intensification is anticipated to occur in the Transit-Oriented District, as the demand for mixed-use development in that District will likely increase due to the construction of the West Dublin BART station and parking structure.

The intensification of commercial and mixed use development within the Downtown is consistent with the current General Plan policies and the amended policies for the Downtown and the desired character for the area:

- 2.2.1: Guiding Policy A. Intensify Downtown Dublin.
- 2.2.1: Implementing Policy B. Designate a Downtown Intensification Area on the General Plan Land Use Map, Figure 1-1a.
- 2.2.1: Implementing Policy C. Provide a downtown BART station that will serve customers and workers with and without cars. Add offices and apartments within walking distance and eventually over BART parking.
- 2.2.1: Implementing Policy D. Encourage mid-rise office/apartment buildings and parking structures with ground floor retail spaces. Create store-lined pedestrian connections between existing shopping centers.
- 2.2.1: Implementing Policy E. Make downtown more understandable to first-time visitors by installing standardized identification signs and directories.

As an already built-out area, the most visible feature of intensification is the often increased building heights. The existing development has a variety of building heights and the proposed Specific Plan would not increase allowed building heights beyond those already established by the five existing approved Specific Plans for the project area. Building heights for the Transit-Oriented District would be limited to 90 feet, a height that is currently allowed by the West Dublin BART Specific Plan. Building heights for the Village Parkway District would be limited to 35 feet, a height that is currently allowed by the Village Parkway Specific Plan. Building heights for the Retail District would be limited to 75 feet, a height that is currently allowed by the Downtown Core Specific Plan.

The proposed Specific Plan includes both development standards and design guidelines to guide the design of future development within the area. These development standards and design guidelines will also be used during the design review process. Therefore, the implementation of the proposed Specific Plan will help insure that properties and buildings contribute to visually appealing Downtown districts and environments. Therefore, this would be considered a **less than significant impact**, and no mitigation is required.

Light and Glare

Impact 3.1-3: The project area and its surroundings are currently developed with buildings and site improvements that generate daytime and night-time light and glare. Additional sources of daytime glare and nighttime lighting would be introduced as the downtown is intensified with new commercial and mixed-use developments. The proposed Specific Plan includes design standards and design guidelines to reduce these impacts. This is considered a less than significant impact.

Implementation of the proposed project would introduce new development to the Specific Plan Area, increasing the potential for daytime and nighttime glare. The main sources of daytime glare would be from sunlight reflecting from structures with reflective surfaces, such as windows. The main sources of nighttime light and glare would be from additional lighting, including, but not limited to, internal and external building lights, parking lot lights, street lighting, site lighting, lights associated with vehicular travel (i.e., car headlights), and any new security lighting associated with future development in the planning area.

The proposed Specific Plan includes design guidelines which address lighting in the planning area, including, but not limited to the following:

- Flood lighting is discouraged on the exterior of buildings; however, uplighting and indirect lighting to highlight key building features (i.e. tower elements) or signature landscaping is encouraged, where appropriate.
- Site, building, and sign lighting should be located and directed to light the intended area of illumination and to prevent off-site glare impacts on adjacent buildings and properties.
- Energy-efficient lighting (lighting from renewable sources and energy-saving devices, such as light sensors) is encouraged, whenever feasible.
- Pedestrian-scaled lighting is required along walkways and within parking areas and private outdoor spaces. Such lighting should be 10 to 15 in height. Bollard lighting may also be used. "Cobra head" lighting is strongly discouraged.
- Lighting should be provided at regular intervals to prevent the creation of light and dark pockets, which are undesirable.
- Over-lighting of buildings and sites should be prevented to avoid ruining desired nighttime ambience.

- Cutoff shields should be used to prevent light from emitting above the light source, to the maximum extent feasible.
- Where feasible, warm white, energy efficient lighting source types such as metal halide, induction lighting, compact fluorescent, and light-emitting diode (LED) should be used.

Future development within the planning area would be required to comply with the design guidelines by demonstrating the proposed exterior lighting is non-intrusive while still providing an adequate amount of light. Compliance with the design guidelines would therefore ensure that the proposed Specific Plan does not introduce substantial light and glare, which would pose a hazard or nuisance. Therefore, the proposed project would have a **less than significant impact**, and no mitigation is required.

3.2. Air Quality and Greenhouse Gases

This section analyzes the impacts associated with implementation of the proposed project on air quality, including short-term construction emissions, long-term operational impacts, and potential impacts on sensitive receptors.

Environmental Setting

Regional Setting

San Francisco Bay Area Air Basin

The City of Dublin is located in eastern Alameda County, which is within the San Francisco Bay Area Air Basin (hereinafter "Basin"). The Basin includes San Mateo, Santa Clara, Alameda, Contra Costa, Napa, and Marin counties, and forms a climatological sub-region. This climatological sub-region stretches from Richmond to San Leandro, bounded to the west by the San Francisco Bay and to the east by the Oakland-Berkeley Hills. The Oakland-Berkeley Hills have a ridgeline height of approximately 1,500 feet, a significant barrier to air flow. The most densely populated area of the sub-region lies in a strip of land between the bay and the lower hills.

In this area, marine air traveling through the Golden Gate, as well as across San Francisco and through the San Bruno Gap, is a dominant weather factor. The Oakland-Berkeley Hills cause the westerly flow of air to split off to the north and south of Oakland, which causes diminished wind speeds. The prevailing winds for most of this sub-region are from the west. At the northern end, near Richmond, prevailing winds are from the south-southwest. Temperatures in this sub-region have a narrow range due to the proximity of the moderating marine air. Maximum temperatures in summer average in the mid-70s, with minimums in the mid-50s. Winter highs are in the mid- to high-50s, with lows in the low- to mid-40s. The air pollution potential is lowest for the parts of the sub-region that is closest to the bay, largely due to good ventilation and less influx of pollutants from upwind sources. The occurrence of light winds in the evenings and early mornings occasionally cause elevated pollutant levels.

Topography and Meteorology

Ambient air quality is commonly characterized by climatological conditions, the meteorological influences on air quality, and the quantity and type of pollutants released. The Basin is subject to a combination of topographical and climatic factors that reduce the potential for high levels of regional and local air pollutants. The Basin is characterized by a complex terrain consisting of coastal mountain ranges, inland valleys, and the San Francisco Bay. It is generally bounded on the west by the Pacific Ocean, on the north by the Coast Ranges, and on the east and south by the Diablo Range.

Climate in the Basin is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell over the northeastern Pacific Ocean, as well as the moderating effects of the adjacent oceanic heat reservoir. Mild summers and winters, moderate windfall, daytime onshore breezes, and moderate humidity characterize regional

climatic conditions. In summer, when the high pressure cell is strongest and farthest north, fog forms in the morning and temperatures are mild. In winter, when the high pressure cell is weakest and farthest south, occasional rain storms occur.

In the City of Dublin, the climate is typically warm during summer, when temperatures tend to be in the 70s and 80s, and cool during winter, when temperatures tend to be in the 50s. The warmest month of the year is July with an average maximum temperature of 89 degrees Fahrenheit, while the coldest month of the year is December with an average minimum temperature of 37 degrees Fahrenheit. Temperature variations between night and day tend to be moderate during summer with a difference that can reach 24 degrees Fahrenheit, and moderate during winter with a difference of approximately 20 degrees Fahrenheit. The annual average precipitation in Dublin is 16.3 inches. Rainfall is fairly evenly distributed throughout the year. The wettest month of the year is January, with an average rainfall of 2.99 inches.[1]

Sunlight

The presence and intensity of sunlight is another important factor that affects air pollution. Typically, ozone is formed at higher temperatures. In the presence of ultraviolet sunlight and warm temperatures, volatile organic compounds (VOC) and nitrogen oxides (NOx) react to form secondary photochemical pollutants, including ozone.

Temperature Inversions

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). The highest air pollutant concentrations in the Basin generally occur during inversions.

Under ideal meteorological conditions and irrespective of topography, pollutants emitted into the air would be mixed and dispersed into the upper atmosphere. However, the region experiences temperature inversions in which pollutants are trapped and accumulate close to the ground. The inversion, a layer of warm, dry air overlaying cool, moist marine air, is a normal condition in the Basin. The cool, damp, and hazy sea air capped by coastal clouds is heavier than the warm, clear air that acts as a lid through which the marine layer cannot rise.

Local Ambient Air Quality

Criteria Air Pollutants

Local ambient air quality is monitored by the BAAQMD and the California Air Resources Board (CARB); refer to Table 3.2-1: Local Ambient Air Quality Levels. CARB monitors

[1] The Weather Channel, *Average Weather for San Bernardino, CA*, Accessed April 14, 2010. http://www.weather.com/outlook/events/weddings/wxclimatology/monthly/graph/USCA0314

ambient air quality at approximately 250 air-monitoring stations across the State. Air quality monitoring stations usually measure pollutant concentrations ten feet above-ground level; therefore, air quality is often referred to in terms of ground-level concentrations.

Table 3.2-1 Local Ambient Air Quality Levels

Pollutant	Standards (Allowable Amount)		Year	Maximum Concentration[1]	Days (Samples) State/Federal Standards was Exceeded
	California	Federal Primary			
Ozone (O_3) for 1 hour [2]	0.09 ppm	0.12 ppm	2007 2008 2009	0.120 ppm 0.141 0.113	2/0 5/2 0/0
Ozone (O_3) for 8 hour [2]	0.07 ppm	0.08 ppm	2007 2008 2009	0.091 ppm 0.110 0.086	3/2 8/6 8/6
Carbon Monoxide(CO) [2]	9.0 ppm (8 hour)	9.0 ppm (8 hour)	2007 2008 2009	1.83 1.43 1.31	0/0 0/0 0/0
Nitrogen Dioxide(NO_2) [2]	0.18 ppm (1 hour)	0.100 ppm (1 hour)	2007 2008 2009	0.052 0.058 0.052	0/NA 0/NA 0/NA
Particulate Matter(PM_{10}) [2,4,5]	50 mg/m^3 (24 hours)	150 mg/m^3 (24 hours)	2007 2008 2009	74.8 46.8 Not Available	2/0 0/0 NA
Fine Particulate Matter($PM_{2.5}$) [2,5]	12 mg/m^3 (annual arithmetic mean)	35mg/m^3 (24 hours)	2007 2008 2009	54.9 52.7 45.7	NA/3 NA/2 NA/4
Sulfur Dioxide (SO_2) [3]	0.04 ppm (24 hours)	0.14 ppm (24 hours)	2007 2008 2009	0.005 0.005 0.004	0/0 0/0 0/0

Notes:
1. Maximum concentrations are measured over the same period as the California standard.
2. Livermore Monitoring Station is located at 793 Rincon Avenue, Livermore, California 94550.
3. Berkley Monitoring Station is the only station in the San Francisco Air Basin that monitors SO_2 and is located at 1340 Sixth Street, Berkeley, California 94710.
4. PM_{10} exceedances are based on State thresholds established prior to amendments adopted on June 20, 2002.
5. PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.

Source: Aerometric Data Analysis and Measurement System, Summaries from 2007 to 2009 as found at http://www.arb.ca.gov/adam/

The nearest monitoring station to the project area is located in the City of Livermore at 793 Rincon Avenue. This station monitors all of the criteria pollutants except for Sulfur Dioxide (SO_2). The Berkeley Monitoring Station is the only station in the San Francisco Air Basin that monitors SO_2 and as such is included in Table 3.2-1: Local Ambient Air Quality

Levels. The following air quality information briefly describes the various types of pollutants monitored at the local stations.

Ozone

Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately ten miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" ozone) layer extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays (UV-B).

"Bad" ozone is a photochemical pollutant, and needs VOCs, NO_X, and sunlight to form; therefore, VOCs and NO_X are ozone precursors. VOCs and NO_X are emitted from various sources throughout the area. To reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors. Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While ozone in the stratosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system and other tissues. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems (such as forests and foothill communities) and damages agricultural crops and some man-made materials (such as rubber, paint, and plastics). Societal costs from ozone damage include increased healthcare costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. At high concentrations, CO can reduce the oxygen-carrying capacity of the blood and cause headaches, dizziness, unconsciousness, and death.

Nitrogen Dioxide

Nitrogen oxides (NO_X) are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone, and react in the atmosphere to form acid rain. Nitrogen dioxide (NO_2), often used interchangeably with NO_X, is a reddish-brown gas that can cause breathing difficulties at high levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g. motor vehicle engines, power plants, refineries, and other industrial operations).

NO_X can irritate and damage the lungs, and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However,

continued or frequent exposure to NO_X concentrations that are much higher than those normally found in the ambient air may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

Coarse Particulate Matter (PM_{10})

PM_{10} refers to suspended particulate matter (PM) which is smaller than 10 microns. PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. PM_{10} scatters light and significantly reduces visibility. In addition, these particulates penetrate the lungs and can potentially damage the respiratory tract.

Fine Particulate Matter ($PM_{2.5}$)

Due to recent increased concerns over health impacts related to fine particulate matter, both Federal and State standards have been created for $PM_{2.5}$. The impacts of fine particulate matter primarily affect infants, children, the elderly, and those with pre-existing cardiopulmonary disease.

Sulfur Dioxide

Sulfur dioxide is a colorless, pungent gas belonging to the family of sulfur oxide gases (SO_x), formed primarily by combustion of sulfur-containing fossil fuels (primarily coal and oil), and during metal smelting and other industrial processes. Sulfur dioxide (SO_2) is often used interchangeably with sulfur oxides (SO_x). The major health concerns associated with exposure to high concentrations of SO_x are effects on breathing, respiratory illness, diminishment of pulmonary defenses, and aggravation of existing cardiovascular disease. Major subgroups of the population that are most sensitive to SO_x are individuals with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema), as well as children and the elderly. Emissions of SO_x also can damage the foliage of trees and agricultural crops. Together, SO_x and NO_x are the major precursors to acid rain, which is associated with the acidification of lakes and streams, and the accelerated corrosion of buildings and public monuments. Sulfur oxides can react to form sulfates, which significantly reduce visibility.

Other Pollutants

CARB has identified lead and vinyl chloride as 'toxic air contaminants' (TACs) with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants. Additionally, because ambient concentrations of lead have decreased in the Basin, these pollutants are not measured at the monitoring stations.

Toxic Air Contaminants (TACs)

According to Section 39655 of the California Health and Safety Code, a toxic air contaminant is "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human

health". In addition, substances that have been listed as Federal hazardous air pollutants (HAPs) pursuant to Section 7412 of Title 42 of the United States Code are TACs under the State's air toxics program pursuant to Section 39657 (b) of the California Health and Safety Code.

TACs can cause various cancers, depending on the particular chemicals, their type, and duration of exposure. Additionally, some of the TACs may cause other health effects over the short or long term. TACs of particular concern for posing health risks in California are acetaldehyde, benzene, 1-3 butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchlorethylene, and diesel particulate matter.

Reactive Organic Gases and Volatile Organic Compounds

Volatile organic compounds (VOCs) are organic chemical compounds with sufficiently high vapor pressure such that they will tend to vaporize and enter ambient air under standard conditions. A wide range of carbon-based molecules, such as aldehydes, ketones, and hydrocarbons are VOCs. Hydrocarbons are organic gases, liquids, or solids that are formed solely of hydrogen and carbon. A subset of VOCs are reactive in the context of ozone formation at urban (and possibly regional) scales. Reactive Organic Gases (ROGs) are defined to be those VOCs that are regulated because they lead to ozone formation. Both ROGs and VOCs can be emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of VOCs are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation).

Reactive VOCs may result in the formation of ozone and its related health effects. Carcinogenic forms of VOCs are considered toxic air contaminants ("air toxics"). Some reactive VOCs are also toxic; an example is benzene, which is both a reactive VOC and a carcinogen.

Greenhouse Gases

The natural process through which heat is retained in the troposphere is called the "greenhouse effect."[2] The greenhouse effect traps heat in the troposphere through a three-fold process, summarized as follows: short wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long wave radiation; and greenhouse gases (GHGs) in the upper atmosphere absorb this long wave radiation and emit this long wave radiation into space and toward the Earth. This "trapping" of the long wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

[2] The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface to 10 to 12 kilometers.

The most abundant GHGs are water vapor and carbon dioxide. Many other trace gases have greater ability to absorb and re-radiate long wave radiation; however, these gases are not as plentiful. For this reason, and to gauge the potency of GHGs, scientists have established a Global Warming Potential for each GHG based on its ability to absorb and re-radiate long wave radiation. The Global Warming Potential of a gas is determined using carbon dioxide as the reference gas with a Global Warming Potential of one (1).

GHGs include, but are not limited to, the following:[3]

- *Water Vapor (H_2O)*. Although water vapor has not received the scrutiny of other GHGs, it is the primary contributor to the greenhouse effect. Natural processes, such as evaporation from oceans and rivers, and transpiration from plants, contribute 90 percent and 10 percent of the water vapor in our atmosphere, respectively.

  The primary human-related source of water vapor comes from fuel combustion in motor vehicles; however, this is not believed to contribute a significant amount (less than one percent) to atmospheric concentrations of water vapor. The Intergovernmental Panel on Climate Change has not determined a Global Warming Potential for water vapor.

- *Carbon Dioxide (CO_2)*. Carbon dioxide is primarily generated by fossil fuel combustion in stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources in the past 250 years, the concentration of carbon dioxide in the atmosphere has increased 35 percent.[4] Carbon dioxide is the most widely emitted GHG and is the reference gas (Global Warming Potential of 1) for determining Global Warming Potentials for other GHGs.

- *Methane (CH_4)*. Methane is emitted from biogenic sources, incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of methane are landfills, natural gas systems, and enteric fermentation. Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The Global Warming Potential of methane is 21.

- *Nitrous Oxide (N_2O)*. Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil

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[3] All Global Warming Potentials are given as 100-year Global Warming Potential. Unless noted otherwise, all Global Warming Potentials were obtained from the Intergovernmental Panel on Climate Change. (Intergovernmental Panel on Climate Change, *Climate Change, The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report of the IPCC*, 1996).

[4] United States Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 to 2004*, April 2006, http://www.epa.gov/climatechange/emissions/usinventoryreport.html.

fuel, adipic acid production, and nitric acid production. The Global Warming Potential of nitrous oxide is 310.

- *Hydrofluorocarbons (HFCs)*. HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is growing, as the continued phase out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The Global Warming Potential of HFCs range from 140 for HFC-152a to 6,300 for HFC-236fa.

- *Perfluorocarbons (PFCs)*. Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a by-product of aluminum production and semi-conductor manufacturing. Perfluorocarbons are potent GHGs with a Global Warming Potential several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years).[5] The Global Warming Potential of PFCs range from 5,700 to 11,900.

- *Sulfur hexafluoride (SF_6)*. Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the Intergovernmental Panel on Climate Change with a Global Warming Potential of 23,900. However, its global warming contribution is not as high as the Global Warming Potential would indicate due to its low mixing ratio compared to carbon dioxide (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm]).[6]

In addition to the six major GHGs discussed above (excluding water vapor), many other compounds have the potential to contribute to the greenhouse effect. Some of these substances were previously identified as stratospheric ozone (O_3) depletors; therefore, their gradual phase out is currently in effect. The following is a listing of these compounds:

- *Hydrochlorofluorocarbons (HCFCs)*. HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, all developed countries that adhere to the Montreal Protocol are subject to a consumption cap and gradual phase out of HCFCs. The United States is scheduled to achieve a 100 percent

[5] Energy Information Administration, *Other Gases: Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride*, October 29, 2001, http://www.eia.doe.gov/oiaf/1605/gg00rpt/other_gases.html.

[6] United States Environmental Protection Agency, *High GWP Gases and Climate Change*, October 19, 2006, http://www.epa.gov/highgwp/scientific.html#sf6.

reduction to the cap by 2030. The Global Warming Potentials of HCFCs range from 93 for HCFC-123 to 2,000 for HCFC-142b.[7]

- *1,1,1 trichloroethane*. 1,1,1 trichloroethane, or methyl chloroform, is a solvent and degreasing agent commonly used by manufacturers. The Global Warming Potential of methyl chloroform is 110 times that of carbon dioxide.[8]

- *Chlorofluorocarbons (CFCs)*. CFCs are used as refrigerants, cleaning solvents, and aerosol spray propellants. CFCs were also part of the EPA's Final Rule (57 FR 3374) for the phase out of O_3 depleting substances. Currently, CFCs have been replaced by HFCs in cooling systems and a variety of alternatives for cleaning solvents. Nevertheless, CFCs remain suspended in the atmosphere, contributing to the greenhouse effect. CFCs are potent GHGs with Global Warming Potentials ranging from 4,600 for CFC 11 to 14,000 for CFC 13.[9]

Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive populations (or sensitive receptors) that are in proximity to localized sources of toxics and CO are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The project area includes the 238-room Holiday Inn hotel and a senior center with an associated 54-unit Wicklow Square apartment complex. Residential uses are located adjacent to the project area to the north, east, and west.

Odors

Offensive odors rarely cause physical harm; however, they can be very unpleasant, leading to considerable stress among the public and often generating citizen complaints to local governments and agencies. Facilities commonly known to produce odors include wastewater treatment facilities, chemical manufacturing, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations. Offensive odors rarely cause physical harm, and no requirements for their control are included in State and Federal air quality regulations. However, the BAAQMD has identified land use and operation types that are typically associated with producing odors. No facilities in the DDSP area have

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7 United States Environmental Protection Agency, *Protection of Stratospheric Ozone: Listing of Global Warming Potential for Ozone Depleting Substances*, November 7, 2006, http://www.epa.gov/fedrgstr/EPA AIR/1996/January/Day 19/pr 372.html.

8 United States Environmental Protection Agency, *Protection of Stratospheric Ozone: Listing of Global Warming Potential for Ozone Depleting Substances*, November 7, 2006, http://www.epa.gov/fedrgstr/EPA AIR/1996/January/Day 19/pr 372.html.

9 United States Environmental Protection Agency, *Class I Ozone Depleting Substances*, March 7, 2006, http://www.epa.gov/ozone/ods.html.

been reported as releasing offensive odors. Additionally, the DDSP does not propose uses identified by the BAAQMD as sources of odors.

Regulatory Setting

Regulatory oversight for air quality in the Basin rests with the Environmental Protection Agency (EPA) Region IX office at the Federal level, CARB at the State level, and with the BAAQMD at the regional level.

Federal

Environmental Protection Agency

The principal air quality regulatory mechanism on the Federal level is the Clean Air Act (FCAA) and, in particular, the 1990 amendments to the FCAA and the National Ambient Air Quality Standards (NAAQS) that it establishes. These standards identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The criteria pollutants are O_3, CO, NO_2 (a form of NO_x), SO_2 (a form of SO_x), PM_{10}, $PM_{2.5}$, and lead (Pb); refer to Table 3.2-2: National and California Ambient Air Quality Standards. The EPA also has regulatory and enforcement jurisdiction over emission sources beyond State waters (outer continental shelf) and those that are under the exclusive authority of the Federal government, such as aircraft, locomotives, and interstate trucking.

Table 3.2-2: National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California[1]	Federal Standards[2]	
		Standard [3]	Primary [3, 4]	Secondary [3, 5]
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m)	N/A[5]	N/A[5]
	8 Hour	0.070 ppm (137 ugm^3)	0.075 ppm (147 μg/m^3)	0.075 ppm (147 μg/m^3)
Particulate Matter (PM_{10})	24 Hour	50 μg/m^3	150 μg/m^3	150 μg/m^3
	Annual Arithmetic Mean	20 μg/m^3	N/A[5]	N/A[5]
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard	35 μg/m^3	35 μg/m^3
	Annual Arithmetic Mean	12 μg/m^3	15.0 μg/m^3	15.0 μg/m3
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 μg/m^3)	9 ppm (10 μg/m^3)	9 ppm (10 μg/m^3)
	1 Hour	20 ppm (23 μg/m^3)	35 ppm (40 μg/m^3)	35 ppm (40 μg/m^3)
Nitrogen Dioxide (NO_2)[7]	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)	0.053 ppm (100 μg/m^3)	0.053 ppm (100 μg/m^3)
	1 Hour	0.18 ppm (339 μg/m^3)	0.100 ppm	0.100 ppm
Lead (Pb)	30 Days Average	1.5 μg/m^3	N/A	N/A
	Calendar Quarter	N/A	1.5 μg/m^3	1.5 μg/m^3
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	N/A	0.030 ppm (80 μg/m^3)	N/A
	24 Hour	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)	N/A
	3 Hour	N/A	N/A	0.5 ppm (1300 μg/m^3)
	1 Hour	0.25 ppm (655 μg/m^3)	75 ppb	N/A
Visibility-Reducing Particles	8 Hour (10 am to 6 pm, PST)	Extinction Coefficient = 0.23 km@<70% RH	No Federal Standards	
Sulfates	24 Hour	25 μg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m^3)		

ppm = parts per million; μg/ m^3 = micrograms per cubic meter; mg/ m^3 = milligrams per cubic meter; km = kilometers; RH = relative humidity; PST = Pacific Standard Time; N/A = not applicable; ppb=parts per billion

Notes:

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter (PM_{10}), and visibility-reducing particles are values that are not to be exceeded. All other values are not to be equaled or exceeded. California ambient air quality standards (CAAQS) are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations. In 1990, the CARB identified vinyl chloride as a Toxic Air Contaminant and determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010-ppm ambient concentration specified in the 1978 standard.
2. Federal standards (other than for ozone, for particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. EPA also may designate an area as attainment/unclassifiable if (1) monitored air quality data show that the area has not violated the ozone standard over a three-year period; or (2) there is not enough information to determine the air quality in the area. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over the three years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3. Concentration is expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees centigrade (°C) and a reference pressure of 760 millimeters (mm) of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); parts per million (ppm) in this table refers to ppm by volume (micromoles of pollutant per mole of gas).
4. Federal Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. The Federal 1-hour ozone standard was revoked on June 15, 2005 in all areas except the 14 8-hour ozone nonattainment Early Action Compact (EAC) areas.
6. The Environmental Protection Agency revoked the annual PM_{10} standard in 2006 (effective December 16, 2006).
7. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

Source: California Air Resources Board, August 3, 2010

State

California Air Resources Board

CARB administers the air quality policy in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 3.2-2: National and California Ambient Air Quality Standards, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates.

California Global Climate Change Regulatory Programs

Executive Order S-3-05. In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050. The Secretary of the California Environmental Protection Agency (the Secretary) is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agencies involved in the GHG reduction plan include Secretary of Business, Transportation, and Housing Agency, Secretary of Department of Food and Agriculture, Secretary of Resources Agency, Chairperson of CARB, Chairperson of the Energy Commission, and the President of the Public Utilities Commission. The Secretary is required to submit a biannual progress report to the Governor and State Legislature disclosing the progress made toward GHG emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California's water supply, public health, agriculture, and the coastline and forestry, and reporting possible mitigation and adaptation plans to combat these impacts.

Executive Order S-1-07. On January 18, 2007, California further solidified its dedication to reducing GHGs by setting a new Low Carbon Fuel Standard for transportation fuels sold within the State. Executive Order S-1-07 sets a declining standard for GHG emissions measured in carbon dioxide equivalent gram per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least ten percent by 2020. The Low Carbon Fuel Standard applies to refiners, blenders, producers, and importers of transportation fuels, and would use market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods. The Executive Order requires the Secretary of the California Environmental Protection Agency to coordinate with actions of the California Energy Commission, CARB, the University of California, and other agencies to develop a protocol to measure the "life cycle carbon intensity" of transportation fuels.

Executive Order S-13-08. Issued on November 14, 2008, Executive Order S-13-08 intends to enhance the State's management of climate impacts from sea level rise, increased temperatures, shifting precipitation, and extreme weather events. There are four

key actions in this Executive Order, including: (1) initiate California's first State-wide climate change adaptation strategy that assesses the State's expected climate change impacts, identifies where California is most vulnerable, and recommends climate adaptation policies; (2) request the National Academy of Science establish an expert panel to report on sea level rise impacts in California to inform State planning and development efforts; (3) issue interim guidance to State agencies for how to plan for sea level rise in designated coastal and floodplain areas for new projects; and (4) initiate a report on critical existing and planned infrastructure projects vulnerable to sea level rise.

Executive Order S-13-08 aims to facilitate California's first comprehensive climate adaptation strategy. This effort improves coordination within State government and adapts the way State agencies work so that better planning can more effectively address climate impacts to human health, the environment, the State's water supply, and the economy. Additionally, this effort provides consistency and clarity to State agencies on how to address sea level rise in current planning efforts, reducing time and resources unnecessarily spent on developing different policies using different scientific information. In response to Executive Order S-13-08, the California Natural Resources Agency prepared the *2009 California Adaptation Strategy* in December 2009.

Assembly Bill 1493. In response to the transportation sector accounting for more than half of California's carbon dioxide (CO_2) emissions, Assembly Bill (AB) 1493 (AB 1493, Pavley) was enacted on July 22, 2002. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light duty trucks, and other vehicles whose primary use is noncommercial personal transportation in the State. The bill required that CARB set the GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. In setting these standards, CARB must consider cost effectiveness, technological feasibility, economic impacts, and provide maximum flexibility to manufacturers. CARB adopted the standards in September 2004. These standards are intended to reduce emissions of CO_2 and other GHGs (e.g., nitrous oxide [N_2O] and methane [CH_4]).

Assembly Bill 32. The Legislature enacted AB 32 (AB 32, Nuñez), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006 to further the goals of Executive Order S-3-05. AB 32 represents the first enforceable State-wide program to limit GHG emissions from all major industries, with penalties for noncompliance and requires California to reduce its GHG emissions by approximately 28 to 33 percent below "business as usual" levels. . CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. The foremost objective of CARB is to adopt regulations that require the reporting and verification of State-wide GHG emissions. This program would be used to monitor and enforce compliance with the established standards. The first GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately

responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted. In order to advise CARB, it must convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee. In December 2008, CARB adopted a scoping plan to achieve reductions in GHG emissions in California. The plan indicates how reductions in significant GHG sources would be achieved through regulations, market mechanisms, and other actions.

Senate Bill 97. Senate Bill (SB) 97 of 2007 requires the California Office of Planning and Research (OPR) to develop CEQA guidelines for analysis and, if necessary, the mitigation of effects of GHG emissions to the Resources Agency. These guidelines for analysis and mitigation must address, but are not limited to, GHG emissions effects associated with transportation or energy consumption. On December 30, 2009, the Natural Resources Agency adopted the CEQA Guidelines Amendments prepared by OPR, as directed by SB 97. On February 16, 2010, the Office of Administration Law approved the CEQA Guidelines Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The CEQA Guidelines Amendments became effective on March 18, 2010. These new guidelines require a survey of existing climate change analyses performed by various lead agencies under CEQA.[10] In his signing statement, Governor Arnold Schwarzenegger noted:

> *Current uncertainty as to what type of analysis of greenhouse gas emissions is required under the California Environmental Quality Act has led to legal claims being asserted, which would stop these important infrastructure projects. Litigation under CEQA is not the best approach to reduce greenhouse gas emissions and maintain a sound and vibrant economy. To achieve these goals, we need a coordinated policy, not a piecemeal approach dictated by litigation.*

Senate Bill 375. SB 375 requires metropolitan planning organizations to include Sustainable Community Strategies (SCS) in their regional transportation plans. The purpose of SB 375 is to reduce GHG emissions from automobiles and light trucks, require CARB to provide GHG emission reduction targets from the automobile and light truck sector for 2020 and 2035, and update the regional targets until 2050. SB 375 would require certain transportation planning and programming activities to be consistent with the sustainable communities strategies contained in the regional transportation plan. The bill also requires affected regional agencies to prepare an alternative planning strategy to the sustainable communities strategies if the sustainable communities strategy is unable to achieve the GHG emissions reduction targets. Governor Schwarzenegger signed and approved SB 375 on September 30, 2008.

[10] http://ceres.ca.gov/ceqa/docs/Adopted_Text_of_SB97_CEQA_Guidelines_Amendments.pdf. Accessed January 15, 2010.

Senator Steinberg, author of SB 375, is also making efforts to clean up the bill. Steinberg authored the new SB 575 as the clean-up bill for SB 375. The clean-up efforts include CEQA streamlining changes for projects that are consistent with the SCS. Currently, SB 375 applies those streamlining provisions to residential and mixed-use projects. The Governor and many interest groups are also lobbying to extend those provisions to Proposition 1B Transportation projects, State highway projects, and infrastructure, retail, and commercial development. A timetable to eliminate schedule conflicts with the new eight-year housing element and the four-year Regional Transportation Plan is also being considered. In addition to SB 575, there will continue to be ongoing discussions with CARB to coordinate AB 32 local land use implementation strategies with SB 375, including new proposed CARB CEQA thresholds of significance to determine which projects will be subject to AB 32 requirements.

Local

City of Dublin Climate Action Plan

The City of Dublin prepared a Draft Climate Action Plan and Initial Study/Mitigated Negative Declaration in July 2010. City's Climate Action Plan provides background on actions taken to curb GHG emissions; presents Dublin's baseline GHG emissions inventory in 2005 and forecast for GHG emissions in 2020 based on business-as-usual scenario; establish a GHG emissions reduction target; and present steps for implementation of the Plan and monitoring and verification of the Plan to achieve the designated emissions reduction target.

The City's Climate Action Plan serves as the City of Dublin's qualified GHG Reduction Plan and programmatic tiering document for the purposes of CEQA for the analysis of impacts to greenhouse gas emissions and climate change. The City has determined that the reduction target under the CAP will reduce the impact from activities under the CAP to a less than significant level under CEQA. If a proposed project is consistent with the applicable emission reduction measures identified in the CAP, the project would be considered to have a less than significant impact (i.e. less than cumulatively considerable contribution to significant cumulative impact) due to GHG emissions and climate change consistent with Public Resources Code Section 21083.3 and CEQA Guidelines Sections 15183.5, 15064, and 15130.

Bay Area Air Quality Management District

The BAAQMD is responsible for regulating stationary, indirect, and area sources of pollution within the Basin. The BAAQMD is one out of 35 air quality management districts that have prepared Air Quality Management Plans (AQMPs) to accomplish the five percent annual reduction goal required by the CCAA. The following notes efforts by the BAAQMD to address ozone and ozone precursors through the implementation of the *Ozone Strategy* and *Clean Air Plan*.

2005 Ozone Strategy. The BAAQMD prepared the Bay Area *2005 Ozone Strategy*, which was adopted on January 4, 2006, and describes how the Basin will fulfill California Clean Air

Act planning requirements for the State 1-hour ozone standard and transport mitigation requirements through the proposed control strategy. The *2005 Ozone Strategy* explains how the BAAQMD plans to achieve these goals with regard to ozone, and also discusses related air quality issues of interest, including the public involvement process, climate change, fine particulate matter, the BAAQMD's Community Air Risk Evaluation (CARE) program, local benefits of ozone control measures, the environmental review process, national ozone standards, and photochemical modeling.

2000 Clean Air Plan. The BAAQMD's *2000 Clean Air Plan* aims to reduce emissions of certain air pollutants, including reactive organic gases (ROG) and nitrogen oxides (NO_x), that lead to ozone or "smog" formation in the lower atmosphere. The Clean Air Plan addresses several areas, including air pollution sources, ozone trends, particulate matter, control measures for ozone, control strategy, and future air quality planning.

2010 Clean Air Plan. The BAAQMD is in the process of preparing the *2010 Bay Area Clean Air Plan*. The *2010 Bay Area Clean Air Plan* will update the Bay Area 2005 Ozone Strategy in accordance with the California Clean Air Act requirements to implement "all feasible measures" to reduce ozone. The 2010 Plan will also consider the impacts of ozone control measures on particulate matter, air toxics, and greenhouse gases. Additionally, the 2010 Bay Area Clean Air Plan will review progress in improving air quality in recent years, and will establish emission control measures to be adopted or implemented in the 2010 through 2012 timeframe. On March 11, 2010, the BAAQMD released the Draft 2010 Clean Air Plan for public review and comment with adoption anticipated in Fall 2010.

State Air Toxics Program

Toxic air contaminants are another group of pollutants of concern in California. There are hundreds of different types of toxic air contaminants, with varying degrees of toxicity. Sources of toxic air contaminants include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle engine exhaust. Public exposure to toxic air contaminants can result from emissions from normal operations, as well as accidental releases of hazardous materials during upset spill conditions. Health effects of toxic air contaminants include cancer, birth defects, neurological damage, and death.

California regulates toxic air contaminants through its air toxics program, mandated in Chapter 3.5 (Toxic Air Contaminants) of the *Health and Safety Code* (*Health and Safety Code* Section 39660 et seq.) and Part 6 (Air Toxics "Hot Spots" Information and Assessment) (Health and Safety Code Section 44300 et seq.). CARB, working in conjunction with the State Office of Environmental Health Hazard Assessment, identifies toxic air contaminants. Air toxic control measures may then be adopted to reduce ambient concentrations of the identified toxic air contaminant to below a specific threshold, based on its effects on health, or to the lowest concentration achievable through use of best available control technology (BACT) for toxics. The program is administered by CARB. Air quality control agencies, including the BAAQMD, must incorporate air toxic

control measures into their regulatory programs or adopt equally stringent control measures as rules within six months of adoption by CARB.

Attainment Status

The Basin is considered in attainment or unclassified for most of the criteria pollutants for State and Federal considerations, except for O_3, PM_{10}, and $PM_{2.5}$. Under Federal regulations the Basin is designated an unclassified/attainment area for PM_{10} standards (see Table 3.2-3: San Francisco Bay Air Basin Attainment Status).

Table 3.2-3: San Francisco Bay Air Basin Attainment Status [1]

Pollutant	State	Federal
Carbon Monoxide (CO)	Attainment	Attainment
Ozone (O_3) – 8 hour	**Non-attainment**	**Non-Attainment**
Ozone (O_3) – 1 hour	**Non-attainment**	--[2]
Nitrogen Dioxide (NO_2) – 1 hour	Attainment	--
Nitrogen Dioxide – Annual Arithmetic Mean	--	Attainment
Sulfur Dioxide (SO_2) – 24 hour	Attainment	Attainment
Sulfur Dioxide (SO2) – 1 hour	Attainment	--
Particulate Matter (PM_{10}) – Annual Arithmetic Mean	**Non-Attainment**	--
Particulate Matter (PM_{10}) – 24 hour	**Non-Attainment**	Unclassified
Particulate Matter ($PM_{2.5}$) – Annual Arithmetic Mean	**Non-attainment**	--
Particulate Matter ($PM_{2.5}$) – 24 hour	**--**	**Non-attainment**
Sulfates – 24 hour	Attainment	**--**
Lead – Calendar Quarter	--	Attainment
Lead – 30 Day Average	Attainment	--
Hydrogen Sulfide – 1 hour	Unclassified	--
Vinyl Chloride (chloroethene) – 24 hour	--	--
Visibility Reducing Particulates[3]	Unclassified	--

Notes:
N/A – Not Applicable
1. In order for an area to meet a particular standard, all time tests of the applicable standard must be met. Separate designations are not made for each time component of the standard. For instance, an area might meet the annual criteria of the State PM_{10} standard but not the 24-hour requirement. In that case, the area fails to meet the standard and would be designated nonattainment for the State PM_{10} standard. Thus, a single designation is made for each State and Federal standard based on whether or not the area meets all the aspects of the standard. Designations for State standards are made by ARB while designations for Federal standards are made by EPA.
2. The national 1-hour ozone standard was revoked by the U.S. EPA on June 15, 2005.
3. The U.S. EPA lowered the 24-hour $PM_{2.5}$ standard from 65 ug/m^3 to 35 ug/m^3 in 2006. EPA issued attainment status designations for the 35 ug/m^3 $PM_{2.5}$ standard. The EPA designation will be effective 90-days after publication of the regulation in the Federal Register. President Obama has ordered a freeze on all pending Federal rules; therefore, the effective date of the designation is unknown at this time.

Source: BAAQMD, Air Quality Standards and Attainment Status, 2010.
(http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm)

City of Dublin General Plan

The following policies in the *City of Dublin General Plan* are applicable to air quality within the DDSP area.

7.4: Implementing Policy A. Request the Bay Area Air Quality Management District (BAAQMD) to establish an air quality monitoring station in Dublin.

Relevant Project Characteristics

Development activities under the DDSP are assumed to occur over the next 15 to 20 years. During that time, it is assumed that only a portion of the existing land uses will be redeveloped and that many of the existing structures will essentially remain the same in size and configuration with the exception of remodeling of existing structures.

Impacts and Mitigation Measures

Criteria for Determining Significance

In accordance with CEQA, *State CEQA Guidelines*, and agency and professional standards, a project impact would be considered significant if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan. For purposes of this EIR and based on the *BAAQMD CEQA Guidelines*, the proposed project must satisfy the following standards to be consistent with the BAAQMD's *2005 Ozone Strategy* and thus result in a less than significant impact: 1) Consistency with the population and vehicle miles traveled assumptions in the Clean Air Plan; and 2) Consistency With Clean Air Plan Transportation Control Measures;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. For the purposes of this EIR, a significant impact will result if a Specific Plan conflicts with or obstructs the implementation of greenhouse gas reduction measures under AB 32; and/or conflicts with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Impacts and Mitigation Measures

Short-Term Construction Emissions

Impact 3.2-1: The proposed project would result in short-term air quality impacts associated with construction activities, including grading, operation of equipment, and demolition of existing structures within the project area. However, future development within the project area would be required to comply with the BAAQMD Control Measures for particulate matter during construction activities. Therefore, this would be considered a less than significant impact.

New emissions would be generated from construction activities associated with development allowed under the proposed DDSP. Under the DDSP, varying amounts of

construction would likely occur over time until buildout of the DDSP is achieved. Construction-related emissions would result from excavation, grading, demolition, vehicle travel on paved and unpaved surfaces, and vehicle and equipment exhaust. Individual projects would vary in size and have the potential to generate significant construction emissions. BAAQMD emphasizes the implementation of effective and comprehensive control measures rather than detailed quantification of construction emissions. BAAQMD has identified a set of feasible particulate matter control measures for construction activities. These are outlined in Table 3.2-4: San Francisco Bay Area Air Quality Management District Control Measures.

Table 3.2-4: San Francisco Bay Air Quality Management District Control Measures

Basic Control Measures – The following controls should be implemented at all construction sites:
• Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose materials *or* require all trucks to maintain at least two feet of freeboard. • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites. • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites. • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
Enhanced Control Measures – The following measures should be implemented at construction sites greater than four acres in area:
• All "Basic" control measures listed above. • Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more). • Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.) • Limit traffic speeds on unpaved roads to 15 mph. • Install sandbags or other erosion control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as quickly as possible.
Optional Control Measures – The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or which for any other reason may warrant additional emissions reductions:
• Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site. • Install wind breaks, or plant trees/vegetative wind breaks at windward side(s) of construction areas. • Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph. • Limit the area subject to excavation, grading, and other construction activity at any one time.
Source: BAAQMD 1999

"Basic Control Measures" should be implemented at all construction sites, regardless of size. Additional "Enhanced Control Measures" should be implemented at construction sites larger than four acres, from which particulate matter emissions would likely be higher. "Optional Control Measures" may be implemented if further emission reductions are deemed necessary by the Lead Agency. If each of the applicable measures are implemented as appropriate, air pollutant emissions from construction activities under the DDSP would be considered a less than significant impact.

Under the DDSP, the potential exists for a number of construction projects to occur every year. It would be speculative to quantify the annualized emissions related to construction activities associated with future projects under the DDSP, as the scale and timing of each construction event is currently unknown, and such speculative quantification is not currently required or recommended by BAAQMD. However, future individual projects under the DDSP would be subject to new project-level emission thresholds in the *BAAQMD Draft CEQA Guidelines*, if adopted. Through the environmental review process for individual projects, additional mitigation may also be required to further reduce emissions and potential impacts on a project-by-project basis. In addition, future development within the project area would be required to comply with BAAQMD Regulation 8, Rule 3 (Architectural Coatings). Adherence to these BAAQMD Control Measures and Regulation 8, Rule 3 would ensure that the proposed Specific Plan would have a less than significant impact during short-term construction activities.

Long-Term Operational Emissions

Impact 3.2-2: The proposed project is consistent with population growth assumptions in the Clean Air Plan, is anticipated to result in reduced VMT compared to population growth, and is consistent with the Plan's Transportation Control Measures. This is considered a less than significant impact.

Implementation of the DDSP would result in new emissions generated by future development within the Downtown Dublin area. Future development would introduce new stationary and mobile source air emissions into the project area.

Area Source Emissions

Area source emissions would be generated due to an increased demand for electrical energy and natural gas associated with the development of the proposed improvement. This is based on the assumption that those power plants supplying electricity to the project area are utilizing fossil fuels. Electric power generating plants are distributed throughout the Basin and western United States, and their emissions contribute to the total regional pollutant burden. The primary use of natural gas by the future development in the project area would be for combustion to produce space heating, water heating, other miscellaneous heating, or air conditioning, consumer products, and landscaping. As shown on Table 3.2-5: Operational Emissions, area source emissions from the proposed project would not exceed BAAQMD thresholds for ROG, NO_X, and PM_{10}. Thus, area source emissions would be **less than significant**.

Table 3.2-5: Operational Emissions

Source[2]	Estimated Annual Average Emissions (pounds/day) [1]		
	ROG	NO_X	PM_{10}
Area	64.13	34.05	0.15
Mobile	1,352.39	1,784.18	3,262.64
Total	1,416.52	1,818.23	3,262.79
BAAQMD Threshold	*80*	*80*	*80*
Threshold Exceeded?	Yes	Yes	Yes

Notes:
1. Emissions estimates calculated using URBEMIS 2007 (version 9.2.4).
2. Emissions estimates calculated using the land use categories/intensities depicted in Section 2, Project Description.

Refer to Appendix D, Air Quality Data, for detailed model input/output data.

Mobile Source Emissions

Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Project-generated vehicle emissions have been estimated using the URBEMIS 2007 model. This model was utilized to predict ROG, NO_X, and PM_{10} emissions from motor vehicle traffic associated with the proposed project.

As shown in Table 3.2-5: Operational Emissions are emissions generated by vehicle traffic associated with the proposed project would exceed established BAAQMD thresholds for ROG, NO_X, and PM_{10}. As the sum of mobile source and area source emissions would exceed BAAQMD thresholds for ROG, NO_X, and PM_{10}.

The DDSP includes a number of policies to address potential air quality impacts that could result from future development. The following guiding principles of the DDSP would help reduce potential regional and local air quality emissions by encouraging the use of transit, alternative transportation modes, and sustainable development:

Downtown Dublin Guiding Principles

- Create a pedestrian-friendly downtown that minimizes potential conflicts between vehicles, pedestrians, and bicyclists.
- Encourage a greater joint use of parking areas through compatible mixes of uses and enhanced pedestrian connections.
- Consider more flexible and appropriate parking standards that reflect verifiable demand and consider the transit-oriented land uses in the area.
- Enhance the multi-modal circulation network to better accommodate alternative transportation choices including BART, bus, bicycle, and pedestrian transportation.

Transit-Oriented District Guiding Principles

- Promote transit-oriented development to create a distinctive and active district.

- Identify opportunity sites for future development that incorporate mixed-use and provide public and/or private plazas and outdoor gathering areas at strategic locations.
- Encourage underground and/or above ground parking structures.
- Discourage housing along Dublin Boulevard unless part of a mixed-use development with ground floor office or retail uses.

Village Parkway District Guiding Principles

- Create opportunities for integrating live/work units into the Village Parkway area.
- Consider an appropriate site(s) for high density housing.

Consistency with Ozone Strategy Transportation Control Measures

The *2005 Ozone Strategy* includes 20 Transportation Control Measures (TCMs), of which seven require participation at the local level. Table 3.2-6: Clean Air Plan Consistency Analysis, lists DDSP policies that are supportive of the *2005 Ozone Strategy* TCMs. A description of each TCM is provided along with a listing of relevant policies that would implement each measure. The proposed policies support and reasonably implement the applicable Clean Air Plan TCMs.

Table 3.2-6: Clean Air Plan Consistency Analysis

Transportation Control Measures	Relevant Downtown Dublin Specific Plan Principles and Policies
TCM 1: Support voluntary employer-based trip reduction programs	*Village Parkway District Guiding Principles* Create opportunities for integrating live/work units into the Village Parkway area.
TCM 3: Improve Local and Areawide Bus Service	*Downtown Dublin Guiding Principles* Enhance the multi-modal circulation network to better accommodate alternative transportation choices including BART, bus, bicycle, and pedestrian transportation. Create opportunities for integrating live/work units into the Village Parkway area. *Retail District Guiding Principles* Identify ways to improve/enhance non-vehicular and vehicular circulation and connections that are pedestrian friendly, particularly in areas that contain large, expansive parking lots. Transit-Oriented District Guiding Principles Promote transit-oriented development to create a distinctive and active district.
TCM 9: Improve bicycle access and facilities	*Downtown Dublin Guiding Principles* Enhance the multi-modal circulation network to better accommodate alternative transportation choices including BART, bus, bicycle, and pedestrian transportation.
TCM 15: Local clean air plans policies and programs should incorporate measures to reduce the number and length of single-vehicle occupant trips	*Downtown Dublin Guiding Principles* Encourage a greater joint use of parking areas through compatible mixes of uses and enhanced pedestrian connections. *Transit-Oriented District Guiding Principles* Promote transit-oriented development to create a distinctive and active district. Identify opportunity sites for future development that incorporate mixed-use and provide public and/or private plazas and outdoor gathering areas at strategic locations. *Village Parkway District Guiding Principles* Create opportunities for integrating live/work units into the Village Parkway area.
TCM 17: Conduct demonstration projects which will reduce vehicle emissions	*Downtown Dublin Guiding Principles* Promote transit-oriented development to create a distinctive and active district. Transit-Oriented District Guiding Principles: Identify opportunity sites for future development that incorporate mixed-use and provide public and/or private plazas and outdoor gathering areas at strategic locations.
TCM 19: Promote pedestrian travel	*Downtown Dublin Guiding Principles* Encourage a greater joint use of parking areas through compatible mixes of uses and enhanced pedestrian connections.
TCM 20: Promote traffic calming	*Downtown Dublin Guiding Principles* Create a pedestrian-friendly downtown that minimizes potential conflicts between vehicles, pedestrians, and bicyclists.
Source: RBF Consulting, *Downtown Dublin Specific Plan*, March 2010.	

All projects within the Specific Plan area would be required to be consistent with these policies intended to reduce air quality impacts by increasing alternatives to individual automobile use supporting a mix of complimentary land uses to reduce trips and facilitating sustainable infill development. Through the environmental review process for individual projects, additional mitigation may also be required to further reduce emissions and potential impacts on a project-by-project basis. Individual projects planned under the DDSP would be subject to BAAQMD's operational emissions thresholds. Many of the

individual projects would be small, and their mobile and area operational emissions would not be expected to exceed BAAQMD's operational emissions thresholds. For plan-level air quality analyses (i.e., general plans, specific plans), the BAAQMD recommends a consistency analysis with the adopted *2005 Ozone Strategy*. Therefore, in addition to assessing the DDSP operational impacts against BAAQMD thresholds (refer to Table 3.2-4), a consistency analysis has also be prepared, comparing the DDSP to the *2005 Ozone Strategy* TCMs (refer to Table 3.2-6).

The goals and policies of the DDSP would encourage: local and regional transit services, bicycle and pedestrian networks, alternatives to automotive transportation, and land use decisions which would help to reduce the increased rate of VMT as compared to that associated with automotive transportation only. For example, the West Dublin/Pleasanton BART Station is currently being constructed and would serve the DDSP area. The station is located along BART tracks with pedestrian bridges over Interstate 580 that connect to Golden Gate Drive in Dublin and to Stoneridge Mall Road in Pleasanton. Parking structures have been constructed on both sides of Interstate 580 to accommodate BART passengers. Station access is a key element in the planning of BART stations and facilitates the location of transit-oriented developments in Downtown Dublin.

Consistency with Ozone Strategy Population Projections

The *2005 Ozone Strategy* was developed utilizing the most recent ABAG population projections available and vehicle activity projections. These projections are based on land use designations developed by cities and counties through local and regional planning processes. This existing number of dwelling units and commercial square footage used in this EIR is a more accurate number than that used in the *2005 Ozone Strategy* because it is based on more recent data from the County Assessor, the California Department of Finance, and private data vendors.

Future development under the DDSP would affect emissions of ozone precursor pollutants and particulate matter ($PM_{2.5}$ and PM_{10}), both of which affect regional air quality. The purpose of the DDSP is to consolidate the five Specific Plans that apply to the Downtown Dublin Area. The DDSP would replace four of the current Specific Plans and the fifth for the portion that is within the DDSP Area. It focuses on strengthening the development standards and design guidelines and providing greater direction as to future land uses, particularly in the transit-oriented area south of Dublin Boulevard. Therefore, the proposed project would not result in future changes in development patterns that affect regional air quality that are accounted for in the *2005 Ozone Strategy*.

The strengthening of development standards would facilitate mixed-use, live/work, and transit-oriented development, and would encourage alternative modes of transportation which would reduce vehicle miles traveled (VMT). Therefore, the proposed project would result in less vehicle use than what is assumed in the *2005 Ozone Strategy*. Traffic modeling conducted for the DDSP reflects a lower rate of VMT growth than population growth. The projected population growth would be 31.7 percent from 2009 through 2015 based on the project market demand analysis within the DDSP. The projected growth rate of

VMT would be 23.4 percent in the same time frame. The VMT estimate is based on the scenario where not all development is built out in order to be consistent with the 2009-2015 time frame. Additionally, the DDSP proposes downtown development near transit and includes extensive policies intended to reduce VMT. The DDSP policies would reduce VMT by creating a pedestrian-friendly downtown, accommodate alternative transportation modes (i.e., BART, bus, bicycle, and pedestrian), promote transit-oriented development, and incorporate mixed-use development into the Specific Plan area. As a result, the growth rate of VMT under the DDSP would not exceed the growth rate of the population. According to the current BAAQMD *CEQA Guidelines*, the VMT growth rate compared to the City's population growth rate over the same time frame would not hinder progress towards achieving the goals of the *2005 Ozone Strategy*. Therefore, the DDSP is consistent with the applicable air quality plan, and a **less than significant impact** would result.

Long-Term Operational Emissions - Toxics Air Contaminants

Impact 3.2-3: No major existing stationary or area sources of toxic air contaminants (TACs) were identified in the vicinity of the project area. The DDSP would result in the development of mixed-use and commercial uses at the project site, which may generate sources of TACs from stationary sources. The proposed project would not result in increased exposure of sensitive land uses in excess of applicable standards. This is considered a less than significant impact.

To address community risk from air toxics, the BAAQMD initiated the Community Air Risk Evaluation (CARE) program in 2004 to identify locations with high levels of risk from TACs co-located with sensitive populations and use the information to help focus mitigation measures. Through the CARE program, the Air District developed an inventory of TAC emissions for 2005 and compiled demographic and heath indicator data. According to the findings of the CARE Program, diesel particulate matter, mostly from on and off-road mobile sources, accounts for over 80 percent of the inhalation cancer risk from TACs in the Bay Area. As of November 2009, the impacted communities include the urban core areas of Concord, eastern San Francisco, western Alameda County, Redwood City/East Palo Alto, Richmond/San Pablo, and San Jose.

The CARB *Air Quality and Land Use Handbook* (April 2005) offers advisory recommendations for locating sensitive receptors near uses associated with TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, chrome platters, dry cleaners, gasoline stations, and other industrial facilities, to reduce exposure of sensitive populations. No major existing stationary or area sources of TACs were identified in the project vicinity. The DDSP would result in development within Downtown Dublin, which may generate sources of TACs from stationary sources. The development of any new stationary sources of TAC's associated with the DDSP project area would be subject to BAAQMD rules and regulations and permitting requirements.

Living close to high traffic and associated emissions may lead to adverse health effects. A number of studies conducted have identified an association between health effects and

living or attending school near heavily traveled roadways. One study conducted in the San Francisco Bay Area found that most related health effects associated with traffic were experienced within 300 feet of the traveled roadway.[11] The nearest residential area of the DDSP area is located approximately 650 feet north of Interstate 580 (I-580). Therefore, as the DDSP area with proposed residential uses is greater than 300 feet from I-580, exposure of sensitive receptors to TACs would be **less than significant.**

In addition, all projects must implement any applicable air toxics control measures (ATCM). For example, projects that have the potential to disturb asbestos (from soil or building material) must comply with all the requirements of CARB's ATCM for Construction, Grading, Quarrying, and Surface Mining Operations. Compliance with applicable regulatory standards is required as part of the permitting process for development and operation of future development within the DDSP, and would ensure a **less than significant impact.**

Long-Term Operational Emissions - Localized Carbon Monoxide (CO)

Impact 3.2-4: Carbon monoxide concentrations are low in the project vicinity and the proposed project would result in carbon monoxide concentrations that would be well below the State and Federal standards. Therefore, the proposed project would have a less than significant impact on localized carbon monoxide concentrations.

Local air quality is a major concern along roadways. Carbon monoxide (CO) is a primary pollutant, and unlike ozone, is directly emitted from a variety of sources. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of its impacts upon the local air quality. Areas of vehicle congestion have the potential to create "pockets" of CO called "hot spots." These pockets have the potential to exceed the State 1-hour standard of 20 parts per million (ppm) and/or the 8-hour standard of 9 ppm.

The BAAQMD requires that proposed projects are analyzed for the potential to cause localized CO hotspots. Per the BAAQMD CO screening guidelines, a project would have CO impacts if the following were to occur:

- Project traffic would impact intersections or roadway links operating at level of service (LOS) D, E or F or would cause LOS to decline to D, E or F.
- Project traffic would increase traffic volumes on nearby roadways by 10 percent or more.

[11] California Air Resources Board, *Air Quality and Land Use Handbook: A Community Heath Perspective*, April 2005.

- Project would contribute to CO concentrations exceeding the State Ambient Air Quality Standard of 9 parts per million (ppm) averaged over 8 hours and 20 ppm for one hour.

Because traffic congestion is highest at intersections where vehicles queue and are subject to reduced speeds, these hot spots are typically produced at intersections. Based on the *Traffic Impact Analysis*, the intersections listed in Table 3.2-7: Project Buildout Carbon Monoxide Concentrations, would require a CO hotspot analysis. The BAAQMD thresholds for CO emissions require projects to perform localized CO modeling. In order to conduct the most conservative analysis, the BAAQMD requires that the CO modeling reflect only those roadway or intersection improvements that are approved and fully funded. The 14 intersections identified in Table 3.2-7: Project Buildout Carbon Monoxide Concentrations would operate at LOS D, E, or F in 2030 without planned improvements, and therefore require a CO hotspot analysis.

Table 3.2-7: Project Buildout Carbon Monoxide Concentrations

Intersection	1-Hour CO[1]		8-Hour CO[1]	
	1-Hour Standard (ppm)	Future + Project (ppm)	8-Hour Standard (ppm)	Future + Project (ppm)
Amador Valley Boulevard and San Ramon Road	20	1.7	9	1.19
Amador Valley Boulevard and Regional Street	20	1.6	9	1.12
Amador Valley Boulevard and Starward Drive/Sr. Center Drive	20	1.6	9	1.12
Amador Valley Boulevard and Donohue Drive	20	1.6	9	1.12
Amador Valley Boulevard and Amador Plaza Road	20	1.6	9	1.12
Amador Valley Boulevard and Village Parkway	20	1.6	9	1.12
Dublin Boulevard and San Ramon Road	20	1.9	9	1.33
Dublin Boulevard and Regional Street	20	1.8	9	1.26
Dublin Boulevard and Golden Gate Drive	20	1.8	9	1.26
Dublin Boulevard and Amador Plaza Road	20	1.8	9	1.26
Dublin Boulevard and Village Parkway	20	1.8	9	1.26
St. Patrick Way and Golden Gate Drive	20	1.8	9	1.26
St. Patrick Way/I-680 Southbound Ramp and Amador Plaza Rd.	20	1.8	9	1.26
I-680 Northbound On Ramp and Village Parkway Road	20	1.5	9	1.05

Notes:

1. As measured at a distance of 10 feet from the corner of the intersection predicting the highest value. Presented 1 hour CO concentrations include a background concentration of 1.43 ppm. Eight-hour concentrations are based on a persistence of 0.7 of the 1-hour concentration.

Source: RBF Consulting 2010

A receptor height of 1.8 meters was used in accordance with the EPA's recommendations. The calculations assume a meteorological condition of almost no wind (0.5 meters per second), a flat topological condition between the source and the receptor, and a mixing height of 1,000 meters. A standard deviation of five degrees was used for the wind direction. The suburban land classification was used for the aerodynamic roughness coefficient. This follows the CALINE-4 user's manual definition of suburban as, "regular coverage with large obstacles, open spaces roughly equal to obstacle heights, villages, mature forests." For the purposes of this analysis, the ambient concentration used in the modeling was the highest one-hour measurement from the past five years of monitoring data at the Livermore Monitoring Station.

Actual future ambient CO levels may be lower due to emissions control strategies that would be implemented between now and buildout of the proposed Specific Plan. As

indicated in Table 3.2-7: Project Buildout Carbon Monoxide Concentrations, CO concentrations would be well below the State and Federal standards of 9 ppm on an 8-hour average and 20 ppm on a 1-hour average. Neither the 1-hour average nor the 8-hour average would be equaled or exceeded. Therefore the proposed project would have a **less than significant impact** on localized carbon monoxide.

Exposure to Odorous Emissions

Impact 3.2-5: The DDSP would allow some uses which generate odors, including restaurants and other uses, however limited exposure and compliance with applicable regulatory requirements will ensure that any impact is less than significant.

Construction Odors

Future construction activities under the DDSP could generate airborne odors associated with the operation of construction vehicles (i.e. diesel exhaust) and the application of architectural coatings. However, these odors are temporary in nature and are not generally considered offensive. Emissions would occur during daytime hours only and would be isolated to the immediate vicinity of the construction site and activity. As such, these odors would not affect a substantial number of people, and these short-term impacts would be limited to people living and working near the source.

Due to the types of odors that would occur in Downtown Dublin and limited exposure, implementation of the DDSP would not create construction-related objectionable odors affecting a substantial number of people, and impacts would be **less than significant**.

Operational Odors

Objectionable odors may be associated with a variety of pollutants. According to the BAAQMD *CEQA Guidelines*, common sources of odors include wastewater treatment plants, landfills, composting facilities, refineries, and chemical plants. However, these facility types are not present within the DDSP area.

Potential operational airborne odors within Downtown Dublin could be created by cooking activities associated with the residential and commercial (i.e., food service) uses. These odors would be similar to existing residential and food service uses throughout the Specific Plan area and would be confined to the immediate vicinity of the new buildings. Additionally, restaurants are typically required to provide ventilation systems that reduce substantial adverse odor impacts. The other potential source of odors would be new waste receptacles within the community. The receptacles would be stored in areas and in containers, and be emptied on a regular basis, before potentially substantial odors have developed. Additionally, City regulations require protection from excessive odors (City of Dublin Municipal Code Chapter 8.24, *Commercial Zoning Districts*, Chapter 8.64, *Home Occupations Regulations*, and Chapter 8.20, *Residential Zoning Districts*). Further, BAAQMD Regulation No. 7, *Odorous Substances*, establishes general limitations on odorous substances and specific emission limitations on certain odorous compounds.

Therefore, with incorporation of ventilation systems, and adherence to the Municipal Code regulations and BAAQMD Regulation No. 7, implementation of the DDSP would not create operational-related objectionable odors affecting a substantial number of people within the City and would result in a **less than significant** impact.

Greenhouse Gas Emissions

Impact 3.2-6: The DDSP would generate greenhouse gas emissions but would not conflict with or obstruct the implementation of greenhouse gas reduction measures under AB 32. This is considered a less than significant impact.

Cumulative GHG emissions could occur as a result of future development under the DDSP. Future projects within the City, including within the project area, would be reviewed on a project-by-project basis to ensure their compliance with the City's policies and to determine if any impacts would occur beyond those already identified in this EIR.

California is a substantial contributor of global GHGs, emitting over 400 million tons of carbon dioxide (CO_2) a year.[12] Climate studies indicate that California is likely to see an increase of three to four degrees Fahrenheit over the next century. Methane (CH_4) and nitrous oxide (N_2O) are also important GHGs that potentially contribute to global climate change. GHGs are global in their effect, which is increasing the earth's ability to absorb heat in the atmosphere.

Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation, reduction in sunlight from the addition of GHGs and other gases to the atmosphere from volcanic eruptions); and,
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

The impact of anthropogenic activities on global climate change is readily apparent in the observational record. For example, surface temperature data shows that 11 of the 12 years from 1995 to 2006 rank among the 12 warmest since 1850, the beginning of the instrumental record for global surface temperature.[13] In addition, the atmospheric water

[12] California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004*, 2006.
[13] Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis, Summary for Policymakers*, February 2007.

vapor content has increased since at least the 1980s over land, sea, and in the upper atmosphere, consistent with the capacity of warmer air to hold more water vapor; ocean temperatures are warmer to depths of 3,000 feet; and a marked decline has occurred in mountain glaciers and snow pack in both hemispheres, along with a decline in polar ice and ice sheets in both the Arctic and Antarctic regions.

Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of carbon dioxide, methane, and nitrous oxide from before the start of the industrialization period (around 1750) to over 650,000 years ago. For that period, it was found that carbon dioxide concentrations ranged from 180 ppm to 300 ppm. For the period from around 1750 to the present, global carbon dioxide concentrations increased from a pre-industrialization period concentration of 280 ppm to 379 ppm in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range.

The proposed project would contribute to global climate change by producing direct and indirect GHG emissions. GHGs resulting from construction activities, area sources, mobile sources, electricity consumption, and water conveyance could result in a significant impact on the environment.

Greenhouse Gas Significance Criteria

At this time, there is no absolute consensus in the State of California among CEQA lead agencies regarding the analysis of global climate change and the selection of significance criteria. In fact, numerous organizations, both public and private, have released advisories and guidance with recommendations designed to assist decision-makers in the evaluation of GHG emissions given the current uncertainty regarding when emissions reach the point of significance. That being said, several options are available to lead agencies.

First, lead agencies may elect to rely on thresholds of significance recommended or adopted by state or regional agencies with expertise in the field of global climate change. (See CEQA Guidelines, §15064.7(c).) However, at the time of the release of the NOP for this EIR, neither CARB nor BAAQMD have adopted significance thresholds for GHG emissions for residential or commercial development under CEQA. CARB has suspended all efforts to develop a threshold, and BAAQMD's threshold remains in draft form. Accordingly, this option (i.e., reliance on an adopted threshold) is not viable for the City.

Second, lead agencies may elect to conclude that the significance of GHG emissions under CEQA is too speculative. However, the City has determined that this option is not viable due to the important focus on global climate change created by the various regulatory schemes and scientific determinations cited in this section.

Third, lead agencies may elect to use a zero-based threshold, such that any emission of GHGs is significant and unavoidable. The City does not endorse this type of threshold because it may indirectly truncate the analysis provided in CEQA documents and the mitigation commitments secured from new development. Moreover, no state or regional

agency with expertise in global climate change has endorsed a zero-based threshold, which would likely result in the preparation of extensive environmental documentation for even the smallest of projects, thereby inundating lead agencies and creating an administrative burden.

Fourth, lead agencies may elect to utilize their own significance criteria, so long as such criteria are informed and supported by substantial evidence. Here, the City has elected to identify its own significance criterion until such time as a state or regional threshold is adopted by a competent authority. Based on the updated Appendix G of the State CEQA Guidelines, the City has determined that significant GHG emissions would result if a project would: (i) generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or (ii) conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. Based on AB 32 as a benchmark for purposes of this EIR, the following significance criterion is used to assess the first standard above:

> *Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? For the purposes of this EIR, a significant impact will result if a Specific Plan conflicts with or obstructs the implementation of greenhouse gas reduction measures under AB 32; and/or conflicts with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

The GHG emission levels will be analyzed to determine whether project approval would impede compliance with GHG emissions reduction strategies established to achieve compliance with AB 32, which requires that California's GHG emissions be reduced to 1990 levels by 2020. As noted in the Scoping Plan[14], a reduction of 28.5 percent below the "business as usual" scenario is required to meet the goals of AB 32. If the project complies with the reduction goals of AB 32, then a less than significant impact would occur with regards to project-related GHG emissions.

Exposure to Climate Change Hazards

This section evaluates the potential impacts of climate change on the DDSP area. Although the following climate change effects could affect the DDSP area, the type and degree of the impacts that climate change would have on humans and the environment is difficult to predict at the local scale.

- *Sea Level Rise*. According to the IPCC, climate change is expected to raise sea levels by up to 4 feet. The City is located more than 14 miles from the Pacific Ocean coastline, and is separated from the coast by the Diablo Mountain Range.

[14] California Air Resources Board, *Climate Change Proposed Scoping Plan: A Framework for Change*, adopted December 2008.

Therefore, the potential of inundation from sea level rise is low. Additionally, the effects related to sea level rise are speculative at this time. If sea level rise is determined to be a significant threat, protective measures would likely be installed by regional and local governments to protect urbanized areas.

- *Natural Disasters*. Climate change could result in increased flooding and weather-related disasters. As the City is located more than 14 miles from the Pacific Ocean, it is not likely that the City would be exposed to intense coastal storms. The frequency of large floods on rivers, streams, and other water bodies could also increase. This could adversely affect any reservoirs in the area. The City is located within portions of either the 100- or 500-year flood zones, making it susceptible to increased frequency of flooding from large storms. However, Downtown Dublin is developed and any new construction in flood prone areas is required to construct the floor above the floodplain level, per the requirements of the City Public Works Department.

- *Wildfires*. Climate change could result in increased occurrences and duration of wildfire events. Downtown Dublin is located within an urbanized area which is not susceptible to wildfire hazards. Climate change could cause these areas of the City to experience more frequent wildfires of great intensity. However, these areas would not likely impact the downtown area of Dublin

- *Air quality*. Climate change would compound negative air quality impacts in the San Francisco Air Basin, resulting in respiratory health impacts.[15] However, this would be a regional, not a project-specific effect. Moreover, as discussed above, the Specific Plan's impacts on air quality were found to be less than significant.

Other predicted physical and environmental impacts associated with climate change include heat waves, alteration of disease vectors, biome shifts, impacts on agriculture and the food supply, reduced reliability in the water supply, and strain on the existing capacity of sanitation and water-treatment facilities. While these issues are a concern for society at large, none of these impacts would have a disproportionate effect on the implementation of the DDSP.

Direct Project-Related Sources of Greenhouse Gases

Direct project-related GHG emissions include emissions from construction activities, area sources, and mobile sources. Table 3.2-8: Estimated Greenhouse Gas Emissions, estimates the CO_2, N_2O, and CH_4 emissions of the proposed project. The project is not anticipated to generate other forms of GHG emissions in quantities that would facilitate a meaningful analysis. Therefore, this analysis focuses on these three forms of GHG emissions. GHG

[15] California Environmental Protection Agency, *AB 1493 Briefing Package*, 2008.

emissions estimations are based on traffic data from Fehr and Peers as well as energy emissions from natural gas and electricity usage, as well as water consumption.

Table 3.2-8: Estimated Greenhouse Gas Emissions

Source	CO_2	N_2O		CH_4		Total Metric Tons of CO_2eq/yr[5]
	Metric tons/year	Metric tons/year	Metric Tons of CO_2eq/yr[5]	Metric tons/year	Metric Tons of CO_2eq/yr[5]	
Operational Emissions						
Direct Emissions						
▪ Area Source[1]	9,316.74	0.17	52.95	0.18	3.75	*9,373.44*
▪ Mobile Source[1,2]	138,205.66	8.32	2,580.68	8.00	167.95	*140,945.28*
Total Direct Emissions[6]	***147,522.40***	***8.49***	***2,633.63***	***8.18***	***171.70***	***150,318.72***
Indirect Emissions						
▪ Electricity Consumption[3]	16,495.07	0.14	43.65	0.86	18.11	*16,556.84*
▪ Water Supply[4]	15.96	0.00	0.05	0.00	0.02	*16.02*
Total Indirect Emissions[6]	***16,511.03***	***0.14***	***43.70***	***0.86***	***18.13***	***16,572.86***
Total Project-Related Operational Emissions	*166,891.58 $MTCO_2eq/year$[6]*					

Notes:
1. Emissions calculated using the U.S. Energy Information Administration Independent Statistics and Analysis Website (http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html).
2. Emissions calculated using EMFAC 2007, *Highest (Most Conservative) Emission Factors for On-Road Passenger Vehicles and Delivery Trucks*.
3. Electricity Consumption emissions calculated using the California Energy Commission, *Reference Appendices for the 2008 Building Energy Efficiency Standards for Residential and Nonresidential Buildings*, Revised June 2009 and SCAQMD's *CEQA Handbook* (note that SCAQMD has the most comprehensive demand factors available).
4. Water usage based on typical end usage rates for residential and non-residential uses. Emissions are based on energy usage factors for water conveyance from the California Energy Commission, *Water Energy Use in California*, Accessed March 2010. http://www.energy.ca.gov/research/iaw/industry/water.html
5. CO_2 Equivalent values calculated using the U.S. Environmental Protection Agency Website, *Greenhouse Gas Equivalencies Calculator*, http://www.epa.gov/cleanenergy/energy-resources/calculator.html, accessed March 2010.
6. Totals may be slightly off due to rounding.

Refer to Appendix B, *Air Quality Data*, for detailed model input/output data.

Mobile source emissions would represent the greatest amounts of GHGs generated from the proposed project. The proposed project would directly result in 140,945.28 metric tons of CO_2 equivalents per year $MTCO_2eq/year$ of mobile source GHG emissions. Area source emissions as a result of the proposed project would be 9,373.44 $MTCO_2eq/year$. N_2O and CH_4 emissions were first calculated in metric tons/year, then converted to $MTCO_2eq/year$ utilizing the EPA's GHG equivalencies calculator. Converting emissions to comparable units ($MTCO_2eq/year$) allows for the summation of all GHG emissions. As shown in Table 3.2-8: Estimated Greenhouse Gas Emissions, the development allowed under the DDSP would generate 166,891.58 $MTCO_2eq/year$.

Indirect Project-Related Sources of Greenhouse Gases

Electricity Consumption. Energy consumption emissions were calculated using the California Energy Commission and the U.S. Energy Information Administration factors[16] and

[16] U.S. Energy Information Administration, *Domestic Electricity Emissions Factors 1999-2002*.

project-specific land use data; refer to Appendix D, *Air Quality Data*. The emission factors for electricity use (771.62 pounds of CO_2 per megawatt hour [MWh], 0.00659 pounds of N_2O per MWh, and 0.4037 pounds of CH_4 per MWh) were obtained from the U.S. Energy Information Administration. As a result, the potential development within the project area would indirectly result in 16,556.84 $MTCO_2eq$/year due to electricity usage; refer to Table 3.2-8: Estimated Greenhouse Gas Emissions.

Water Supply. Water demand for the proposed uses would be approximately 135.63 acre-feet per year. Based on energy usage factors for water conveyance from the California Energy Commission, water transport consumes approximately 366 kilowatt hours [kWh] per acre-foot.[17] Emissions from indirect energy impacts due to water supply would result in 16.02 $MTCO_2eq$/year.

Consistency with the California Attorney General's Mitigation Measures

The DDSP includes several measures that are consistent with the California Office of the Attorney General's recommended measures to reduce GHG emissions. A list of the Attorney General's recommended measures and the project's compliance with each applicable measure is presented in Table 3.2-9: Project Consistency with the Attorney General's Recommendations. The proposed project would incorporate sustainable practices which include water, energy, solid waste, land use, and transportation efficiency measures.

Table 3.2-9: Project Consistency with the Attorney General's Recommendations

Project Design Feature	Project Applicability
Energy Efficiency	
Incorporate green building practices and design elements.	The DDSP encourages energy efficient building measures. Development Standards and Design Guidelines for new development in the DDSP area include several energy-saving measures. These include green roofs, Energy Star roof materials, and energy-efficient lighting (i.e., light sensors, induction lighting, compact fluorescent, and light-emitting diode [LED]). In addition to Title 24 requirements, the DDSP promotes and requires the conservation of energy and the use of renewable energy sources on new buildings where solar access is available. The DDSP also encourages shading mechanisms, such as incorporation of awnings, window shades, and strategically placed shade trees into future projects within the Specific Plan area.
Meet recognized green building and energy efficiency benchmarks.	
Install energy efficient lighting (e.g., light emitting diodes (LEDs)), heating and cooling systems, appliances, equipment, and control systems.	
Use passive solar design, e.g., orient buildings and incorporate landscaping to maximize passive solar heating during cool seasons, minimize solar heat gain during hot seasons, and enhance natural ventilation. Design buildings to take advantage of sunlight.	
Install light colored "cool" roofs and cool pavements.	
Install efficient lighting, (including LEDs) for traffic, street and other outdoor lighting.	
Renewable Energy and Energy Storage	

[17] California Energy Commission, Water Energy Use in California, Accessed October 2009. http://www.energy.ca.gov/research/iaw/industry/water.html

Project Design Feature	Project Applicability
Install solar, wind, and geothermal power systems and solar hot water heaters.	The DDSP Development Standards and Design Guidelines encourage solar energy systems, wind turbine systems, and have requirements to meet or exceed Energy Star requirements. Future projects within the Specific Plan area would adhere to the DDSP Goals, Development Standards, and Design Guidelines.
Water Conservation and Efficiency	
Incorporate water-reducing features into building and landscape design.	The DDSP addresses water conservation by encouraging efficient design and green building measures. The DDSP encourages the use of low-volume drip irrigation systems to be used to water landscaping, and encourages the planting of drought-resistant plants. Additionally, the DDSP promotes landscaping features that retain water and filter stormwater runoff such as bio-swales, rain gardens, underground cisterns, flow-through planters, and roof gardens. The Dublin San Ramon Services District (DSRSD) provides recycled water for irrigation and other non-potable uses. DSRSD Ordinance No. 301 requires recycled water use for approved customer categories for all new land uses, including commercial, multi-family residential and institutional irrigation uses. The City also has Water-Efficient Landscaping Regulations that reduce water use for irrigation (Chapter 8.88 of the Dublin Municipal Code).
Create water-efficient landscapes.	
Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls and use water-efficient irrigation methods.	
Devise a comprehensive water conservation strategy appropriate for the project and location.	
Design buildings to be water-efficient. Install water-efficient fixtures and appliances.	
Solid Waste Measures	
Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).	The City requires all construction and demolition projects to recycle at least 50 percent of waste generated on a job site through Municipal Code Chapter 7.30. Additionally, the Specific Plan Development Standards and Design Guidelines encourage the use of green building materials, including materials with recycled content, materials from resource-efficient manufacturing process, locally-produced materials, salvaged or refurbished materials, and reusable materials, consistent with the City's Green Building Ordinance (Chapter 7.94).
Integrate reuse and recycling into residential industrial, institutional and commercial projects.	The City of Dublin also has an aggressive and comprehensive recycling program. All single-family residences are provided with recycling containers. In addition, free recycling service is available to all commercial customers that subscribe to solid waste collection.
Provide easy and convenient recycling opportunities for residents, the public, and tenant businesses.	
Land Use Measures	
Ensure consistency with "smart growth" principles –mixed-use, infill, and higher density projects that provide alternatives to individual vehicle travel and promote the efficient delivery of services and goods.	Implementation of the DDSP would transform Downtown Dublin into a vibrant and dynamic commercial and mixed-use center that would provide a wide range of opportunities for shopping, service, working, living, and entertainment. Residential mixed-use and non-residential mixed-use land use designations are proposed by the DDSP.
Incorporate public transit into the project's design.	The DDSP encourages transit-oriented development, as well as enhancement of a multi-modal circulation network for alternate transportation. The DDSP plans to improve connections to the BART station. Although no changes are proposed to existing transit service, transit routes may be altered to improve connections to the BART station.
Promote "least polluting" ways to connect people and goods to their destinations.	The DDSP Development Standards and Design Guidelines encourage visible pedestrian connections through surface

Project Design Feature	Project Applicability
Include pedestrian and bicycle facilities within projects and ensure that existing non-motorized routes are maintained and enhanced.	parking lots, connecting the parking lot to the destination. The DDSP also encourages the expansion and improvement of downtown pedestrian pathways and bikeways to improve connections for non-motorized travel.
Incorporate bicycle lanes, routes and facilities into street systems, new subdivisions, and large developments.	The DDSP recommends exploring opportunities to expand the bikeway network within the downtown area and creating improved connections to the BART station. Bicycle facilities, such as bike lockers, bike racks, and shower facilities are encouraged at or near the station. The DDSP also states that bike racks should be provided throughout the downtown area.
Require amenities for non-motorized transportation, such as secure and convenient bicycle parking.	
Ensure that the project enhances, and does not disrupt or create barriers to, non-motorized transportation.	The DDSP includes provisions for improved pedestrian pathways and bicycle circulation within the downtown area.
Protect existing trees and encourage the planting of new trees. Adopt a tree protection and replacement ordinance.	The DDSP includes provisions for the incorporation of street trees within future projects in the Specific Plan area, including along streets and within parking lots. Street trees should adhere to the recommendations in the City's Streetscape Master Plan as well as with standards within the DDSP.
Preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.	
Source: State of California Department of Justice, Attorney General's Office, *Addressing Climate Change at the Project Level,* updated January 6, 2010.	

Consistency with CARB's AB 32 Scoping Plan

The following is an analysis of the DDSP's consistency with actions identified in the CARB Scoping Plan. As noted above, AB 32 requires California to reduce its GHG emissions by 28.5percent below "business as usual" levels. CARB identified reduction measures to achieve this goal in its AB 32 Scoping Plan. Projects that are consistent with the CARB Scoping Plan are also consistent with the reduction requirements set forth in AB 32. Compliance with the CARB Scoping Plan would ensure that the DDSP would not conflict with the State's goals of reducing GHG emissions to 1990 levels.

The primary purpose of the Scoping Plan is to develop a set of measures that provide the maximum technologically feasible and cost-effective GHG emission reductions. The Scoping Plan includes, among other items, energy conservation measures, use of new energy efficient technologies, a cap and trade emissions program, as well as transportation and land use standards and policies. Full implementation of the Scoping Plan depends upon actions taken by CARB and other State and Federal regulatory agencies.

The analysis below provides a consistency analysis with the CARB Scoping Plan and the DDSP. The DDSP Guiding Principles are consistent with applicable recommended actions and are noted below in Table 3.2-10: Downtown Dublin Specific Plan Consistency with Recommended Actions in the CARB Scoping Plan.

Table 3.2-10: Downtown Dublin Specific Plan Consistency with Recommended Actions in the CARB Scoping Plan

ID #	Sector	Strategy Name	Applicable to Proposed Specific Plan	Conflict With Implementation of the Proposed Specific Plan?
T-1	Transportation	Pavley I/II – Light-Duty Vehicle GHG Standards	No	No
T-2	Transportation	Low Carbon Fuel Standard (Discrete Early Action)	No	No
T-3	Transportation	Regional Transportation-Related GHG Targets	No	No
T-4	Transportation	Vehicle Efficiency Measures	No	No
T-5	Transportation	Ship Electrification at Ports (Discrete Early Action)	No	No
T-6	Transportation	Goods-movement Efficiency Measures	No	No
T-7	Transportation	Heavy Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)	No	No
T-8	Transportation	Medium and Heavy-Duty Vehicle Hybridization	No	No
T-9	Transportation	High Speed Rail	**Yes**	No
E-1	Electricity and Natural Gas	Increased Utility Energy efficiency programs. More stringent Building and Appliance Standards	**Yes**	No
E-2	Electricity and Natural Gas	Increase Combined Heat and Power Use by 30,000 GWh	No	No
E-3	Electricity and Natural Gas	Renewable Portfolio Standard	No	No
E-4	Electricity and Natural Gas	Million Solar Roofs	**Yes**	No
CR-1	Electricity and Natural Gas	Energy Efficiency	No	No
CR-2	Electricity and Natural Gas	Solar Water Heating	**Yes**	No
GB-1	Green Buildings	Green Buildings	**Yes**	No
W-1	Water	Water Use Efficiency	**Yes**	No
W-2	Water	Water Recycling	**Yes**	No
W-3	Water	Water System Energy Efficiency	**Yes**	No

ID #	Sector	Strategy Name	Applicable to Proposed Specific Plan	Conflict With Implementation of the Proposed Specific Plan?
W-4	Water	Reuse Urban Runoff	No	No
W-5	Water	Increase Renewable Energy Production	No	No
W-6	Water	Public Goods Charge (Water)	No	No
I-1	Industry	Energy Efficiency and Co-benefits Audits for Large Industrial Sources	No	No
I-2	Industry	Oil and Gas Extraction GHG Emission Reduction	No	No
I-3	Industry	GHG Leak Reduction from Oil/Gas Transmission	No	No
I-4	Industry	Refinery Flare Recovery Process Improvements	No	No
I-5	Industry	Removal of Methane Exemption from Existing Refinery Regulations	No	No
RW-1	Recycling and Waste Management	Landfill Methane Control (Discrete Early Action)	No	No
RW-2	Recycling and Waste Management	Additional Reductions in Landfill Methane – Capture Improvements	No	No
RW-3	Recycling and Waste Management	High Recycling/Zero Waste	**Yes**	No
F-1	Forestry	Sustainable Forest Target	No	No
H-1	High Global Warming Potential Gases	Motor Vehicle Air Conditioning Systems (Discrete Early Action)	No	No
H-2	High Global Warming Potential Gases	SF6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)	No	No
H-3	High Global Warming Potential Gases	Reduction in Perflourocarbons in Semiconductor Manufacturing (Discrete Early Action)	No	No
H-4	High Global Warming Potential Gases	Limit High GWP Use in Consumer Products (Discrete Early Action, Adopted June 2008)	No	No
H-5	High Global Warming Potential Gases	High GWP Reductions from Mobile Sources	No	No
H-6	High Global Warming Potential Gases	High GWP Reductions from Stationary Sources	No	No
H-7	High Global Warming Potential Gases	Mitigation Fee on High GWP Gases	No	No

ID #	Sector	Strategy Name	Applicable to Proposed Specific Plan	Conflict With Implementation of the Proposed Specific Plan?
A-1	Agriculture	Methane Capture at Large Dairies	No	No
Source: California Air Resources Board, *Assembly Bill 32 Scoping Plan*, 2008.				

Table 3.2-10 identifies which CARB Recommended Actions apply to the DDSP, and of those, whether the DDSP is consistent. Of the 39 measures identified, those that would be considered to be applicable to the DDSP would primarily be those actions related to transportation, electricity and natural gas use, water conservation, green building design, and industrial uses. Consistency of the DDSP with these measures is evaluated by each source-type measure. A detailed discussion of each CARB recommended action (as listed above) and whether the DDSP conflicts with its implementation is provided below.

Transportation

Scoping Plan Action T-9 supports high speed rail, which is part of the Statewide strategy to provide more mobility choice and reduce GHGs. The DDSP encourages transit-oriented development, as well as enhancement of a multi-modal circulation network for alternate transportation. As a result, the DDSP would help promote and would not conflict with Action T-9.

Electricity and Natural Gas

Scoping Plan Action E-1 aims to reduce electricity demand by increased efficiency of Utility Energy Programs and adoption of more stringent building and appliance standards. The Development Standards and Design Guidelines in the DDSP specify that warm white, energy efficient lighting source types such as metal halide, induction lighting, compact fluorescent, and light-emitting diode (LED) should be used where feasible. Energy-efficient lighting (lighting from renewable sources and energy-saving devices, such as light sensors) are encouraged. Additionally the DDSP has standards for the use of Energy Star requirements. Therefore, the DDSP would help implement and not conflict with Action E-1.

Scoping Plan Action E-4 strives to promote solar generated electricity. The DDSP Development Standards and Design Guidelines encourage solar energy systems, wind turbine systems, and have requirements to meet or exceed Energy Star requirements. Future projects within the Specific Plan area would adhere to the DDSP Goals, Development Standards, and Design Guidelines. Therefore, the DDSP is consistent with and promotes the goal of Action E-4.

Energy Efficiency

Scoping Plan Action CR-2 aims to establish solar water heating systems in commercial and residential buildings. A solar water heating system offsets the use of natural gas by using

the sun to heat water, typically reducing the need for conventional water heating by about two-thirds. In addition to Title 24 requirements, the Specific Plan promotes and requires the conservation of energy and the use of renewable energy sources on new buildings where solar access is available. Therefore, the DDSP would help implement and not conflict with Action CR-2.

Green Building

Scoping Plan Action GB-1 aims to reduce electricity demand by increased efficiency and adoption of more stringent building standards. Elements of this action include encouraging construction of zero net energy (ZNE) buildings and implementation of passive solar design. In addition to employing on-site electricity generation, a ZNE building must either replace natural gas with renewable energy for space and water heating, or compensate for natural gas use by generating surplus electricity for sale on the State's electricity grid. The DDSP encourages efficient building measures. Development Standards and Design Guidelines for new development in the DDSP area include the following energy-saving measures:

- Green roofs and rooftop gardens are encouraged to add landscaping, decrease the heat island effect of large expanses of flat roofs, and to reduce heating and cooling energy demands;
- Roof materials should meet or exceed the Energy Star requirements for solar reflectance;
- Energy-efficient lighting (lighting from renewable sources and energy-saving devices, such as light sensors) is encouraged, whenever feasible; and
- Where feasible, warm white, energy efficient lighting source types such as metal halide, induction lighting, compact fluorescent, and light-emitting diode (LED) should be used.

Water Use

Scoping Plan Action W-1 pertains to implementation of water use efficiency measures, and Scoping Plan Action W-2 addresses water recycling and is part of the water use efficiency measures intended to reduce water usage and energy consumption. Additionally, Scoping Plan Action W-3 targets increasing energy efficiency within the water system. The DDSP encourages water conservation through efficient design and green building measures. In addition to potable water, the Dublin San Ramon Services District (DSRSD) provides recycled (reclaimed) water for irrigation and other non-potable uses. DSRSD Ordinance No. 301 requires recycled water use for approved customer categories for all new land uses, including commercial, multi-family residential, and institutional irrigation uses with the DSRSD potable water service area. The City of Dublin also has Water-Efficient Landscaping Regulations that reduce water use for irrigation (refer to the Dublin Municipal Code, Chapter 8.88). The DDSP is consistent with and would not obstruct Scoping Plan Action W-1, W-2, or W-3.

Recycling and Waste Management

Scoping Plan Action RW-3 relates to high recycling/zero waste. The City of Dublin also has an aggressive and comprehensive recycling program. All single-family residences are provided with recycling containers. In addition, free recycling service is available to all commercial customers that subscribe to garbage service. In regards to construction and demolition debris, the City requires all construction and demolition projects to recycle at least 50 percent of waste generated on a job site. Additionally, the Specific Plan Development Standards and Design Guidelines encourage the use of green building materials, including materials with recycled content, materials from resource-efficient manufacturing process, locally-produced materials, salvaged or refurbished materials, and reusable materials. Therefore, the project would not obstruct Scoping Plan Action RW-3.

Consistency with the Attorney General's Recommendations and Climate Action Team GHG Emission Reduction Strategies

In addition to being compliant with applicable CARB Scoping Plan Actions, the Development Standards and Design Guidelines are consistent with the Attorney General's recommended design features and the California Environmental Protection Agency Climate Action Team's proposed early action measures to mitigate climate change. These measures are designed to ensure that projects meet the Governor's climate reduction targets, and are documented in the *Climate Action Team Report to Governor Schwarzenegger at the Legislature,* March 2006.

Consistency with Applicable GHG Plans, Policies, or Regulations

The City does not currently have an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. At this time, the City of Dublin Climate Action Plan is in draft form, and has not been formally adopted with a completed environmental document. Therefore, the Project does not conflict with any applicable plan, policy, or program.

As previously noted, the DDSP includes several measures that would result in a reduction of GHG emissions. Therefore, the proposed project would not hinder the State's GHG reduction strategies for meeting the goals established by AB 32, and a **less than significant impact** would occur in this regard.

3.3. Geology, Soils & Seismicity

This section of the EIR describes the existing geologic, seismic, and soil conditions present in the project area, and evaluates potential project impacts under these conditions associated with faults, strong seismic ground shaking, seismic-related ground failure such as liquefaction, landslides, and unstable geologic units and/or soils.

Environmental Setting

Geologic Structure

The proposed project is located within the California Coast Ranges Physiographic Province. The project area consists of deep, geologically recent alluvial deposits containing gravel, sand, silt, and clay. On the eastern portion of the San Francisco Bay, bedrock geology consists of sedimentary and metaporphic rocks ranging from Cretaceous through Quaternary periods (up to 144 million years to present).

Topography

The project area is generally flat with a gradual slope to the south. On-site elevations range from approximately 328 feet above mean sea level (msl) to 371 feet above msl. There are no unique or unusual geographic or topographic conditions present within the project area, since the majority of properties are developed and the project area lies in an urbanized portion of Dublin.

Soils

Each of the soils within the proposed project are listed below in Table 3.3-1: Soil Map Units and shown in Figure 3.3-1: General Soil Map.

Table 3.3-1: Soil Map Units

Map Unit Symbol	Map Unit Name	Soil Series
Cc	Clear Lake clay, 0 to 3% slopes	Clear Lake
DaA	Danville silty clay loam, 0 to 3% slopes	Danville
Pd	Pescadero clay	Pescadero
Sm	Sunnyvale clay loam over clay	Sunnyvale
YmA	Yolo loam, 0 to 3% slopes	Yolo
Source: NRCS 2010		

The following soils are located in the vicinity of the proposed project (and are identified on Figure 3.3-1), but do not occur within the DDSP boundary: Danville silty clay loam, 0 to 3% slopes (DaB); Diablo Clay, 15 to 30% slopes (DbD); and Sycamore silt loam over clay (Sy).

The following is a description of the individual soil characteristics within the project area. This soil information is derived from the Alameda Area, California (CA609) Web Soil Survey.

- *Clear Lake Clay (0 to 3 percent slopes).* Clear Lake clay is a very deep, poorly drained soil. Permeability is slow to very slow, runoff is negligible to high. This soil is primarily used for growing row crops and dry farmed pasture; and it is also used for rangeland. The native vegetation consists of grasses and forbs.
- *Danville silty clay loam (0 to 3 percent slopes).* Danville silty clay loam is a very deep, well drained soil. Permeability is slow, runoff is slow to medium. This soil is used for growing row, truck, and field crops; minor areas of this soil are used for growing small grain. Uncultivated areas have annual grasses, forbs, and scattered trees.
- *Pescadero clay.* Pescadero clay is a very deep soil. Permeability is very slow, runoff is very slow, and is poorly drained or ponded in areas with concave slopes. This soil is mainly used for livestock grazing, some reclaimed areas are used for irrigated field, row crops and irrigated pasture. Commonly cultivated crops include sugarbeets, barley, alfalfa, corn and tomatoes. The native vegetation consists mainly of salt grass, pickle weed, annual grasses and forbs.
- *Sunnyvale clay loam over clay.* Sunnyvale clay loam over clay is a poorly drained soil with slow permeability and slow runoff. Because the water table has been lowered due to pumping in most areas where this soil occurs, the water tables and soil management are similar to somewhat poorly or moderately well drained soils. This soil is mostly used for row crops, orchards, irrigated pasture and field crops. The native vegetation consists of grasses, tules, sedges, and forbs.
- *Yolo loam (0 to 3 percent slopes).* Yolo loam is a well drained soil with slow to medium runoff. Permeability is moderate, although tillage pans have developed over broad areas and tend to restrict permeability. This soil is used for intensive row, field and orchard crops. The native vegetation consists of annual grasses, forbs, and some scattered oak.

Expansive Soils

Expansive soils shrink or swell significantly with changes in moisture content. Clay content and porosity of the soil also influence the change in volume. The most common cause of changing soil moisture content is seasonal fluctuation due to rainfall; however, improper surface drainage or underground water pipe leaks may cause shrinking or swelling of soil. The shrinking and swelling caused by expansive clay rich soil often results in damage to overlying structures, including foundations, floor slabs, pavements, sidewalks, and other improvements that are sensitive to soil movements. Usually, damage from expansive soils can be minimized or eliminated by using site-specific engineering techniques. The soils located within the project area do not generally exhibit characteristics of expansive soils.

Erosion Potential

Soil erosion is the process by which soil particles are removed from a land surface by wind, water, or gravity. Topsoil is the uppermost layer of soil, usually the top six to eight inches, and has the highest concentration of organic matter and microorganisms. Topsoil erosion is of concern when the topsoil layer is blown or washed away. Most natural erosion occurs at relatively slow rates; however, the rate of erosion increases where the ground surface is

steep and when land is cleared and/or left in a disturbed condition, such as may occur during the preparation and excavation phases of site development. The proposed project site is nearly flat-lying and at least 85 percent of the soils within the project area are covered by roads, buildings, parking lots, and sidewalks. Therefore, the majority of the soils within the project area are not exposed to erosive forces.

Liquefaction, Landslide Risk, and Other Soil Hazards

During earthquakes, ground shaking may cause a loss of strength in cohesionless saturated soils. This process is called liquefaction and occurs most commonly in loose sands associated with a high water table. In general, variable layers of potentially liquefiable material are expected in the upper 30 feet of the proposed project site. Below a depth of 30 feet, the sandy materials are expected to be dense and generally not liquefiable. The project area is located within a California Geological Survey (CGS) Seismic Hazard Zone where liquefaction may occur during a strong earthquake.

Due to the relatively flat topography of the project area, landslides are not considered to be a potential significant geologic hazard. The proposed project is not located within a CGS Seismic Hazard Zone where landslides may occur during a strong earthquake. In addition, the proposed project is not located near an ocean or lakefront; therefore, the risk of tsunamis or seiches is considered low.

Faults / Seismic Hazards

A fault is a fracture in the crust of the earth along which land on one side has moved relative to land on the other side. Most faults are the result of repeated displacements over a long period of time. A fault trace is the line on the earth's surface defining the fault. An active fault is defined by the State Mining and Geology Board as a fault that has "had surface displacement within Holocene times (about the last 11,000 years)." This definition does not mean that faults lacking evidence of surface displacement within Holocene times are necessarily inactive. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity is sometimes difficult to obtain and locally may not exist. A potentially active fault is a fault that shows evidence of surface displacement during Quaternary time (about the last 1.6 million years).

Faults surrounding the project area are shown in Figure 3.3-2: Fault Location Map and the active and conditionally active faults that are located within 45 miles of the project area are listed below in Table 3.3-2: Active and Conditionally Active Faults within 45 Miles of the Project Area.

Table 3.3-2: Active and Conditionally Active Faults within 45 Miles of the Project Area

Fault Name	Distance in Miles	Last Surface Rupture	Activity	Maximum Credible Earthquake
Hayward	6	Historic	Active	7.5
Calaveras	Traverses Project Site	Holocene	Active	7.5
Monte Vista	26	Late Quaternary	Conditionally Active	6.5
Las Positas	10	Historic	Active	6.3
San Andreas	26	Historic	Active	8.0
Pleasanton	1.5	Historic	Active	6.2
Greenville	10.5	Historic	Active	7.25
San Gregorio	33	Holocene	Active	7.5
Concord	14	Historic	Active	6.5
Green Valley	28	Holocene	Active	6.75
Napa	37	Holocene	Active	6.5
Rodgers Creek	43	Late Quaternary	Active	7.1
Source: USGS 2006 and Caltrans 1996				

Three active faults are located within six miles of the proposed project: the Pleasanton Fault, which is located approximately 1.5 miles northeast, the Hayward Fault, which is located approximately six miles west, and the Calaveras Fault, which traverses the western portion of the project area. The Calaveras Fault is the major active fault in the project area with rupture potential, and runs parallel to and just west of San Ramon Road. As shown in Figure 3.3-3: Alquist-Priolo Earthquake Fault Zone Map, the western portion of the project area is located within an Alquist-Priolo Earthquake Fault Zone, due to the Calaveras Fault. Established Alquist-Priolo Earthquake Fault Zones require detailed studies of rupture hazards prior to construction.

Because of the presence of active faults in the region, the project area is considered seismically active. Numerous small earthquakes occur every year in the region, and large (greater than Magnitude 7.0) earthquakes have been recorded and can be expected to occur in the future. All development within the project area is therefore subject to seismic hazards. Development standards require the proposed project to comply with appropriate seismic design criteria in the California Building Code (CBC), adequate drainage facility design, and preconstruction soils and grading studies.

Fault / Surface Ruptures

Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Fault ruptures almost always follow pre-existing faults that are zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault

creep. Sudden displacements are more damaging to structures because they are accompanied by shaking. Fault creep is the slow rupture of the earth's crust.

Ground Shaking

Some ground shaking is likely at the proposed project site in the event of a major earthquake on one of the nearby faults. The Modified Mercalli (MM) intensity scale measures the intensity of an earthquake's effects in a given locality, and is perhaps much more meaningful to the layman because it is based on actual observations of earthquake effects at specific places. On the MM intensity scale, values range from I to XII. The most commonly used adaptation covers the range of intensity from the conditions of "I: not felt except by very few favorably situated, to XII: damage total, lines of sight disturbed, objects thrown into the air." An earthquake has one magnitude, but can have a range of intensities, which decrease with distance from the epicenter.

Regulatory Setting

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 (originally enacted as the Alquist-Priolo Special Studies Zones Act and renamed in 1994) and is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as "Earthquake Fault Zones" around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Local agencies must regulate most development projects within the zones. Projects include all land divisions and most structures for human occupancy.

California Building Standards Code (CBC)

The State of California provides minimum standards for building design through the CBC. The CBC is based on the Uniform Building Code (UBC), which is used widely throughout the Untied States (generally adopted on a state-by-state or district-by district basis), and has been modified for conditions within California. The CBC requires extensive geotechnical analysis and engineering for grading, foundations, retaining walls, and other structures, including criteria for seismic design. The proposed project is located within Seismic Zone 4, which is expected to experience the greatest effects from earthquakes, and requires the most stringent requirements for seismic design.

Seismic Hazards Mapping Act

The CGS provides guidance with regard to seismic hazards under the *Seismic Hazards Mapping Act*. Seismic hazard zones are identified and mapped by the CGS to assist local

governments in land use planning. The intent of the Act is to protect the public from the effects of strong groundshaking, liquefaction, landslides, ground failure, or other hazards caused by earthquakes. In addition, CGS Special Publication 117, *Guidelines for Evaluating and Mitigating Seismic Hazards in California*, provides guidance for the evaluation and mitigation of earthquake-related hazards for projects within designated zones of required investigations. The proposed project is located within a CGS Seismic Hazard Zone where liquefaction may occur during a strong earthquake; however, the proposed project is not located within a CGS Seismic Hazard Zone where landslides may occur during a strong earthquake.

Local

City of Dublin General Plan

The following policies in the *City of Dublin General Plan* are applicable to geology, soils and seismicity.

Environmental Resources Management: Conservation Element

7.2: Guiding Policy I: Regulate grading and development on steep slopes, with special concern for potential problems of erosion and siltation.

7.2: Implementing Policy J: Require erosion control plans for proposed development. Erosion control plans shall include recommendations for preventing erosion and scour of drainageways, consistent with biological and visual values.

Environmental Resources Management: Seismic Safety and Safety Element

8.1: Guiding Policy A. Geologic hazards shall be mitigated or development shall be located away from geologic hazards in order to preserve life, protect property, and reasonable limit the financial risks to the City of Dublin and other public agencies that would result from damage to poorly located public facilities.

8.1.1 Implementing Policy A. All structures shall be designed to the standards delineated in the Uniform Building Code and Dublin grading ordinance. A "design earthquake" shall be established by an engineering geologist for each structure for which ground shaking is a significant design factor.

8.1.1: Implementing Policy B. Structures intended for human occupancy shall be at least 50 feet from any active fault trace; freestanding garages and storage structures may be as close as 25 feet. These distances may be reduced based on adequate exploration to accurately locate the fault trace.

8.1.1: Implementing Policy C. Generally, facilities should not be built astride potential rupture zones, although certain low-risk facilities may be considered. Critical facilities that must cross a fault, such as oil, gas, and water lines, should be designed to accommodate the maximum expected offset from fault rupture. Site specific evaluations should determine the maximum credible offset.

8.1.2: Implementing Policy A. A preliminary geologic hazards report must be prepared for all subdivisions. Any other facility that could create a geologic hazard, such as a road or a building on hillside terrain, must also have such a study. Each of the hazards described in the Seismic Safety and Safety Element must be evaluated. This hazard analysis shall be prepared by a registered engineering geologist.

8.1.2: Implementing Policy B. Detailed geologic studies will be required at the tentative subdivision map stage for all projects within the Landslide Hazard Area Boundary on the Geologic Hazards and Constraints map, and for other proposed projects if the preliminary investigation indicates a potential geologic hazard. Proposals for mitigation should be included at this stage. The detailed analysis for projects in the Landslide Hazard Area Boundary must consider:

1. Cumulative effect of new development on a partially developed slide;
2. Effects of septic leach systems, garden watering, and altered drainage patterns;
3. Impact of a maximum credible earthquake;
4. Where applicable, passage of the Calaveras Fault through or under landslide deposits;
5. Debris flow and other downslope hazards (especially common east of Dublin). Care must be taken not to locate structures in the path of potential debris flows.
6. Where published maps identify or show "ancient" or Quaternary slides on sites of proposed development, their stability must be analyzed, and effects of the proposed development on the area's stability must be evaluated by a soils engineer.

8.1.2: Implementing Policy C. If the preliminary report indicates liquefaction potential, an engineering analysis and design, if necessary, to mitigate liquefaction hazards, shall be required for all structures planned for human occupancy.

8.1.2: Implementing Policy D. Evaluation for shrink-swell potential shall be included with all soils reports and design recommendations formulated where the potential is present. These analyses and recommendations shall include public streets and utilities, in order to reduce future public repair costs.

8.1.2: Implementing Policy E. A fault rupture evaluation, as outlined by the State of California for Special Studies Zones (Alquist-Priolo Act), shall be required for all development within the Revised Special Studies Zones as shown on the Geologic Hazards and Constraints map. The fault rupture evaluation should be conducted after building sites are specifically defined. Sites situated outside of this zone but within the Preliminary Zones (Slossen, 1973) shall be evaluated if proposed for multifamily dwellings or for public or recreational facilities.

8.1.2: Implementing Policy F. Any changes in grading or building design that would be significantly affected by geologic hazards or soils conditions, or in turn would significantly alter geologic or soils conditions, shall be accompanied by a re-analysis of those conditions.

In addition, any conditions discovered during excavation or grading that significantly depart from the previously described geologic and soils setting shall be evaluated.

8.1.3: Implementing Policy A: Post-earthquake or damage reconstruction of existing structures shall be permitted only if mitigating factors are incorporated.

8.1.4: Implementing Policy A: A procedure to review all required reports and data shall be established with the Alameda County Geologist or a consulting engineering geologist shall be retained as reviewer. This individual shall participate in the review process from the earliest proposal stage to completion of the project.

8.1.4: Implementing Policy B: A file of all geologic and soils reports and grading plans shall be maintained as reference material for future planning and design on each site as well as on adjacent sites.

8.1.4: Implementing Policy C: City and developer shall endeavor to fully disclose hazards to present and future occupants and property owners.

8.1.5: Implementing Policy A: In 1978 Alameda County adopted an Earthquake Response Directive to be incorporated in the County Emergency Operations Plan (updated March 1980). The directive applies fully to the unincorporated area and to eight contract cities. Dublin will adopt its own multi-hazard response plan.

8.1.5: Implementing Policy B: The City will prepare a route plan for evacuation of Dublin in the event of a major seismic event.

Relevant Project Characteristics

No site specific or additional project characteristics apply relative to Geology, Soils & Seismicity beyond those requirements per the CBC, *City of Dublin General Plan*, and City's Building Code.

Impacts and Mitigation Measures

Criteria for Determining Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines, as amended. For purposes of this EIR, implementation of the proposed project may have a significant adverse geology, soils and seismicity impact if it would result in any of the following:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
    - Strong seismic ground shaking;
    - Seismic-related ground failure, including liquefaction; or

  - Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; and/or
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Methodology

Impacts evaluated in this section were assessed based on previously published reports and GIS data from the CGS, the U.S. Department of Agriculture, Natural Resources Conservation Service, the California Department of Conservation, and the *City of Dublin General Plan*.

Project Impacts and Mitigation Measures

Landslides

Due to the relatively flat topography and the lack of steep slopes within or adjacent to the project area, landslides are not considered to be a potential significant geologic hazard. In addition, the proposed project is not located within a CGS Seismic Hazard Zone where landslides may occur during a strong earthquake. **No impacts** would occur.

Septic Tanks or Alternative Wastewater Disposal Systems

Wastewater disposal in the project area is provided by the Dublin San Ramon Services District. Future development within the project area would be required to connect to the existing wastewater system. The project area would not need to use septic tanks or other alternative wastewater disposal systems. Consequently, the threshold of significance for septic tanks or alternative wastewater disposal systems would not apply to the proposed project and no further analysis is required. **No impacts** would occur.

Fault Rupture

Impact 3.3-1: Active or potentially active faults are located within the project area and the Calaveras Fault traverses the western portion of the project area. However, future development associated with the proposed project will be performed in accordance with the latest edition of the CBC, in addition to the goals and policies of the *City of Dublin General Plan*. This is considered a less than significant impact.

The proposed project is located in a seismically active area. The nearest potentially active fault is the Calaveras Fault, which traverses the western portion of the proposed project

site. The Calaveras Fault is also located in an Alquist-Priolo Earthquake Fault Zone (a regulatory zone around an active fault). Per the Alquist-Priolo Earthquake Fault Zoning Act, before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (generally 50 feet). The western portion of the project area that is located within an Alquist-Priolo Earthquake Fault Zone is already built-out. Design of any redevelopment within this area would be performed in accordance with the latest edition of the CBC, the City Building Code, and policies of the *City of Dublin General Plan*. Compliance with the statutory and local technical reports and design requirements would ensure that no significant impacts related to fault zone rupture would occur. Therefore, this would be considered a **less than significant impact**, and no mitigation is required.

Seismic Ground Shaking

Impact 3.3-2: Ground shaking is likely to occur in the project area in the event of a major earthquake on one of the nearby faults resulting in the exposure of people and/or structures to potentially significant adverse effects, including the risk of loss, injury or death. This is considered a potentially significant impact.

The proposed project is located in a seismically active region. Earthquakes on any of the potentially active faults within the surrounding region could produce moderate ground shaking in the DDSP area depending on the magnitude, characteristics, and location of the seismic event. According to the CBC, the proposed project is located within Seismic Zone 4. Because the DDSP area is in Seismic Zone 4, structures are required to be designed to the most stringent standards in accordance with applicable parameters described in the current CBC. Specific engineering design and construction measures required by the CBC for the construction of new or renovated buildings are required to be implemented to reduce the potential for adverse effects to human life and property caused by seismically induced groundshaking. Additionally, the proposed project would be regulated under the requirements of the Alquist-Priolo Earthquake Fault Zoning Act, the policies of the *City of Dublin General Plan*, and the City's Building Code.

To provide the adequate level of information to properly design and engineer future development consistent with statutory requirements and the City's Building code, the City's Public Works Department requires an engineering geologist to perform design-level geotechnical studies and submit them to the City for approval. In addition, the project applicant would be required to comply with all applicable CBC requirements with regard to the design and construction or installation of structures and improvements with regard to resisting damaging forces of seismic ground shaking. Therefore, Implementation of the following mitigation measure would therefore ensure that the proposed project would not expose people or structures to potential substantial adverse effects, including the risk of

loss, injury, or death involving strong seismic ground shaking which would reduce this potentially significant impact to a **less than significant** level.

Mitigation Measure

MM 3.3-1 Project applicants shall consult with a registered geotechnical engineer to prepare a design level geotechnical report that addresses the affects of seismic ground shaking and includes a quantitative evaluation of liquefaction and liquefaction-induced lateral spreading for future development in the DDSP project area. The design level geotechnical report shall specify foundations and structural elements that are designed to resist forces and potential ground settlement for liquefaction and lateral spreading. This report shall be submitted in conjunction with a Building Permit application.

Liquefaction

Impact 3.3-3: Future development associated with the proposed project could expose people or structures to potential substantial adverse effects of liquefaction. This is considered a potentially significant impact.

Generally, when liquefaction occurs because of earthquakes, the conditions of cohesionless surface material accompanied with relatively shallow water tables underlying the area were the factor. In such cases, ground vibration increases the pore pressure resulting in water moving upward whereby turning the sand or silt into a quicksand like condition. The surface characteristics include the development of sand boils, surface cracks, ground settlement and differential compaction. Without proper soil engineering, foundation design, and construction, the project site could expose people and/or structures to hazards associated with seismic-related ground failure.

The proposed project is located within a CGS Seismic Hazard Zone where liquefaction may occur during a strong earthquake. This Zone is defined as an area where historic occurrence of liquefaction, or local geological, geotechnical and ground water conditions indicate a potential for permanent ground displacements.

Future development within the DDSP area would be required to comply with the City's Building Code, liquefaction regulations of the CBC, and the City's standard engineering practices and design criteria. In addition, mitigation measure MM 3.3-1 would require properties developing within this zone to prepare a design level geotechnical report, which would reduce this potentially significant impact to a **less than significant** level.

Mitigation Measure

MM 3.3-1 Project applicants shall consult with a registered geotechnical engineer to prepare a design level geotechnical report that addresses the affects of seismic ground shaking and includes a quantitative evaluation of liquefaction and liquefaction-induced lateral spreading for future development in the

DDSP project area. The design level geotechnical report shall specify foundations and structural elements that are designed to resist forces and potential ground settlement for liquefaction and lateral spreading. This report shall be submitted in conjunction with a Building Permit application.

Soil Erosion

Impact 3.3-4: Implementation of the proposed project may result in soil erosion or the loss of topsoil during short-term construction activities within the DDSP project area. This is considered a potentially significant impact.

Because the majority of the soils in the project area are covered by roads, buildings, parking lots, and sidewalks, and the remainder have been landscaped, the erosion potential in the DDSP area is very low. Nonetheless, earth-disturbing activities associated with any future construction in the project area has the potential to increase erosion if proper sedimentation and erosion control methods are not in place at the construction project sites.

The City of Dublin Public Works Department Policy No. 95-11 requires that all plans specify both long-term and short-term erosion control measures that will be implemented during construction activities to control runoff, erosion, and sediment movement prior to issuance of a building permit. In addition, in order to comply with the National Pollution Discharge Elimination System (NPDES) permit process for storm drainage and construction site discharge, projects involving construction that are greater than one acre in size within the DDSP area are required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) which would be submitted for review by the City of Dublin Public Works Department during the Grading/Site Work and Building Permit process, The SWPP describes the stormwater BMPs (structural and operational measures) that would control the quality (and quantity) of stormwater runoff. In addition, the NPDES permit requires implementation of non-point source control of runoff through the application of a number of Best Management Practices (BMPs). These BMPs are meant to reduce the amount of constituents, including eroded sediment, that enter streams and other water bodies. Examples of BMPs typically used in the City of Dublin include vegetated swales in parking areas. A Erosion and sedimentation issues are addressed more fully in Section 3.5 (Hydrology & Water Quality) of this EIR.

Compliance with the City of Dublin Public Works Department Policy No. 95-11; NPDES permit process; and the City's Building Code requirements, as described in Mitigation Measures 3.5-1a and 3.5-1b, would minimize the effects from erosion and reduce this potentially significant impact to a **less than significant** level.

Mitigation Measures

MM 3.5-1a: Prior to issuance of grading permit, the project proponent shall file a Notice of Intent as required by Regional Water Quality Control Board regarding

stormwater discharges associated with construction activities. Upon completion of construction activities, a Notice of Termination shall be filed.

MM 3.5-1b: Prior to issuance of any building or grading permits, a Storm Water Pollution Prevention Plan (SWPPP) shall be prepared by the project contractors and submitted to the Regional Water Quality Control Board for review and comment and to the City of Dublin in conjunction with the Building/Grading/Site work permit and shall be found to be acceptable by the City prior to ground disturbance. The SWPPP shall be prepared to Regional Water Quality Control Board standards and Alameda Countywide Clean Water Program requirements, and shall identify erosion minimization and control provisions, pollution detection provisions, and pollution elimination/ minimization provisions appropriate to the development project and its site for construction and post-construction activities. The SWPPP shall include best available technology, engineering, and design solutions such as the use of silt screens, hay bales, modern trash screens, energy dissipaters, and/or absorbent devices. Stormwater runoff water quality monitoring procedures shall be clearly detailed in the SWPPP.

Expansive Soil

Impact 3.3-5: Implementation of the proposed project would not lead to development on expansive soil. With adherence to the City's Building Code and CBC requirements, this is considered a less than significant impact.

Based on the soil descriptions described above, the soils located within the project area are: Clear Lake clay, 0 to 3 percent slopes; Danville silty clay loam, 0 to 3 percent slopes; Pescadero clay; Sunnyvale clay loam over clay; and Yolo loam, 0 to 3 percent slopes. These do not generally exhibit characteristics of expansive soils; however, a site-specific evaluation of soil conditions would be required by the City for each specific development project within the project area. In addition, all future projects would be required to adhere to the City's Building Code and CBC requirements. Therefore, impacts as a result of expansive soils would be considered a **less than significant impact**, and no mitigation is required.

3.4. Hazards & Hazardous Materials

This section of the EIR discusses the potential presence of hazards and hazardous materials at or within the vicinity of the project area and analyzes the potential risk of these conditions in the context of existing and proposed development and future human activities within the project area. This section is based on a review of existing environmental records to identify agency listings of sources of hazardous materials which might affect the project area; a review of potential airport hazards; and a review of emergency evacuation routes in the vicinity of the project area This section evaluates the potential for hazardous materials within the project area based on readily discernable and/or documented present and historic uses within the project area and generally characterizes the expected nature of hazardous materials that may be present.

Environmental Setting

Regional Setting

The proposed project is located in the Amador Valley region of eastern Alameda County, within the California Coast Ranges Physiographic Province. The project area consists of deep, geologically recent alluvial deposits containing gravel, sand, silt, and clay.

Hazardous Materials

Hazardous materials include substances that are corrosive, poisonous, radioactive, flammable, or explosive. The City of Dublin, similar to most cities, has industrial and commercial activities within and in the vicinity of the City that store, use, and must dispose of hazardous materials. Hazardous materials can be released into the environment accidentally during normal business operations or through transportation accidents.

Hazardous materials are transported through the City of Dublin regularly along major transportation corridors, including Highways 580 and 680, and several arterial streets including San Ramon Road, Amador Valley Boulevard, and Dublin Boulevard, and local streets within the City provide access to commercial and industrial businesses.

Airport Hazards

The closest airport to the project area is the Livermore Municipal Airport (hereinafter "Airport"), which is located approximately 6.5 miles east of the downtown. The Airport is a general aviation airport which serves private, business, and corporate tenants and customers. The facility has two parallel runways: a 5,255 foot lighted main runway, and 2,700 foot unlighted training runway. The Livermore Municipal Airport has approximately 600 based aircraft, over 150,000 annual aircraft operations. The airfield is accessible 24 hours a day. According to the *Livermore Municipal Airport Master Plan*, the downtown is not located within the approach zones and is not located within an unacceptable noise contour.

Wildland Fire Hazards

Due to the urban nature of the project area, the proposed Specific Plan is not located within an area that would be subject to the requirements of the City's *Wildfire Management Plan* (City of Dublin 2002).

Project Setting

The majority of the project area is developed with urban uses consisting of commercial retail, auto dealerships, hotel, and office uses as shown in Figure 2-3: Existing Land Uses. The majority of the land uses include regional serving retail in the center of the project area. These include: Target, Toys R Us, Burlington Coat Factory, 99 Ranch Market, Orchard Supply Hardware, Ross, Marshall's, and Safeway. Several large scale retailers have recently closed in 2009 due to the current economic recession and/or other factors.

There are two auto dealership sites in the Specific Plan area including one located in the southeast corner of Dublin Boulevard and Golden State Drive and one located at the southeast corner of Saint Patrick Way and Amador Plaza Road.

Smaller specialty retail, convenience retail, and services are generally located west of Regional Street and along Amador Valley Boulevard, Amador Plaza Road, and Village Parkway.

Office uses within the Specific Plan Area include the Corrie Center (located southeast of Dublin Boulevard and Regional Street), the Chase Bank Building (southwest of Dublin Boulevard and Golden Gate Drive) and an office building located at the south end of Amador Plaza Road.

Other notable land uses include the 238-room Holiday Inn, Earl Anthony Dublin Bowl, Dublin Bowl, Dublin Post Office, Dublin Iceland, and a senior center with an associated 54-unit Wicklow Square apartment complex.

Hazardous Materials

RBF Consulting observed the physical characteristics of the project area, which included: 1) a preliminary visual examination of the project area; 2) review of aerial photographs and topographic maps; 3) a review of the Geotracker database maintained by the State Water Resources Control Board regarding public agency records within the project area; and 4) a review of the *Livermore Municipal Airport Master Plan* (City of Livermore 1975).

Asbestos and Lead Based Paints

Asbestos is a strong, incombustible, and corrosion resistant material, which was used in many commercial products between the 1940s and the early 1970s. If inhaled, asbestos fibers can result in serious health problems. Asbestos Containing Materials (ACMs) are building materials containing more than one percent asbestos (some state and regional regulators impose a one-tenth of one percent (0.1 percent) threshold).

Until 1978, when the U.S. Consumer Product Safety Commission (CPSC) phased out the sale and distribution of residential paint containing lead, many homes were treated with paint containing some amount of lead. It is estimated that over 80 percent of all housing built prior to 1978 contains some Lead-Based Paints (LBP). The mere presence of lead in paint may not constitute a material to be considered hazardous. In fact, if in good condition (no flaking or peeling), most intact LBP is not considered to be a hazardous material. LBPs can create a potential health hazard for building occupants, especially children when in poor condition.

It is likely that ACMs and LBPs may be associated with any structures located within the project area that were constructed more than 40 years ago.

Historical and Regulatory Searches

Based on a search on the State Water Resources Control Board's GeoTracker database, the following leaking underground storage tank (LUST) sites are located are within the project area and are fuel sites where petroleum-based products were leaked into the soil and/or groundwater:

- *Former Quest Laboratory (6511 Golden Gate Drive).* One 2,000-gallon gasoline underground storage tank was removed from the site in 1989. A Phase II Site Investigation was conducted at the site in December 2003 through January 2004. Groundwater impact was detected from previous release of diesel fuel. Four groundwater monitoring wells were installed in January 2009. Groundwater monitoring is currently being conducted at the site.
- *Arco Gas Station (7249 Village Parkway).* The Arco Gas Station site is a LUST clean-up site. Since 1990, four underground storage tanks USTs have been removed from the site. In addition, a total of 4,150 tons of soil and approximately 25,600 gallon of impacted groundwater was removed from the site. However, significantly elevated residual concentrations of TPH-g and benzene remain at the site in the vicinity of the former USTs. The cleanup status is open and is currently undergoing verification monitoring.
- *Unocal Gas Station (7850 Amador Valley Boulevard).* This site is a LUST clean-up site that is currently undergoing verification monitoring. In November 1994, one 280-gallon steel waste oil UST and four 10,000-gallon steel USTs, consisting of one regular, one mid-grade, one super-unleaded gasoline, and one diesel UST were replaced with two 12,000-gallon steel USTs. Following UST removal activities, soil sample analytical results detected elevated concentrations of total petroleum hydrocarbons (TPH) as diesel, gasoline, and benzene at concentrations of 9,100 mg/kg, 1,600 mg/kg, and 1.6 mg/kg, respectively. Groundwater monitoring wells installed at the site verified hydrocarbon contamination in groundwater. In 2007, a sensitive receptor survey was performed. Source area characterization is currently underway.

- *Cornwood Carwash (6973 Village Parkway).* Two 10,000 gallon USTs were removed from the site in January 2000. Significantly elevated concentrations of petroleum hydrocarbons were detected in soil and groundwater samples. Between 2000 and 2006, subsurface investigations consisting of soil borings and groundwater monitoring well installations were conducted at the site.
- *Former Crown Chevrolet (7544 Dublin Boulevard).* A subsurface investigation was conducted in February 2009. Petroleum hydrocarbon contamination was detected in soil and groundwater. A site assessment for the contamination is currently underway.
- The following two cases are chlorinated solvent sites where tetrachloroethylene (PCE) and/or tetrachloroethylene (TCE) have been detected:
- *Crow Canyon Cleaners (7272 San Ramon Boulevard).* The Crow Canyon Cleaners is an open case with potential contaminants of concern including Tetrachloroethylene (PCE).
- *Village Square Shopping Center (7054-7150 Village Parkway).* The Village Parkway Shopping Center is an open case with potential contaminants of concern of chlorinated solvents (PCE), chlorinated solvents (TCE) and volatile organic compounds.

Regulatory Setting

A material is considered hazardous if it has been designated as such by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. The California Code of Regulations defines a hazardous material as a substance that, because of physical or chemical properties, its quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating illness; or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed (22 CCR §66260.10 and California Health and Safety Code [HSC] §25501). Based on this definition, "hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment (22 CCR §66260.10).

Chemical residuals in soil that are the result of the normal application of fertilizer, plant pesticides for agricultural purposes do not constitute a release of hazardous substances under the California Hazardous Substances Account Act (HSC §25321 (d)). Similarly, the Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) exempts parties from liability for the application of federally-registered pesticides (42 USC §9607(i)).

Regulation of hazardous materials and hazardous wastes occurs at the federal, state, and local levels of government. On the federal level, many hazardous materials-related

regulations are promulgated by the EPA. Additional regulations pertaining to work place standards and for transportation of hazardous materials are enforced by the United States Department of Labor Occupational Health and Safety Administration (OSHA) and the United States Department of Transportation (DOT).

In 1993, Senate Bill 1082 gave the California Environmental Protection Agency (CalEPA) the authority and responsibility to establish a unified hazardous waste and hazardous materials management and regulatory program (Unified Program). The purpose of the Unified Program is to consolidate and coordinate six different hazardous materials and hazardous waste programs, and to insure that they are consistently implemented throughout the state. The unified program is overseen by CalEPA with support from the Department of Toxic Substances Control (DTSC), the State Water Resources Control Board (SWRCB), the Office of Emergency Services, and the State Fire Marshal.

State law requires county and local agencies to implement the Unified Program. The county and local agencies in charge of implementing the program are called "Certified Unified Program Agency" (CUPA). The Alameda County Department of Environmental Health (ACDEH) is the designated CUPA within the geographic boundaries of the County and has jurisdiction in the following cities: Alameda, Albany, Castro Valley, Dublin, Emeryville, Piedmont, Newark, San Lorenzo, Sunol, and the unincorporated areas of Fremont, Hayward, Livermore, Pleasanton, San Leandro and parts of Byron, Mountain House and Tracy.

The ACDEH is therefore the administrative agency that coordinates and enforces numerous local, state, and federal hazardous materials management and environmental protection programs in the county. The CUPA administers the following programs:

- *Hazardous Materials Business Plan Program* – Chapter 6.95 of the Health and Safety Code establishes minimum statewide standards for Hazardous Materials Business Plans (HMBP's). HMBP's contain basic information on the location, type, quantity, and health risks of hazardous materials and/or waste. Each business shall prepare a HMBP if that business uses, handles, or stores a hazardous material and/or waste or an extremely hazardous material in quantities greater than or equal to the following:
- 55 gallons for a liquid
- 500 pounds of a solid
- 200 cubic feet for any compressed gas
- Threshold planning quantities of an extremely hazardous substance
- *Hazardous Waste Generator Program* - The Hazardous Waste Generator Program regulates businesses that generate any amount of a hazardous waste. Proper handling, recycling, treating, storing and disposing of hazardous waste are key elements to this program.

- *Underground Storage Tank Program* - The UST program regulates the construction, operation, repair and removals of UST systems used to store hazardous materials and/or waste.
- *California Accidental Release Program* - The California Accidental Release Program (Cal ARP) requires any business that handles more than threshold quantities of an extremely hazardous substance to develop a Risk Management Plan (RMP). The RMP is implemented by the business to prevent or mitigate releases of regulated substances that could have off-site consequences through hazard identification, planning, source reduction, maintenance, training, and engineering controls.
- *Tiered Permitting Program* - The Tiered Permitting Program regulates the onsite treatment of hazardous waste.
- *Aboveground Storage Tank Program* - Facilities with a single tank or cumulative aboveground storage capacities of 1,320 gallons or greater of petroleum-based liquid product (gasoline, diesel, lubricants, etc.) must develop a Spill Prevention Control and Countermeasure plan (SPCC).
- An SPCC plan must be prepared in accordance with the oil pollution prevention guidelines in the Federal Code of Regulations (40 CFR, 112). This plan must include procedures, methods, and equipment at the facility to prevent discharges of petroleum from reaching navigable waters. A Registered Professional Engineer must certify an SPCC plan and a complete copy of the plan must be maintained on site.

In addition to the CUPA, other local agencies help to implement the Unified Program. These agencies are called Participatory Agencies (PA). The Alameda County Fire Department is the PA for the City of Dublin. The Department provides hazardous materials code enforcement, public education, and emergency response services. It also oversees enforcement of hazardous waste regulations, underground tank requirements, risk management requirements, and clean up of hazardous materials spills that occur within the City. In addition, the Department manages the City's hazardous materials management plans.

Local

City of Dublin General Plan

The following policies in the *City of Dublin General Plan* are applicable to hazards and hazardous materials within the project area.

8.2.1: Guiding Policy A. Develop an emergency preparedness plan in coordination with other public agencies.

8.2.2: Implementing Policy C. Enact a high hazard ordinance specifying sprinklers for all habitable structures beyond five minutes response time from a station.

8.2.4: Guiding Policy A. The City of Dublin shall encourage the reduction or elimination of hazardous wastes at the source site as the highest priority in the management of hazardous wastes.

8.2.4: Guiding Policy B. The City of Dublin shall make provisions for the location of offsite hazardous waste facilities in its community which meet the fair share needs of the City of Dublin and of Alameda County.

City of Dublin Zoning Code

Chapter 8.60, Hazardous Waste Facilities regulates off-site hazardous waste facilities in the City of Dublin. The purpose of Chapter 8.60 is to establish uniform standards, land use regulations and a permit process for controlling the location, design, maintenance and safety of off site hazardous waste facilities. These standards, regulations and process are intended to be consistent with Article 8.7 of the California Health and Safety Code, applicable portions of the Alameda County Hazardous Waste Management Plan and the *City of Dublin General Plan*.

City of Dublin Wildfire Management Plan

The purpose of the *City of Dublin Wildfire Management Plan* is to reduce the risk of open land wildfire to the lowest practical level consistent with the reasonable protection of wildlife habitat and other open space values. The Wildfire Management Plan was adopted by the City of Dublin in 1996 and amended in 2001 and revised in 2002. The Wildfire Management Plan provides for development of a Fire Buffer Zone between open space/undeveloped lands and developed properties.

Impacts and Mitigation Measures

Methodology

This section is based on a review of potential hazardous materials sources within the City from the State Water Resources Control Board Geotracker database, as well as review of the *Livermore Airport Master Plan* (City of Livermore 1975) to address any potential airport-related hazards.

Criteria for Determining Significance

In accordance with CEQA, State CEQA Guidelines, agency and professional standards, a project impact would be considered significant if the project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area; and/or
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Transport, Use, Disposal, and Release of Hazardous Materials During Operation

Impact 3.4-1: Future development within the project area may involve the use of hazardous materials including cleaning solvents, fertilizers, pesticides, and other hazardous materials typical of future retail and residential uses within the project area. However, this would be considered a less than significant impact.

The proposed Specific Plan is not anticipated to result in significant hazards to the public or the environment due to the range of uses proposed within the project area. If future users within the project area propose to use, handle, or store hazardous materials or waste in quantities that are regulated by the Alameda County Department of Environmental Health, businesses would be required to submit a Hazardous Materials Business Plan documenting basic information on the location, type, quality and health risks of hazardous materials and/or waste.

With proper use and disposal in accordance with the Alameda County Department of Environmental Health, chemicals associated with future users within the project area are not expected to result in hazardous or unhealthful conditions for employees and patrons of the proposed project. Therefore, operational impacts from the transport, use, disposal, and release of hazardous materials associated with operations within the project area would be considered **less than significant**.

Transport, Use, Disposal, and Release of Hazardous Materials During Construction

Impact 3.4-2: During construction of the proposed project, there is the potential for the transport, use, or disposal of hazardous materials, which could create a hazard to the public or the environment. This is considered a potentially significant impact.

Future development within the project area may result in the routine transport of hazardous materials during construction. Handling procedures of the Alameda County Environmental Health Department and the Alameda County Fire Department would be

required during all phases of future development within the project area. These measures include standards and regulations regarding the storage, handling, and use of these materials.

In addition, in order to comply with the National Pollution Discharge Elimination System (NPDES) requirements for construction of site storm water discharges, projects involving construction on sites one acre or more are required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that specifies how the discharger will protect water quality during construction activities as required by Mitigation Measures MM 3.5-1a and 3.5-1b. Compliance with the appropriate hazardous materials handling measures and acquisition of the NPDES General Permit for construction activities would ensure that potential hazardous materials impacts during short-term construction activities associated with future development within the project area would be **less than significant**.

Mitigation Measures

MM 3.5-1a: Prior to issuance of grading permit, the project proponent shall file a Notice of Intent as required by Regional Water Quality Control Board regarding stormwater discharges associated with construction activities. Upon completion of construction activities, a Notice of Termination shall be filed.

MM 3.5-1b: Prior to issuance of any building or grading permits, a Storm Water Pollution Prevention Plan (SWPPP) shall be prepared by the project contractors and submitted to the Regional Water Quality Control Board for review and comment and to the City of Dublin in conjunction with the Building/Grading/Site work permit and shall be found to be acceptable by the City prior to ground disturbance. The SWPPP shall be prepared to Regional Water Quality Control Board standards and Alameda Countywide Clean Water Program requirements, and shall identify erosion minimization and control provisions, pollution detection provisions, and pollution elimination/ minimization provisions appropriate to the development project and its site for construction and post-construction activities. The SWPPP shall include best available technology, engineering, and design solutions such as the use of silt screens, hay bales, modern trash screens, energy dissipaters, and/or absorbent devices. Stormwater runoff water quality monitoring procedures shall be clearly detailed in the SWPPP.

Result in the Release of Hazardous Materials from the Demolition of Structures

Impact 3.4-3: The proposed project may result in the demolition and removal of structures within the project area which may contain asbestos and/or lead based paint (LBPs). This would be considered a potentially significant impact.

Future development within the project area may result in the demolition of buildings that were constructed prior to approximately 1980, which may contain asbestos and/or lead, a

hazardous contaminant. Any demolition of structures within the project area would be subject to the U.S. EPA regulations for lead based paint including 40 CFR Part 745 Lead; Clearance and Clearance Testing Requirements for the Renovation, Repair, and Painting Program and the Bay Area Air Quality Management District (BAAQMD) Regulation 11, Rule 2, which regulates the demolition and renovation of buildings and structures which may contain asbestos. Specifically, District Regulation 11-2-401.3 requires that for every renovation involving the removal of 100 square feet or greater of Regulated Asbestos Containing Material (ACM), and for every demolition (even when no asbestos is present), a notification must be made to the BAAQMD at least ten working days prior to commencement of demolition/renovation. The potential release of ACM and LBPs during demolition activities is considered a potentially significant impact. Implementation of the following mitigation measure would ensure that this impact is reduced to a less than significant level.

Mitigation Measure

MM 3.4-1 Prior to demolition of existing structures that were constructed prior to 1980 within the project area, project applicants shall have structures proposed for demolition inspected by a qualified environmental specialist for the presence of LBPs and Asbestos (ACM) contaminating materials prior to obtaining a demolition permit from the City of Dublin. If found to be present, samples shall be collected and analyzed for ACM and lead using EPA testing methods. If actionable levels of lead and or ACM are within the structures, a remediation plan shall be prepared by a qualified consultant and implemented. Necessary permits and approvals shall be obtained from appropriate regulatory agencies including the Bay Area Air Quality Management District. Worker safety plans shall be included in any remediation plans. Any hazardous materials that are removed from the structures shall be disposed of at an approved landfill facility in accordance with federal, state, and local laws and regulations.

With implementation of this mitigation measure and applicable rules and regulations by the U.S. EPA and the BAAQMD, impacts from any demolition of existing structures within the project area would be considered a **less than significant impact.**

Result in the Disturbance of Contaminated Soil or Groundwater

Impact 3.4-4: The project area is not located on a hazardous material site pursuant to Government Code Section 65962.5. Based on a search of the State Water Resources Control Board's GeoTracker database, there are approximately seven sites within the project area that are currently being investigated. If hazardous materials are discovered during construction activities at sites located in the vicinity of these open cases, this would be considered a potentially significant impact.

The project area contains approximately seven sites that are currently being monitored by the Regional Water Quality Control Board:

- Former Quest Laboratory (6511 Golden Gate Drive).
- Arco Gas Station (7249 Village Parkway).
- Unocal Gas Station (7850 Amador Valley Boulevard).
- Cornwood Carwash (6973 Village Parkway).
- Crown Chevrolet Cadillac Isuzu (7544 Dublin Boulevard).
- Crow Canyon Cleaners (7272 San Ramon Boulevard).
- Village Parkway Shopping Center (7054-7150 Village Parkway).
- If contamination is discovered during construction activities in the vicinity of these sites, this would be considered a **potentially significant impact**. The following mitigation measure would reduce this impact to a less than significant level by ensuring that future development evaluates the potential for hazardous materials within a specific project site prior to construction activities:

Mitigation Measure

MM 3.4-2 Future development or substantial redevelopment within the project area shall prepare a Phase I Environmental Site Assessment to determine whether or not a particular development site contains any hazardous materials as a result of historic contamination within the project area subject to review and approval by the City of Dublin. In the event that the Phase I recommends subsequent testing, the potential health risks shall be evaluated and a work plan prepared to remediate the soil and/or groundwater in accordance with all applicable federal, state, and local regulations. This assessment shall be submitted to the City in conjunction with the Building and Grading/Site work permit and shall be found acceptable by the City prior to ground disturbance.

Implementation of mitigation measure MM 3.4-2 would reduce potential impacts associated with contaminated soils within the project area to a **less than significant level**.

Emit Hazardous Materials in the Vicinity of a School

Nielsen Elementary School (7500 Amarillo Drive, Dublin) is located within a quarter mile of the project site. New businesses that locate near residential areas or within a quarter mile from a school may expose these sensitive land uses to greater risk of exposure to hazardous materials, wastes, or emissions. While the risk of exposure to hazardous materials cannot be eliminated, measures can be implemented to maintain risk to acceptable levels. As noted in the project description, future new development will be commercial, office and retail uses with some residential and public uses. Related hazardous materials would also be typical with no high-risk materials such as those that are expected with industrial uses. Under these circumstances, required compliance with regulations established by federal, State and local regulatory agencies is considered adequate to avoid the negative effects related to the use, storage, emission and the transport of hazardous

materials at future development/redevelopment sites within the project area. Therefore, the proposed Specific Plan would have a **less than significant** impact to Nielsen Elementary School after compliance with applicable federal, State, and local regulations.

Interfere with an Emergency Response Plan/Emergency Evacuation Plan

The proposed Specific Plan would not impair implementation of or physically interfere with an emergency response plan or emergency evacuation plan and no impact is anticipated.

Potential for Wildfire Hazards

Wildfire impacts may be considered significant if the proposed project would expose people or structures to a significant risk, loss, injury or death involving wildfires, including where wildlands are located adjacent to urban areas or where residences are intermixed with wildlands. As the project area is located in an urban area, it would not be subject to potential wildfire hazards.

Potential for Airport Hazards

The closest airport to the project area is the Livermore Municipal Airport which is located approximately 6.5 miles east of the project area. According to the *Livermore Municipal Airport Master Plan*, the City of Dublin is not located within the approach zones and is not located within an unacceptable noise contour. Therefore, the proposed project would not result in a safety hazard for any people residing or working in the area.

3.5. Hydrology & Water Quality

This section of the EIR discusses the hydrologic and water quality setting of the proposed project and surrounding area. This section also evaluates the potential impacts that the proposed project will have on water resources. The discussion of hydrology and water quality issues within the proposed project area was developed through review of existing literature pertinent to hydrology in the local area, as well as a review of the *City of Dublin General Plan*, Dublin/Pleasanton Extension Project EIR; and the San Francisco Bay Area Rapid Transit District's *West Dublin/ Pleasanton BART Station and Transit Village EIR.*

Environmental Setting

Climate

The climate of the Livermore-Amador Valley is characterized as Mediterranean, with cool wet winters and warm dry summers. The average annual temperature of the area ranges from a low of 42 degrees (Fahrenheit) to a high of 73 degrees. The mean annual rainfall in the vicinity of the proposed project site is approximately 17 inches (the majority of which falls between October and April). Analysis of long-term precipitation records indicates that wetter and drier cycles lasting several years are common in the region. Severe, damaging rainstorms occur at a frequency of about once every three years.

Surface Water

The proposed project is located in the City of Dublin, within the western portion of the Livermore-Amador Valley hydrologic region. The project area is relatively flat, with on-site elevations ranging from approximately 328 feet above mean sea level (msl) to 371 feet above msl. Stormwater generally flows east into the existing storm drains within the project area.

Dublin Creek is an open channel that follows the southern boundary of proposed project. An unnamed drainage feature traverses the project site parallel to Interstate 680, which then cuts under Interstate 680, and continues outside of the project boundary. In addition, the South San Ramon Creek is located approximately 0.25 miles southeast of the proposed project. Hydrologic features of the project area (including creeks and nearby flood-prone locations), are identified in Figure 3.5-1: Hydrologic Features.

In an undeveloped setting, when rainfall intensities exceed the infiltration capacity of surface soils, run-off flows over the ground surfaces toward established natural drainage channels. Stormwater runoff is then conveyed away from the area in creeks and streams. In a developed setting, an increased portion of the natural soils would be covered with impervious surfaces (i.e. roads, driveways, and roofs), increasing amounts and altering flow patterns of runoff. In developed portions of the City of Dublin, storm drainage is conveyed in underground pipes, channels, and to a lesser extent, swales. New development is required to install adequately-sized storm drains, connected to the City's system, to accommodate increased runoff volumes. Stormwater drainage is managed by the City of Dublin Public Works Department and all runoff in the vicinity is directed to regional storm

drain facilities owned and maintained by Zone 7 of the Alameda County Flood Control and Water Conservation District (Zone 7).

Flooding

Based on Panel Numbers 06001C0308G and 06001C0304G of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), portions of the proposed project are located within a 100-Year Flood Hazard Zone, a 500-Year Flood Hazard Zone (0.2-percent annual chance), and within Zone X or outside of a special flood hazard zone (refer to Figure 3.5-1: Hydrologic Features).

The eastern portion of the proposed project (specifically, an area of land located to the east and west of Interstate 680) is located within a FEMA 100-Year Flood Zone, in addition to a small portion of land to the west of San Ramon Road. Land within a FEMA 100-Year Flood Zone means that the flood elevation has a one percent chance of being equaled or exceeded each year. Thus, the 100-Year Flood could occur more than once in a relatively short period of time. The 100-Year Flood, which is the standard used by most federal and state agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management and to determine the need for flood insurance. The majority of the central portion of the project area is located within a 500-Year Flood Zone (0.2-percent annual chance), meaning this area would be affected by the 0.2-percent annual chance flood. Portions of the proposed project are also located with Zone X, which is considered an area of minimal flood hazard and outside the Special Flood Hazard Area (SFHA).

Reservoirs/Dams

There are 29 reservoirs/dams in Alameda County. The following discusses reservoirs located within 12 miles of the proposed project:

Don Castro Reservoir is located approximately six miles to the west of the proposed project. Don Castro Reservoir is maintained by the Alameda County Flood Control and Water Conservation District for flood control, and by the East Bay Regional Park District as a recreational facility. Lake Chabot Reservoir is located approximately nine miles west of the DDSP area. Lake Chabot Reservoir was completed in 1875 by damming San Lorenzo creek and served as the primary water source for the East Bay Area. The Upper San Leandro Reservoir is located approximately 10 miles northwest of the DDSP area. The Upper San Leandro Reservoir was built by the East Bay Water Company in 1926 and is maintained by the East Bay Municipal Utility District. The San Antonio Reservoir is located approximately 10 miles south-southeast of the DDSP area. The San Antonio Reservoir, built in 1964 by the City and County of San Francisco, is managed by the San Francisco Public Utilities Commission (SFPUC). The reservoir captures local rain and runoff from the Alameda Watershed and contributes surface water supplies to the SFPUC Water System. Lake de Valle is located approximately 12 miles southeast of the DDSP area. De Valle Dam and Lake de Valle were built in 1968 as part of the State Water Project. It provides storage for the South Bay Aqueduct and flood control for Alameda Creek. The East Bay

Regional Park District manages the Lake de Valle Regional Park, which is also a State Recreation Area.

Groundwater Basin

The proposed project is located within the Livermore Valley Groundwater Basin, which contains a surface area of approximately 109 square miles. The Livermore Valley lies approximately 40 miles east of San Francisco and 30 miles southwest of Stockton, within a structural trough of the Diablo Range. The Livermore Valley Groundwater Basin extends from the Pleasanton Ridge east to the Altamont Hills (about 14 miles) and from the Livermore Upland north to the Orinda Upland (about three miles). Surface drainage features include Arroyo Valley, Arroyo Mocho, and Arroyo las Positas as principal streams, with Alamo Creek, South San Ramon Creek, and Tassajara Creek as minor streams. All streams converge on the west side of the basin to form Arroyo de la Laguna, which flows south and joins Alameda Creek in Sunol Valley. Elevations within the basin range from about 600 feet in the east, near the Altamont Hills, to about 280 feet in the southwest, where Arroyo de la Laguna flows into Sunol Groundwater Basin.

The groundwater resources in the Livermore Valley Groundwater Basin are managed by Zone 7, under authority from California Water Code Section 30000 (County Water District).

Water Quality

The quality of surface and groundwater at the proposed project site is affected by land uses within the entire watershed. Drainage from the project area affects the quality of water in larger creeks and drainages downstream, including Arroyo de la Laguna, Alameda Creek, and San Francisco Bay. Water quality in surface and groundwater bodies is regulated primarily by the State and Regional Water Quality Control Boards.

The surface and groundwater quality in the proposed project area is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (RWQCB), which is responsible for implementation of state and federal water quality protection guidelines in the vicinity of the proposed project site. The RWQCB's master water quality control planning document is the *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan). It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan is currently being updated to reflect the Basin Plan amendments adopted since 2006.

Regulatory Setting

Federal

Clean Water Act

The principal law governing pollution of the nation's surface waters is the Federal Water Pollution Control Act (Clean Water Act [CWA]). Originally enacted in 1948, it was

amended in 1972 and has remained substantially the same since. The CWA consists of two major parts: provisions that authorize federal financial assistance for municipal sewage treatment plant construction and regulatory requirements that apply to industrial and municipal dischargers. The CWA authorizes the establishment of effluent standards on an industry basis. The CWA also requires states to adopt water quality standards that "consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses".

National Pollutant Discharge Elimination System

To achieve its objectives, the CWA is based on the concept that all discharges into the nation's waters are unlawful, unless specifically authorized by a permit. The NPDES is the permitting program for discharge of pollutants into surface waters of the United States under Section 402 of the CWA. Thus, industrial and municipal dischargers (point source discharges) must obtain NPDES permits from the appropriate RWQCB (i.e., the Central Valley region). The existing NPDES (Phase I) stormwater program requires municipalities serving more than 1,000,000 persons to obtain a NPDES stormwater permit for any construction project larger than five acres. Proposed NPDES stormwater regulations (Phase II) expand this existing national program to smaller municipalities with populations of 10,000 persons or more and construction sites that disturb more than one acre. For other dischargers, such as those affecting groundwater or from non-point sources, a Report of Waste Discharge must be filed with the RWQCB. For specified situations, some permits may be waived and some discharge activities may be handled through being included in an existing General Permit.

Construction activity subject to a General Permit includes any clearing, grading, stockpiling, or excavation that results in soil disturbances of one acre of total land area or more. Construction activities disturbing less than one acre are still subject to this permit if the activity is part of a large common plan of development or if significant water quality impairment will result from the activity. The General Permit requires all dischargers whose construction activity disturbs one acre or more to:

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) that specifies Best Management Practices (BMPs) to prevent all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving off-site into receiving waters;
- Eliminate or reduce non-stormwater discharge to storm sewer systems and other waters of the United States; and
- Inspect all BMPs.

Impaired Waterbodies

CWA Section 303(d) and California's Porter-Cologne Water Quality Control Act (described below) require the State to establish the beneficial uses of its State waters and to adopt water quality standards to protect those beneficial uses. Section 303(d) establishes a Total Maximum Daily Load (TMDL), which is the maximum quantity of a

particular contaminant that a water body can maintain without experiencing adverse effects, to guide the application of State water quality standards. Section 303(d) also requires the State to identify "impaired" streams (water bodies affected by the presence of pollutants or contaminants) and to establish the TMDL for each stream.

Federal Flood Insurance Program

Congress passed the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The intent of these acts is to reduce the need for large publicly funded flood control structures and disaster relief by restricting development on floodplains. FEMA administers the NFIP to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development on floodplains. FEMA issues FIRMs for communities participating in the NFIP. FIRMs delineate flood hazard zones in the community.

A Special Flood Hazard Area (SFHA) is an area within a floodplain having a one percent or greater chance of flood occurrence within any given year (commonly referred to as the 100 year flood zone). SFHAs are delineated on flood hazard boundary maps issued by FEMA. The Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994 make flood insurance mandatory for most properties in SFHAs. A portion of the proposed project site is located within a designated special flood hazard area. See Figure 3.5-1:Hydrologic Features.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act acts in cooperation with the CWA to establish the SWRCB. The SWRCB is divided into nine regions, each overseen by a RWQCB. The SWRCB, and thus each RWQCB, is responsible for protecting California's surface waters and groundwater supplies. The Porter-Cologne Water Quality Control Act develops Basin Plans that designate the beneficial uses of California's rivers and groundwater basins. The Basin Plans also establish narrative and numerical water quality objectives for those waters. Basin Plans are updated every three years and provide the basis of determining waste discharge requirements, taking enforcement actions, and evaluating clean water grant proposals. The Porter-Cologne Water Quality Control Act is also responsible for implementing CWA Sections 401-402 and 303(d) to SWRCB and RWQCBs.

Regional Water Quality Control Board, San Francisco Bay Region

The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates surface water and groundwater quality in San Francisco Bay, including the City of Dublin. The area under the RWQCB's jurisdiction comprises all of the San Francisco Bay segments extending to the mouth of the Sacramento-San Joaquin Delta (Winter Island near Pittsburg). In its efforts to protect surface waters and groundwaters of the San Francisco region, the RWQCB addresses region wide water quality concerns through the creation and triennial

update of a Water Quality Control Plan (Basin Plan) and adopts, monitors compliance with, and enforces waste discharge requirements and NPDES permits.

San Francisco Bay Regional Water Quality Control Plan (Basin Plan)

In addition to the NPDES permitting program, the RWQCB regulates water quality in the Bay Area in accordance with the 1995 Water Quality Control Plan (Basin Plan). The Basin Plan presents the beneficial uses that the RWQCB has designated for significant surface waters, aquifers, and wetlands, as well as the water quality objectives and criteria that must be met to protect these uses. The Basin Plan designates specific existing beneficial uses for the Central San Francisco Bay, including: (a) ocean, commercial, and sport fishing, (b) estuarine habitat, (c) industrial service supply, (d) fish migration, (e) navigation, (f) preservation of rare and endangered species, (g) non-contact water recreation, (h) shellfish harvesting, (i) fish spawning, and (j) wildlife habitat. Project storm runoff will be discharged to the existing stormwater drainage system and subsequently the San Francisco Bay. Wildlife habitat, particularly fish and waterfowl habitat, is the beneficial use most sensitive to water quality impacts from the proposed project. Pollution from pesticides, fertilizers, metals, and hydrocarbons in urban runoff can directly and indirectly affect sensitive fish and bird species and their offspring.

Stormwater Pollution Prevention Plan (SWPPP)

The SWPPP has two major objectives: 1) to help identify the sources of sediment and other pollutants that affect the quality of storm water discharges, and 2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in both stormwater and in non-stormwater discharges.

BMPs include activities, practices, maintenance procedures, and other management practices that reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges. BMPs include treatment requirements, operation procedures, and practices to control site runoff, spillage, leaks, waste disposal, and drainage from raw materials storage. BMP implementation must take into account changing weather conditions and construction activities, and various combinations of BMPs may be used over the life of the project to maintain compliance with the CWA. The General NPDES Permit gives the owner the discretion to determine the most economical, effective, and innovative BMPs to achieve the performance-based goals of the General NPDES Permit.

There are two categories of BMPs: structural and non-structural. Structural BMPs are the specific construction, modification, operation, maintenance, or monitoring of facilities that would minimize the introduction of pollutants into the drainage system, or would remove pollutants from the drainage system. Non-structural BMPs are activities, programs, and other nonphysical measures that help reduce pollutants from non-point sources to the drainage system. In general, nonstructural BMPs are source control measures.

The issue of pollution in stormwater and urban runoff has been recognized by both federal and state agencies, and there has been a growing concern regarding activities that discharge water affecting California's surface water, coastal waters, and groundwater. Discharges of

water are classified as either point source or non-point source discharges. A point source discharge usually refers to waste emanating from a single, identifiable point. Regulated point sources include municipal wastewater, oil field wastewater, winery discharges, solid waste sites, and other industrial discharges. Point source discharge must be actively managed to protect the state's waters. A non-point source discharge usually is a waste emanating from diffused locations. As a result, specific sources of non-point source pollution may be difficult to identify, treat, or regulate. The goal is to reduce the adverse impact of non-point source discharges on water resources through better management of these activities. Non-point sources include drainage and percolation from a variety of activities such as agriculture, forestry, recreation, and storm runoff with the later being the most common in the Dublin area.

Local

City of Dublin General Plan

The following policies in the *City of Dublin General Plan* are applicable to hydrology and water quality.

Environmental Resources Management: Conservation Element

7.2: Guiding Policy A: Maintain natural hydrologic systems.

7.2: Guiding Policy B: Regulate grading and development on steep slopes.

7.2: Implementing Policy C: Enact and enforce erosion and sedimentation ordinance establishing performance standards in relation to maintenance of water quality and protection of stream courses.

7.2: Implementing Policy D: Enact ordinance requiring on-site runoff control.

7.2: Implementing Policy E: Review development proposals to insure site design that minimizes soil erosion and volume and velocity of surface runoff.

7.2: Implementing Policy F: Restrict development on slopes of over 30 percent.

7.2: Implementing Policy G: Development projects shall comply with the requirements of the Urban Runoff Program.

Alameda County Flood Control and Water Conservation District Zone 7, Water Agency Stream Management Master Plan

For the past 40 years, stormwater has been conveyed primarily on channelized arroyos, many of them concrete, to convey stormwaters through the area as quickly as possible. But the new, more environmentally friendly *Stream Management Master Plan's* vision over the next three decades is to create a flood-protection program that relies largely on using the future Chain of Lakes, a series of mined-out gravel pits between Livermore and Pleasanton, to detain stormwater in the Valley. The stored water would be released downstream only after storms pass through the area – meaning arroyos can be kept in a more natural state than under the channelization method. Not only significantly less expensive when it comes to flood control, this technical approach also affords

opportunities to: improve the water supply through groundwater recharge, enhance arroyo water quality and habitat, increase the connectivity of trails and recreational opportunities in the Valley, and promote public understanding of watersheds of through educational programs. Of the 45 conceptual projects identified in the *Stream Management Master Plan*, ten would remove or modify fish-passage barriers in Arroyo Mocho, Arroyo del Valle and Arroyo de la Laguna. Others would restore natural stream flows, replace plants with native types, stabilize stream banks, create wetlands and other habitat for sensitive species, and install trails and educational kiosks near Valley arroyos.

Alameda Countywide Clean Water Program

The City of Dublin is a co-permittee of the Alameda Countywide Clean Water Program which was started in 1991. This local government and community Program educates the public on how to keep businesses and homes from contributing to stormwater pollution, and also coordinates its activities with other pollution prevention programs, such as wastewater treatment plants, hazardous waste disposal, and water recycling.

3.8.3 Relevant Project Characteristics

The proposed Specific Plan includes both development standards and design guidelines to guide future development within the area. These development standards and design guidelines will be used during the design review process for project applications within the DDSP area. The development standards apply to all new construction within the project area. Development standards also apply to all redevelopment that result in an increase of building size of more than 25 percent.

Design guidelines identified in the proposed Specific Plan encourage increased percolation through the use of vegetated swales, curb extensions, reconfigured parking lots with increased landscaping, and the use of pervious materials (e.g. pervious pavers) in parking lots. Implementation of these guidelines would result in a reduction of existing stormwater discharge rates and improve water quality.

Impacts and Mitigation Measures

Criteria for Determining Significance

In accordance with the CEQA, *State CEQA Guidelines*, and agency and professional standards, a project impact would be considered significant if the project would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted;
- Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood-hazards area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; and/or
- Inundation by seiche, tsunami, or mudflow.

Methodology

Impacts evaluated in this section were assessed based on previously published reports by the Regional Water Quality Control Board, the California Department of Water Resources, and information from the *City of Dublin General Plan*. Impacts to surface and groundwater quality were analyzed by reviewing existing groundwater and surface water quality literature that pertain to the project area; identifying existing on-site ground and surface waters, and evaluating existing and potential sources of water quality pollutants based on the types of land uses and operational activities that occur or could occur in the DDSP area. Additionally, the applicability of federal and state regulations, ordinances, and/or standards to surface and groundwater quality of the project area and subsequent receiving waters was assessed. The impacts of the proposed project on water resources and water quality are evaluated qualitatively.

Project Impacts and Mitigation Measures

Place Housing or Structures Within a 100-Year Flood-Hazards Area Which Would Impede or Redirect Flood Flows

Several properties within the DDSP area are located within the Federal Emergency Management Agency (FEMA) 100-year floodplain. As previously discussed, new construction will be subject to floodplain regulations. In addition, the Zone 7 Stream Management Plan contains plans to retrofit the culvert that carries water from Dublin Creek under Donlon Way. This retrofit will increase the culvert capacity and reduce the risk of flooding in the DDSP area. Future construction would be required to comply with the existing floodplain regulations to ensure that the structures do not impede or redirect flows. **No impacts** would occur.

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Inundation by Seiche, Tsunami, or Mudflow

The proposed project is located well inland from the San Francisco Bay or other major bodies of water to be impacted by a tsunami or seiche. The site and surrounding properties are also relatively flat and would not be subject to mudflows. **No impacts** would occur.

Violate Water Quality Standards or Waste Discharge Requirements

Impact 3.5-1 Future construction associated with the proposed project may violate water quality standards or waste discharge requirements. This is considered a potentially significant impact.

The project area is a primarily urbanized, developed area, which likely already contributes non-point source pollution such as motor oil, fertilizers and pesticides, human littering, animal waste and other pollutants typical of developed commercialized areas. These pollutants are typically washed from streets, parking lots, and garages during rainfall events that create sufficient runoff to carry the waste materials. These pollutants have the potential to degrade water quality and may result in potentially significant impacts to the extent that they are generated by new development. Although the majority of the project area is built-out, the construction of individual projects would include grading and other earth moving activities which would expose on-site soils to erosion processes. Additionally, construction activities could lead to exposure of contaminated materials/soils which if present within the project area that could impact surface water quality during storm events. Individual development projects within the project area greater than one acre would be required to mitigate short-term construction impacts pursuant to the NPDES criteria and standards on a project-by-project basis. The purpose of the NPDES permit is to ensure that the proposed project would eliminate or reduce construction-related sediments and pollutants during stormwater runoff.

Construction sediment erosion can be adequately controlled through the application of standard construction BMPs. The goal of BMPs is to capture and treat "first flush" stormwater run-off generated by surrounding and on-site watersheds. Water quality management BMPs for grading and construction scenarios may include the use of sand bags and straw bales for run-off diversion and velocity reduction, mulch topping, hydro-seeding and siltation fencing to prevent soil loss and measures to minimize vehicular leaking and spilling. Design guidelines identified in the DDSP encourage increased percolation through the use of vegetated swales, curb extension, reconfigured parking lots with increased landscaping, and the use of pervious materials (e.g. pervious pavers) in parking lots. Implementation of these guidelines would result in improved water quality. Future proposed uses would be served by City's sanitary sewer service; therefore, the proposed project would not involve any permitted discharges of waste material directly into ground or surface waters.

Implementation of the following mitigation measures would ensure construction and post-construction water quality impacts are reduced to less than significant levels.

Mitigation Measures

MM 3.5-1a: Prior to issuance of grading permit, the project proponent shall file a Notice of Intent as required by Regional Water Quality Control Board regarding stormwater discharges associated with construction activities. Upon completion of construction activities, a Notice of Termination shall be filed.

MM 3.5-1b: Prior to issuance of any building or grading permits, a Storm Water Pollution Prevention Plan (SWPPP) shall be prepared by the project contractors and submitted to the Regional Water Quality Control Board for review and comment and to the City of Dublin in conjunction with the Building/Grading/Site work permit and shall be found to be acceptable by the City prior to ground disturbance. The SWPPP shall be prepared to Regional Water Quality Control Board standards and Alameda Countywide Clean Water Program requirements, and shall identify erosion minimization and control provisions, pollution detection provisions, and pollution elimination/ minimization provisions appropriate to the development project and its site for construction and post-construction activities. The SWPPP shall include best available technology, engineering, and design solutions such as the use of silt screens, hay bales, modern trash screens, energy dissipaters, and/or absorbent devices. Stormwater runoff water quality monitoring procedures shall be clearly detailed in the SWPPP.

Compliance with existing regulations, implementation of mitigation measures, and the use of BMP's would reduce potential impacts to **less than significant** levels.

Deplete Groundwater Supplies and Groundwater Recharge

Impact 3.5-2 The proposed project would not result in adverse impacts to the amount of available groundwater available, degrade groundwater quality, or decrease groundwater recharge in the project area. This is considered a less than significant impact.

The proposed water source for the project would rely on surface water supplies from the Dublin San Ramon Services District (DSRSD), the purveyor of potable water in the City of Dublin. DSRSD purchases wholesale water from Zone 7, who in turn purchases 70 percent of its water from the State Water Project (SWP). The remainder of the Zone 7 water is from groundwater aquifers through the Livermore-Amador Valley.

According to the Water Master Plan Update prepared by West Yost & Associates in 2005, future water demands were calculated using two methodologies, one based on future population projections and per capita consumption and one based on future land use and unit water use factors. Both are consistent with future population projections and land use buildout under the City of Dublin General Plan. The DSRSD estimated that there is sufficient water supply to service future water demand in the project area over the next 20 or more years, based on a buildout of an additional 3.2 million square feet of non-residential development and 1,300 residential units, which is within the demand

requirements for the Specific Plan. New development projects within the project area would connect to the DSRSD's existing water lines.

In addition, individual projects constructed within the DDSP project area would include project design features, which would encourage increased percolation through the use of vegetated swales, curb extension, reconfigured parking lots with increased landscaping, and the use of pervious materials (e.g. pervious pavers) in parking lots with future development in the project area, which would slightly increase groundwater recharge over existing conditions. Therefore, the proposed project would have a **less than significant impact** on the groundwater basin, and no mitigation is required.

Substantially Alter Existing Drainage Patterns

Impact 3.5-3 Construction and operation of the DDSP would not substantially alter the existing drainage patterns of the area or result in substantial erosion or siltation on- or off-site, nor would it increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. This is considered a less than significant impact.

Implementation of the proposed project would allow for development of currently vacant lands within the project area; however, the majority of the project area is already built-out and consists of impervious surfaces. As the majority of the DDSP area is developed, it is served by existing storm water collection and conveyance systems.

Individual projects constructed within the DDSP area would include project design features that would aid in the conveyance of storm water to existing facilities and would encourage increased percolation through the use of vegetated swales, curb extension, reconfigured parking lots with increased landscaping, and the use of pervious materials (e.g. pervious pavers) in parking lots with future development in the project area, which would result in similar or slightly reduced stormwater flows within the project area. All runoff would continue to be conveyed via streets and gutters to storm drain locations within the project area. Consequently, this would be considered a **less than significant impact**, and no mitigation is required.

Exceed Capacity of Existing or Planned Stormwater Drainage Systems

Impact 3.5-4 The DDSP area is largely built-out and stormwater flows with implementation of the proposed project are expected to be similar or slightly reduced due to improved management practices proposed within the proposed Specific Plan. In addition, compliance with existing regulations would ensure that impacts are minimized. This is considered a less than significant impact.

The City of Dublin Public Works Department maintains the City's storm drain pipelines that are located within the public streets. Zone 7 owns and operates regional storm drain facilities that collect runoff from the City. Because the DDSP area is largely built-out, stormwater flows to collection distribution systems are expected to be similar or slightly reduced due to design guidelines in the proposed Specific Plan, which would encourage

increased percolation through the use of vegetated swales, curb extension, reconfigured parking lots with increased landscaping, and the use of pervious materials (e.g. pervious pavers) in parking lots with future development in the project area. In addition, since the proposed project area is nearly completely covered with existing buildings, parking lots, sidewalks, and roadways, stormwater discharge rates are not able to exceed current conditions. The existing stormwater conveyance system (storm drains, catch basins and other infrastructure) within the project area is therefore considered adequate. This would be considered a **less than significant impact**, and no mitigation is required.

Flooding Exposure / Risk, Including the Failure of a Levee or Dam

Impact 3.5-5 The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. Structures and personnel would not be subject to greater risk with implementation of the proposed project as compared to existing conditions. This is considered a less than significant impact.

Based on the Association of Bay Area Governments "Dam Failure Inundation Areas" map, the project area would not be inundated by dam failure. In addition, structures and personnel would not be subject to greater risk with implementation of the proposed project as compared to existing conditions. Therefore, a seismic-related or sudden, accidental breach of dam structures is considered remote and speculative. Therefore, this would be considered a **less than significant impact**, and no mitigation is required.

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3.6. Land Use & Planning

This section of the EIR examines the land use and planning impacts associated with proposed project. Specifically, this section analyzes the change in land use characteristics from a primarily commercial business district to mixed use, and analyzes potential conflicts between proposed land uses on site and existing and/or proposed land uses in the vicinity of the project area, as well as the relationship of the proposed land use changes to relevant planning policies that guide land use decisions.

Preparation of this analysis used data from various sources. These sources include the proposed *Dublin Downtown Specific Plan* (2010), the *City of Dublin General Plan* (various resource Elements, including the Land Use Element), and the Dublin Municipal Code.

Existing Conditions

On-site and Surrounding Land Uses

A majority of the land uses include regional serving retail in the center of the Specific Plan project area. These include: Target, Toys R Us, Burlington Coat Factory, 99 Ranch Market, Orchard Supply Hardware, Ross, and Marshall's.

There are two auto dealerships in the Specific Plan Area. A used car lot is located at the southeast corner of Dublin Boulevard and Golden Gate Drive (the former site of Crown Chevrolet which relocated to John Monego Court). Stoneridge Chrysler is located at the southeast corner of Saint Patrick Way and Amador Plaza Road.

Smaller specialty retail, convenience retail, and services are generally located west of Regional Street, and along Amador Valley Boulevard, Amador Plaza Road, and Village Parkway.

Office uses within the Specific Plan Area include the Corrie Center (located southeast of Dublin Boulevard and Regional Street), the Chase Bank Building (southwest of Dublin Boulevard and Golden Gate Drive) and Amador Plaza (located at the south end of Amador Plaza Road).

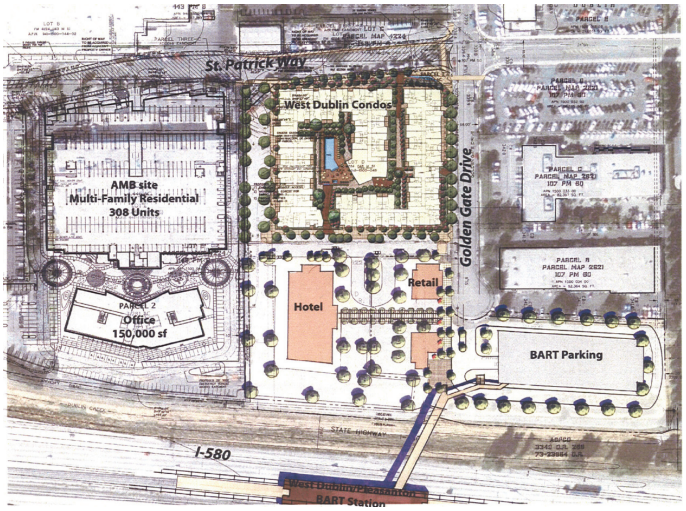
Other notable land uses include the 238-room Holiday Inn Hotel, Dublin Bowl, Dublin Post Office, Dublin Iceland, and senior center with an associated senior apartment complex (Wicklow Square).

Existing land uses are shown in Figure 2-3: Existing Land Uses.

Proposed Development Projects

Several new projects are either under construction or have been proposed within the project area. The most significant development is the construction of the West Dublin/Pleasanton BART Station. The station is being constructed within the median of Interstate 580 with pedestrian access north and south over both sections of the freeway. By the year 2013, the project is projected to accommodate 8,600 users per day.[18]

Within the City of Dublin, a 713-space parking garage has been constructed at the southern terminus of Golden Gate Drive for BART commuters. As part of the BART project, a 150-room hotel and 7,500 sf of retail space is proposed to be constructed; a 309 residential units (Essex) is approved west of Golden Gate Drive. Adjacent to and west of the BART station project is an existing 225,500 sf one-story warehouse facility (the AMB site). This building is proposed to be demolished and replaced with 308 multi-family residential dwelling units and a 150,000 square foot office building. Associated with these developments, Saint Patrick Way would be extended, providing a vehicular and pedestrian connection between Golden Gate Drive and Regional Street. A graphic of the proposed site plan is shown below.



Dublin General Plan

The Land Use Element and Land Use Map in the General Plan establish the policy for change and growth within the City. The General Plan identifies the general locations, density and extent of land available for housing, business, industry, natural resource protection, recreation, and other uses. Existing land use designations for the project area include: High-Density Residential, Mixed-use, Retail/Office, Retail/Office and Automotive,

[18] http://www.bart.gov/about/projects/wdp/index.aspx

Parks/Public Recreation, and Public/Semi-Public (see Figure 2-4: General Plan Land Use Designations).

Below are the definitions of these land use designations from the General Plan.

High-Density Residential: (25.1 units and above per gross residential acre). Residential units in this density range are attached. Housing types include condominiums, townhouses, apartments, and flats, and can either be for-sale or rent. These projects typically incorporate tuck-under or under-structure parking and may have three or more living levels. Assumed household size is two persons per unit.

Mixed-use: (FAR .30 to 1.00; employee density 200 – 400 square feet per employee) Mixed-use encourages the combination of medium- to medium-high density residential housing and at least one non-residential use, such as office or retail. Office or retail uses recommended include shopping centers, stores, restaurants, business and professional offices, and entertainment facilities. A FAR of less than .30 is acceptable when existing tenancy conditions of the site do not permit immediate conversion of the entire site but it is determined that the site is in the process of becoming a mixed-use site.

Retail/Office: (FAR: .25 to .60; employee density 200-450 square feet per employee). Shopping centers, stores, restaurants, business and professional offices, motels, service stations, and auto part sales are included in this classification. Residential use is excluded except in the Downtown Intensification Area.

Retail/Office and Automotive: (FAR: .25 to .50; employee density 220 to 490 square feet per employee). This classification includes all retail/office uses as well as auto dealerships, auto body shops, and similar uses. Residential uses are not permitted.

Parks/Public Recreation: Publicly owned parks and recreation areas.

Public/Semi-Public: (Maximum of .50 FAR; employee density 590 square feet per employee) A combination land use category of public facilities land uses and semi-public facilities land uses. Public facilities, which are uses other than parks owned by a public agency or non-profit entity, are of sufficient size to warrant differentiation from adjoining uses.

As part of the project, the General Plan will remove the above land use designations and the DDSP area will be designated by the District (Transit-Oriented, Retail and Village Parkway as shown in Figure 2.6: DDSP Districts/Land Use Designations).

Existing Specific Plans

At present, there are five Specific Plans that apply to the project area. Brief summaries of each of these Specific Plans are described below. A map showing the boundaries of these specific plans and the Downtown Dublin Specific Plan is illustrated in Figure 3.6-1: Existing

Specific Plans. The Downtown Core and West Dublin BART Specific Plans were intended to be for short-term time frame (5-7 years).

Downtown Core Specific Plan

The 51-acre Downtown Core Specific Plan (DCSP) area contains most of the City of Dublin's large-scale format (60,000+ square feet) retailers. The DCSP envisions integrating these large users with newer, smaller scale development as well a series of public spaces including a central landscaped plaza to accommodate public gatherings.

The DCSP envisioned that existing major retailers would remain in their present locations along the westerly edge of the core, although building facades would be modernized. To the east, a variety of smaller buildings would be constructed accommodating new restaurants and specialty retail entertainment. A new vehicular accessway, possibly through a joint private/public endeavor, would be constructed through the center of the Core area from Dublin Boulevard/Golden Gate Drive, north to Amador Valley Boulevard at Donahue Drive.

The DCSP calls for a maximum development potential of 1.2 million square feet of commercial, retail office and mixed-use development and up to 154 dwelling units. This represents an increase of 737,072 square feet and 154 dwelling units, as compared to existing conditions when the DCSP was first adopted (December 2000). Because the DCSP area is largely built-out, a majority of the increase in density would be achieved through an increased floor-area-ratio (FAR) of up to .79 (on average) with buildings up to six stories or 75 feet. A mix of surface parking and garages would help increase site densities.

West Dublin BART Specific Plan

With the adoption of the West Dublin BART Specific Plan (WDBSP) by the Dublin City Council in December 2000, a General Plan Amendment was adopted to change land uses and land use intensification and to modify the FAR for certain properties. The WDBSP area is generally located between I-580 to the south, I-680 to the east, Dublin Boulevard to the north, and San Ramon Road to the west. The area consists of approximately 92 acres of commercial, office and light industrial land uses. Central to the WDBSP area and providing a catalyst for the direction of future development is the new West Dublin/Pleasanton BART Station planned to be open in 2011 and the associated parking structure. The WDBSP called for further intensification of development through an increased FAR of up to 1 for some properties.

The WDBSP envisioned a transit-oriented, mixed-use area, capitalizing on regional transit linkages provided by both the BART line and supported by nearby freeways, I-580 and I-680. Within the West Dublin BART area, a mixture of low-rise and mid-rise buildings for residences, offices, specialty retail, lodging, restaurant, and similar uses are planned that are consistent with a transit-oriented development area. As amended since adoption, the City Council has adopted a Stage 1 Development Plan allowing for the construction of up to 150 hotel rooms and 7,500 square feet of commercial uses adjacent to the BART station.

The City Council and Planning Commission has also approved a 309 unit residential development (Essex, formerly known as Windstar) and a mixed-use development with 150,000 square feet of office and 308 residential dwelling units (AMB), which have not been constructed. The maximum amount of development for the WDBSP was anticipated to be 3,247,956 square feet of non-residential space and 640 residential dwellings (per Exhibit A – Table 5: Maximum Economic Development Potential

Village Parkway Specific Plan

The Village Parkway Specific Plan (VPSP) consists of approximately 31 acres of commercial services, retail, restaurant, office, and automotive service land uses. Under the VPSP Concept Plan, these existing uses would not change, but would be stabilized and enhanced. The FAR within the VPSP area was increased from 0.24, equivalent to 308,474 square feet, to 0.35, equivalent to 408,108 square feet, or an increase of nearly 100,000 square feet. The land use plan designated properties west of Village Parkway as Retail/Office and Auto Service (R/O&A) and the east side as Retail/Office (R/O).

The VPSP encouraged higher density residential dwellings in the form of multi-family complexes and live/work units. It also encouraged property and streetscape improvements to enhance the pedestrian character. While there was considerable discussion and analysis regarding the reconfiguration of the Village Parkway roadway, it was determined that it should remain four lanes, due in part to the fact that it serves as an important north-south emergency access roadway.

San Ramon Road Specific Plan

Adopted in June of 1983, the San Ramon Road Specific Plan (SRRSP) is the oldest of the downtown specific plans and is located west of San Ramon Road between Silvergate (to the north) and Dublin Boulevard to the south. The SRRSP planning area included both residential and commercial land uses. This Specific Plan includes only those commercial areas that are located north and south of Amador Valley Court (identified as Area 3 in the SRRSP).

The primary intent of the SRRSP was to provide guidance for development of approximately 30 acres of vacant land for retail commercial, office and multifamily uses. Area 3 (13 acres), which included both occupied and vacant commercial land uses, has now been completely built-out with primarily region serving retail and commercial uses.

Dublin Downtown Plan

The Dublin Downtown Plan (DDP) was adopted by the City Council in 1987 and is generally bounded by San Ramon Road, Amador Valley Boulevard, Village Parkway (including land uses to the east) and Interstate 580. The DDP included a area encompassed and superseded by the WDSP, the DCSP, and VPSP, described above. The only remaining properties that are still applicable as a regulating document are Development Zones 5 and 6:

- *Zone 5:* San Ramon Road Retail – Currently oriented almost exclusively to Regional Street, uses in this area encouraged an increased presence on San Ramon Road to improve visual appearances along that frontage. Proposals which provide new access to San Ramon Road and pedestrian linkages to Zone 5 were encouraged. Uses will continue as a mix of retail and commercial services under the proposed DDSP.
- *Zone 6:* Central Block West Retail – A continuation of current retailing and service commercial uses with improvements to zone entries, internal circulation and parking lot landscaping were encouraged.

Collectively, the DCSP, the WDBSP and the VPSP allows for the additional development of approximately 3.1 million square feet of non-residential development, 717 dwelling units, and 150 hotel rooms (see Table 3.6-1: Summary of Previous Specific Plans Development Capacity). Because the SRRSP has been built-out to allowed densities, no additional development potential exists

Table 3.6-1: Summary of Previous Specific Plans Development Capacity (1)

Land Use Category	West Dublin BART SP	Downtown Core SP	Village Parkway SP	Total
Commercial (A & B)	959,446 sf	132,294 sf	100,000 sf	1,091,740 sf
Retail/Office (R/O)	763,175 sf	332,186 sf		1,195,361 sf
Retail/Auto (R/A)		74,264 sf		74,264 sf
Office	61,665 sf	16,720 sf		78,385 sf
Mixed-use (MU)	493,430 sf + 308 DU	181,630 sf + 100 du	--	675,060 sf 408 du
Lodging	150 rooms	--	--	150 rooms
Residential	309 du	--	--	309 du
Total	2,277,716150 rooms 617 du	737,094 sf 100 du	100,000 sf	3,114,810 sf 150 rooms 717 du

Note: (1) Approved per Specific Plans but not yet constructed.
Source: City of Dublin 2009.

Based on City estimates, approximately 258,734 square feet of non-residential development has occurred since adoption of these Specific Plans (December 2000). These include the Expo Design Center site, Target, Safeway, as well as additional sites (see Table 3.6-2: Non-Residential Development Since 2000). During this same period, no residential development occurred with the exception of the 54 unit Wicklow Square senior housing project located north and adjacent to Target.

Table 3.6-2: Non-Residential Development Since 2000

Use	Square Footage
Target (expansion)	14,587
Expo Design Center	93,935
Dublin Place	17,500
Senior Center	15,300
Safeway	65,883
Shamrock Village	2,999
Enea Village	19,018
Valley Center	1,472
Arco	28,040
TOTAL	**258,734**

Source: City of Dublin, 2009

All four Specific Plans call for the intensification of land uses, possible reduction in parking standards, and improvements to the public realm to create a more pedestrian-friendly environment that supports a transit-oriented set of land uses in support of the West Dublin BART station.

Existing Zoning Designations

The City's Zoning Code is the principal means through which the land use policy recommendations of the General Plan are implemented. For each defined zoning designation, the Zoning Code identifies the permitted uses and applicable development standards (i.e., density, height, parking, landscaping requirements, etc.).

A large portion of the project area is zoned Planned Development (PD), whereby one or more properties are planned as a unit with development standards tailored to the site. The intent of this zone is to create a more desirable use of the land, a more coherent and coordinated development, and a better physical environment than would otherwise be possible under a single zoning district or combination of zoning districts.

The only other zoning designation in the project area is Retail Commercial (C-1). The Retail Commercial zone is intended to provide for the continued use, expansion, and new development of retail commercial use types along major transportation corridors and intersections, and to ensure compatibility with adjacent residential and commercial uses.

A map of the zoning designations in and around the project area is shown in Figure 2-5: Current Zoning.

Environmental Impacts

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines, as amended, with the exception of a threshold added to consider physical impacts on the environment from potential urban decay or blight (often characterized by property abandonment and/or desolate urban landscapes). For purposes of this EIR, implementation of the proposed project may have a significant adverse land use and planning impact if it would result in any of the following:

- Intensify development within the project area that creates incompatibilities with adjacent land uses
- Physical division of an established community
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect
- Conflict with any applicable habitat conservation plan or natural community conservation plan
- Result in urban decay or urban blight (i.e., significant physical changes in the environment)

Create Land Use Incompatibilities or Physically Divide a Community

Impact 3.6-1: Implementation of the proposed project would amend the City's General Plan land uses within the DDSP project area and could involve new uses and structures that may result in intensification of development within the project area. However, the proposed project is not anticipated to create incompatibilities with adjacent land uses or physically divide an established community. This is considered a less than significant impact.

Land use incompatibility can occur where differences exist among uses that are near each other. These incompatibilities may result from differences in the physical scale of development, noise levels, traffic levels, hours of operation, and other factors.

The implementation of the proposed Specific Plan would allow for the intensification of commercial and mixed use development within the Downtown districts. Most of the intensification is anticipated to occur in the Transit-Oriented District, as the demand for mixed-use development in that District will likely increase due to the construction of the West Dublin/Pleasanton BART station and parking structure.

Existing development and construction of approved projects would have varying heights. In addition, The proposed Specific Plan would not increase allowed building heights beyond those already established by the five existing approved Specific Plans for the project area. Building heights for the Transit-Oriented District would be lower than the existing Specific Plan. Building heights for the Village Parkway District would be limited to 35 feet, a height

that is currently allowed by the Village Parkway Specific Plan. Building heights for the Retail District would be limited to 75 feet, a height that is currently allowed by the Downtown Core Specific Plan.

Furthermore, the proposed Specific Plan policies include concepts aimed at achieving land use compatibility. All significant new development would be subject to the design review process and/or other discretionary permits which would ensure compatibility with both the development standards and design guidelines identified in the DDSP. This includes all new construction, substantial rehabilitation, or exterior remodel or change to a building.

Allowed land uses would ensure compatibility between various types of uses, particularly for residential development. Standards and guidelines are established in the DDSP provide for buffers of landscaping and decorative masonry between proposed commercial development and residential zones. Height limits and setback requirements would also assist in ensuring compatibility of new structures with existing structures. Parking structures would be oriented so that a decorative façade integrated with the surrounding development avoids intrusion of vehicle headlights and parking lot lighting.

Projects would also be subject to the City's environmental review process. Each project will require project site specific environmental review under CEQA.

With implementation of the DDSP development standards and design guidelines, and project-specific environmental review requirements, proposed development would be compatible with existing and potential adjacent land uses and would not physically divide an established community. Therefore, this would be considered a **less than significant**, and no mitigation is required.

Conflict with Applicable Land Use Plans, Policies, or Regulations

Impact 3.6-2: Implementation of the proposed project would not conflict with goals and policy of the City of Dublin General Plan, nor the City of Dublin Zoning Code. This is considered a less-than-significant impact.

As described in the project description, residential, commercial, mixed-use and public uses could be developed within the project area under the existing *City of Dublin General Plan* and City of Dublin Zoning Code. Currently, the majority of the project area features the General Plan Land Use Designation of Retail/Office and is zoned PD and C-1.

Collectively, the existing five Specific Plans that encompass the proposed project area allow for the additional development of nearly approximately 3.1 million square feet of non-residential development, 717 residential units, and 150 hotel rooms. The proposed DDSP will allow a future buildout development potential of 3.0 million square feet of non-residential development, 1,300 residential units, and 150 hotel rooms.

Assuming an average of 1,200 square feet per residential unit and an average of 500 square feet per hotel room, the existing specific plans represent a gross future buildout

development potential of 3.9 million square feet as compared to 4.59 million square feet under the proposed DDSP, for a net addition of 460,000 square feet.

While this represents the theoretical buildout capacity of development in the project area, the ultimate amount of future development will likely be less due non-tangibles such as market demand, ownership patterns, tenant lease terms, etc., as well as the fact that the DDSP project area is already largely developed resulting in significant physical limitations such as parcel configurations, parking, and circulation.

The *City of Dublin General Plan*, including the General Plan Land Use Map, will be amended concurrent with the adoption of the DDSP to include DDSP Land Use Designations to replace the existing General Plan land use designations for the area. The proposed General Plan designations are shown in Figure 2-6: DDSP Districts/Land Use Designations.

The Zoning Map for the project area will be amended concurrent with the adoption of the DDSP to rezone the project area to ensure consistency with the new land use categories. Where land use regulations and/or development standards in the Dublin Zoning Ordinance are inconsistent with the DDSP, the standards and regulations of the DDSP shall prevail. Any issue not specifically addressed in the DDSP shall be subject to the Dublin Zoning Ordinance and/or Municipal Code. Interpretations may be made by the Community Development Director if not specifically covered in the City's existing regulations. Proposed zoning is shown in Figure 2-7: Proposed Downtown Dublin Specific Plan Zoning.

With the adoption of the General Plan amendments and rezoning, the proposed uses would be allowed within the DDSP districts.

The proposes project's consistency with the *City of Dublin General Plan* is discussed in Table 3.6-3: City of Dublin General Plan Consistency Analysis. As demonstrated, the proposed project would not be in conflict with the applicable policies of the General Plan. Therefore, this would be considered a **less than significant**, and no mitigation is required.

Table 3.6-3: City of Dublin General Plan Consistency Analysis

City of Dublin General Plan	Consistency Analysis
Land Use Element	
2.1.1 Housing Availability	
Implementing Policy B – Designate site available for residential development in the primary planning area for medium to medium high density where site capability and access are suitable and where the higher density would be compatible with existing residential development nearby.	Consistent. The Downtown Dublin Specific Plan allows and encourages up to 1,300 residential units throughout the project site.
2.1.5 West Dublin BART and Downtown Core Specific Plan Areas	
Guiding Policy A – Intensify development and provide housing opportunities and transit-oriented uses near transit center and facilities.	Consistent. The Downtown Dublin Specific Plan allows and encourages up to 1,300 residential units throughout the project area. Of this, 1,100 units are allowed in the Transit District.
Implementing Policy B – Development within the Mixed-Use land use designation areas may include a combination of medium-to-high density residential housing and at least one non-residential use, such as office or retail.	Consistent. The Downtown Dublin Specific Plan includes a mixed-use land use designation that allows a combination of medium-to-high density residential housing and at least one non-residential use, such as office or retail.
2.2.1 Downtown Dublin	
Guiding Policy A – Intensify Downtown Dublin	Consistent. The Downtown Dublin Specific Plan allows for a future buildout development potential of more than 3 million square feet of non-residential development and 1,300 residential units.
Implementing Policy B – Designate a Downtown Intensification Area on the General Plan Land Use Map, Figure 1-1a.	Consistent. The Downtown Dublin Specific Plan fulfills the intent of this designation by allowing for urban levels of development density in the downtown.
Implementing Policy C – Provide a downtown BART station that will serve customers and workers with and without cars. Add offices and apartments within walking distance and eventually over BART parking.	Consistent. The Downtown Dublin Specific Plan allows a future building development potential in the Transit District of 2.2 million square feet of non-residential (mixed-use) development and 1,100 residential units.
Implementing Policy D – Encourage mid-rise office/apartment buildings and parking structures with ground floor retail space. Create store-lined pedestrian connections between existing shopping centers.	Consistent. The Downtown Dublin Specific Plan allows mixed-use development and included development standards and design guidelines that encourages mid-rise office/apartment buildings and parking structures with ground floor retail space. Design guidelines are included in the DDSP to create store-lined pedestrian connections between existing shopping centers
Implementing Policy E – Make downtown more understandable to the first-time visitor by installing standardized identification signs and directories.	Consistent. The Downtown Dublin Specific Plan includes design guidelines that address signage and other wayfinding improvements.
2.2.5 Application to the Same Property Within the City of Dublin of Both the Retail/Office and Medium-High Density Residential Designations as Defined in the Dublin General Plan	
Guiding Policy A – The City Council may apply to the same property within the City of Dublin both the Retail/Office and Medium High Density Residential designations as defined in the Dublin General Plan.	Consistent. The Downtown Dublin Specific Plan allows and encourages mixed-use development throughout the downtown project area.
Implementing Policy B – The location, extent, density	Consistent. The Downtown Dublin Specific Plan allows

City of Dublin General Plan	Consistency Analysis
and intensity of mixed-use Retail/Office and Medium-High Density residential development will be determined when studies indicate that: Serves are available for that use. The site is suitable for a mixed-use development. The use supports itself and does not draw upon and dilute the fiscal base of the remainder of the City. Proper roadways and roadway capacity are available. Mixed-use development would be compatible with adjacent land uses.	and encourages mixed-use development throughout the downtown project area. This Draft EIR analyzes the potential environmental impacts the project may have on land use, transportation, public services, utilities, etc. and has identified mitigation measures where necessary and consistent with CEQA requirements.
Parks and Open Space Element	
3.1 Open Space for Preservation of Natural Resources and For Public Health and Safety	
Implementing Policy D – Encourage an efficient and high intensity of use of the flat and gently sloping portions of the planning area as a means of minimizing grading requirements and potential impacts to environmental and aesthetic resources.	Consistent. The project area is nearly flat and higher-density urban development is allowed as part of the proposed project.
Circulation and Scenic Highways Element	
5.1.1 Roadway Standards	
Guiding Policy A – Design non-residential streets to (1) accommodate forecasted average daily traffic demand on segments between intersections, and (2) minimize congested conditions during peak hours of operation at intersections and serve a balance of vehicles, bicycles, pedestrian, and transit.	Consistent. The Downtown Dublin Specific Plan proposes an extension of St. Patrick's Way between Golden Gate Avenue and Regional Street to accommodate additional traffic associated with future development. The Transportation section of this Draft EIR has analyzed the transportation circulation with this proposed extension and includes mitigation measures to help reduce traffic congestion.
Implementing Policy G – Connect existing north-south cul-de-sac streets near proposed West Dublin BART station south of Dublin Boulevard (Amador Plaza Road, Golden Gate Drive and Regional Street) via the creation of Bray (now Stain Patrick's) Way.	Consistent. The Downtown Dublin Specific Plan proposes an extension of St. Patrick's Way between Golden Gate Avenue and Regional Street to accommodate additional traffic associated with future development.
5.2 Transit	
Implementing Policy C – Urge BART cooperation in maintaining standards for review of public and private improvements in the vicinity of BART stations that take account of both future traffic needs and development opportunities	Consistent. Staff from BART have been closely involved with city staff in the preparation of the Downtown Dublin Specific Plan and this Draft EIR.

Conflict with Applicable Conservation Plans

The project area is located in an urban area that is completely developed. There are no habitat or natural community conservation plans in the project area and therefore, **no impacts** would occur.

Urban Blight or Decay

Economic and social changes are not in themselves significant impacts on the environment; however, a physical change in the environment caused by economic and social factors

attributable to a development could sometimes result in a reasonably foreseeable indirect environmental impact, such as urban decay or deterioration.

The proposed project seeks to guide future development and intensification in downtown Dublin in an orderly and cohesive fashion through the Downtown Dublin Specific Plan. The combination of land uses would function to increase retail and commercial sales and activities within the City, as well as enhance the economic viability of the area. The creation of new commercial activities and enhancement of existing commercial facilities would contribute to the economic vitality of the City, which would enable the continued provision of high quality services and programs for residents.

Increased economic activity and revenues that may result in the creation of indirect and induced jobs. Indirect jobs are those that would be created when the future owners and/or managers of the retail-commercial uses purchase goods and services from businesses in the region, and induced jobs are those that are created when wage incomes of those employed in direct and indirect jobs are spent on the purchase of goods and services in the region. The beneficial results are primarily the result of purchases of goods and services as well as payment of taxes and salaries, which affects the regional economy of the City and County, and on a more indirect basis, California. Therefore, the positive revenue stream and the resulting increased economic viability of the proposed project would be a benefit to the City and not result in urban blight or decay and therefore, **no impacts** would occur.

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3.7. Noise

This section addresses potential noise impacts from the construction, traffic, and operations that could occur within proposed project. Data used to prepare this analysis were drawn from the *City of Dublin General Plan*, City of Dublin Municipal Code, and the DDSP.

Environmental Setting

Mobile and Stationary Noise Sources

The primary noise sources in the vicinity of the project area include regional serving retail uses, car and truck traffic with high volumes of traffic along Interstate 580, Interstate 680, and noise from adjacent local roadways. Traffic along these arterial roadways generates substantial noise levels at roadside receptors. Both mobile and stationary noise sources contribute to the existing noise levels within the project area.

In order to assess the potential for mobile source noise impacts, it is necessary to determine the noise currently generated by vehicles traveling through the DDSP project area. The existing roadway noise levels in the vicinity of the project area were modeled. Noise models were run using the Federal Highway Administration's Highway Noise Prediction Model (FHWA-RD-77-108) together with several roadway and site parameters; please refer to Appendix C, *Noise Data.* These parameters determine the projected impact of vehicular traffic noise and include the roadway cross-section (e.g., number of lanes), roadway width, average daily traffic (ADT), vehicle travel speed, percentages of auto and truck traffic, roadway grade, angle-of-view, and site conditions ("hard" or "soft"). The model does not account for ambient noise levels (i.e., noise from adjacent land uses) or topographical differences between the roadway and adjacent land uses. Noise projections are based on modeled vehicular traffic as derived from intersection turning movements by Fehr and Peers and ADT calculations by RBF Consulting. The posted speed limits vary throughout the DDSP project area. Existing modeled traffic noise levels can be found in Table 3.7-1: Existing Traffic Noise Levels.

Table 3.7-1: Existing Traffic Noise Levels

Roadway Segment	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Amador Plaza					
Amador Valley Boulevard and Dublin Boulevard	7,610	57.6	65	21	7
Dublin Boulevard and St. Patrick Way	10,770	59.1	92	29	9
Amador Plaza Road and Village Parkway	16,930	62.4	209	66	21
Donahue Drive and Amador Plaza Road	14,610	61.8	180	57	18
East of Village Parkway	12,790	61.2	158	50	16
Regional Street and Starward Drive	14,330	61.7	177	56	18
San Ramon Road and Regional Street	15,060	62.0	186	59	19
Starward Drive and Donahue Drive	13,310	61.4	165	52	16
West of San Ramon Road	2,960	54.9	37	12	4
Dublin Boulevard					
Amador Plaza Road and Village Parkway	20,300	64.7	350	111	35
East of Village Parkway	21,350	64.9	368	116	37
Golden Gate Drive and Amador Plaza Road	16,720	63.9	288	91	29
Regional Street and Golden Gate Drive	17,120	64.0	295	93	30
San Ramon Road and Regional Street	20,220	64.6	349	110	35
West of San Ramon Road	16,230	63.6	280	88	28
Golden Gate Drive					
Dublin Boulevard and St. Patrick Way	3,110	53.8	27	8	3
South of St. Patrick Way	1,050	49.1	9	3	1
Regional Street					
Amador Valley Boulevard and Dublin Road	5,450	57.8	67	21	7
South of Dublin Boulevard	5,570	57.9	69	22	7
San Ramon Road					
Amador Valley Boulevard and Dublin Boulevard	24,070	66.4	565	179	56
North of Amador Valley Boulevard	19,030	65.5	446	141	45
South of Dublin Boulevard	37,040	68.3	869	275	87
St. Patrick Way					
East of Amador Plaza Road	10,500	59.2	90	28	9
Golden Gate Drive and Amador Plaza Road	2,340	52.6	20	6	2
West of Golden Gate Drive	310	43.9	3	1	0
Village Parkway					
Amador Valley Boulevard and Dublin Boulevard	12,350	61.0	153	48	15
Dublin Boulevard and I-680 NB on ramp	4,840	57.3	60	19	6
North of Amador Valley Boulevard	13,690	61.5	169	53	17
South of I-680 NB on ramp	990	50.4	12	4	1
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level					
Source: Intersection turning movements, prepared by Fehr and Peers, dated January 2010 and ADT calculations by RBF Consulting, dated April 2010.					

Stationary noise sources include regional serving retail in the center of the project area. These include: Target, Toys R Us, Burlington Coat Factory, Ranch 99 Market, Orchard Supply Hardware, Ross and Marshall's. Two auto dealerships within the project area include a car sales lots, including one located in the southeast corner of Dublin Boulevard and Golden State Drive, and one located at the southeast corner of Saint Patrick Way and Amador Plaza Road. Smaller specialty retail, convenience retail, and services are generally located west of Regional Street and along Amador Valley Boulevard, Amador Plaza Road,

and Village Parkway. Office uses within the project area include Corrie Center (located southeast of Dublin Boulevard and Regional Street), the Chase Bank Building (southwest of Dublin Boulevard and Golden Gate Drive), and Amador Plaza (located at the south end of Amador Plaza Road). Other notable stationary noise sources consist of the 238-room Holiday Inn, Dublin Bowl, Dublin Post Office, Dublin Iceland, and a senior center with an associated 54-unit Wicklow Square apartment complex.

Sensitive Receptors

Land uses that are considered sensitive receptors to noise include residential areas, schools, hospitals, churches, recreational areas, and transient lodging. Residential areas are also considered particularly sensitive to noise during the nighttime hours. The project area includes the 238-room Holiday Inn Hotel and a senior center with an associated 54-unit Wicklow Square apartment complex. Residential uses are located adjacent to the DDSP project area to the north, east, and west.

Existing Regulatory Setting

State of California Guidelines

The State of California Office of Planning and Research (OPR) *Noise Element Guidelines* include recommended interior and exterior level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The *OPR Guidelines* describe the compatibility of various land uses with a range of environmental noise levels in terms of dBA CNEL.

A noise environment of 50 dBA CNEL to 60 dBA CNEL is considered to be "normally acceptable" for residential uses. The State indicates that locating residential units, parks, and institutions (such as churches, schools, libraries, and hospitals) in areas where exterior ambient noise levels exceed 65 dBA CNEL is undesirable. The OPR recommendations also note that, under certain conditions, more restrictive standards than the maximum levels cited may be appropriate. As an example, the standards for quiet suburban and rural communities may be reduced by 5 to 10 dB to reflect their lower existing outdoor noise levels in comparison with urban environments.

In addition, *Title 25, Section 1092* of the *California Code of Regulations*, sets forth requirements for the insulation of multiple-family residential dwelling units from excessive and potentially harmful noise. Whenever multiple-family residential dwelling units are proposed in areas with excessive noise exposure, the developer must incorporate construction features into the building's design that reduce interior noise levels to 45 dBA CNEL.

Table 3.7-2: Noise and Land Use Compatibility Matrix, illustrates the State standards established by the State Department of Health Services for acceptable noise levels. These standards are incorporated into the land use planning process to reduce future noise and land use incompatibilities.

Table 3.7-2: Noise and Land Use Compatibility Matrix

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low Density, Single-Family, Duplex, Mobile Homes	50 - 60	55 - 70	70-75	75-85
Residential – Multiple Family	50 - 65	60 - 70	70 - 75	70 – 85
Transient Lodging - Motel, Hotels	50 - 65	60 - 70	70 - 80	80 – 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	80 – 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70	NA	65 – 85
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75	NA	70 – 85
Playgrounds, Neighborhood Parks	50 - 70	NA	67.5 - 75	72.5 – 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 70	NA	70 - 80	80 – 85
Office Buildings, Business Commercial and Professional	50 - 70	67.5 - 77.5	75 - 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	75 - 85	NA
NA: Not Applicable				
Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice. Normally Unacceptable: New Construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise-insulation features must be included in the design. Clearly Unacceptable: New construction or development should generally not be undertaken.				
Source: OPR 2003				

Local

City of Dublin General Plan

The Noise Element of the *City of Dublin General Plan* establishes residential, commercial, and industrial land use compatibility standards for noise measured at the property line of the receiving land use. The land use compatibility noise criteria provides the basis for decisions on location of land uses in relation to noise sources and for determining noise mitigation requirements. Table 3.7-3: City of Dublin Land Use Compatibility for Community Noise Environments shows the noise standards for the City. As indicated, the normally acceptable exterior noise level for the City of Dublin is 60 CNEL or less for noise-sensitive land uses (e.g., residential, hotels, motels, schools, and churches), and 70 dBA or

less for parks, commercial, office, and industrial land uses. Noise levels up to 60 dBA are considered conditionally acceptable for most noise sensitive land uses.

Table 3.7-3: City of Dublin – Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (Ldn)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential	60 or less	60-70	70-75	75 or greater
Motels, Hotels	60 or less	60-70	70-80	80 or greater
Schools, Churches, Nursing Homes	60 or less	60-70	70-80	--
Neighborhood Parks	50 – 70	60 – 70	70 - 80	80 – 85
Office, Retail, Commercial	70 or less	70-75	75-80	80 or greater
Industrial	70 or less	70-75	75 or greater	--
Ldn = Day night average; NA = not applicable.				
Notes: Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice. Normally Unacceptable: New Construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise-insulation features must be included in the design. Clearly Unacceptable: New construction or development should generally not be undertaken.				
Source: City of Dublin General Plan, City of Dublin, adopted February 11, 1985, updated January 19, 2010.				

The following policies in the *City of Dublin General Pl*an are applicable to noise in the project area:

Guiding Policy A. Where feasible, mitigate traffic noise to levels indicated by Table 9.1: Land Use Compatibility for Community Noise Environments; refer above to Table 3.7-3: Land Use Compatibility for Community Noise Environments.

Implementing Policy B. Request Caltrans to provide noise walls at least seven feet high along both sides of I-680 between Amador Valley Boulevard and the Alcosta interchange when additional freeway lanes are constructed.

Future noise, if not mitigated, will subject about 2,700 residents to levels exceeding 65 CNEL. The noise wall would reduce noise by 10 dB, making this the most cost-effective noise reduction project in Dublin. Actual wall height would be determined during project design.

Implementing Policy C. Encourage homeowners west of San Ramon Road who are affected by I-580 noise to construct noise barriers on their properties where these would be effective and require such barriers for new development. This policy also applies to sites adjoining the west side of San Ramon Road at higher elevations.

Where the noise source is below the receptors, only barriers near the receptor will be effective. About 5 dB noise reduction could be achieved.

Implementing Policy D. Support unified action by residential owners on the east side of San Ramon Road and along Village Parkway to install, repair, or extend noise barriers.

Much of this frontage was developed before effective noise barriers were required as a condition of subdivision approval. Because construction for a single lot is costly, relatively ineffective, and potentially unattractive, the City should assist in the formation of assessment districts or otherwise promote group action where there is consensus that a problem exists.

Implementing Policy E. Design Dougherty Road improvements and adjoining residential development for compliance with noise standards.

This corridor offers the opportunity to do it right the first time without continuous walls. Berms, open space, garages near the road, and noise-conscious site planning can be used.

Implementing Policy F. Noise impacts related to all new development shall be analyzed by a certified acoustic consultant.

Implementing Policy G. Request demonstration of ability to mitigate noise prior to approval of light rail or bus service in the Southern Pacific Right-of-Way Transportation Corridor.

A depressed rail line or noise walls close to the tracks could make light rail a good neighbor.

Implementing Policy H. Review all multi-family development proposals within the projected 60 CNEL contour for compliance with noise standards (45 CNEL in any habitable room) as required by State law.

Because the *City of Dublin General Plan* designates almost all residential sites subject to 60 or greater CNEL for multifamily development, this standard will be effective in Dublin. Project designers may use one or more of four available categories of mitigation measures: site planning, architectural layout (bedrooms away from noise source, for example), noise barriers, or construction modifications.

Noise Scales and Definitions

Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of

sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In general, a 1 dB change in the sound pressure levels of a given sound is detectable only under laboratory conditions. A 3 dB change in sound pressure level is considered a "just detectable" difference in most situations. A 5 dB change is readily noticeable and a 10 dB change is considered a doubling (or halving) of the subjective loudness. It should be noted that, generally speaking, a 3 dBA increase or decrease in the average traffic noise level is realized by a doubling or halving of the traffic volume; or by about a 7 mile per hour (mph) increase or decrease in speed.

For each doubling of distance from a point noise source (a stationary source, such as a loudspeaker or loading dock), the sound level will decrease by 6 dBA. In other words, if a person is 100 feet from a machine, and moves to 200 feet from that source, sound levels will drop approximately 6 dBA. For each doubling of distance from a line source, like a roadway, noise levels are reduced by 3 to 4.5 dBA, depending on the ground cover between the source and the receiver. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud; 20 dBA higher four times as loud; and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are shown in Figure 3.7-1: Sound Levels and Human Response.

There are three methods used to measure sound over a period of time: the Community Noise Equivalent Level (CNEL), the equivalent energy level (L_{eq}) and the Day/Night Average Sound Level (L_{dn}). The predominant community noise rating scale used in California for land use compatibility assessment is the Community Noise Equivalent Level (CNEL). The CNEL reading represents the average of 24 hourly readings of equivalent levels, known as L_{eq}'s, based on an A-weighted decibel with upward adjustments added to account for increased noise sensitivity in the evening and night periods. These adjustments are +5 dBA for the evening (7:00 p.m. to 10:00 p.m.), and +10 dBA for the night (10:00 p.m. to 7:00 a.m.). CNEL may be indicated by "dBA CNEL" or just "CNEL".

The L_{eq} is the sound level containing the same total energy over a given sample time period. The L_{eq} can be thought of as the steady (average) sound level which, in a stated period of time, would contain the same acoustic energy as the time-varying sound level during the same period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

Another commonly used method is the day/night average level or L_{dn}. The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of

community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq}. The L_{dn} is calculated by averaging the L_{eq}'s for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 p.m. to 7:00 a.m.), by a 10 dBA to account for the increased sensitivity of people to noises that occur at night. The maximum noise level recorded during a noise event is typically expressed as L_{max}. The sound level exceeded over a specified time frame can be expressed as Ln (i.e., L90, L50, L10, etc.). L50 equals the level exceeded 50 percent of the time.

Relevant Project Characteristics

Development activities under the DDSP are assumed to occur over the next 15 to 20 years. During that time, it is assumed that only a portion of the existing land uses will be intensified and that many of the existing structures will essentially remain the same in size and configuration with the exception of remodeling of existing structures.

Impacts and Mitigation Measures

Criteria for Determining Significance

In accordance with the CEQA, *State CEQA Guidelines*, agency and professional standards, a project impact would be considered significant if the project would:

- Expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose persons to, or generate, excessive ground borne vibration or ground borne noise levels;
- Substantially permanently increase ambient noise levels in the project vicinity above levels existing without the project;
- Substantially temporarily or periodically increase ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; and
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

Significance of Changes in Traffic Noise Levels

If the ambient noise environment is quiet and the new noise source greatly increases the noise exposure, an impact may occur even though a criterion level might not be exceeded. The project would create a significant impact for traffic noise levels when the following occurs:

- An increase of the existing ambient noise levels by 5 dBA or more, where the existing ambient level is less than 60 dBA CNEL;

- An increase of the existing ambient noise level by 3 dBA or more, where the existing ambient level is 60 to 65 dBA CNEL; or
- An increase of the existing ambient noise level by 1.5 dBA or more, where the existing ambient level is greater than 65 dBA CNEL.

Significance of Changes in Cumulative Traffic Noise Levels

The project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. The combined effect compares the "cumulative with project" condition to "existing" conditions. This comparison accounts for the traffic noise increase from the project generated in combination with traffic generated by projects in the cumulative projects. The following criteria have been utilized to evaluate the combined effect of the cumulative noise increase.

Combined Effects: The cumulative with project noise level ("Cumulative With Project") causes the following:

- An increase of the existing noise level by 5 dBA or more, where the existing level is less than 60 dBA CNEL;
- An increase of the existing noise level by 3 dBA or more, where the existing level is 60 to 65 CNEL; or
- An increase of the existing noise level by 1.5 dBA or more, where the existing level is greater than 65 dBA CNEL.

Although there may be a significant noise increase due to the proposed project in combination with other related projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

Incremental Effects: The "Cumulative With Project" causes a 1 dBA increase in noise over the "Cumulative Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded.

Exposure to Short-term Construction-Related Noise and Vibration

Impact 3.7-1: The proposed project could result in short-term construction-related noise and vibration that would exceed applicable noise standards at nearby noise sensitive land uses. This is considered a potentially significant impact.

Construction activities have a short and temporary duration, lasting from a few days to a period of several months. Groundborne noise and vibration, as well as other types of construction-related noise impacts may occur during the initial site preparation, which can

create the highest levels of noise and vibration. Generally, site preparation has the shortest duration of all construction phases. Activities that occur during this phase include earthmoving and soils compaction. High groundborne noise and other vibration levels and other miscellaneous noise levels can occur during this phase by the operation of heavy-duty trucks, backhoes, and other heavy-duty construction equipment.

Noise from construction activities is generated by two primary sources: (1) the transport of workers and equipment to construction sites, and (2) the noise related to active construction equipment. These noise sources can be a nuisance to local residents and businesses or unbearable to sensitive receptors (i.e., residences, hospitals, senior centers, schools, day care facilities, etc.). The Federal Transit Administration (FTA) has compiled data regarding noise generating characteristics of specific types of construction equipment and typical construction activities. These noise levels would decrease rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance.

Potential future development facilitated by the proposed project could generate significant amounts of noise and vibration during grading and construction operations. During future project implementation, adjacent sensitive receptors would be exposed to sporadic high noise and vibration levels associated with construction activities (as a result of power tools, jack-hammers, truck noise, etc.). It is anticipated that construction traffic would access the potential construction sites within the project area from several major roadways, including San Ramon Road, Dublin Boulevard, and Amador Valley Boulevard. As stated above, various sensitive receptors exist both within and in close proximity to the project area.

All future development within the DDSP would be subject to compliance with the implementing policies of the Noise Element of the *City of Dublin General Plan* Additionally, implementation of the following mitigation measures would further reduce construction noise associated with future development within the DDSP to a **less than significant** level by requiring preparation of a construction noise management plan which would include limiting construction to the less noise sensitive periods of the day and ensuring that proper operating procedures are followed during construction so that nearby sensitive receptors are not adversely affected by noise and vibration.

Mitigation Measures:

MM 3.7-1a Project applicants within the project area shall prepare a construction noise management plan that identifies measures to be taken to minimize construction noise on surrounding sensitive receptors (e.g. residential uses and schools) and includes specific noise management measures to be included into project plans and specifications subject to review and approval by the City. These measures shall include, but not be limited to the following:

- Construction activities, including the maintenance and warming of equipment, shall be limited to Monday through Friday, and non-City

holidays, between the hours of 7:30 AM and 5:30 PM except as otherwise approved by the City Engineer.

- All construction equipment shall be equipped with mufflers and sound control devices (e.g., intake silencers and noise shrouds) no less effective than those provided on the original equipment and no equipment shall have an un-muffled exhaust.
- The City shall require that the contractor maintain and tune-up all construction equipment to minimize noise emissions.
- Stationary equipment shall be placed so as to maintain the greatest possible distance to the sensitive receptors.
- All equipment servicing shall be performed so as to maintain the greatest possible distance to the sensitive receptors.
- The construction contractor shall provide an on-site name and telephone number of a contact person. In the event that construction noise is intrusive to an educational process, the construction liaison will revise the construction schedule to preserve the learning environment.
- Select demolition methods to minimize vibration, where possible (e.g., sawing masonry into sections rather than demolishing it by pavement breakers).

MM 3.7-1b Should potential future development facilitated by the proposed project require off-site import/export of fill material during construction, trucks shall utilize a route that is least disruptive to sensitive receptors, preferably major roadways (Interstate 580, Interstate 680, San Ramon Road, Dublin Boulevard, and Amador Valley Boulevard). Construction trucks should, to the extent practical, avoid the weekday and Saturday a.m. and p.m. peak hours (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.).

Exposure to Long-Term Stationary Noise

Impact 3.7-2: Compliance with design guidelines and development standards contained within the DDSP will ensure that potential future development within the project does not exceed established noise standards. This is considered a less than significant impact.

Potential future development within the project area could result in long-term stationary noise impacts on sensitive receptors within the project area, which consist of a 238-room Holiday Inn Hotel and a senior center with an associated 54-unit Wicklow Square apartment complex. Residential uses are located adjacent to the project area to the north, east, and west. Examples of stationary noise sources are generators, air conditioning facilities, etc.

The purpose of the DDSP is to guide development and design within the approximately 284 acres located in downtown Dublin. This will be accomplished by a set of regulations,

design principles, and related implementing actions designed to foster quality development and prevent excessive noise. The DDSP project area has been divided into three districts (Retail District, Transit-Oriented District, and Village Parkway District), based on the existing building patterns and land uses within each area and the intended development envisioned for each district.

The DDSP proposes development that is consistent with existing land uses and is anticipated to generate similar noise levels. Where new development would abut noise sensitive uses, the DDSP includes design guidelines and development standards that are aimed at reducing noise levels, including building orientation, wall placement, lot dimensions, maximum intensity, outdoor storage, setbacks, buffers, edge conditions, and landscaping. By providing the necessary regulatory and design guidance, the proposed project ensures that future development of parcels within the DDSP project areas implements the policies of the Noise Element in the *City of Dublin General Plan*. Compliance with the City's standards would ensure that any new stationary noise source (i.e., generators, air compressors, loading bays, pumps, etc.) within the project area would result in a **less than significant impact** to sensitive receptors.

Exposure to Long-Term Mobile Noise

Impact 3.7-3: Development in the project area facilitated by the proposed project could permanently increase noise levels from mobile sources (vehicular traffic) at existing and future uses within the DDSP project area. This is considered a potentially significant impact.

Potential future development within the project area could cause permanent increases in ambient noise levels, both within and outside the project area, from mobile sources (i.e., vehicular traffic to/from the area) at sensitive receptors.

The "Near Term Without Project" and "Near Term With Project" scenarios were compared for near term traffic noise conditions. As previously discussed, an increase of five dBA or greater in noise levels occurring from project-related activities would be significant when the "Without Project" noise level is below 60 dBA CNEL. An increase of three dBA or greater in noise levels occurring from project-related activities would be significant when the "Without Project" noise level is between 60 to 65 dBA CNEL. Finally, an increase of 1.5 dBA or greater would be significant if the "Without Project" noise level is above 65 dBA CNEL.

In Table 3.7-5: Near Term Noise Scenarios, the noise level (dBA at 100 feet from centerline) depicts what would typically be heard 100 feet perpendicular to the roadway centerline. As indicated in Table 3.7-5: Near Term Noise Scenarios under the "Near Term Without Project" scenario, noise levels at a distance of 100 feet from the centerline would range from approximately 50.4 dBA to 69.5 dBA. The highest noise levels under the "Near Term Without Project" conditions occur along San Ramon Road (south of Dublin Boulevard). Under the "Near Term With Project" scenario, noise levels at a distance of 100 feet from the centerline would range from approximately 50.4 dBA to 70.7 dBA. The

highest noise levels under future with project conditions would also occur along San Ramon Road (south of Dublin Boulevard).

Table 3.7-5: Near Term Noise Scenarios

Roadway Segment	Near Term Without Project		Near Term With Project		Difference in dBA @ 100 Feet from Roadway	Potentially Significant Impact?
	ADT	dBA CNEL @ 100 Feet from Roadway Centerline	ADT	dBA CNEL @ 100 Feet from Roadway Centerline		
Amador Plaza						
Amador Valley Blvd. / Dublin Blvd.	8,380	58.0	12,690	59.8	1.8	No
Dublin Blvd. / St. Patrick Way	13,130	60.0	30,670	63.7	3.7	**Yes**
Amador Plaza Rd. / Village Parkway	17,840	62.7	20,550	63.3	0.6	No
Donahue Dr. / Amador Plaza Rd.	15,040	61.9	17,110	62.5	0.6	No
E. of Village Parkway	13,360	61.4	14,770	61.9	0.5	No
Regional Street / Starward Dr.	14,770	61.9	16,790	62.4	0.5	No
San Ramon Rd. / Regional Street	16,110	62.2	18,260	62.8	0.6	No
Starward Dr. / Donahue Dr.	13,740	61.5	15,800	62.1	0.6	No
W. of San Ramon Rd.	3,010	55.0	3,370	55.5	0.5	No
Dublin Blvd.						
Amador Plaza Rd. / Village Parkway	24,270	65.5	38,260	67.5	2.0	**Yes**
E. of Village Parkway	24,400	65.5	33,050	66.8	1.3	No
Golden Gate Dr. / Amador Plaza Rd.	21,440	65.0	38,060	67.4	2.4	No
Regional Street / Golden Gate Dr.	22,650	65.2	43,330	68.0	2.8	**Yes**
San Ramon Rd. / Regional Street	28,090	66.0	49,860	68.5	2.5	**Yes**
W. of San Ramon Rd.	21,220	64.7	23,020	65.1	0.4	No
Golden Gate Dr.						
Dublin Blvd. / St. Patrick Way	7,900	57.9	15,850	60.9	3.0	No
S. of St. Patrick Way	5,830	56.5	7,810	57.8	1.3	No
Regional Street						
Amador Valley Blvd. / Dublin Rd.	6,220	58.4	9,670	60.3	1.9	No
S. of Dublin Blvd.	7,820	59.4	11,590	61.1	1.7	No
San Ramon Rd.						
Amador Valley Blvd. / Dublin Blvd.	27,090	66.9	32,620	67.8	0.9	No
N. of Amador Valley Blvd.	22,520	66.2	29,190	67.3	1.1	No
S. of Dublin Blvd.	48,540	69.5	64,120	70.7	1.2	No
St. Patrick Way						
E. of Amador Plaza Rd.	12,050	59.8	16,730	61.2	1.4	No
Golden Gate Dr. / Amador Plaza Rd.	3,840	54.8	6,800	57.3	2.5	No
W. of Golden Gate Dr. (Proposed Saint Patrick Way Extension)	1,670	51.2	3,630	54.5	3.3	No
Village Parkway						
Amador Valley Blvd. / Dublin Blvd.	12,990	61.2	17,300	62.4	1.2	No
Dublin Blvd. / I-680 NB on ramp	5,400	57.8	7,300	59.1	1.3	No
N. of Amador Valley Blvd.	14,670	61.8	19,100	63.0	1.2	No
S. of I-680 NB on ramp	990	50.4	990	50.4	0	No

ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Intersection turning movements, prepared by Fehr and Peers, dated January 2010 and ADT calculations by RBF Consulting, dated April 2010.

Table 3.7-5 also compares the "Near Term Without Project" scenario to the "Near Term With Project" scenario. The proposed project would increase noise levels on the surrounding roadways by a maximum of 3.7 dBA along Amador Plaza (between Dublin

Boulevard and St. Patrick Way) with noise levels between 60 dBA and 65 dBA. As indicated in Table 3.7-5 and stated under the *Significance Criteria*, four of the roadway noise levels resulting from the proposed project would result in a potentially significant increase in noise located along Amador Plaza (between Dublin Boulevard and Saint Patrick Way) and Dublin Boulevard (between Amador Plaza Road and Village Parkway, between Regional Street and Golden Gate Drive; and between San Ramon Road and Regional Street). Land uses along these roadway segments are currently comprised of commercial uses with no existing sensitive receptors that would be affected by the proposed project. However, future development within the project area may include the construction of sensitive receptors along these roadway segments, which would be considered a potentially significant impact.

Siting of new development within the DDSP project area would be required to consider proximity to noise sources such as freeway and roadway traffic including proximity to Highway 580. Implementation of the following mitigation measure would ensure that the proposed project would result in a less than significant impact by establishing regulatory and design guidance for future development within the DDSP, as well as implementing the policies of the Noise Element of the City of Dublin General Plan to limit exterior noise levels to 60 dBA CNEL or less at noise sensitive land uses within the project area. Implementation of the following mitigation measure will result a **less than significant impact**.

Mitigation Measures:

MM 3.7-3 Future development within the DDSP project area that is located adjacent to Highway 580; Amador Plaza (between Dublin Boulevard and Saint Patrick Way); and Dublin Boulevard (between Amador Plaza Road and Village Parkway; between Regional Street and Golden Gate Drive and between San Ramon Road and Regional Street) shall prepare a site-specific acoustical analysis subject to review and approval by the City of Dublin. The acoustical analysis prepared for future development shall evaluate resultant noise impacts in comparison to the City's noise criteria for Land Use Compatibility for Community Noise Environments. Feasible project specific mitigation measures shall be required as part of the project design to reduce noise impacts at future noise sensitive land uses, including but not limited to the following: 1) site design, 2) operational restrictions; 3) barriers, 4) setbacks, and 5) insulation, No development permits or approval of land use applications shall be issued until the acoustical analysis is received and approved by City staff and any project design features are incorporated into the future development project.

Aircraft Noise

The closest airport to the project area is the Livermore Municipal Airport which is located approximately 6.5 miles east of the project area. According to the *Livermore Municipal Airport Master Plan*, the City of Dublin is not located within the approach zones and is not

located within an unacceptable noise contour. Therefore, the proposed project would not expose residents or workers in the project area to excess airport-related noise.

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3.8. Public Services & Utilities

This section of the Draft EIR analyzes the impacts associated with implementation of the proposed project on public services and facilities and services, including fire protection, law enforcement, schools, libraries, parks/recreation facilities, stormwater drainage, potable water, wastewater treatment, solid waste management, and other public utilities. Information in this section is derived primarily from the proposed Specific Plan, as well as personal communication with service providers.

Environmental Setting

Fire Protection

The proposed project would be served by the Alameda County Fire Department (hereinafter "ACFD"), which provides fire protection and suppression services under contract to the City of Dublin. ACDF currently consists of 36 line personnel.

ACDF has 28 fire stations, three of which are located in the City of Dublin. Station No. 16 is located at 7494 Donohue Drive; Station No. 17 is located at 6200 Madigan Avenue; and Station No. 18 is located at 4800 Fallon Road.

- Station No. 16 houses one engine company, a patrol and a water tender, and a patrol. This station provides initial response to west and downtown Dublin and would be the first responder to any fire or emergency occurring in the DDSP area.
- Station No. 17 provides service to the west, and central core sections of Dublin. This station houses one engine and one truck company.
- Station No. 18 provides the primary response for the eastern most portions of Dublin. This station includes one engine company and one bulldozer.

Law Enforcement

The proposed project would be served by the City of Dublin Police Department. Police services for the City of Dublin are performed under contract to the Alameda County Sheriff's Office. As of 2010, the City of Dublin has 51 sworn personnel.

Police Services are provided by Sheriff personnel located at the Dublin Civic Center, 100 Civic Center Plaza. Services provided include uniformed police officers patrolling the City in marked vehicles, criminal investigations, crime prevention, drug enforcement prevention education programs, and special investigation officers responsible for narcotic and vice suppression. Response times to various places in the City can vary depending on the time of day and the available units. The average response time to a life-or-death emergency averages approximately 3.5 to five minutes. For non-emergencies the response time is typically 15 minutes. Dispatch and some data processing functions are handled at the Sheriff's Office facilities located in Oakland, San Leandro, and Hayward. Dublin police also enforce city ordinances and state laws within the limits of the City of Dublin.

Schools

The Dublin Unified School District (DUSD) provides public education in the City of Dublin and the surrounding area (including the proposed project site). The DUSD includes five elementary schools, one K-8 school, one middle school, a comprehensive high school, a continuation high school, and a K-3 parent participation program. The elementary schools all feature before and after school child care. Primary and secondary school facilities, 2008-2009 student enrollment, and the school's optimum capacity are identified in Table 3.8-1: Optimum Capacity of Schools Serving the DDSP Area.

Table 3.8-1: Optimum Capacity of Schools Serving the DDSP Area

Grade Level and School Name	Student Enrollment in 2008-2009	Optimum Capacity
Elementary		
Dougherty	642	576
Dublin	533	344
Green	581	610
Frederiksen	506	502
Murray	370	264
Fallon (based on 6-8 grade only)	836	1,285
Kolb (opening Fall 2010)	N/A	N/A
Middle School		
Wells	718	1,000
High School		
Dublin HS	1,474	1,259
Valley Continuation HS	79	160

Source: Dublin Unified School District, 2010; Ed-Dat,a, 2010

The proposed project is located within the jurisdiction of Dublin, Frederiksen, and Murray Elementary Schools, Wells Middle School, and Dublin High School.

For planning purposes, a school district's projected student generation rates are based on dwelling units. Student generation rates are the average number of students residing in a home. It is also an indicator of the number of students that will come from new housing developments. According to the Dublin Unified School District's Demographic Study and Facilities Plan, 2007-09, each new single-family home generates an average of 0.68 K-12 students; single-family attached housing (otherwise known as "townhomes") generate an average 0.24 K-12 students per home; and a new multifamily housing development generates an average of 0.125 K-12 students per unit.

Libraries

The Dublin Public Library is located at 200 Civic Plaza, and is a partnership between the City of Dublin and the Alameda County Library. The City of Dublin owns the library building and contracts with Alameda County for library services. The Dublin Public Library contains a collection of 145,700 materials including books, DVDs, and audio books, newspapers, and magazines funded with $1.3 million dollars given to the Library by the City of Dublin.

The Alameda County Library provides library services from ten branch libraries in the cities of Albany, Dublin, Fremont, Newark, and Union City, and the unincorporated communities of Castro Valley and San Lorenzo. The Alameda County Library is funded primarily by local property taxes, with additional revenue from State grants and contracts with cities for additional open hours and services.

Parks/Recreation Facilities

The City of Dublin's current park system includes thirteen parks and two open space areas. The City's Parks and Community Services Department manages park planning and development, and the Public Works Department coordinates park maintenance. The nearest City park to the project area is the Mape Memorial Park, located at 11711 Mape Way (less than a quarter-mile northwest of the proposed project between San Sabana & Calle Verde). This 2.6-acre park includes walkways, play equipment, a small group picnic area, picnic tables, barbecues, a sand volleyball court, restrooms, and drinking fountains.

The City's existing trail network consists of bikeways located along Amador Valley Boulevard, Village Parkway, San Ramon Road, Alamo Creek, Dublin Boulevard, Tassajara Creek and Dougherty Road, a public local trail along Martin Canyon Creek, and a regional trail link along the Iron Horse Trail.

Stormwater Drainage

The City of Dublin Public Works Department maintains the City's storm drain pipelines that are located within the public streets (see Figure 3.8-1: Storm Drain System). The Alameda County Water Conservation District Zone 7 (Zone 7) owns and operates regional storm drain facilities that collects runoff from the City. Because the project area is largely built-out, stormwater flows to collection distribution systems are expected to be similar to or possibly slightly reduced with incorporation of low impact development (LID) within the project area as part of future development.

Water

The Dublin San Ramon Services District (DSRSD) is the purveyor of potable water in the City of Dublin. DSRSD has provided drinking water to more than 60,000 people in Dublin since March 1961 and in Dougherty Valley since May 2000. The existing potable water distribution system for the DDSP area is shown in Figure 3.8-2: Potable Water System.

In addition to potable water, DSRSD also provides recycled (reclaimed) water for irrigation and other non-potable uses. DSRSD Ordinance No. 301 requires recycled water use for

approved customer categories for all new land uses, including commercial, multi-family residential, and institutional irrigation uses with the DSRSD potable water service area. The City of Dublin also has Water-Efficient Landscaping Regulations that reduce water use for irrigation (refer to the Dublin Municipal Code, Chapter 8.88).

DSRSD's Urban Water Management Plan (May 2005) (hereinafter "DSRSD UWMP") includes a projection of future potable and reclaimed water use through the year 2030. This projection is shown in Table 3.8-2: Projected DSRSD Water Demand (Potable and Reclaimed).

Table 3.8-2: Projected DSRSD Water Demand (Potable and Reclaimed)

Demand Source	2005	2010	2015	2020	2025	2030
Dublin	9,300	10,600	11,900	13,700	13,700	13,700
Dougherty Valley	1,250	2,800	3,400	3,400	3,400	3,400
Subtotal	10,550	13,400	15,300	17,100	17,100	17,100
Recycled Water	2,000	2,700	3,250	3,700	3,700	3,700
Total	12,550	16,100	18,550	20,800	20,800	20,800
Note: All Amounts in Acre-Feet/Year						
Source: Dublin San Ramon Services District Urban Water Management Plan, May 2005 Update.						

DSRSD is responsible for planning to supply sufficient water to meet the anticipated growth in demand, in which it is planned to use a combination of potable and recycled water supplies as well as conservation of water resources to meet demand.

The wholesale supplier of water to DSRSD is Zone 7. DSRSD has a contract with Zone 7 which establishes the obligations between the parties to meet demand in the DSRSD service area. Under the contract, DSRSD is obligated to purchase all of the treated water it requires from Zone 7, unless Zone 7 is unable to deliver sufficient water. If Zone 7 is unable for a period of time to deliver sufficient water to satisfy DSRSD's needs, DSRSD is permitted to acquire water from other sources during the period that Zone 7 has insufficient water. Zone 7 relies on a combination of supplies to meet treated and untreated (i.e. raw surface water) demands. Zone 7's water supplies consist of imported surface water and local runoff.

Zone 7 conducts an annual review of its water supply reliability. The most recent review was completed in May 2009. The sustainability and reliability of Zone 7's existing water supply system is achieved first by having sufficient long term supplies to meet demands and then by storing surplus water in wet years for use in dry years; it is heavily dependent on having enough wet years to balance the dry years. This balance between wet and dry years is evaluated by comparing projected yields from existing water supplies over a wide range of historic hydrology to make sure that Zone 7 can meet 100 percent of its treated water customer water supply needs during: an average water year; the worst single dry year from the historic record that represents the lowest yield from all available supplies; and multiple

dry water ears from the historic record. Traditionally, if the projected yields over a long range of hydrology can be shown to meet a future demand every year, then the system is called sustainable for that level of demand. In general, if long-term average yields from existing water supplies are less than projected water demands, then over time, the storage reserves needed to meet reliability goals will erode and the system is not sustainable.

Zone 7 staff compared projected water demands to the long-term average yield of existing water supplies in the current year (2009), over the next five years (2009 to 2013), and at buildout, to identify potential deficiencies in the existing water supply system. This comparison indicated that the existing water supply system could reliably meet projected water demands of 62,500 acre-feet (AF) which is 9,000 AF more than 2013 demands, but that projected water demands at buildout exceed long-term average yields expected from existing water supplies. Therefore, the existing system could become unsustainable in about a decade, sometime between 2015 and 2020.

The exact year that the existing system becomes unsustainable cannot be determined because of a number of current uncertainties (e.g., rate of urban growth, rate of growth in untreated demands, changes in water efficiency, timing of potential solutions, or future adjustments to projected demands by Zone 7 customers) that would significantly influence timing. However, Zone 7 has developed a risk model to help incorporate these uncertainties, along with other key issues, into future evaluations of Zone 7's existing water supply system. Overall, Zone 7 staff feels that it is reasonably likely that Zone 7 will be able to meet contracted water demands through projected buildout of the Livermore-Amador Valley.

Zone 7 and DSRSD currently charge connection and other fees on new development within their service area. Fees are used for construction of planned water system capital improvements including storage, pumping, transmission, and on-going system water maintenance and improvements.

Sewer/Wastewater

DSRSD is also the purveyor of wastewater collection services in the City of Dublin and a portion of the City of San Ramon. DSRSD wastewater collection system includes over 170 miles of sanitary sewers ranging from six to 42 inches in diameter that are from five to over 40 years old. As shown in Figure 3.8-3: Sanitary Sewer System, the project area includes a variety of collection mains located within the existing public streets and on some private properties. Most of the mains range from eight to 12 inches. All of the sewer mains drain into a 36-inch main, which runs north to south along Village Parkway.

Disposal of treated wastewater is under the jurisdiction of the Livermore-Amador Valley Water Management Authority (LAVWMA). Wastewater collected from the DSRSD service area travels by gravity to the DSRSD wastewater treatment plant, which is located near the southeast corner of Interstate 580 and Interstate 680 in the City of Pleasanton. The plant has a rated dry-weather capacity of 17.0 million gallons per day (mgd).

Disposal of treated effluent from DSRSD's wastewater treatment plant in Pleasanton is the responsibility of the LAVWMA. LAVWMA exports secondary treated wastewater to the East Bay Discharges Authority interceptor pipeline for ultimate discharge to San Francisco Bay via a deepwater outfall. LAVWMA facilities are designed to export a maximum flow of 41.2 mgd during wet weather events.

DSRSD currently charges wastewater connection and other fees on all new development within the District's service area. Fees are used for construction of planned wastewater treatment and collection system capital improvements, as well as on-going wastewater system maintenance.

Solid Waste Management

Coordination of the solid waste management activities in Alameda County is the joint responsibility of the County's Waste Management Authority and local jurisdictions. The City of Dublin currently contracts with Amador Valley Industries (AVI), a private company for residential and commercial garbage collection within the City limits. The City of Dublin also has an aggressive and comprehensive recycling program and collects both recycling and organics. All single-family residences are provided with recycling containers. In addition, free recycling service is available to all commercial customers that subscribe to garbage service. In regards to construction and demolition debris, the City requires all construction and demolition projects to recycle at least 50-percent of waste generated on a job site.

Solid waste generated within the project area would be deposited at the Altamont Landfill. The Altamont Landfill has a total estimated permitted capacity of 62,000,000 cubic yards. The total estimated capacity used is 16,280,000 cubic yards (or 26.3 percent), and the remaining estimated capacity is at 45,720,000 cubic yards (or 73.7 percent). The estimated closure date of this landfill is January 2029.

Electricity and Natural Gas

Pacific Gas and Electric Company (PG&E) provides electricity to all or part of 47 counties in California, and provides natural gas to all or part of 39 counties in California, constituting most of the northern and central portions of the state. PG&E provides electricity and natural gas service to the City of Dublin. PG&E charges connection and user fees for all new development, in addition to sliding rates for electrical and natural gas service based on use. Electricity and gas services are currently offered in the DDSP area.

Title 24, Part 6, of the California Code of Regulations, entitled "Energy Efficiency Standards for Residential and Nonresidential Buildings," specifies requirements to achieve the State's minimum energy efficiency standards. The standards apply to new construction of both residential and nonresidential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating and lighting. Compliance with these standards is verified and enforced through the local building permit process. Projects that apply for a building permit on or after January 1, 2010, must comply with the 2008 Energy Efficiency Standards. In addition, the California Energy Commissions' *Energy Aware Planning Guide* is available as a reference tool to assist in project planning. Development Standards and Design Guidelines

for new development in the proposed DDSP area include the following energy-saving measures:

- Green roofs and rooftop gardens are encouraged to add landscaping, decrease the heat island effect of large expanses of flat roofs, and to reduce heating and cooling energy demands;
- Roof materials should meet or exceed the Energy Star requirements for solar reflectance;
- Energy-efficient lighting (lighting from renewable sources and energy-saving devices, such as light sensors) are encouraged, whenever feasible; and
- Where feasible, warm white, energy efficient lighting source types such as metal halide, induction lighting, compact fluorescent, and light-emitting diode (LED) should be used.

Regulatory Setting

State

Schools

School Facilities Act of 1998

The School Facilities Act of 1998 (also know as Senate Bill [SB] 50), provides state funding for new school construction projects that can satisfy certain criteria for such funding, including eligibility due to growth, Division of State Architect plan approval. However, the Act also dramatically limits the maximum amount of impact fees, which can be charged by school districts as mitigation for new residential, commercial, and industrial construction. The Act also prohibits local agencies from denying a development application on the basis of a person's refusal to provide school facilities mitigation that exceeds the fee amount and refusing to approve any legislative or adjudicative act on the basis that school facilities are inadequate.

Parks and Recreation

Quimby Act

Since the passage of the 1975 Quimby Act (California Government Code §66477), cities and counties have been authorized to pass ordinances requiring that developers set aside land, donate conservation easements, or pay fees for park improvements. The goal of the Quimby Act was to require subdividors to provide park and recreational lands to meet the increased demand from new subdivisions. Originally, the Act was designed to ensure "adequate" open space acreage in jurisdictions adopting Quimby Act standards, which ranged from three to five acres per 1,000 residents.

Water Supply and Distribution

Title 22 California Code of Regulations

The California Department of Public Health (CDPH) promulgates and enforces state regulations for drinking water treatment facilities and distribution systems. These state regulations are at least as strict as federal drinking water regulations, although not all federal regulations are currently incorporated into corresponding state regulations. These state drinking water regulations are contained in California Code of Regulations (CCR) Title 22. The CDPH also regulates the distribution and use of recycled water through CCR Title 22.

Urban Water Management Plan

In 1983, the California Legislature enacted the Urban Water Management Planning Act (Water Code Sections 10610 - 10656). The California Urban Water Management Planning Act requires that each urban water supplier, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, shall prepare, update and adopt its urban water management plan at least once every five years on or before December 31, in years ending in five and zero.

Wastewater Treatment

Clean Water Act

The Federal Water Pollution Control Act Amendments of 1972 (CWA (33 U.S.C. 1251 et seq.)) have as their goal the restoration of the physical, chemical, and biological integrity of the nation's waters. The primary regulatory mechanism to achieve the goal is the National Pollutant Discharge Elimination System (NPDES). The CWA requires that parties seeking to discharge pollutants to the water of the United States obtain a permit under the NPDES. The federal government has delegated responsibilities for implementing the CWA NPDES program in California to the State. A discharge of pollutants from a source with a single readily identifiable point of discharge, such as a municipal wastewater outfall, is only permitted if it meets certain quality standards, known as effluent limits. Effluent limits are based on available wastewater treatment technology. For surface water discharges of stormwater runoff, additional regulations may apply, as discussed further below.

CWA Section 303(d)(1)(A) requires states to identify surface waters within their boundaries where numeric or narrative water quality objectives are not being achieved or maintained and/or where beneficial uses are not fully protected after application of technology-based controls. Section 401 of the CWA requires applicants for federal licenses or permits to obtain safe certification that any discharge of pollutants to surface waters from a proposed activity will comply with the CWA, including applicable water quality standards. CWA Section 404(b)(1) Guidelines (40 CFR 230) regulate dredge and fill activities that affect jurisdictional wetlands and waters, including water quality aspects of such activities.

California Porter-Cologne Act

The California Porter-Cologne Act created an administrative structure and procedures for management of water quality in the state. California's water quality program is administered by the State Water Resources Control Board (SWRCB) and by nine Regional Water Quality Control Boards (RWQCBs). Each RWQCB is responsible for regulating water quality within their watershed. In accordance with the Porter-Cologne Act, each RWQCB implements the Basin Plan developed for its region by issuing and enforcing waste discharge requirements to individuals, communities, or businesses whose waste discharges can affect water quality. These requirements can be either waste discharge requirements (WDRs) for discharges to land (which may impact groundwater), or federally delegated NPDES permits for discharges to surface water.

Solid Waste

Integrated Waste Management Act

The Integrated Waste Management Act (AB 939) mandates that communities reduce their solid waste. The Act requires local jurisdictions to divert 25 percent of their solid waste by 1995 and 50 percent by 2000, compared to a baseline of 1990. AB 939 also establishes an integrated framework for program implementation, solid waste planning, and solid waste facility and landfill compliance.

Local

City of Dublin Public Facilities Fee

Chapter 7.78, Public Facilities Fee of the City of Dublin Municipal Code establishes a public facilities fee in order to finance public facilities and to pay for each development's fair share of construction and acquisition costs of improvements to public facilities that are caused by future development.

City of Dublin General Plan

The following policies in the *City of Dublin General Plan* are applicable to public services and utilities within the project area:

Parks / Recreational Facilities

Guiding Policy A. Expand park areas throughout the primary and extended planning areas to serve new development.

Guiding Policy B. Maintain and improve outdoor facilities in conformance with the recommendations of the City's Parks and Recreation Master Plan.

Implementing Policy C. Acquire and improve parklands in conformance with the standards and policies recommended in the City's Parks and Recreation Master Plan.

Solid Waste

Guiding Policy A. Ensure that adequate solid waste disposal capacity is available to avoid constraining development consistent with the Dublin General Plan.

Implementing Policy B. Continue to enforce City Source Reduction and Recycling/Household Hazardous Waste Elements.

Implementing Policy C. Cooperate with Alameda County, as necessary, for adoption and implementation of the County Integrated Waste Management Plan.

Implementing Policy D. Prior to project approval, the applicant shall demonstrate that capacity will exist in solid waste disposal facilities for their projects prior to issuance of building permits.

Implementing Policy E. Large scale projects should be required to submit a plan that demonstrates how they will contribute towards the City's State mandated diversion requirement.

Sewage Treatment and Disposal

Guiding Policy A. Expand sewage treatment and disposal capacity to avoid constraining development consistent with the Dublin General Plan.

Implementing Policy B. Prior to project approval, developers shall demonstrate that adequate capacity will exist in sewage treatment and disposal facilities for their projects prior to the issuance of building permits.

Water Supply

Guiding Policy A. Base General Plan proposals on the assumption that water supplies will be sufficient and that local wells could be used to supplement imported water if necessary.

Implementing Policy B. Consider obtaining water from the East Bay Municipal Utility District and other sources.

Relevant Project Characteristics

Development activities under the proposed Specific Plan are assumed to occur over the next 15 to 20 years. During that time, it is assumed that only a portion of the existing land uses will be intensified and that many of the existing structures will essentially remain the same in size and configuration with the exception of remodeling of existing structures. Based on this information, future development assumptions for each district were identified which is used for the basis for infrastructure improvements.

Downtown Dublin is largely built-out, but there are a few vacant parcels on which new development could occur. Future development would therefore occur as properties are intensified and in some cases at a higher density. Due to the existing Floor to Area (FAR)

ratio and parking requirements, limited new additional density opportunities within the planning area exist, particularly in the Retail and Village Parkway Districts.

Impacts and Mitigation Measures

Criteria for Determining Significance

In accordance with the CEQA, *State CEQA Guidelines*, agency and professional standards, a project impact would be considered significant if the project would:

- Result in substantial adverse physical impacts associated with the provision of or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:
    - Fire protection,
    - Police protection,
    - Schools,
    - Parks, or
    - Other public facilities;
- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment;
- Result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed;
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; and/or
- Comply with federal, state and local statutes and regulations related to solid waste.

Methodology

Information in this section is derived primarily from the City of Dublin General Plan, the DSRSD Urban Water Management Plan, the Downtown Dublin Specific Plan, as well as personal communication with service providers.

Impacts and Mitigation Measure

Increased Demand for Fire Protection Service

Impact 3.8-1: The proposed project would not significantly increase the need for fire protection services and result in the need for or the construction of new or physically altered facilities in order to meet the City's response times for fire protection services. Therefore, the proposed project would have a less than significant impact on fire protection services.

The City of Dublin contracts with the Alameda County Fire Department to provide fire and rescue services. The County of Alameda currently provides the City with 36 line personnel that are assigned to the City at three fire stations (Stations 16, 17 and 18) that serve the community. Station No. 16 is located at 7494 Donohue Drive and houses one engine company, one truck company, and a patrol. This station provides initial response to west and downtown Dublin and would be the first responder to any fire or emergency occurring in the project area.

Although the number of calls for service from the DDSP area would likely increase, all proposed development must meet certain State building and fire codes. Typically, these codes require a development plan that provides for fire protection systems, ingress and egress, maximum occupancy limitations, and construction techniques and materials dictated by the proposed use of the structure (refer to the City of Dublin's Municipal Code, Chapter 5.08, Fire Code). Specifically, the Fire Department would review individual development proposals for conformance with locally-defined performance standards, including the California Fire Code, as adopted by the City of Dublin's Fire Department, and California Building Code standards. Site access, road widths and turning radii, road grades, surfacing, load bearing capability, sprinkler systems, stand pipes, smoke detectors, and fire alarms would also be reviewed for consistency with Fire Department standards.

Each proposed development project within the DDSP will be required to fund its own project-specific on-site and off-site improvements consistent with existing City regulations and requirements. The City would collect public facilities fees (Chapter 7.78 of the City of Dublin Municipal Code) from future development to help off-set fire protection-related capital improvements and on-going maintenance expenses incurred by new development prior to issuance of a Building Permit.

As the majority of the DDSP area is already built-out and future projects will be required to comply with the Fire Code and other applicable fire protection regulations, the proposed project is not expected to create any adverse impacts on fire protection.

Therefore, this would be considered a **less than significant impact**, and no mitigation is required.

Increased Demand for Law Enforcement Service

Impact 3.8-2: The proposed project would not significantly increase the need for law enforcement services, which would result in the need for the construction of new or physically altered facilities in order to meet the City's response times. Therefore, the proposed project would have a less than significant impact on law enforcement services.

The City of Dublin contracts with the Alameda County Sheriff's Department for police services. The County Sheriff, under consultation with the City, designates a commanding officer that functions and is empowered to act as the City's Police Chief. Patrol, criminal investigation, crime prevention, and business office functions are handled at the Dublin Civic Center location. Dublin Police Services is staffed so that there is a five-minute response time to all emergency calls. The City of Dublin has 51 sworn personnel with a population of 43,630, for a ratio of 1.17 sworn personnel per 1,000 population.

Although the addition of new residents and businesses to the DDSP area would slightly increase the demand for police services, implementation of the proposed project would have a minimal effect on response times for police services and would not affect the Department's ability to meet the response time goal Future development would be required to comply with Chapter 7.32.300 (Building Security) and Chapter 7.32.310 (Nonresidential building security) of the City's Building Code, which includes building standards aimed at reducing law enforcement calls within the City. In addition, the City would collect public facilities fees (Chapter 7.78 of the City of Dublin Municipal Code) from future development to help off-set police service capital improvements and on-going maintenance expenses incurred by the new development prior to issuance of a Building Permit to ensure that the proposed project will not impact law enforcement services. Therefore, the proposed project would have a **less than significant impact** on law enforcement services, and no mitigation is required.

Increased Demand for Educational Facilities

Impact 3.8-3: Implementation of the DDSP would increase the number of students in the Dublin Unified School District (DUSD) with the construction of approximately 1,300 multi-family residential units, which would increase the capacity of the schools with serve the project area, which are operating above optimum capacity. However, future development within the project area would be required to pay school impact fees as required under State law to the DUSD. This impact is considered less than significant.

The proposed project would allow for a future net new development potential with approximately 3.0 million square feet of non-residential development and 1,300 multi-family residential dwelling units. Children from the proposed dwelling units would likely attend DUSD schools. Therefore, the DDSP could have a direct impact on schools within the

DUSD boundary. The DUSD has established student generation rates for the purposes of estimating and planning for enrollment increases as a result of new residential development or redevelopment. No generation rates have been established for commercial development, as commercial development is not anticipated to result in direct population growth and a corresponding demand for classroom space.

According to the DUSD's Demographic Study and Facilities Plan, 2007-09, multifamily housing development generates an average of 0.125 K-12 students per unit the proposed project would result in approximately 163 students (K-12 grades).

The DDSP area would be served by the following schools: elementary – Dublin, Frederiksen, and Murray Elementary Schools; middle – Wells Middle School, and high school – Dublin High School. The DUSD middle school has a sufficient existing capacity to meet the needs of school children generated by the proposed project. However, the elementary schools and high school which would be serving the DDSP area currently exceed capacity, as shown in Table 3.8-3: Capacity Versus Current Enrollment of Schools Serving the DDSP Area, below.

Table 3.8-3: Capacity Versus Current Enrollment of Schools Serving the DDSP Area

Grade Level and School Name	Student Enrollment in 2008-2009	Optimum Capacity	Excess Capacity
Elementary			
Dublin	533	344	189
Frederiksen	506	502	4
Murray	370	264	106
Middle School			
Wells	718	1,000	(282)
High School			
Dublin HS	1,474	1,259	215

Source: Dublin Unified School District, 2010; Ed-Dat,a, 2010

Future development within the DDSP area would be required by law to pay school impact fees at the time of the building permit issuance. The DUSD currently charges development fees in the amount of $2.97 per square foot of residential development and $0.47 per square foot for commercial and industrial uses. These fees are used by the DUSD to mitigate impacts associated with long-term operation and maintenance of school facilities. A development project applicant's fees would be determined at the time of the building permit issuance and would reflect the most current fee amount established by the DUSD. School fees exacted from residential and commercial uses would help fund necessary school service and facilities improvements to accommodate anticipated population and school enrollment growth within the DUSD service area, and would allow for the DUSD to allocate these funds as deemed necessary. Therefore, the increased demand on the

DUSD is considered a **less than significant impact** on school services, and no mitigation is required.

Increased Demand for Parks and Recreation Facilities

Impact 3.8-4: The proposed project would increase the demand for park and recreational uses within the DDSP area. However, development projects within the project area would be required to pay the City's Public Facilities Fee prior to Building Permit issuance. Therefore, this would be considered a less than significant impact.

Implementation of the proposed project would increase the demand for neighborhood and community parks due to the projected increase in the residential population generated by future development within the DDSP project area. Parks and gathering spaces are to be provided as a community benefit under the DDSP, which would off-set the increased demand. The City of Dublin General Plan establishes park standards that call for five net acres per 1,000 residents. The Parks and Community Services Department Public Facilities Fee would be applied to future development within the project area. Public Facilities Fees vary according to the size of residential units, the location of the development, and whether or not there is credit of the dedication of land. With payment of City's public facilities fees (Chapter 7.78 of the City of Dublin Municipal Code), the proposed project would have a **less than significant impact** on park and recreation facilities in the City, and no mitigation is required.

Increased Demand for Library Services or Other Public Facilities

Impact 3.8-5: The proposed project would result in an increase in demand for library services. However, existing library facilities have adequate capacity to serve the proposed project. In addition, the proposed project would not physically impact other public facilities. Therefore, this would be considered a less than significant impact.

The Dublin Library is a partnership between the City of Dublin and Alameda County Library. Although the proposed project would increase the demand for library services, the demand for these services would be met by existing library facilities. The City funds 31 additional hours of library service and supports the collection with additional money. Implementation of the proposed project would not require the construction of new library facilities and would not cause or accelerate the physical deterioration of existing library facilities. Additionally, the proposed project would not physically impact other public facilities. This would be considered a **less than significant impact**, and no mitigation is required.

Increased Wastewater Demand

Impact 3.8-6: Implementation of the DDSP would not require the construction of new wastewater treatment facilities, or the expansion of existing facilities. Additionally, the existing service provider has an adequate capacity to meet this demand. Therefore, this would be considered a less than significant impact.

DSRSD provides wastewater collection services in the DDSP area. The DDSP area includes a variety of collection mains located within the existing public streets and on some private properties. Most of the mains range from eight to 12 inches. All of the sewer mains drain into a 36-inch main, which runs north to south along Village Parkway. New development projects within the DDSP area would connect to existing sewer lines.

DSRSD, in collaboration with MWH, Inc. completed a Wastewater Collection System Master Plan Update in June of 2005. Land use data form the basis for estimating wastewater flows in the collection system. In order to accommodate existing and future demand, sewer improvements were recently completed in the DDSP area. These improvements included the Dublin Boulevard West Sewer Relief project, and the Orchard Supply Hardware Sewer Replacement.

Although implementation of the proposed project would result in an increase in the demand for wastewater treatment and disposal, this demand is not anticipated to result in dry weather wastewater flows that exceed existing or planned capacity of the wastewater treatment plant. Individual development projects would be responsible for the cost and construction of new infrastructure required to serve new development. Public facility improvements for sanitary sewer drainage are managed and maintained by the DSRSD. In the District's Capital Improvement Plan, the costs of capital improvement projects are assigned to Local Sewer Replacement (Fund 210) and/or Local Sewer Expansion (Fund 220). The Replacement fund represents costs that are allocated to existing users (generally through sewer rates), and the Expansion fund represents the costs allocated to future users (generally through connection fees). Implementation of these actions would ensure that adequate wastewater infrastructure exists to serve new development.

In addition, implementation of the proposed project would comply with wastewater treatment requirements established by the Regional Water Quality Control Board (RWQCB).

Based on the Wastewater Master Plan (2005), the existing sewer infrastructure system that provides service to the DDSP area is sized to accommodate existing and planned development based on the City's General Plan and the respective Specific Plan growth projections. Based on a review of these projections and discussions, there is adequate capacity to service buildout of the downtown area. The wastewater treatment plant has an adequate capacity to serve the proposed project, the proposed project would have a less than significant impact on the existing wastewater treatment plant. Future development within the DDSP area would be required to pay the sanitary sewer connection fee to the DSRSD in order for the District to serve the proposed project. This is considered a **less than significant impact**, and no mitigation is required.

Increased Water Demand and Extension of Water Infrastructure

Impact 3.8-7: Implementation of the DDSP would generate an additional demand for water; however, the additional demand would be adequately served by anticipated water entitlements and resources. Impacts are considered less than significant.

DSRSD is the purveyor of potable water in the City of Dublin. DSRSD purchases wholesale water from Zone 7, who in turns purchases 70 percent of its water from the State Water Project. The remainder of the Zone 7 water is from groundwater aquifers through the Livermore-Amador Valley.

DSRSD, in collaboration with West Yost & Associates, completed a Water Supply Master Plan Update in 2005. The Water Master Plan Update based future demand (in part) on the City of Dublin's General Plan and respective Specific Plan growth projections. The update recommends additional storage for the central Dublin area and potable water system facility improvements to support existing and future conditions. No additional pumping capacity is required for Pressure Zone 1, which includes the DDSP area. Within Central Dublin, the Water Master Plan Update recommends the construction of a 2.74 million gallon reservoir (Tank 1C) in Central Dublin (North of Dougherty Reservoir and north of Amador Valley Road) to meet a storage deficiency at buildout, and to help alleviate low pressure during peak hour demand conditions. In addition, new 12-inch and 20-inch diameter service mains are recommended in the vicinity of new Tank 1C to fill the tank and distribute water from the tank to the Central Dublin service area. These improvements have been incorporated into DSRSD's capital improvement program.

Future water demands for the DDSP area were calculated using two methodologies: one based on future population projections and per capita consumption, and one based on future land use and unit water use factors. Based on the buildout of the existing Specific Plans within the project area, it is reasonable to assume that there is sufficient water supply to service future water demand in the DDSP area over the next 20+ years as the projections in the Water Master Plan Update included land use and unit water use factors consistent with the development densities proposed in the DDSP. In addition, new and/or redeveloped uses resulting from implementation of the proposed project are not anticipated to exceed the capacity of the water treatment plant.

The DDSP addresses water conservation by encouraging efficient design and green building measures. The DDSP encourages the use of low-volume drip irrigation systems to be used to water landscaping, and encourages the planting of drought-resistant plants. Additionally, the DDSP promotes landscaping features that retain water and filter stormwater runoff such as bio-swales, rain gardens, underground cisterns, flow-through planters, and roof gardens, which would increase groundwater recharge within the project area. In addition, the Dublin San Ramon Services District (DSRSD) provides recycled water for irrigation and other non-potable uses. DSRSD Ordinance No. 301 requires recycled water use for approved customer categories for all new land uses, including commercial, multi-family residential, and institutional irrigation uses. The City also has Water-Efficient Landscaping Regulations that reduce water use for irrigation (Chapter 8.88 of the Dublin Municipal Code).

Based on a review of these projections, as well as the project design features in the proposed DDSP, there is adequate capacity to service buildout of the DDSP area. In addition, new development would tie into the existing service lines. Other than minor

construction to improve and/or expand existing connections, no major upgrades to water infrastructure will be required. Developers of individual development projects would be responsible for the cost and construction of new infrastructure required to serve new development. Implementation of these actions would ensure that adequate water infrastructure would be available to serve new development. This would be considered a **less than significant impact**, and no mitigation is required.

Stormwater Runoff

Impact 3.8-8: Implementation of the proposed project may result in reduced off-site stormwater flows and future development within the planning area would be required to pay applicable impact fees at the time of issuance of the building permits. As City impact fees would adequately fund stormwater infrastructure, this would be considered a less than significant impact.

As previously mentioned, the City of Dublin Public Works Department maintains the City's storm drain pipelines that are located within public streets. Zone 7 owns and operates regional storm drain facilities that collect runoff from the City. Given the fact that the DDSP area is nearly completely covered with buildings, parking lots, sidewalks, and roadways, stormwater discharge rates are not anticipated to exceed current conditions.

The DDSP area is adjacent to and drains into Lines F-4 and J-1 of Zone 7's flood protection and stormwater drainage system. Portions of these drainages may benefit from the implementation of Low Impact Development (LID) technologies, such as pervious pavement, rain gardens, and green roofs. Any new development could potentially improve stormwater conditions through the application of LID and Best Management Practices (BMPs) to groundwater infiltration, and thus, reduce off-site stormwater flows. Design guidelines in the DDSP encourage increased percolation through the use of vegetated swales, curb extensions, reconfigured parking lots with increased landscaping, and the use of pervious materials (e.g. pervious pavers), particularly in parking lots. Implementation of these design guidelines would result in a net reduction of off-site stormwater discharge rates beyond what currently exists in the project area and would improve water quality as compared to existing conditions. Such features would passively improve the quality of runoff and would enhance environmental quality. Implementation of these actions would reduce the impacts of new development on the storm drainage system compared to existing conditions

Several properties within the DDSP area are located within the Federal Emergency Management Agency (FEMA) 100-year floodplain. As previously discussed, new construction will be subject to floodplain regulations. In addition, the Zone 7 Stream Management Plan contains plans to retrofit the culvert that carries water from Dublin Creek under Donlon Way. This retrofit will increase the culvert capacity and reduce the risk of flooding in the DDSP area.

Future development would be required to pay applicable impact drainage fees at the time of development, which includes development impact fees to Zone 7 based on total

increases in impervious surfaces associated with future development. Payment of these development impact fees to Zone 7 would ensure that the proposed project would result in a **less than significant impact** on stormwater infrastructure and services, and no mitigation is required.

Increased Generation of Solid Waste

Impact 3.8-9: Implementation of the proposed project would increase the generation of solid waste, but would be served by landfills with adequate capacity to accommodate the increase. Therefore, this would be considered a less than significant impact.

Development within the DDSP area would result in an increase in both residential and commercial development within the City. Solid waste services are currently provided by Amador Valley Industries (AVI) and include the collection of waste, recycling, and organics.

The City requires all construction and demolition projects to recycle at least 50 percent of waste generated on a job site (Chapter 7.30 of the Municipal Code). Additionally, the Specific Plan Development Standards and Design Guidelines encourage the use of green building materials, including materials with recycled content, materials from resource-efficient manufacturing process, locally-produced materials, salvaged or refurbished materials, and reusable materials, consistent with the City's Green Building Ordinance (Chapter 7.94). The City of Dublin also has an aggressive and comprehensive recycling program. All single-family residences are provided with recycling containers. In addition, free recycling service is available to all commercial customers that subscribe to solid waste collection.

All solid waste generated by development under the DDSP would be deposited at the Altamont Landfill. The Altamont Landfill has a total estimated permitted capacity of 62,000,000 cubic yards. The total estimated capacity used is 16,280,000 cubic yards (or 26.3 percent), and the remaining estimated capacity is at 45,720,000 cubic yards (or 73.7 percent). The estimated closure date of this landfill is January 2029. Development under the DDSP would occur over an extended period of time, meaning the Altamont Landfill would see an incremental increase in additional project solid waste until ultimate buildout of the DDSP.

The proposed DDSP calls for the construction of approximately 3.0 million square feet of non-residential development and 1,300 residential units. While this represents the theoretical buildout capacity of development in the DDSP project area, the ultimate amount of future development will likely be considerably less due non-tangibles such as market demand, ownership patterns, tenant lease terms, etc., as well as the fact that the DDSP project area is already largely developed resulting in significant physical limitations such as parcel configurations, parking, and circulation. Table 3.8-4: Solid Waste Generation Rates from Proposed Buildout of the DDSP, provides the projected amount of solid waste that would be generated at DDSP buildout.

Table 3.8-4: Solid Waste Generation Rates from Proposed Buildout of the DDSP

Proposed Land Use	Potential New Development	Solid Waste Generation Rate*	Solid Waste Generation
Non-Residential (Commercial Retail/Office)	3,000,000 sq. ft.	2.5 lb/1000 sq. ft./day	3.75 tons/day
Residential	1,300 units	12.23 lb/unit/day	7.95 tons/day
Projected Total			**11.7 tons/day**
*Rates from CalRecycle Website: http://www.calrecycle.ca.gov/, April 2010			

The proposed project would create approximately 11.7 tons of waste per day (or 4,270 tons/year). The Altamont Landfill's permitted maximum disposal rate is 11,500 tons/day. The proposed project's solid waste generation amount represents approximately 0.1 percent of the Landfill's maximum daily disposal rate. In addition, future development within the DDSP project area would be required to reduce 75 percent of trash through recycling and the composting of organics, which would also reduce the overall waste generation of the proposed project. Therefore, the Altamont Landfill has sufficient capacity to accommodate the waste disposal needs of the proposed project. This would be considered a **less than significant impact**, and no mitigation is required.

Electricity, Gas, and Telecommunications

Impact 3.8-10: The proposed project may result in the expansion of electricity, gas, and telecommunications on-site; however, the majority of the DDSP area is already built-out. This is considered a less than significant impact.

The majority of the DDSP area is already built out; therefore, the DDSP area is currently serviced by electricity, natural gas, and telephone infrastructure located along local streets. As such, new and intensification of uses that would occur with implementation of the proposed are anticipated. PG&E would provide electrical and natural gas services to the proposed project. AT&T would be the local telecommunications provider. Because the DDSP area is located contiguous to existing services provided by the City of Dublin, provision of new service would result in a **less than significant impact**, and no mitigation is required.

3.9. Transportation & Circulation

This section presents the results of the transportation impact study for the proposed project that was prepared by Fehr & Peers in April 2010. The purpose of the transportation impact analysis for the proposed project is to evaluate transportation impacts, identify short-term and long-term roadway and circulation needs, determine potential mitigation measures, and identify any critical transportation issues that should be addressed in the on-going planning process. The study primarily focused on evaluating conditions at fourteen existing intersections that may potentially be affected by the proposed project. The intersection operating conditions were evaluated under seven scenarios. A complete copy of the traffic level of service worksheets, prepared by Fehr & Peers, is included in Appendix D of this DEIR and is available for review at the City of Dublin.

Environmental Setting

This chapter includes a description of existing traffic and circulation conditions, pedestrian, bicycle, and transit facilities in and around the project area.

Existing Roadway Network

Operations of key intersections in the vicinity of the project area during the weekday morning and evening peak commute periods were evaluated, when traffic volumes on the surrounding roadways are highest. Intersections with potential impacts were selected in consultation with City staff, based on the amount of traffic projected to be added by the proposed project. The locations of these intersections are shown on Figure 3.9-1: Transportation Study Area and represent the locations most likely to experience traffic impacts associated with the project. These intersections are listed below followed by a narrative description of key roadways.

- Amador Valley Boulevard/San Ramon Rd.
- Amador Valley Boulevard/Regional Street
- Amador Valley Boulevard/Starward Drive
- Amador Valley Boulevard/Donohue Drive
- Amador Valley Boulevard/Amador Plaza Road
- Amador Valley Boulevard/Village Parkway
- Dublin Boulevard/San Ramon Road
- Dublin Boulevard/Regional Street
- Dublin Boulevard/Golden Gate Drive
- Dublin Boulevard/Amador Plaza Road
- Dublin Boulevard/Village Parkway
- Saint Patrick Way/Golden Gate Drive
- Saint Patrick Way/Amador Plaza Road/Interstate 680 (I-680) Southbound Ramps
- I-680 Northbound On-Ramp/Village Parkway

Interstate 580 (I-580)

I-580 is an eight-lane, east-west freeway that connects Dublin with local Tri-Valley cities such as Livermore and Pleasanton as well as regional cities such as Oakland, Hayward and Tracy. According to *Traffic Volumes of California State Highways (Caltrans 2008)*, I-580 carries between 178,000 and 209,000 vehicles per day (vpd) in the project vicinity. I-580 interchanges are located at San Ramon Road/Foothill Road, I-680, Dougherty Road/Hopyard Road, Hacienda Drive, Tassajara Road/Santa Rita Road, and Fallon Road/El Charro Road.

Interstate 680 (I-680)

I-680 is a six-to-eight lane north-south freeway that provides access to the south to Fremont, Milpitas and San Jose, and north to San Ramon, Danville, Walnut Creek and beyond. According to *Traffic Volumes on California State Highways,* I-680 carries between 148,000 and 163,000 vpd in the vicinity of the project area (Caltrans 2008). I-680 interchanges are located at Alcosta Boulevard, Dublin Boulevard via Amador Plaza Road and Village Parkway, and I-580.

Dublin Boulevard

Dublin Boulevard is a major east-west arterial in the City of Dublin. Dublin Boulevard, west of Dougherty Road is a four- to six-lane divided road fronted largely by retail and commercial land uses. Between Dougherty Road and Tassajara Road, Dublin Boulevard is a six-lane divided arterial fronted primarily by residential uses, commercial uses, and vacant land. Dublin Boulevard extends east of Tassajara Road to Fallon Road as a four- to five-lane roadway fronted by multi-family residential, commercial uses and vacant land.

Amador Valley Boulevard

Amador Valley Boulevard is an east-west collector that spans from San Ramon Road in the west to Dougherty Road in the east. East of Village Parkway, it is a two-lane divided road fronted largely by residences. West of Village Parkway, it is four-lane divided road that traverses through the Retail District. It is located north of Dublin Boulevard.

San Ramon Road

San Ramon Road is a north-south arterial that forms the western border of the Plan study area. San Ramon Road has six travel lanes (with a median) north of I-580 and an interchange at I-580. North of Amador Valley Boulevard, Sam Ramon Road narrows to four travel lanes (with a median). This arterial runs parallel to I-680 north through San Ramon, Danville, Walnut Creek, and Concord; south of I-680 it becomes Foothill Road and continues through Pleasanton. Because of the I-580 interchange, this roadway will be a major access point to uses in the Specific Plan Area.

Village Parkway

Village Parkway is a north-south Class I collector that extends from just south of Dublin Boulevard north to Alcosta Boulevard in San Ramon. Village Parkway has four travel lanes

with a raised median. Within the Plan area between Dublin Boulevard and Amador Valley Boulevard, Village Parkway provides access to commercial uses; north of Amador Valley Boulevard, access is provided to residential developments and to Dublin High School. South of Dublin Boulevard, an on-ramp is provided to I-680 northbound.

Regional Street

Regional Street is a north-south Class II collector that begins at Amador Valley Boulevard and terminates south of Dublin Boulevard; it is a two-lane roadway providing access to local commercial land uses.

Amador Plaza Road

Amador Plaza Road is a north-south Class II collector that begins at Amador Valley Boulevard and terminates south of Saint Patrick Way; at the intersection with Saint Patrick Way it provides access to and from I-680 southbound. It serves as an access point to commercial uses.

Saint Patrick Way

Saint Patrick Way is an east-west Class II collector connecting the I-680 ramps to Golden Gate Drive. It currently provides two travel lanes and provides access for the uses between Amador Plaza Road and Golden Gate Drive, as well as to and from I-680 southbound. In the future this roadway will extend further west to Regional Street.

Starward Drive and Donohue Drive

Starward Drive and Donohue Drive provide access to residential dwellings located north of Amador Valley Boulevard between San Ramon Road and I-680. They are both two-lane residential collectors which turn into Landale Avenue.

Traffic Analysis Methodology

Operational traffic analyses focus on intersections rather than roadway segments, due to the capacity constraints typically occurring at the intersections. The operational performance of a roadway network is commonly described with the term level of service or LOS. LOS is a qualitative description of operating conditions, ranging from LOS A (free-flow traffic conditions with little or no delay) to LOS F (oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays). The LOS analysis methods outlined in the *Highway Capacity Manual* (HCM) (Transportation Research Board, 2000) were used in this study. The HCM methods for calculating LOS for signalized intersections and unsignalized intersections are described below.

Traffic operations at signalized intersections were evaluated using the LOS method described in Chapter 16 of the 2000 HCM. The Synchro 7.0 software was used to analyze traffic conditions throughout the Plan Area. A signalized intersection's LOS is based on the weighted average control delay measured in seconds per vehicle. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. Table

3.9-1: Signalized Intersection LOS Criteria summarizes the relationship between the control delay and LOS for signalized intersections.

Table 3.9-1: Signalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay (Seconds per Vehicle)
A	Operations with very low delay occurring with favorable traffic signal progression and/or short cycle lengths.	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55.0 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2000

In Chapter 17 of the 2000 *Highway Capacity Manual (HCM)*, the LOS for unsignalized intersections (side-street or all-way stop controlled intersections) is also defined by the average control delay per vehicle (measured in seconds). The control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. For side-street stop-controlled intersections, delay is calculated for each stop-controlled movement and for the uncontrolled left turns, if any, from the main street. The delay and LOS for the intersection as a whole and for the worst movement are reported for side-street stop intersections. The intersection average delay is reported for all-way stop intersections. Table 3.9-2: Unsignalized Intersection LOS Criteria summarizes the relationship between delay and LOS for unsignalized intersections. The delay ranges for unsignalized intersections are lower than for signalized intersections as drivers expect less delay at unsignalized intersections.

Table 3.9-2: Unsignalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay (Seconds Per Vehicle)
A	Little or no delays	≤ 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0

F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2000

Existing Traffic Operations and Levels of Service

The existing peak hour turning movement volumes can be seen in Figure 3.9-2: Existing Peak Hour Intersection Volumes, and the lane configuration and control for each intersection is shown in Figure 3.9-3: Existing Lane Configurations and Traffic Control. The fourteen study intersections were evaluated for the weekday AM and PM peak hours according to the procedures described and reflect the worst 15 minute scenario during each of these peak periods Table 3.9-3: Existing Peak Hour Intersection Levels of Service provides a summary of the level of service results. Currently, all fourteen intersections operate acceptably during both peak hours.

Table 3.9-3: Existing Peak Hour Intersection Levels of Service

Intersection		Control	Peak Hour	Delay (in seconds)[1,2]	LOS[1,2]
1	Amador Valley Boulevard / San Ramon Road	Signal	AM	32	C
			PM	26	C
2	Amador Valley Boulevard / Regional Street	Signal	AM	8	A
			PM	15	B
3	Amador Valley Boulevard / Starward Drive	Signal	AM	6	A
			PM	7	A
4	Amador Valley Boulevard / Donohue Drive	Signal	AM	13	B
			PM	14	B
5	Amador Valley Boulevard / Amador Plaza Road	Signal	AM	12	B
			PM	18	B
6	Amador Valley Boulevard / Village Parkway	Signal	AM	50	D
			PM	43	D
7	Dublin Boulevard / San Ramon Road	Signal	AM	39	D
			PM	36	D
8	Dublin Boulevard / Regional Street	Signal	AM	21	C
			PM	43	D
9	Dublin Boulevard / Golden Gate Drive	Signal	AM	10	B
			PM	27	C
10	Dublin Boulevard / Amador Plaza Road	Signal	AM	35	D
			PM	41	D
11	Dublin Boulevard / Village Parkway	Signal	AM	37	D
			PM	34	C
12	Saint Patrick Way / Golden Gate Drive	AWSC	AM	8	A
			PM	7	A
13	Saint Patrick Way / Amador Plaza Road / I-680 SB Ramps	Signal	AM	19	B
			PM	24	C
14	I-680 NB On-Ramp / Village Parkway	SSSC	AM	1 (5)	A (A)
			PM	1 (4)	A (A)

Notes:
1. Signalized intersection and all-way stop intersection level of service based on weighted average control delay per vehicle, according to the *2000 Highway Capacity Manual*.
2. Side-street stop intersection level of service based on weighted average control delay per vehicle and worst approach control delay per vehicle, according to the *2000 Highway Capacity Manual* in the notation: average (worst approach).

Source: Fehr & Peers 2010

Traffic Impact Fee Program

The Downtown Dublin Traffic Impact Fee (TIF) was established in 2004 after completion of three Specific Plans (Village Parkway, Downtown Dublin Core, and West Dublin BART Specific Plans) in the Downtown area. It encompasses the entire study area for this project. The TIF evaluated traffic impacts associated with potential future development based on the City's General Plan and the Downtown Specific Plans. As a result, roadway improvement projects were identified throughout downtown Dublin to mitigate traffic impacts.

To fund these improvements, a TIF rate was calculated by dividing the estimated number of trips associated with the potential development in the study area into the unfunded cost of the proposed improvements. The 2004 adopted cost per daily trip for non-residential development added was $136; for residential development, the cost per unit added varied from $816 to $1,360 per unit based on the density of the development. Automatic annual adjustments are applied each year and the current fees are somewhat higher.

The improvements identified that are part of the study area include:

- Extension of Saint Patrick Way to Regional Street
- Widening of Golden Gate Drive
- Dublin Boulevard/Golden Gate Drive intersection improvements
- Dublin Boulevard/Amador Plaza Road intersection improvements
- Dublin Boulevard/San Ramon Road intersection improvements
- Dublin Boulevard/Dougherty Road intersection improvements

The above improvements are identified and funded by the TIF program; however the City anticipates updating the TIF program in the near future to ensure that the program is consistent with the goals of the Downtown Dublin Specific Plan and previously-adopted mitigation measures for other projects. Therefore, the improvements are not identified as planned improvements pending this revision. The revision is anticipated to commence once the Specific Plan has been adopted.

Bicycle and Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. Sidewalks are provided on all of the existing roadways in the study area. All study intersections provide some striped crosswalks, although crossings are not provided at a few locations for safety reasons. There are no marked crossings across Village Parkway at the unsignalized I-680 northbound on-ramp; however, there should be no need to cross here. Pedestrian signal heads are provided at the signalized intersections where crosswalks are provided.

A shared pedestrian and bicycle pathway is also provided in the study area. The pathway is a pedestrian/bicycle path that provides off-street thoroughfare through the area. The path

is located to the west of San Ramon Road and runs from Westside Drive/Alcosta Boulevard to Dublin Boulevard in the south.

Bicycle facilities include the following:

- Class I Paths – These facilities are located off-street and can serve both bicyclists and pedestrians. Recreational trails can be considered Class I facilities. Class I paths are completely separate from the roadway and are typically 8 to 10 feet wide excluding shoulders and are generally paved.
- Class II Bicycle Lanes – These facilities provide a dedicated area for bicyclists within the paved street width through the use of striping and appropriate signage. These facilities are typically four to six feet wide.
- Class III Bicycle Routes – These facilities are found along streets that do not provide sufficient width for dedicated bicycle lanes. The street is then designated as a bicycle route through the use of signage informing drivers to share the roadway with bicyclists. Class III facilities may also provide the shared lane marking (sharrow) to identify the bicycling path for bicyclists and to inform motorists to share the roadway.

Within the project area, a Class I bicycle/pedestrian path is provided on the west side of San Ramon Road, as described above. A Class II bicycle lane is provided in both directions on Amador Valley Boulevard and San Ramon Road. Class III bike routes are provided along Village Parkway. A more complete map of the existing bicycle facilities near the study area is illustrated on Figure 3.9-4: Existing Bicycle Facilities.

Transit Service

Transit service providers in the project vicinity include Bay Area Rapid Transit District (BART), which provides regional rail service, and the Livermore Amador Valley Transit Authority (LAVTA) which provides local and regional bus service. Figure 3.9-5: Existing Transit Routes shows the existing transit services provided near the project site. Each service is described below.

Bay Area Rapid Transit District (BART)

BART provides regional transit service to Alameda, San Francisco, Contra Costa, and San Mateo Counties. Weekday service is provided from 4:00 a.m. to 1:00 a.m., while Saturday and Sunday service is provided from 6:00 a.m. to 1:00 a.m., and 8:00 a.m. to 1:00 a.m., respectively. Trains have a typical headway of 15 minutes on weekdays and Sundays, and 20 minutes on Saturdays. The East Dublin/Pleasanton BART Station is located approximately one and one half miles east of the Project site. Another BART Station, the West Dublin/Pleasanton station and a 711-space parking garage for BART patrons, is located in the Specific Plan Area and is currently under construction and projected to open sometime in 2011. The BART project also includes approval of a Stage 1 Development Plan which will allow for up to 150 hotel rooms and 7,500 square feet of commercial development adjacent to the BART station (see Table 2-1). Additionally, a total of 617

residential dwellings and a 150,000 square foot office building have been approved in close proximity to the new station. Table 3.9-4: Projected BART Ridership – West Dublin/Pleasanton Station shows the projected ridership for the new West Dublin/Pleasanton station, based on system-wide forecasting performed by Fehr & Peers for BART. The Station is projected to serve approximately 700 boardings and 700 alightings in each of the peak hours, and about 6,000 boardings/6,000 alightings on a daily basis.

Table 3.9-4: Projected BART Ridership – West Dublin/Pleasanton Station

Access Mode	AM Peak Hour		PM Peak Hour		Daily	
	Board	Alight	Board	Alight	Board	Alight
Walk/Bike	40	625	509	156	3175	3262
Transit	158	65	87	148	1043	1068
Drive/Park	395	15	32	326	1324	1057
Drive/Drop off	100	8	20	103	530	515
Total	693	713	648	733	6072	5902

Source: BART Direct Ridership Model and Fehr & Peers 2009

Livermore Amador Valley Transit Authority (LAVTA)

LAVTA provides transit service for the Tri-Valley communities of Dublin, Livermore and Pleasanton via Wheels, which provides both local and regional bus service. Wheels provides Transbay service to destinations in San Francisco via connections to BART. Three Wheels' bus routes operate near the project site. The characteristics of the routes operating in the project area are summarized in Table 3.9-5: LAVTA Service Summary.

Local adult fares, as of March 2009, are $2.00, and youth and senior fares are $1.00. A transfer to and from other Wheels routes is free, as are transfers from the Altamont Commuter Express (ACE) and Contra Costa County's County Connection service. Transfers from BART are $1.00. Ten-ride and monthly passes are also available for Wheels. Fares are paid on the bus, and passengers must have exact change. Ridership estimates from March 2010 for routes operating in the project area are summarized in Table 3.9-6: March 2010 LAVTA Route Ridership.

Table 3.9-5: LAVTA Service Summary

Line	Route	Nearest Stop	Weekday		Weekend	
			Hours	Head-way	Hours	Head-way
3	BART / Dougherty / Johnson Drive / West Dublin / Stoneridge Mall	Several on Amador Valley Boulevard and Regional Street	5:00 AM – 9:00 AM; 3:00 PM – 8:30 PM	30 minutes – 1 hour	7:45 AM – 11:15 AM; 2:30 PM – 8:00 PM (Saturday only)	1 hour
3V	BART / Dougherty / Johnson Drive / West Dublin / Stoneridge Mall – Limited Service	Village Parkway / Amador Valley Boulevard	Once in morning, once in afternoon, once in evening		n/a	n/a
10	Dublin / Pleasanton / Livermore	Several on Dublin Boulevard	5:00 AM – 2:00 AM	15 – 40 minutes	6:00 AM – 1:00 AM	20 minutes – 1 hour
70X	Pleasant Hill BART to Dublin/Pleasanton BART	Dublin Boulevard east of Village Parkway	5:30 – 10:00 AM; 3:30 – 7:00 PM	30 minutes	n/a	n/a
201	East Dublin to Dublin High School	Village Parkway / Amador Valley Boulevard	Once in morning, once in afternoon		n/a	n/a
202	Dublin Ranch Village / Dublin High School	Village Parkway / Amador Valley Boulevard	Once in morning, once in afternoon		n/a	n/a

Source: Livermore Amador Valley Transit Authority, March 2010

Table 3.9-6: March 2010 LAVTA Route Ridership

Route	Weekday Average Ridership	Saturday Average Ridership
3	130	37
10	2726	1956
70	155	-
201	76	-
202	30	-

Source: LAVTA, April 2010

Relevant Project Characteristics

This section presents the relevant project details pertaining to the transportation impact analysis, and describes the analysis scenarios and analysis methods.

The traffic analysis includes the following scenarios :

- *Existing Conditions*
- *Near-Term Conditions Without the Project*, which assumes all entitled development, including that which is in the Plan area, in addition to existing traffic volumes.

- *Near-Term Plus Base FAR[19] Project*, which assumes all entitled development in addition to existing traffic volumes, plus a level of Plan development that would result in minor roadway and infrastructure improvements, such as signal timing adjustments or re-striping of lanes.
- *Near-Term Conditions Plus Maximum FAR Project*, which assumes all entitled development in addition to existing traffic volumes, along with the entire allotment of development allowed by the plan, including the "development density pool," which is the proposed project.
- *Cumulative Conditions Without the Project*, which starts with the Near-Term Without Project case, adds regional background growth as determined from the Contra Costa Transportation Authority (CCTA) Countywide Travel Demand model, and also adds the additional net new development (after accounting for the entitled projects) that is allowed by the five current specific plans that make up the Project area.
- *Cumulative Conditions Plus Base FAR Project*, which starts with the Near-Term Without Project case, adds regional background growth as determined from the Contra Costa Transportation Authority (CCTA) Countywide Travel Demand model, and also adds the additional net new development (after accounting for the entitled projects) that is allowed by the Base FAR Project.
- *Cumulative Conditions Plus Max FAR Project*, which starts with the Near-Term Without Project case, adds regional background growth as determined from the Contra Costa Transportation Authority (CCTA) Countywide Travel Demand model, and also adds the additional net new development (after accounting for the entitled projects) that is allowed by the Max FAR Project.

The process for developing each of these scenarios is further explained below. The LOS results for each scenario are provided another section.

Because there are several entitled but not yet constructed projects in and around Dublin, projected traffic volumes from these projects were added to the existing volumes to form a Near-Term scenario for the Plan analysis. Entitled projects within Dublin, San Ramon, and Pleasanton were included if they were expected to add traffic through the Plan area. Entitled projects within and outside of the Plan area are shown in Table 3.9-7: Entitled Projects Near the Specific Plan Area. Bold-face projects are located within the Plan area.

[19] FAR = Floor Area Ratio. Base FAR for the purposes of the traffic analysis is the difference between the proposed project Base FAR and already entitled projects.

Table 3.9-7: Entitled Projects Near the Specific Plan Area

City	Project	Location	Development
Dublin	Schaefer Ranch	Western terminus of Dublin Boulevard	582 dwelling units
	Windstar Condos	**South of Dublin Boulevard; west of Golden Gate Drive**	**309 dwelling units**
	AMB Site	**South of Dublin Boulevard; east of Regional Street**	**308 dwelling units; 150,000 square feet office space**
	Tralee Development	Eastern Dublin along Dublin Boulevard	233 dwelling units; 33,500 square feet retail space
	Arroyo Vista	Eastern Dublin along Dublin Boulevard	Residential; traffic volume information provided
	Hotel Site (adjacent to the West Dublin/Pleasanton BART Station)	**Southern terminus of Golden Gate Drive**	**150 hotel rooms; 7,500 square feet retail space**
	BART Station Parking Garage	**Southern terminus of Golden Gate Drive**	**711-space parking garage**
	Custom Fireplace, Patio, & BBQ	**Amador Plaza Road north of Dublin Boulevard**	**Additional 10,900 square feet retail space**
	Big Lots	**Northwest corner of Amador Valley Boulevard and San Ramon Road**	**Additional 4,185 square feet retail space**
Pleasanton	Senior Citizen Housing	Along Foothill Boulevard	132 dwelling units
	Multi-family Homes	Along Foothill Boulevard	350 dwelling units
San Ramon	Senior Citizen Housing	Along San Ramon Road	105 dwelling units

Notes: **Bold** projects are part of the proposed Plan area.

Source: City of Dublin, January 2010.

Trip generation estimates for the entitled projects during both AM and PM peak hours were estimated using the trip generation equations and rates presented in Institute of Transportation Engineers' (ITE) *Trip Generation, 8th Edition.* Project trip generation was adjusted to account for pass-by trips and transit use, to more accurately reflect the number of new vehicle trips expected to be added to the roadway network.

Pass-by trips are those that occur when a driver on an adjacent roadway to a particular use decides to stop on their way to their final destination (e.g., to purchase an item on their way home from work). These trips are not considered as new trips on the roadway network. Transit trip reductions are taken to reflect the higher-than-average transit mode share that is expected for development with good access to transit.

The following pass-by trip and transit trip reductions were taken:

Residential uses: 25% transit trip reduction

Retail Uses: 25% pass-by reduction

Office: 15% transit trip reduction

The approved project trips were distributed to the study area intersections using a TRAFFIX traffic assignment model with distribution percentages derived from the Contra Costa Transportation Authority (CCTA) Travel Demand Model. The trip generation calculations for the entitled projects are included in the technical appendix. The resulting peak hour turning movements generated by these projects are shown in Figure 3.9-6: Approved Project Peak Hour Intersection Volumes, and Figure 3.9-7: Near-Term Peak Hour Intersection Volumes shows the total near-term peak hour intersection volumes.

Base FAR Project and Maximum FAR Project

Trip generation estimates for the proposed project during both AM and PM peak hours were estimated using the trip generation equations and rates presented in Institute of Transportation Engineers' (ITE) *Trip Generation, 8th Edition.* Project trip generation was adjusted to account for pass-by trips and transit use, to more accurately reflect the number of new vehicle trips expected to be added to the roadway network.

Pass-by trips are those that occur when a driver on an adjacent roadway to a particular use decides to stop on their way to their final destination (e.g., to purchase an item on their way home from work). These trips are not considered as new trips on the roadway network.

Because the project site is adjacent to the under-construction West Dublin/Pleasanton BART Station, which also will also serve as a hub for several bus routes, it is reasonable to expect transit use by employees and patrons that is somewhat higher than the average ITE rate for these types of development.

Given the proximity to BART and bus route coverage available to the Downtown Dublin Specific Plan area, the proposed mix of uses, and the proximity to freeways and arterials from which pass-by trips can be drawn, the following pass-by trip and transit trip reductions were taken:

- Residential uses: 25% transit trip reduction
- Retail Uses: 15% transit trip reduction and 25% pass-by reduction

Because the total development potential in the Downtown Dublin Specific Plan is higher than can be reasonably expected within the Near-Term and Cumulative horizons, an assessment was conducted to determine how much development would likely be constructed in the near term. The analysis determined that 867,320 square feet of non-residential development, 799 dwelling units, and 150 hotel rooms could be added and the

existing roadway network would operate acceptably without major infrastructure improvements. This amount of development defines the *Base FAR Project* for the purposes of this traffic analysis.

It is important to note that the Base FAR Project described above includes the entitled project development within the Specific Plan boundary. Thus, the net new development after accounting for the entitled projects, (see Table 3.9-7, bold projects) is 182 new residential units and 709,500 square feet of commercial space.

Table 3.9-8: Downtown Dublin Specific Plan Trip Generation – Base FAR Project provides the trip generation estimates for each of the three districts for the Base FAR Project. Table 3.9-9: Downtown Dublin Specific Plan Trip Generation – Maximum FAR Project gives the trip generation for the full Downtown Dublin Specific Plan development potential (the *Maximum FAR Project*). Detailed trip generation calculations for both cases are provided in Appendix D.

As these tables show, the Base FAR Project generates about 580 net new AM peak hour trips and 1,900 net new PM peak hour trips. The Maximum FAR Project generates much higher trips, at 2,100 and 7,100 net new in the AM and PM peak hours, respectively. The difference is much greater in the PM peak hour because much of the additional development in the Maximum FAR project is commercial development, which has higher trip generation in the PM peak hour, relative to the AM peak hour.

Need to insert new information in a text or table format that provides a description of Base FAR and Maximum FAR that shows consistency with Chapter 2 definitions.

Table 3.7-8: Downtown Dublin Specific Plan Trip Generation – Base FAR Project

District	Development	AM Peak Hour Trips (Net)			PM Peak Hour Trips (Net)		
		Inbound	Outbound	Total	Inbound	Outbound	Total
Retail	368,680 square feet of commercial (retail) space; 100 dwelling units (total and net)	183	154	337	537	562	1,099
Transit-Oriented	477,910 square feet of commercial (office) space (320,410 net after entitled projects subtracted); 150 hotel rooms (0 net); 699 dwelling units (82 net)	125	103	228	372	387	759
Village Parkway	20,730 square feet of commercial (retail) space (total and net)	10	6	16	28	31	59
Total	867,320 square feet of commercial space (709,820 net); 799 dwelling units (182 net); 150 hotel rooms (0 net)	**318**	**263**	**581**	**937**	**980**	**1,917**

Note: The total development numbers include already-entitled projects within the Plan area; the net numbers represent the net additional development allowed under the Base FAR case. The trip generation shown is for the net new development.
Source: Fehr & Peers, April 2010

Table 3.7-9: Downtown Dublin Specific Plan Trip Generation – Maximum FAR Project

District	Development	AM Peak Hour Trips (Net)			PM Peak Hour Trips (Net)		
		Inbound	Outbound	Total	Inbound	Outbound	Total
Retail	737,100 square feet of commercial (retail) space; 100 dwelling units (total and net)	358	263	621	1,035	1,102	2,137
Transit-Oriented	2,202,710 square feet of commercial (office) space (2,045,210 net); 150 hotel rooms (0 net); 1,100 dwelling units (483 net)	806	637	1,443	2,352	2,468	4,820
Village Parkway	20,730 square feet of commercial (retail) space; 100 dwelling units (total and net)	20	47	67	68	53	121
Total	2,960,540 square feet of commercial space (2,803,040 net); 1,300 dwelling units (683 net); 150 hotel rooms (0 net)	**1,184**	**947**	**2,131**	**3,455**	**3,623**	**7,078**

Note: The total development numbers include already-entitled projects within the Plan area; the net numbers represent the net additional development allowed under the Maximum FAR case. The trip generation shown is for the net new development.
Source: Fehr & Peers, April 2010.

Project Trip Distribution

Trip distribution is defined as the directions of approach and departure that vehicles would use to arrive at and depart from the site. Project trip distribution was primarily based on the results of the Contra Costa Transportation Authority (CCTA)'s Countywide Travel Demand model. Since the model is a regional model and does not accurately forecast local traffic patterns, the trip distribution was further refined based on existing traffic patterns in the area, local roadway characteristics, and location of complementary land uses. Project-generated trips were assigned to the surrounding transportation network based on the percentages shown in Figures 3.9-8a: Commercial Project Trip Distribution and Figure 3.9-8b: Residential Trip Distribution.

Near-Term Plus Project (Base FAR)

Figure 3.9-9: Project (Base FAR) Peak Hour Intersection Volumes shows the turning movement volumes at each of the study intersections for net new project-generated trips beyond already entitled projects for this scenario. The Near-Term plus Base FAR Project scenario adds the existing traffic volumes, projected trips from the entitled projects listed in Table 3.9-7: Entitled Projects Near the Specific Plan Area, and net new Plan-specific trips beyond already entitled projects as shown in Figure 3.9-9: Project (Base FAR) Peak Hour Intersection Volumes. The sum of these elements is shown in Figure 3.9-10: Near-term Plus Project (Base FAR) Peak Hour Intersection Volumes. The results from this analysis

were used to determine impacts to the roadway network and develop mitigation measures.

Near-Term Plus Project (Maximum FAR)

The Near-Term Plus Maximum FAR Project scenario adds the existing traffic volumes, projected trips from the entitled projects listed in Table 3.9-7: Entitled Projects Near the Specific Plan Area, and net new Plan-specific trips beyond already entitled projects as shown in Figure 3.9-11: Project (Max FAR) Peak Hour Intersection Volumes. The sum of these elements is shown in Figure 3.9-12: Near-term Plus Project (Max FAR) Peak Hour Intersection Volumes. The results from this analysis were used to determine impacts to the roadway network and develop mitigation measures.

Cumulative No Project Conditions

The Cumulative Conditions without Project scenario adds the existing traffic volumes, projected trips from the entitled projects listed in Table 3.9-7: Entitled Projects Near the Specific Plan Area, development permitted under the existing Specific Plans and background growth from the CCTA Countywide Travel Demand model, to form a baseline for the analysis. Development allowed by the five existing specific plans that apply to the greater downtown area was included, as these specific plans would still be in place if this proposed Specific Plan is not adopted. These specific plans allow for additional development of nearly 3.2 million square feet of retail and office development, 717 dwelling units, and 150 hotel rooms beyond existing development and already entitled projects. The sum of these elements is shown in Figure 3.9-13: Cumulative No Project (Current Specific Plans) Peak Hour Intersection Volumes. The Cumulative analysis scenario also includes a new study intersection, Regional Street and Saint Patrick Way. This intersection is introduced as a result of the extension of Saint Patrick Way past Golden Gate Drive; the extension is necessary to move vehicular traffic through the Transit-Oriented District when the new West Dublin/Pleasanton BART station and entitled projects are completed. It was analyzed as an all-way stop intersection, with improvements as required by the City for the Windstar development.

Cumulative Plus Project (Base FAR)

This scenario adds the existing traffic volumes, projected trips from the entitled projects listed in Table 3.9-7: Entitled Projects Near the Specific Plan Area, background growth from the CCTA Countywide Travel Demand model, and net new traffic generated by the Base FAR Project beyond already entitled projects. The projected turning movements for this case are shown in Figure 3.9-14: Cumulative Plus Project (Base FAR) Peak Hour Intersection Volumes.

Cumulative Plus Project (Maximum FAR)

This scenario adds the existing traffic volumes, projected trips from the entitled projects listed in Table 3.9-7: Entitled Projects Near the Specific Plan Area, background growth from the CCTA Countywide Travel Demand model, and net new traffic generated by the Maximum FAR Project beyond already entitled projects. The projected turning

movements for this case are shown in Figure 3.9-15: Cumulative Plus Project (Max FAR) Peak Hour Intersection Volumes.

Project Circulation Elements

The project will also necessitate some improvements to pedestrian and bicycle facilities. In order to induce more pedestrian travel along the Amador Valley Boulevard and Dublin Boulevard corridors and meet the intent of the Downtown Dublin Specific Plan, the Specific Plan will require project developers to improve pedestrian connectivity in the Specific Plan Area by requiring landscaping, streetscape enhancements and pedestrian connections to establishments.

Impacts and Mitigation Measures

Criteria for Determining Significance

In accordance with the California Environmental Quality Act (CEQA), *State CEQA Guidelines,* agency and professional standards, a project impact would be considered significant if the project would:

- Result in a traffic increase that is substantial in relation to the existing traffic load and capacity of the street system, which is defined as causing an existing acceptable intersection or roadway level of service to drop to unacceptable levels (as defined by a City's General Plan).
- Cause a Congestion Management Plan (CMP) or Metropolitan Transportation System (MTS) network segment to fall from acceptable (LOS E, roadway segment volume-to-capacity ratio of 0.99 or less) in the No Project case to unacceptable (LOS F, v/c of 1.00 or more); or, if a segment is already operating at LOS F in the No Project case, the v/c ratio increases by more than 0.02 (for example, from 1.03 to 1.06).
- Conflict with adopted policies, plans, programs that support supporting alternative transportation (for example, bus turnouts, bicycle racks).
- Increase the demand for public transit service above that which local transit operators or agencies could accommodate.
- Conflict with adopted policies, plans or programs supporting alternative transportation.
- Disrupts existing transit service or does not provide amenities necessary to accommodate transit demand.

The proposed Project includes an amendment to the City's General Plan related to acceptable Levels of Service within the City. As proposed, this General Plan amendment will require a Level of Service of D or better for all intersections except for intersections within the Downtown Specific Plan Area, including the intersections of Dublin Blvd./San Ramon Road and Village Parkway/Interstate 680 on-ramp, which are exempted from the standard in the Draft General Plan Amendment:

As shown in the following Traffic Analysis Results section, no intersections will operate unacceptably, in accordance with the amended General Plan, as a result of the Project.

Intersection Traffic Analysis Results

Table 3.9-10: Near-Term Intersection Levels of Service – Base FAR Project provides the LOS results for the Near-Term No Project and Near-Term Plus Base FAR Project scenarios.

Table 3.9-11: Near-Term Intersection Levels of Service – Maximum FAR Project provides LOS results for the summary for the Near-Term No Project and Near-Term Plus Maximum FAR Project scenarios.

Table 3.9-12: Cumulative Peak Hour Intersection Levels of Service – Base FAR Project provides the LOS results for the Cumulative No Project and Cumulative Plus Base FAR Project scenarios.

Table 3.9-13: Cumulative Peak Hour Intersection Levels of Service – Maximum FAR Project provides the LOS results for the Cumulative No Project and Cumulative Plus Maximum FAR Project scenarios.

Table 3.9-10: Near-Term Intersection Levels of Service – Base FAR Project

Intersection		Control	LOS Standard	Peak Hour	Existing Conditions		Near-Term No Project		Near-Term With Base FAR Project	
					Delay (in seconds)[1,2]	LOS[1,2]	Delay (in seconds)[1,2]	LOS[1,2]	Delay (in seconds)[1,2]	LOS[1,2]
1	Amador Valley Boulevard / San Ramon Road	Signal	Exempt	AM	32	C	36	D	38	D
				PM	26	C	28	C	30	C
2	Amador Valley Boulevard / Regional Street	Signal	Exempt	AM	8	A	8	A	9	A
				PM	15	B	17	B	18	B
3	Amador Valley Boulevard / Starward Drive	Signal	Exempt	AM	6	A	6	A	6	A
				PM	7	A	7	A	7	A
4	Amador Valley Boulevard / Donohue Drive	Signal	Exempt	AM	13	B	13	B	13	B
				PM	14	B	14	B	14	B
5	Amador Valley Boulevard / Amador Plaza Road	Signal	Exempt	AM	12	B	13	B	14	B
				PM	18	B	19	B	22	C
6	Amador Valley Boulevard / Village Parkway	Signal	Exempt	AM	50	D	53	D	54	D
				PM	43	D	48	D	54	D
7	Dublin Boulevard / San Ramon Road	Signal	Exempt	AM	39	D	43	D	47	D
				PM	36	D	57	E	91	F
8	Dublin Boulevard / Regional Street	Signal	Exempt	AM	21	C	47	D	48	D
				PM	43	D	61	E	71	F
9	Dublin Boulevard / Golden Gate Drive	Signal	Exempt	AM	10	B	22	C	25	C
				PM	27	C	43	D	65	E
10	Dublin Boulevard / Amador Plaza Road	Signal	Exempt	AM	35	D	38	D	45	D
				PM	41	D	50	D	98	F
11	Dublin Boulevard / Village Parkway	Signal	Exempt	AM	37	D	36	D	36	D
				PM	34	C	36	D	43	D
12	Saint Patrick Way / Golden Gate Drive	AWSC	Exempt	AM	8	A	18	C	20	C
				PM	7	A	18	C	24	C
13	Saint Patrick Way / Amador Plaza Road / I-680 SB Ramps	Signal	Exempt	AM	19	B	27	C	30	C
				PM	24	C	37	D	65	E
14	I-680 NB Ramps / Village Parkway	SSSC	Exempt	AM	1 (5)	A (A)	1 (5)	A (A)	1 (5)	A (A)
				PM	1 (4)	A (A)	1 (4)	A (A)	1 (4)	A (A)

1. 2. Notes: Signalized intersection and all-way stop intersection level of service based on weighted average control delay per vehicle, according to the *2000 Highway Capacity Manual*.
3. Side-street stop intersection level of service based on weighted average control delay per vehicle and worst approach control delay per vehicle, according to the *2000 Highway Capacity Manual* in the notation: average (worst approach).

Source: Fehr & Peers 2010

Table 3.9-11: Near-Term Intersection Levels of Service – Maximum FAR Project

Intersection		Control	LOS Standard	Peak Hour	Existing Conditions		Near-Term No Project		Near-Term With Maximum FAR Project	
					Delay (in seconds)[1, 2]	LOS[1,2]	Delay (in seconds)[1,2]	LOS[1,2]	Delay (in seconds)[1,2]	LOS[1,2]
1	Amador Valley Boulevard / San Ramon Road	Signal	Exempt	AM	32	C	36	D	46	D
				PM	26	C	28	C	37	D
2	Amador Valley Boulevard / Regional Street	Signal	D	AM	8	A	8	A	10	A
				PM	15	B	17	B	25	C
3	Amador Valley Boulevard / Starward Drive	Signal	D	AM	6	A	6	A	6	A
				PM	7	A	7	A	6	A
4	Amador Valley Boulevard / Donohue Drive	Signal	D	AM	13	B	13	B	13	B
				PM	14	B	14	B	15	B
5	Amador Valley Boulevard / Amador Plaza Road	Signal	D	AM	12	B	13	B	16	B
				PM	18	B	19	B	29	C
6	Amador Valley Boulevard / Village Parkway	Signal	Exempt	AM	50	D	53	D	60	E
				PM	43	D	48	D	87	F
7	Dublin Boulevard / San Ramon Road	Signal	Exempt	AM	39	D	43	D	73	E
				PM	36	D	57	E	>120	F
8	Dublin Boulevard / Regional Street	Signal	Exempt	AM	21	C	47	D	62	E
				PM	43	D	61	E	>120	F
9	Dublin Boulevard / Golden Gate Drive	Signal	Exempt	AM	10	B	22	C	35	C
				PM	27	C	43	D	>120	F
10	Dublin Boulevard / Amador Plaza Road	Signal	Exempt	AM	35	D	38	D	94	F
				PM	41	D	50	D	>120	F
11	Dublin Boulevard / Village Parkway	Signal	Exempt	AM	37	D	36	D	39	D
				PM	34	C	36	D	119	F
12	Saint Patrick Way / Golden Gate Drive	AWSC	Exempt	AM	8	A	18	C	48	E
				PM	7	A	18	C	>120	F
13	Saint Patrick Way / Amador Plaza Road / I-680 SB Ramps	Signal	Exempt	AM	19	B	27	C	73	E
				PM	24	C	37	D	>120	F
14	I-680 NB Ramps / Village Parkway	SSSC	D	AM	1 (5)	A (A)	1 (5)	A (A)	1 (5)	A (A)
				PM	1 (4)	A (A)	1 (4)	A (A)	1 (4)	A (A)

1. 2. Notes: Signalized intersection and all-way stop intersection level of service based on weighted average control delay per vehicle, according to the *2000 Highway Capacity Manual*.
3. Side-street stop intersection level of service based on weighted average control delay per vehicle and worst approach control delay per vehicle, according to the *2000 Highway Capacity Manual* in the notation: average (worst approach).

Source: Fehr & Peers 2010

Table 3.9-12: Cumulative Peak Hour Intersection Levels of Service – Base FAR Project

Intersection		Control	LOS Standard	Peak Hour	Existing Conditions		Cumulative No Project		Cumulative With Project	
					Delay (in seconds)[1,2]	LOS[1,2]	Delay (in seconds)[1,2]	LOS[1,2]	Delay (in seconds)[1,2]	LOS[1,2]
1	Amador Valley Boulevard / San Ramon Road	Signal	Exempt	AM	32	C	76	E	65	E
				PM	26	C	55	E	37	D
2	Amador Valley Boulevard / Regional Street	Signal	D	AM	8	A	13	B	12	B
				PM	15	B	34	C	27	C
3	Amador Valley Boulevard / Starward Drive	Signal	D	AM	6	A	8	A	8	A
				PM	7	A	7	A	8	A
4	Amador Valley Boulevard / Donohue Drive	Signal	D	AM	13	B	17	B	17	B
				PM	14	B	20	B	18	B
5	Amador Valley Boulevard / Amador Plaza Road	Signal	D	AM	12	B	18	B	16	B
				PM	18	B	49	D	32	C
6	Amador Valley Boulevard / Village Parkway	Signal	Exempt	AM	50	D	82	F	72	E
				PM	43	D	>120	F	85	F
7	Dublin Boulevard / San Ramon Road	Signal	Exempt	AM	39	D	81	F	54	D
				PM	36	D	>120	F	>120	F
8	Dublin Boulevard / Regional Street	Signal	Exempt	AM	21	C	55	D	51	D
				PM	43	D	>120	F	82	F
9	Dublin Boulevard / Golden Gate Drive	Signal	Exempt	AM	10	B	35	C	23	C
				PM	27	C	>120	F	57	E
10	Dublin Boulevard / Amador Plaza Road	Signal	Exempt	AM	35	D	92	F	46	D
				PM	41	D	>120	F	>120	F
11	Dublin Boulevard / Village Parkway	Signal	Exempt	AM	37	D	51	D	50	D
				PM	34	C	>120	F	72	E
12	Saint Patrick Way / Golden Gate Drive	AWSC	Exempt	AM	8	A	22	C	15	B
				PM	7	A	60	F	15	B
13	Saint Patrick Way / Amador Plaza Road / I-680 SB Ramps	Signal	Exempt	AM	19	B	99	F	34	C
				PM	24	C	>120	F	109	F
14	I-680 NB Ramps / Village Parkway	SSSC	D	AM	1 (5)	A (A)	1 (6)	A (A)	1 (5)	A (A)
				PM	1 (4)	A (A)	1 (4)	A (A)	1 (4)	A (A)
15	Saint Patrick Way / Regional Street	AWSC	D	AM	n/a	n/a	8	A	8	A
				PM	n/a	n/a	8	A	9	A

1.

2. Notes: Signalized intersection and all-way stop intersection level of service based on weighted average control delay per vehicle, according to the *2000 Highway Capacity Manual*.
3. Side-street stop intersection level of service based on weighted average control delay per vehicle and worst approach control delay per vehicle, according to the *2000 Highway Capacity Manual* in the notation: average (worst approach).

Source: Fehr & Peers 2010

Table 3.9-13: Cumulative Peak Hour Intersection Levels of Service – Maximum FAR Project

Intersection		Control	LOS Standard	Peak Hour	Existing Conditions		Cumulative No Project		Cumulative With Project	
					Delay (in seconds)[1,2]	LOS[1,2]	Delay (in seconds)[1,2]	LOS[1,2]	Delay (in seconds)[1,2]	LOS[1,2]
1	Amador Valley Boulevard / San Ramon Road	Signal	Exempt	AM	32	C	76	E	77	E
				PM	26	C	55	E	54	D
2	Amador Valley Boulevard / Regional Street	Signal	D	AM	8	A	13	B	13	B
				PM	15	B	34	C	35	C
3	Amador Valley Boulevard / Starward Drive	Signal	D	AM	6	A	8	A	8	A
				PM	7	A	7	A	8	A
4	Amador Valley Boulevard / Donohue Drive	Signal	D	AM	13	B	17	B	17	B
				PM	14	B	20	B	19	B
5	Amador Valley Boulevard / Amador Plaza Road	Signal	D	AM	12	B	18	B	18	B
				PM	18	B	49	D	49	D
6	Amador Valley Boulevard / Village Parkway	Signal	Exempt	AM	50	D	82	F	81	F
				PM	43	D	>120	F	>120	F
7	Dublin Boulevard / San Ramon Road	Signal	Exempt	AM	39	D	81	F	85	F
				PM	36	D	>120	F	>120	F
8	Dublin Boulevard / Regional Street	Signal	Exempt	AM	21	C	55	D	65	E
				PM	43	D	>120	F	>120	F
9	Dublin Boulevard / Golden Gate Drive	Signal	Exempt	AM	10	B	35	C	36	D
				PM	27	C	>120	F	>120	F
10	Dublin Boulevard / Amador Plaza Road	Signal	Exempt	AM	35	D	92	F	91	F
				PM	41	D	>120	F	>120	F
11	Dublin Boulevard / Village Parkway	Signal	Exempt	AM	37	D	51	D	52	D
				PM	34	C	>120	F	>120	F
12	Saint Patrick Way / Golden Gate Drive	AWSC	Exempt	AM	8	A	22	C	25	C
				PM	7	A	60	F	75	F
13	Saint Patrick Way / Amador Plaza Road / I-680 SB Ramps	Signal	Exempt	AM	19	B	99	F	95	F
				PM	24	C	>120	F	>120	F
14	I-680 NB Ramps / Village Parkway	SSSC	D	AM	1 (5)	A (A)	1 (6)	A (A)	1 (6)	A (A)
				PM	1 (4)	A (A)	1 (4)	A (A)	1 (4)	A (A)
15	Saint Patrick Way / Regional Street	AWSC	D	AM	n/a	n/a	8	A	9	A
				PM	n/a	n/a	8	A	15	B

Notes:

1. Signalized intersection and all-way stop intersection level of service based on weighted average control delay per vehicle, according to the *2000 Highway Capacity Manual*.
2. Side-street stop intersection level of service based on weighted average control delay per vehicle and worst approach control delay per vehicle, according to the *2000 Highway Capacity Manual* in the notation: average (worst approach).

Source: Fehr & Peers 2010

CMA/MTS System Analysis Results

The Alameda County Congestion Management Agency (ACCMA) requires analysis of project impacts to Metropolitan Transportation System (MTS) roadways for development projects that would generate more than 100 PM peak hour trips. The ACCMA requires that the baseline forecasts be represented by the model run completed by the ACCMA for 2015 and 2035 conditions. To complete this analysis, the project traffic, generated and distributed outside of the model as described in the preceding section, was added directly to the ACCMA 2015 and 2035 peak hour model runs. It is noted that a review of the 2015 and 2035 ACCMA model land use files showed very little growth in the Plan area; thus, this approach gives a reasonably accurate assessment of the net new traffic added by the Plan on the MTS roadways.

The MTS system analysis differs from the intersection analysis in the following aspects:

- The regional and local land use data sets used for the intersection forecasts and the MTS forecasts are different, since the CCTA Countywide Model was used to develop intersection volumes and the ACCMA Countywide Model was used to develop the MTS system forecasts
- The MTS roadway analysis reports the outputs of the ACCMA model on a roadway segment level, as compared to the more detailed intersection turning movement level forecasts developed for the intersection analysis.

The MTS roadway system in the vicinity of the Project includes I-580, I-680, Dublin Boulevard, and San Ramon Road. The ACCMA Congestion Management Plan (CMP) requires this analysis only be done for the PM peak hour; however, Caltrans requires that it be done for the AM peak hour as well for all Caltrans' facilities. Tables 3.9-14: Near-Term PM Peak Hour MTS Arterial Level of Service and 3.9-15: Cumulative PM Peak Hour MTS Arterial Level of Service summarize the results of the analysis on various segments of the four MTS roadways for the Near-Term and Cumulative Conditions scenarios, respectively, during the PM peak hour. Tables 3.9-16: Near-Term AM Peak Hour MTS Arterial Level of Service and 3.9-17: Cumulative AM Peak Hour MTS Arterial Level of Service summarize the results of the analysis on Caltrans' facilities only for the Near-Term and Cumulative Conditions scenarios, respectively, during the AM peak hour.

Table 3.9-14: Near-Term PM Peak Hour MTS Arterial Level of Service

Location	Capacity	Year 2015 No Project PM Peak Hour			Year 2015 Plus Project (Base FAR) PM Peak Hour			Year 2015 Plus Project (Maximum FAR) PM Peak Hour		
		Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS
I-580										
West of San Ramon Road										
Eastbound	8,000	8,955	1.12	F	9,144	1.14	F	9,652	**1.21**	**F**
Westbound	10,000	5,667	0.57	A	5,866	0.59	A	6,402	0.64	B
Between San Ramon Road and I-680										
Eastbound	9,000	5,682	0.63	B	5,714	0.63	B	5,753	0.64	B
Westbound	9,000	8,334	0.93	E	8,469	0.94	E	8,821	0.98	E
East of I-680										
Eastbound	12,000	10,030	0.84	D	10,042	0.84	D	10,062	0.84	D
Westbound	9,000	5,403	0.60	B	5,416	0.60	B	5,435	0.60	B
I-680										
South of I-580										
Northbound	7,000	6,071	0.87	D	6,196	0.89	D	6,534	0.93	E
Southbound	7,000	5,329	0.76	C	5,461	0.78	C	5,818	0.83	D
North of I-580										
Northbound	8,000	7,031	0.88	D	7,105	0.89	D	7,305	0.91	E
Southbound	8,000	7,336	0.92	E	7,408	0.93	E	7,599	0.95	E
Dublin Boulevard										
West of San Ramon Road										
Eastbound	1,600	344	0.22	A	384	0.24	A	490	0.31	A
Westbound	1,600	627	0.39	A	669	0.42	A	782	0.49	A
Between San Ramon Road and Regional Street										
Eastbound	2,940	449	0.15	A	882	0.30	A	2,240	0.76	C
Westbound	2,940	403	0.14	A	791	0.27	A	1,911	0.65	B
Between Regional Street and Golden Gate Drive										
Eastbound	2,940	695	0.24	A	1,163	0.40	A	2,484	0.84	D
Westbound	2,940	514	0.17	A	870	0.30	A	1,908	0.65	B
Between Golden Gate Drive and Amador Plaza Road										
Eastbound	2,940	759	0.26	A	1,151	0.39	A	2,195	0.75	C
Westbound	2,940	439	0.15	A	740	0.25	A	1,552	0.53	A
Between Amador Plaza Road and Village Parkway										
Eastbound	2,940	889	0.30	A	1,206	0.41	A	2,150	0.73	C
Westbound	2,940	613	0.21	A	852	0.29	A	1,544	0.53	A

Location	Capacity	Year 2015 No Project PM Peak Hour			Year 2015 Plus Project (Base FAR) PM Peak Hour			Year 2015 Plus Project (Maximum FAR) PM Peak Hour		
		Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS
East of Village Parkway										
Eastbound	2,940	1,156	0.39	A	1,341	0.46	A	1,848	0.63	B
Westbound	2,940	2,500	0.85	D	2,677	0.91	E	3,161	**1.08**	**F**
San Ramon Road										
Between I-580 and Dublin Boulevard										
Northbound	3,920	3,011	0.77	C	3,380	0.86	D	4,363	**1.11**	**F**
Southbound	3,920	1,639	0.42	A	1,914	0.49	A	2,609	0.67	B
Between Dublin Boulevard and Amador Valley Boulevard										
Northbound	2,940	2,441	0.83	D	2,568	0.87	D	2,907	0.99	E
Southbound	2,940	1,397	0.48	A	1,477	0.50	A	1,772	0.60	B
North of Amador Valley Boulevard										
Northbound	1,960	1,912	0.98	E	2,051	**1.05**	**F**	2,425	**1.24**	**F**
Southbound	1,960	1,342	0.68	B	1,476	0.75	C	1,836	0.94	E

Note: Shaded cells indicate a significant impact (increase of more than 0.02 in the v/c ratio, relative to the No Project case).
Source: Fehr & Peers 2010

Table 3.9-15: Cumulative PM Peak Hour MTS Arterial Level of Service

Location	Capacity	Year 2035 No Project PM Peak Hour			Year 2035 Plus Project (Base FAR) PM Peak Hour			Year 2035 Plus Project (Maximum FAR) PM Peak Hour		
		Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS
I-580										
West of San Ramon Road										
Eastbound	8,000	10,932	1.37	F	10,595	1.32	F	11,103	1.39	F
Westbound	10,000	7,715	0.77	C	7,424	0.74	C	7,960	0.80	C
Between San Ramon Road and I-680										
Eastbound	9,000	6,862	0.76	C	6,856	0.76	C	6,895	0.77	C
Westbound	9,000	10,274	1.14	F	10,079	1.12	F	10,431	1.16	F
East of I-680										
Eastbound	12,000	11,472	0.96	E	11,466	0.96	E	11,486	0.96	E
Westbound	9,000	6,849	0.76	C	6,850	0.76	C	6,869	0.76	C
I-680										
South of I-580										
Northbound	7,000	7,992	1.14	F	7,791	1.11	F	8,129	1.16	F
Southbound	7,000	6,280	0.90	D	6,062	0.87	D	6,419	0.92	E
North of I-580										
Northbound	8,000	7,412	0.93	E	7,292	0.91	E	7,492	0.94	E
Southbound	8,000	8,071	1.01	F	7,961	1.00	E	8,152	1.02	F

Location	Capacity	Year 2035 No Project PM Peak Hour			Year 2035 Plus Project (Base FAR) PM Peak Hour			Year 2035 Plus Project (Maximum FAR) PM Peak Hour		
		Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS
Dublin Boulevard										
West of San Ramon Road										
Eastbound	1,600	514	0.32	A	451	0.28	A	557	0.35	A
Westbound	1,600	978	0.61	B	909	0.57	A	1,022	0.64	B
Between San Ramon Road and Regional Street										
Eastbound	2,940	2,252	0.77	C	1,441	0.49	A	2,799	0.95	E
Westbound	2,940	1,607	0.55	A	928	0.32	A	2,048	0.70	B
Between Regional Street and Golden Gate Drive										
Eastbound	2,940	2,794	0.95	E	1,996	0.68	B	3,317	**1.13**	**F**
Westbound	2,940	1,637	0.56	A	989	0.34	A	2,027	0.69	B
Between Golden Gate Drive and Amador Plaza Road										
Eastbound	2,940	2,648	0.90	E	1,995	0.68	B	3,039	**1.03**	**F**
Westbound	2,940	1,374	0.47	A	851	0.29	A	1,663	0.57	A
Between Amador Plaza Road and Village Parkway										
Eastbound	2,940	2,936	1.00	E	2,343	0.80	C	3,287	1.12	F
Westbound	2,940	1,492	0.51	A	1,064	0.36	A	1,756	0.60	A
East of Village Parkway										
Eastbound	2,940	3,212	1.09	F	2,898	0.99	E	3,405	**1.16**	**F**
Westbound	2,940	3,394	1.15	F	3,098	1.05	F	3,582	**1.22**	**F**
San Ramon Road										
Between I-580 and Dublin Boulevard										
Northbound	3,920	4,863	1.24	F	4,303	1.10	F	5,286	1.35	F
Southbound	3,920	2,540	0.65	B	2,139	0.55	A	2,834	0.72	C
Between Dublin Boulevard and Amador Valley Boulevard										
Northbound	2,940	3,065	1.04	F	2,858	0.97	E	3,197	**1.09**	**F**
Southbound	2,940	1,851	0.63	B	1,666	0.57	A	1,961	0.67	B
North of Amador Valley Boulevard										
Northbound	1,960	2,328	1.19	F	2,104	1.07	F	2,478	**1.26**	**F**
Southbound	1,960	2,151	1.10	F	1,944	0.99	E	2,304	**1.18**	**F**

Note: Shaded cells indicate a significant impact (increase of more than 0.02 in the v/c ratio, relative to the No Project case).
Source: Fehr & Peers 2010

Table 3.9-16: Near-Term AM Peak Hour MTS Arterial Level of Service

Location	Capacity	Year 2015 No Project AM Peak Hour			Year 2015 Plus Project (Base FAR) AM Peak Hour			Year 2015 Plus Project (Maximum FAR) AM Peak Hour		
		Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS
I-580										
West of San Ramon Road										
Eastbound	8,000	5,813	0.73	C	5,903	0.74	C	6,149	0.77	C
Westbound	10,000	9,952	1.00	E	10,025	1.00	E/F[1]	10,215	1.02	F
Between San Ramon Road and I-680										
Eastbound	9,000	8,095	0.90	D	8,106	0.90	E	8,118	0.90	E
Westbound	9,000	4,927	0.55	A	4,959	0.55	A	5,046	0.56	A
East of I-680										
Eastbound	12,000	5,756	0.48	A	5,764	0.48	A	5,775	0.48	A
Westbound	9,000	8,625	0.96	E	8,627	0.96	E	8,630	0.96	E
I-680										
South of I-580										
Northbound	7,000	6,012	0.86	D	6,043	0.86	D	6,128	0.88	D
Southbound	7,000	6,175	0.88	D	6,204	0.89	D	6,278	0.90	D
North of I-580										
Northbound	8,000	7,106	0.89	D	7,136	0.89	D	7,213	0.90	E
Southbound	8,000	7,050	0.88	D	7,086	0.89	D	7,183	0.90	D

1. LOS E/F due to rounded v/c ratio.

Note: Shaded cells indicate a significant impact (increase of more than 0.02 in the v/c ratio, relative to the No Project case).
Source: Fehr & Peers 2010

Table 3.9-17: Cumulative AM Peak Hour MTS Arterial Level of Service

Location	Capacity	Year 2035 No Project AM Peak Hour			Year 2035 Plus Project (Base FAR) AM Peak Hour			Year 2035 Plus Project (Maximum FAR) AM Peak Hour		
		Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS
I-580										
West of San Ramon Road										
Eastbound	8,000	7,765	0.97	E	7,617	0.95	E	7,863	0.98	E
Westbound	10,000	11,866	1.19	F	11,773	1.18	F	11,963	1.20	F
Between San Ramon Road and I-680										
Eastbound	9,000	9,362	1.04	F	9,365	1.04	F	9,377	1.04	F
Westbound	9,000	7,254	0.81	D	7,206	0.80	D	7,293	0.81	D
East of I-680										
Eastbound	12,000	7,674	0.64	B	7,676	0.64	B	7,687	0.64	B
Westbound	9,000	12,007	1.33	F	12,007	1.33	F	12,010	1.33	F
I-680										
South of I-580										
Northbound	7,000	6,299	0.90	D	6,250	0.89	D	6,335	0.91	E
Southbound	7,000	9,278	1.33	F	9,247	1.32	F	9,321	1.33	F
North of I-580										
Northbound	8,000	7,511	0.94	E	7,475	0.93	E	7,552	0.94	E
Southbound	8,000	7,347	0.92	E	7,289	0.91	E	7,386	0.92	E

Note: Shaded cells indicate a significant impact (increase of more than 0.02 in the v/c ratio, relative to the No Project case).
Source: Fehr & Peers 2010

Transit Demand Generated by the Downtown Specific Plan

Table 3.9-18: Project Transit Trip Summary provides a summary of the transit trips generated by the Plan; the results are taken from the trip generation calculations that can be seen in the Appendix. Transit trips generated by the different projects were estimated by calculating the number of trips expected with the ITE rates, then assuming 25% of trips for residential uses and 15% of trips for retail uses were made on some form of transit.

Table 3.9-18: Project Transit Trip Summary

All Transit Trip (Bus + BART)			
Case	**Daily**	**AM Peak Hour**	**PM Peak Hour**
Entitled Projects in Plan Area	2,160	180	220
No Project (Existing Specific Plans)	14,450	350	1,250
Base FAR Project	2,200	50	200
Max FAR Project	13,800	350	1,200

Source: Transit trip generation calculations by Fehr & Peers, assuming 25% transit use for residential uses and 15% transit use by retail uses. See technical appendix for detailed trip generation calculations.

Impacts and Mitigation Measures

Intersection Impacts

As shown in Tables 3.9-10 to 3.9-13, with the proposed amendment to the General Plan, the Project would result in no significant impacts to intersections.

Metropolitan Transportation System

Impact 3.9-1: In the Near-Term, the Base FAR Project results in sub-standard LOS on one Metropolitan Transportation System roadway segment, when compared to the Near-Term Without Project scenario. This is a significant impact:

- San Ramon Road northbound, north of Amador Valley Boulevard (PM peak hour). As shown on Table 3.9-14, the intersection would drop from LOS E under the No Project scenario to LOS F with the Project under the Base FAR and Maximum FAR scenarios.

It should be noted that the intersection of San Ramon Road/Amador Valley Boulevard is projected to operate acceptably with the Base FAR Project in the Near-Term scenario. This result, which appears inconsistent with the above impact finding for San Ramon Road, is due to the different analysis methods and models used to conduct the intersection and MTS system analyses.

Mitigation Measure:

MM 3.9-1: As required by the Alameda County Congestion Management Agency, the City of Dublin shall do the following to help reduce traffic congestion on the MTS system:

- Support Alameda County's projects and programs which are aimed at reducing traffic congestion.
- Encourage developers to voluntarily develop a Transportation Demand Management (TDM) Program to reduce trips associated with their project. Strategies that could be included in the program could include additional bicycle

parking, shower facilities, HOV parking, direct building access for pedestrians, commute alternative incentives and convenient transit waiting areas.

- Implement the policies outlined in the City's Bicycle Master Plan and General Plan Land Use and Circulation Element related to bikeways. Support public transit improvements, including but not limited to re-routing, schedule adjustments, new vehicles, upgraded waiting areas, and transit information signs, to encourage use of alternative modes.
- Collect fees from developers in the Specific Plan Area for the Tri-Valley Transportation Development Fee as well as the Downtown TIF programs prior to issuance of Building Permits, which fund local and regional transportation improvements.

Even with mitigation, the City's ability to restore acceptable LOS on the identified roadways/freeways cannot be assured because some projects are the County's, and some the City can encourage but not require (e.g. employer TDM programs). Therefore, this impact remains **significant and unavoidable** after mitigation.

Impact 3.9-2: In the Near-Term, the Maximum FAR Project results in sub-standard LOS on five Metropolitan Transportation System roadway segments, when compared to the Near-Term Without Project scenario. This is a significant impact:

- San Ramon Road northbound, north of Amador Valley Boulevard (PM peak hour)
- San Ramon Road northbound, between Dublin Boulevard and I-580 (PM peak hour)
- Dublin Boulevard westbound, east of Village Parkway (PM peak hour)
- I-580 eastbound, west of San Ramon Road (PM peak hour)
- I-580 westbound, west of San Ramon Road (AM peak hour)

It should be noted that the San Ramon Road/Amador Valley Boulevard and Dublin Boulevard/Village Parkway intersections are projected to operate acceptably with the Maximum FAR Project in the Near-Term scenario. These results, which appear inconsistent with the above impact findings for San Ramon Road and Dublin Boulevard, are due to the different analysis methods and models used to conduct the intersection and Metropolitan Transportation System analyses.

Mitigation Measure:

MM 3.9-1: As required by the Alameda County Congestion Management Agency, the City of Dublin shall do the following to help reduce traffic congestion on the MTS system:

- Support Alameda County's projects and programs which are aimed at reducing traffic congestion.

- Encourage developers to voluntarily develop a Transportation Demand Management (TDM) Program to reduce trips associated with their project. Strategies that could be included in the program could include additional bicycle parking, shower facilities, HOV parking, direct building access for pedestrians, commute alternative incentives and convenient transit waiting areas.
- Implement the policies outlined in the City's Bicycle Master Plan and General Plan Land Use and Circulation Element related to bikeways. Support public transit improvements, including but not limited to re-routing, schedule adjustments, new vehicles, upgraded waiting areas, and transit information signs, to encourage use of alternative modes.
- Collect fees from developers in the Specific Plan Area for the Tri-Valley Transportation Development Fee as well as the Downtown TIF programs prior to issuance of Building Permits, which fund local and regional transportation improvements.

For the same reasons as above, the City's ability to restore acceptable LOS on the identified roadways/freeways cannot be assured. Therefore, this impact remains **significant and unavoidable** after mitigation.

Impact 3.9-3: In the Cumulative scenario, the Maximum FAR Project results in sub-standard LOS on eight Metropolitan Transportation System roadway segments, when compared to the Cumulative Without Project case. This is a significant impact: [20]

- San Ramon Road northbound and southbound, north of Amador Valley Boulevard (PM peak hour)
- San Ramon Road northbound, between Amador Valley Boulevard and Dublin Boulevard (PM peak hour)
- San Ramon Road northbound, between Dublin Boulevard and I-580 (PM peak hour)
- Dublin Boulevard eastbound and westbound, east of Village Parkway (PM peak hour)
- Dublin Boulevard eastbound, between Regional Street and Golden Gate Drive (PM peak hour)
- Dublin Boulevard eastbound, between Golden Gate Drive and Amador Plaza Road (PM peak hour)

[20] Note that there is no significant impact on the MTS system for the Cumulative Plus Base FAR Project case, because the Cumulative Without Project case contains higher trip generation than the Cumulative Plus Base FAR project case. This is due to the slightly higher land use and trip generation in the five current specific plans that make up the Cumulative Without Project case.

Mitigation Measure:

MM 3.9-1: As required by the Alameda County Congestion Management Agency, the City of Dublin shall do the following to help reduce traffic congestion on the MTS system:

- Support Alameda County's projects and programs which are aimed at reducing traffic congestion.
- Encourage developers to voluntarily develop a Transportation Demand Management (TDM) Program to reduce trips associated with their project. Strategies that could be included in the program could include additional bicycle parking, shower facilities, HOV parking, direct building access for pedestrians, commute alternative incentives and convenient transit waiting areas.
- Implement the policies outlined in the City's Bicycle Master Plan and General Plan Land Use and Circulation Element related to bikeways. Support public transit improvements, including but not limited to re-routing, schedule adjustments, new vehicles, upgraded waiting areas, and transit information signs, to encourage use of alternative modes.
- Collect fees from developers in the Specific Plan Area for the Tri-Valley Transportation Development Fee as well as the Downtown TIF programs prior to issuance of Building Permits, which fund local and regional transportation improvements.

For the same reasons as noted above, the City's ability to restore acceptable LOS on the identified roadways/freeways cannot be assured. Therefore, this impact remains **significant and unavoidable** after mitigation.

Transit

Impact 3.9-4: The Base FAR Project will increase transit demand, generating an estimated 2,200 weekday daily transit trips (bus and BART combined). This will create the need for bus route adjustments and increased bus frequency. This is a significant impact on bus transit.

A portion of the projected demand would be served by the new West Dublin/Pleasanton BART station. BART projects ridership of approximately 6,000 weekday boardings/6,000 alightings at this station, based on expectations of current and future ridership generated by transit-oriented and transit-proximate development like that proposed by the project. Therefore, the demand generated by the Maximum FAR project falls within the BART ridership projection and does not constitute a significant impact on BART.

The Livermore-Amador Valley Transit Authority is planning increased bus service via a Bus Rapid Transit service, scheduled to begin operation in January 2011. The service will run eight buses in each direction along Dublin Boulevard during the peak hours, with BART transfers occurring at the East Dublin/Pleasanton Station. It is reasonable to assume that the service would connect to the West Dublin/Pleasanton Station when it is built. This

service is expected to be adequate to serve the additional peak hour bus trips generated by the project. With implementation of the following mitigation measure, the impact will be **less than significant**.

Mitigation Measure

MM 3.9-4 The City will continue to support and work with LAVTA to define route changes and increased service as needed as the Plan area develops.

Pedestrian/Bicycle Mobility

Impact 3.9-5: The Plan contains Guiding Principles to "create a pedestrian-friendly downtown that minimizes potential conflicts between vehicles, pedestrians and bicyclists" and to "enhance the multi-modal circulation network to better accommodate alternative transportation choices including BART, bus, bicycle and pedestrian transportation."

These proposals are consistent with the goals and policies of the Dublin General Plan Circulation Element and the Bikeways Master Plan. This is a beneficial impact; **no mitigation** is required.

4. CEQA Considerations

This section of the EIR discusses long-term implications of the proposed project as required by CEQA. The topics discussed include significant irreversible commitment of resources, growth-inducing impacts, significant and unavoidable environmental effects, and effects found not to be significant. Cumulative impacts and alternatives to the proposed project are also discussed herein.

4.1. 4.1 Significant and Unavoidable Environmental Effects

Unavoidable adverse impacts are those effects of the proposed project that would significantly affect either natural systems or other community resources, and cannot be mitigated to a less-than-significant level as identified in the previous analyses. The proposed project, if implemented, would result in the following significant and unavoidable project impacts:

- Transportation & Circulation: As described in Impacts 3.9-1 through 3.9-3, although mitigation measures would reduce potential impacts, the proposed project would generate result in sub-standard LOS on eight Metropolitan Transportation System roadway segments would be considered significant and unavoidable.

4.2. Significant Irreversible Changes

Section 15126.2(c) of the State CEQA Guidelines requires an EIR to discuss the significant irreversible environmental changes that would be involved if the proposed project would be implemented. Examples include the following: uses of nonrenewable resources during the initial and continued phases of the project, since a large commitment of such resources makes removal or nonuse thereafter unlikely; primary and secondary impacts of a project that would generally commit future generations to similar uses (e.g., highway improvements that provide access to a previously inaccessible area); and/or irreversible damage that could result from any potential environmental accidents associated with the proposed project.

Analysis

This proposed project replaces four of the current Specific Plans and the fifth for the portion that is within the DDSP area. It does increase densities, but instead focuses on strengthening the development standards and design guidelines, and providing greater direction as to future land uses. The proposed project would allow for approximately 1,300 dwelling units and 3.0 million square feet of non-residential development, and 150 additional hotel rooms .

A variety of nonrenewable and limited resources would be irretrievably committed for construction and operation, including but not limited to: oil, natural gas, gasoline, lumber, sand and gravel, asphalt, steel, water, land, energy, and construction materials. With respect to operational activities, compliance with all applicable building codes, as well as project mitigation measures or project requirements, would ensure that all natural resources are conserved or recycled to the maximum extent feasible.

The proposed project would result in an increase in demand on public services and utilities. For example, an increase in the intensity of land uses within the planning area would result in an increase in regional electric energy consumption to satisfy additional electricity demands from the proposed project. These energy resource demands relate to initial project construction, transport of goods and people, and lighting, heating, and cooling of buildings. However, the proposed project would not involve a wasteful or unjustifiable use of energy or other resources, and energy conservation efforts would occur with new construction. In addition, new development associated with the proposed project would be constructed and operated in accordance with specifications contained in Title 24 of the California Code of Regulations. Therefore, the use of energy on-site would occur in an efficient manner.

Although the majority of the DDSP area is already built-out and urbanized, increased development within the DDSP area to support urban uses may be regarded as a permanent and irreversible change. The proposed project would generally commit future generations to similar urban uses within the DDSP area.

4.3. Growth Inducement

CEQA requires that any growth-inducing aspect of a project be discussed in an EIR. According to CEQA, it must not be assumed that growth in any area is necessarily beneficial, detrimental or of little significance to the environment. A project would have growth-inducing effects if it would:

- Foster economic or population growth, or the construction of additional housing (either directly or indirectly) in the surrounding environment;
- Remove obstacles to population growth;
- Tax existing community services or facilities, requiring the construction of new facilities that could cause significant environmental effects; or
- Encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.

If a project meets any one of these criteria, it may be considered growth inducing. Generally, growth inducing projects are either located in isolated, undeveloped, or underdeveloped areas, necessitating the extension of major infrastructure such as sewer and water facilities or roadways, or encourage premature or unplanned growth.

To comply with CEQA, an EIR must discuss the ways in which the proposed project could promote economic or population growth in the vicinity of the project and how that growth will, in turn, affect the surrounding environment [CEQA Guidelines Section 15126.2(d)].

4.3.1 Economic Effects

The combination of land uses within the DDSP area would function to increase nighttime population through increased residential units and an increase in retail and commercial sales

and activities within the City, as well as enhance the economic viability of the regional area. Future new development within the DDSP would include approximately 1,300 dwelling units and 3.0 million square feet of non-residential development, and 150 additional hotel rooms

The creation of new commercial activities and enhancement of existing commercial facilities would contribute to the economic vitality of the City, which would enable the continued provision of high quality services and programs for residents and businesses, and would contribute to the municipal revenue streams. The positive revenue stream may result in the creation of indirect and induced jobs. Indirect jobs are those that would be created when the future owners and/or managers of the retail-commercial uses purchase goods and services from businesses in the region, and induced jobs are those that are created when wage incomes of those employed in direct and indirect jobs are spent on the purchase of goods and services in the region. The City's economic impacts are primarily the result of purchases of goods and services as well as payment of taxes and salaries, which affects the regional economy of the City and County, and on a more indirect basis, California. Therefore, the positive revenue stream and the resulting increased economic viability of the proposed project could result in indirect growth-inducing impacts.

4.3.2 Remove Obstacles to and/or Foster Population Growth

Growth can be induced in a number of ways, including the direct construction of new homes and businesses, the elimination of obstacles to growth, or through the stimulation of economic activity within the region. The discussion of the removal of obstacles to growth relates directly to the removal of infrastructure limitations (typically through the provision of additional capacity or supply), or the reduction or elimination of regulatory constraints on growth that could result in growth unforeseen at the time of project approval.

The elimination of either physical or regulatory obstacles to growth is considered to be a growth-inducing effect. A physical obstacle to growth typically involves the lack of public service infrastructure. The extension of public service infrastructure, including roadways, water mains, and sewer lines, into areas that are not currently provided with these services would be expected to support new development. Similarly, the elimination or change to a regulatory obstacle, including existing growth and development policies, could result in new growth.

The proposed project would not induce substantial population growth in the area beyond that already forecasted for the City of Dublin. According to the U.S. Census Bureau, the 2008 population estimate for the City of Dublin was 44,297 persons. According to the Association of Bay Area Governments, the City of Dublin's population will be approximately 50,000 persons in the year 2010, representing an annual average growth rate of approximately 2,852 residents per year. The proposed project provides for development through intensification through existing sites and projects that will make efficient use of the existing infrastructure. Although the proposed project includes a General Plan Amendment and a Zone Change (via the proposed Specific Plan), the proposed designations would be generally consistent with the nature of on-site and

surrounding development. The implementation of the proposed Specific Plan would allow for the intensification of commercial and mixed-use development within the Downtown districts. Most of the intensification is anticipated to occur in the Transit-Oriented District, as the demand for mixed-use development in that District will likely increase due to the construction of the West Dublin/Pleasanton BART station and parking structure. Like the other districts, the TOD is fully served by utilities and public services. Therefore, the proposed project would not be growth inducing as a result of removing an obstacle to growth.

4.3.3 Tax Existing Community Services or Facilities

The proposed project would not require significant regional public infrastructure upgrades for any utility or service. Any new development would be required to include provisions to make the necessary improvements in order to facilitate implementation of the DDSP. Project developers would be required to fund their fair share allocation of any necessary public infrastructure associated with development under the DDSP. Therefore, the proposed project would not tax existing community services or facilities.

4.4. Energy Conservation

Public Resources Code Section 21100(b)(3) and Appendix F of the *CEQA Guidelines* requires a description (where relevant) of the wasteful, inefficient, and unnecessary consumption of energy caused by a project. In 1975, the California State Legislature adopted Assembly Bill 1575 (AB 1575) in response to the oil crisis of the 1970s. This bill created the California Energy Commission (CEC). The purpose of the CEC is to forecast future energy needs; license thermal power plants of 50 megawatts or larger; develop energy technologies and renewable energy resources; plan for and direct State responses to energy emergencies; and to promote energy efficiency through the adoption and enforcement of appliance and building energy efficiency standards.

Energy Consumption

Short-Term Construction

In 1994, the United States Environmental Protection Agency (EPA) adopted the first set of emission standards (Tier 1) for all new off-road diesel engines greater than 37 kilowatts (kW). The Tier 1 standards were phased in for different engine sizes between 1996 and 2000, reducing NO_X emissions from these engines by 30 percent. The EPA Tier 2 and Tier 3 standards for off-road diesel engines are projected to further reduce emissions by 60 percent for NO_X and 40 percent for particulate matter from Tier 1 emission levels. In 2004, the EPA issued the Clean Air Non-road Diesel Rule. This rule will cut emissions from off-road diesel engines by more than 90 percent, and will be fully phased in by 2014. A number of construction projects using diesel powered equipment have the potential to occur every year under the DDSP.

Development under the DDSP includes mixed-use, commercial, and transit-oriented development. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable

construction sites in the region or State. Therefore, it is expected that construction fuel consumption associated with the DDSP would not be any more inefficient, wasteful, or unnecessary than other similar development projects. Also, diesel powered construction equipment in general will continue to become more efficient as the EPA standards phase in.

Long-Term Operations

Transportation Energy Demand

Pursuant to the Federal Energy Policy and Conservation Act of 1975, the National Highway Traffic and Safety Administration is responsible for establishing additional vehicle standards and for revising existing standards. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with Federal fuel economy standards is not determined for each individual vehicle model. Rather, compliance is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States.

The DDSP would create a pedestrian-friendly downtown that includes transit-oriented development and mixed use and is intended to reduce daily vehicle trips and vehicle miles traveled (VMT). The DDSP is not anticipated to result in any unusual characteristics that would result in excessive long-term operational fuel consumption. The DDSP involves typical downtown commercial and mixed-use use type trips which would include internal trip capture rates. Fuel consumption associated with vehicle trips generated by future development within the DDSP would not be considered inefficient, wasteful, or unnecessary.

Public Transportation Options

The Livermore Amador Valley Transit Authority (LAVTA) provides public transportation for the Tri-Valley communities of Dublin, Livermore and Pleasanton, California. Additionally, the San Francisco Bay Area Rapid Transit District (BART) is constructing a new station on existing track way between the Castro Valley and Dublin/Pleasanton stations. This station will provide LAVTA with easy connections to San Francisco via BART. Additionally LAVTA operates the Wheels bus system, which is in the process of constructing new bus stops in preparation for its new bus rapid transit service. The availability of the public transit for the residents and visitors to the DDSP area would ensure that the DDSP would not result in the inefficient, wasteful, or unnecessary consumption of transportation energy.

Building Energy Demand

The DDSP would not result in any unusual characteristics that would result in excessive long-term operational building energy demand. The Development Standards and Design

Guidelines in the DDSP specify that warm white, energy efficient lighting source types such as metal halide, induction lighting, compact fluorescent, and light-emitting diode (LED) should be used where feasible. Energy-efficient lighting (lighting from renewable sources and energy-saving devices, such as light sensors) are encouraged. Additionally the DDSP has standards for the use of Energy Star requirements. Therefore, the DDSP would not be considered inefficient, wasteful, or unnecessary.

Energy Efficiency Measures

California Code of Regulations, Title 24, Part 6, is California's Energy Efficiency Standards for Residential and Non-residential Buildings. Title 24 was established by the CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption, and provide energy efficiency standards for residential and non-residential buildings. In 2010, the CEC updated Title 24 standards with more stringent requirements. The 2010 Standards are expected to substantially reduce the growth in electricity and natural gas use. Additional savings result from the application of the Standards on building alterations. These savings are cumulative, increasing as years go by.

Future development under the DDSP would adhere to all Federal, State, and local requirements for energy efficiency, including the CEC's Title 24 standards. The proposed project would not result in the inefficient, wasteful, or unnecessary consumption of building energy. The following energy efficiency measures are incorporated into the DDSP:

- Energy efficient lighting sources;
- Solar energy systems;
- Green roofs;
- Use of energy star roof materials;
- Water efficient landscaping;
- Water efficient fixtures and appliances;
- Mixed-use development; and
- Promotes pedestrian travel and alternative transportation mode use.

As discussed above, future development under the DDSP would result in less than significant impacts on energy resources. There would not be any inefficient, wasteful, or unnecessary energy usage in comparison to similar development projects of this nature regarding construction-related fuel consumption. Additionally, the availability of public transit services would ensure that the DDSP would not result in the inefficient, wasteful, or unnecessary consumption of transportation energy. The DDSP would adhere to, and exceed, all Federal, State, and local requirements for energy efficiency, including Title 24 of the California Code of Regulations regarding building energy efficiency standards. Therefore, the DDSP would not result in the inefficient, wasteful, or unnecessary consumption of building energy. Therefore, the DDSP would not be considered inefficient, wasteful, or unnecessary.

4.5. Effects Found Not to be Significant

A significant effect on the environment is generally defined as a substantial or potentially substantial adverse change in the physical environment (CEQA Guidelines Section 15328). The term "environment," as used in this definition, means the physical conditions that exist within the area that will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise and objects of historic or aesthetic significance. The area involved shall be the area in which significant effects would occur either directly or indirectly as a result of the proposed project. The "environment" includes both natural and man-made conditions (CEQA Guidelines Section 15360).

Detailed analyses and discussion of environmental topics found to be significant are provided within Section 3.0 of this EIR. Section 3.0 also identifies impacts that are found to be less than significant. The project site is an urban infill area and the below resources do not exist on the project site and / or are not considered to have the potential to cause a significant environmental impact. As such, detailed analyses of the following environmental resources were not included in the EIR:

- Agricultural Resources
- Biological Resources
- Mineral Resources
- Population & Housing

Other environmental issues listed below were found to have no impact as a result of the proposed project. This determination is based on the standards of significance contained within the CEQA Guidelines and the Notice of Preparation process for the proposed project.

Aesthetics & Visual Resources

Substantial Adverse Effect on a Scenic Vista

A scenic vista is a view that possesses visual and aesthetic qualities of high value to the community. Scenic vistas can provide views of natural features or significant structures and buildings. The term "vista" generally implies an expansive view, usually from an elevated point or open area. Because there are no designated scenic vistas in the vicinity of the planning area, **no impacts** would occur.

Cultural Resources

The DDSP project area is primarily developed and has been disturbed through prior development. Although no significant historical, archaeological or Native American artifacts are anticipated within the DDSP project area, construction of the proposed project could disturb unidentified and unrecorded artifacts, including prehistoric archaeological and/or native American remains. The proposed project would be required to comply with Section 7050.5 of the California Health and Safety Code in the event of the discovery or

recognition of any human remains in any location other than a dedicated cemetery during future development activities, which would require that there be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24-hours of identification.

Geology, Soils, & Seismicity

Landslides

Due to the relatively flat topography and the lack of steep slopes within or adjacent to the proposed project, landslides are not considered to be a potential significant geologic hazard. In addition, the proposed project is not located within a CGS Seismic Hazard Zone where landslides may occur during a strong earthquake, although other seismic hazards (e.g. liquefaction) were identified in Chapter 3.0. **No impacts** would occur.

Septic Tanks or Alternative Wastewater Disposal Systems

Wastewater disposal in the DDSP area is provided by the Dublin San Ramon Services District. Proposed projects in the DDSP area would connect to the existing wastewater system. The DDSP area would not need to use septic tanks or other alternative wastewater disposal systems. Consequently, the threshold of significance for septic tanks or alternative wastewater disposal systems would not apply to the proposed project and no further analysis is required. **No impacts** would occur.

Hydrology & Water Quality

Place Housing or Structures Within a 100-Year Flood-Hazards Area Which Would Impede or Redirect Flood Flows

Several properties within the DDSP area are located within the Federal Emergency Management Agency (FEMA) 100-year floodplain. As previously discussed, new construction will be subject to floodplain regulations. In addition, the Zone 7 Stream Management Plan contains plans to retrofit the culvert that carries water from Dublin Creek under Donlon Way. This retrofit will increase the culvert capacity and reduce the risk of flooding in the DDSP area. Future construction would be required to comply with the existing floodplain regulations to ensure that the structures do not impede or redirect flows. **No impacts** would occur.

Inundation by Seiche, Tsunami, or Mudflow

The proposed project is located well inland from the San Francisco Bay or other major bodies of water to be impacted by a tsunami or seiche. The site and surrounding properties are also relatively flat and would not be subject to mudflows. **No impacts** would occur.

Land Use & Planning

Conflict with Applicable Conservation Plans

The project site is located in an urban area that is completely developed. There are no naturally occurring habitat areas in the project area and therefore, **no impacts** would occur.

Urban Blight or Decay

The proposed project seeks to guide future development and redevelopment in downtown Dublin in an orderly and cohesive fashion through the Downtown Dublin Specific Plan. The combination of land uses would function to increase retail and commercial sales and activities within the City, as well as enhance the economic viability of the area. The creation of new commercial activities and enhancement of existing commercial facilities would contribute to the economic vitality of the City, which would enable the continued provision of high quality services and programs for residents and businesses and would contribute to a large municipal revenue stream. Therefore, the positive revenue stream and the resulting increased economic viability of the project would be a benefit to the City and not result in urban blight or decay and therefore, **no impacts** would occur.

4.6. Cumulative Impacts

CEQA Requirements

CEQA defines cumulative impacts as two or more individual effects which, when considered together, are substantial or which compound or increase other environmental impacts. An evaluation of cumulative impacts is required by CEQA when they are significant, but need not be as detailed as the discussion of project impacts. Cumulative conditions are defined as conditions in the foreseeable future with all approved, pending, and known planned development in place. The CEQA Guidelines require that an EIR discuss the cumulative impacts of a project where the project's incremental effect is cumulatively considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

The criteria for determining significance of cumulative impacts are the same as those that apply to the project-level analysis unless otherwise noted in the section, where other agency standards regarding cumulative analyses may apply. Where the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, the EIR indicates why the cumulative impact is not significant and is not discussed in further detail in the EIR. Where the EIR identifies a significant cumulative impact, but finds that the project's contribution to that impact would be less than considerable, an explanation for that conclusion is provided.

According to the California State CEQA Guidelines section 15130 (a)(1), there is no need to evaluate cumulative impacts to which the project does not contribute. Relevant potential cumulative impacts to which the proposed project could contribute include:

aesthetics and visual resources; air quality; geology, soils and seismicity; hazards and hazardous materials; hydrology and water quality; land use and planning; noise; public services and utilities; and transportation and circulation. Each of these topics is addressed herein.

Cumulative Impacts Analysis and Assumptions

Impacts associated with cumulative development were analyzed based on the proposed project's effects in combination with a summary of projections in the adopted City of Dublin General Plan (February 11, 1985, Updated January 19, 2010).

Aesthetics & Visual Resources

The proposed project is located within an already urbanized area of the City. Portions of the proposed project are visible from Interstate-680 (an officially designated State Scenic Highway and a locally designated scenic route), Interstate-580 (a highway eligible for designation as a State Scenic Highway and locally designated scenic route), and San Ramon Road (a locally designated scenic route). However, all projects that are visible from these corridors would be subject to design review per the policy of the City's General Plan and requirements of the proposed Specific Plan.

Although implementation of the proposed project would allow for the intensification of commercial and mixed use development within the Downtown districts, the proposed Specific Plan includes both development standards and design guidelines to guide the design of future development within the area. In addition, compliance with the design guidelines would ensure that the proposed project does not introduce substantial light and glare, which would pose a hazard or nuisance. Future development would be required to undergo design review, thereby ensuring that cumulative development would result in a less than significant cumulative impact.

> **Conclusion:** The proposed project would be required to comply with the design guidelines in the proposed Specific Plan, which would ensure that the proposed project does not contribute to cumulative light and glare in the City and surrounding areas, and would ensure that the proposed project is of quality design. The existing setting together with the design features of the proposed Specific Plan would minimize the project's cumulative contribution to aesthetics and visual quality, resulting in a **less than significant cumulative impact** in regards to aesthetics and visual resources.

Air Quality

Cumulative Construction Impacts

The BAAQMD recommends that for any project that does not individually have significant operational air quality impacts, the determination of significant cumulative impact should be based on an evaluation of the consistency of the project with the local general plan and of the general plan with the regional air quality plan. Individual development projects that generate construction-related or operational emissions that exceed the BAAQMD

recommended daily thresholds for project-specific impacts would also cause a cumulative considerable increase in emissions.

> **Conclusion:** As stated in the short-term construction impacts discussion, with implementation of BAAQMD control measures, construction-related air quality impacts would be less than significant. Therefore, construction of the proposed project would result in a **less than significant** cumulative impact.

Cumulative Operational Impacts

As previously stated, the BAAQMD recommends that for any project that does not individually have significant operational air quality impacts, the determination of significant cumulative impact should be based on an evaluation of the consistency of the project with the local general plan and of the general plan with the regional air quality plan. Consistency was analyzed above in the long-term operational emissions discussion.

As discussed above, traffic modeling conducted for the DDSP reflects a lower rate of VMT growth than population growth. The projected growth rate of VMT would be 23.4 percent from 2009 through 2015, while projected population growth would be 31.7 percent in the same time frame. With the extensive policies intended to reduce VMT, the growth rate of VMT under the DDSP would not exceed the growth rate of the population. Therefore, according to the current BAAQMD *CEQA Guidelines*, the VMT growth rate would not exceed the City's population growth rate and therefore would be consistent with the *2005 Ozone Strategy*.

> **Conclusions:** DDSP includes guiding principles that reasonably implement TCMs, and includes guiding principles that would reduce air pollution from VMT. Therefore, the DDSP is consistent with the applicable air quality plan, and a **less than significant** cumulative impact would result.

Greenhouse Gas Emissions

The proposed DDSP would facilitate the construction of new mixed-use, transit-oriented, commercial, and residential uses. As shown in Table 3.2-8, the proposed project would result in 166,891.58 MTCO2eq/year of operational-related emissions. The DDSP includes numerous guiding principles that encourage the transit-oriented development, alternative transportation modes, and sustainable development. As noted above, the project is anticipated to reduce VMT Below related population growth.

> The City's process for the future evaluation of discretionary projects within the DDSP would include an environmental review pursuant to CEQA, as well as a consistency analysis with the principles and objectives of the DDSP and the City's General Plan goals and policies. In general, implementation of these DDSP goals and principles, DDSP Development Standards and Design Guidelines, as well as compliance with Federal, State, and local regulations, would reduce their incremental contribution to the significant worldwide increase in GHG emissions.

Conclusion: In general, with implementation of project-specific reduction measures, future projects would have a less than significant impact with regards to GHG emissions. As seen in Table 3.2-9 and Table 3.2-10, the DDSP includes several measures that are consistent with the Attorney General's recommendations and the CARB Scoping Plan measures which would reduce GHG emissions associated with the proposed project. Therefore, the proposed project in combination with cumulative projects would be consistent with, and not hinder, the reduction strategies for meeting the goals of AB 32. Impacts in this regard would be less than significant.

Geology, Soils, & Seismicity

The geographic context for the analysis of impacts resulting from geologic hazards generally is site-specific, rather than cumulative in nature, because each construction project site has unique geologic considerations that would be subject to uniform site development and construction standards. As such, the potential for cumulative impacts to occur is limited. Impacts associated with potential geologic hazards related to soil or other conditions occur at individual building sites. These effects are site-specific, and impacts would not be compounded by additional development, especially in relatively level areas like the project site. Buildings and facilities in the City of Dublin would be sited and designed in accordance with the City's Building Code. General Plan, Specific Plan and findings from a design level geotechnical study prepared for future development in accordance with Mitigation Measure MM 3.3-1.

Development of cumulative projects in the vicinity of the proposed project could expose soil surfaces and further alter soil conditions, subjecting soils to erosional processes during construction. To minimize the potential for cumulative impacts that could cause erosion, all proposed construction projects in the DDSP area (and cumulative projects throughout the City) are required to be developed in conformance with the provisions of applicable federal, state, county, and City laws and ordinances. Adequate control of sedimentation and erosion must be incorporated into individual projects to address current legal requirements for control of erosion caused by stormwater discharges. Future development projects within the DDSP area that are more than one acre in size and would be required to comply with the provisions of the NPDES permitting process and local implementation strategies, which would minimize the potential for erosion during construction and operation of the facilities. In addition, future development would be required to comply with the City of Dublin Public Works Department Policy No. 95-11 to control erosion during construction activities. Compliance with this permit process, in addition to the City's Building Code and other legal requirements related to erosion control practices, would minimize cumulative effects from erosion. Therefore, cumulative impacts would be less than significant.

Conclusion: Adherence to all relevant plans, codes, and regulations with respect to project design and construction would provide adequate levels of safety regarding geologic and seismic hazards. Adherence by each proposed development project to all relevant plans, codes, and regulations would ensure the proposed

project would not result in a cumulatively considerable contribution to cumulative impacts regarding soil erosion. As potential geologic impacts are evaluated on a site-specific basis during the environmental review process, the proposed project would have a **less than significant cumulative impact** in regards to geology, soils, and seismicity.

Hazards & Hazardous Materials

Development within the project area would increase the total transport of hazardous materials within the City, but would not include the transport of significant amounts or types of hazardous materials. In addition, future development of the proposed project would not generate significant amounts of hazardous waste and the City as a whole would generate reasonably manageable quantities of waste, all of which would be regulated by federal, state and local statues. The construction related hazardous waste disposal resulting from all development within the City could result in large amounts of lead, asbestos, and other hazardous materials. However, these hazardous materials would be disposed of in compliance with all pertinent regulations for the handling of such waste. Therefore, cumulative impacts would be less than significant.

Conclusion: Hazardous materials and substances highly regulated at the federal, state, and local levels. Impacts related to hazardous materials and hazardous substances are considered site-specific and are generally mitigated to less than significant levels on a project-by-project basis. Compliance with all applicable local, state, and federal laws that regulate, control, or respond to hazardous waste, transport, disposal, or clean-up would ensure that development in the region, which includes the project area, does not result in significant impacts. Therefore, the proposed project would have a less than significant cumulative impact in regards to hazards and hazardous materials.

Hydrology & Water Quality

Buildout within the project area would contribute to cumulative drainage flows and surface water quality impacts when combined with other growth and development in the area. However, the potential cumulative impact is mitigated through required drainage studies, the relationship to City and County drainage master plans, and implementation of appropriate on-site and off-site drainage improvements.

Proposed project conveyance and detention structures will be planned and designed to maintain existing condition drainage patterns and storm flow rates. Therefore, the proposed project is not expected to contribute significantly to cumulative impacts on flooding and drainage system capacities that might arise because of continued development within the region. Cumulative impacts would be less than significant.

Conclusion: The proposed project would be required to implement NPDES and BMP measures on a project-by-project basis to reduce potential water quality impacts (as required by mitigation measures MM 3.5-1 and MM 3.5-2). In addition,

projects may require drainage improvements to be in compliance with the City of Dublin General Plan, Dublin Zoning Ordinance and/or Municipal Code standards. Therefore, the proposed project would have a **less than significant cumulative impact** in regards to stormwater runoff and contamination impacts, with mitigation measures incorporated herein.

Land Use & Planning

The City of Dublin has planning programs such as the General Plan, Zoning Ordinance, and Municipal Code, that have established plans and guidelines for growth and development within the City. The City's General Plan, including the General Plan Land Use Map, would be amended concurrent with the adoption of the proposed DDSP, to include a DDSP Land Use Designation to replace the existing General Plan land use designations for the area. In addition, projects that require zone changes must be found to be consistent with such planning programs in order to be approved. The Zoning Map for the project area will be amended concurrent with the adoption of the proposed DDSP to rezone the DDSP project area to PD, Planned Development. Land use regulations and/or development standards in the PD will include the standards and regulations of the DDSP. Any issue not specifically addressed in the DDSP shall be subject to the Dublin Zoning Ordinance and/or Municipal Code. Interpretations may be made by the Community Development Director if not specifically covered in the City's existing regulations. Therefore, the proposed project would not result in a cumulatively considerable impact to land use and planning.

Conclusion: Development of the proposed project would be compatible with surrounding land uses and would not conflict with applicable plans or policies. Projects would also be subject to the City's environmental review process. Therefore, the cumulative impact of the proposed project with respect to future development would result in a **less than significant cumulative impact** in regards to land use and planning.

Noise

The cumulative mobile noise analysis is conducted in a two step process. First, the combined effects from both the proposed project and other projects are compared. Second, for combined effects that are determined to be cumulatively significant, the project's incremental effects then are analyzed. The combined effect compares the "cumulative with project" condition to "existing" conditions. This comparison accounts for the traffic noise increase from the project generated in combination with traffic generated by projects in the cumulative projects list. The following criteria have been utilized to evaluate the combined effect of the cumulative noise increase.

Combined Effects: The cumulative with project noise level ("Cumulative With Project") causes the following:

- An increase of the existing noise level by 5 dBA or more, where the existing level is less than 60 dBA CNEL;

- An increase of the existing noise level by 3 dBA or more, where the existing level is 60 to 65 dBA CNEL; or
- An increase of the existing noise level by 1.5 dBA or more, where the existing level is greater than 65 dBA CNEL.

Although there may be a significant noise increase due to the proposed project in combination with other related projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

Incremental Effects: The "Cumulative With Project" causes a 1 dBA increase in noise over the "Cumulative Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded. Noise by definition is a localized phenomenon, and drastically reduces as distance from the source increases. Consequently, only proposed projects and growth due to occur in the general vicinity of the project site would contribute to cumulative noise impacts. Table 4.5-1, Cumulative Noise Scenario, lists the traffic noise effects along roadway segments in the project vicinity for "Existing Without Project", "Cumulative Without Project", and "Cumulative With Project", including incremental and net cumulative impacts.

First, it must be determined whether the Cumulative With Project Increase Above Existing Conditions (*Combined Effects*) is exceeded. Per Table 4.5-1, this criteria is exceeded along ten of the project area roadways. Under the *Incremental Effects* criteria, cumulative noise impacts are defined by determining if the ambient (Cumulative Without Project) noise level is increased by 1 dBA or more. Per Table 4.5-1, this criteria is not exceeded along DDSP roadways.

Table 4.5-1: Cumulative Noise Scenarios

Roadway Segment	Existing Without Project	Cumulative Without Project	Cumulative With Project	Combined Effects	Incremental Effects	Cumulatively Significant Impact?
	dBA CNEL @ 100 Feet from Roadway Centerline	dBA CNEL @ 100 Feet from Roadway Centerline	dBA CNEL @ 100 Feet from Roadway Centerline	Difference In dBA Between "Existing Without Project" and 'Cumulative With Project"	Difference In dBA between "Cumulative Without Project" and 'Cumulative With Project"	
Amador Plaza						
Amador Valley Blvd. / Dublin Blvd.	57.6	60.0	60.3	2.7	0.3	No
Dublin Blvd. / St. Patrick Way	59.1	63.5	64.0	4.9	0.5	No
Amador Plaza Rd. / Village Parkway	62.4	63.8	63.9	1.5	0.1	No

Roadway Segment	Existing Without Project	Cumulative Without Project	Cumulative With Project	Combined Effects	Incremental Effects	Cumulatively Significant Impact?
	dBA CNEL @ 100 Feet from Roadway Centerline	dBA CNEL @ 100 Feet from Roadway Centerline	dBA CNEL @ 100 Feet from Roadway Centerline	Difference In dBA Between "Existing Without Project" and 'Cumulative With Project"	Difference In dBA between "Cumulative Without Project" and 'Cumulative With Project"	
Donahue Dr. / Amador Plaza Rd.	61.8	62.9	63.1	1.3	0.2	No
E. of Village Parkway	61.2	62.5	62.6	1.4	0.1	No
Regional Street / Starward Dr.	61.7	62.9	63.1	1.4	0.2	No
San Ramon Rd. / Regional Street	62.0	63.2	63.4	1.4	0.2	No
Starward Dr. / Donahue Dr.	61.4	62.7	62.8	1.4	0.1	No
W. of San Ramon Rd.	54.9	55.4	55.5	0.6	0.1	No
Dublin Blvd.						
Amador Plaza Rd. / Village Parkway	64.7	67.6	68.0	3.3	0.4	No
E. of Village Parkway	64.9	67.4	67.5	2.6	0.1	No
Golden Gate Dr. / Amador Plaza Rd.	63.9	67.4	67.9	4.0	0.5	No
Regional Street / Golden Gate Dr.	64.0	67.8	68.4	4.4	0.6	No
San Ramon Rd. / Regional Street	64.6	68.3	68.9	4.3	0.6	No
W. of San Ramon Rd.	63.6	65.4	65.5	1.9	0.1	No
Golden Gate Dr.						
Dublin Blvd. / St. Patrick Way	53.8	60.0	60.9	7.1	0.9	No
S. of St. Patrick Way	49.1	57.3	57.8	8.7	0.5	No
Regional Street						
Amador Valley Blvd. / Dublin Rd.	57.8	60.6	61.1	3.3	0.5	No
S. of Dublin Blvd.	57.9	60.5	61.1	3.2	0.6	No
San Ramon Rd.						
Amador Valley Blvd. / Dublin Blvd.	66.4	68.1	68.3	1.9	0.2	No
N. of Amador Valley Blvd.	65.5	67.5	67.8	2.3	0.3	No
S. of Dublin Blvd.	68.3	70.8	71.1	2.8	0.3	No
St. Patrick Way						
E. of Amador Plaza Rd.	59.2	61.5	61.8	2.6	0.3	No
Golden Gate Dr. / Amador Plaza Rd.	52.6	56.5	57.3	4.7	0.8	No
W. of Golden Gate Dr. (Proposed Saint Patrick Way	43.9	53.7	54.5	10.6	0.8	No

Roadway Segment	Existing Without Project	Cumulative Without Project	Cumulative With Project	Combined Effects	Incremental Effects	Cumulatively Significant Impact?
	dBA CNEL @ 100 Feet from Roadway Centerline	dBA CNEL @ 100 Feet from Roadway Centerline	dBA CNEL @ 100 Feet from Roadway Centerline	Difference In dBA Between "Existing Without Project" and 'Cumulative With Project"	Difference In dBA between "Cumulative Without Project" and 'Cumulative With Project"	
Extension)						
Village Parkway						
Amador Valley Blvd. / Dublin Blvd.	61.0	63.0	62.9	1.9	-0.1	No
Dublin Blvd. / I-680 NB on ramp	57.3	59.4	59.8	2.5	0.4	No
N. of Amador Valley Blvd.	61.5	63.4	63.7	2.2	0.3	No
S. of I-680 NB on ramp	50.4	50.4	50.4	0	0	No
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level						
Source: Intersection turning movements, prepared by Fehr and Peers, dated January 2010 and ADT calculations by RBF Consulting, dated April 2010.						

Activities associated with future development could cause local noise level increases resulting in higher noise levels. However, the expected combined cumulative effect within the proposed project would be reduced by implementing Mitigation Measures 3.7-1 through 3.7-3. Furthermore, the DDSP proposes development that is consistent with existing land uses. As such, the increase in ambient noise levels is anticipated to generate noise levels similar to the surrounding developments. For areas where new development would abut sensitive uses such as residences, the DDSP includes design guidelines and development standards that are aimed at reducing impacts, including building orientation, wall placement, lot dimensions, maximum intensity, outdoor storage, setbacks, buffers, edge conditions, and landscaping.

Based on the results of Table 4.5-1, the maximum noise increase for the "Cumulative With Project" scenario, noise levels at a distance of 100 feet from the centerline would range from approximately 50.4 dBA to 71.1 dBA. The maximum noise increase for incremental effects criteria would be 0.9 dBA along Golden Gate Drive (Dublin Blvd./Saint Patrick Way). Therefore, the cumulative impact of the proposed project with respect to future development would result in a **less than significant cumulative impact** in regards to noise.

Public Services & Utilities

Significant cumulative impacts to public services would occur if the cumulative projects would overburden the public service agencies, and if utility providers were unable to provide adequate services. Implementation of the proposed project in combination with reasonably foreseeable development would result in the increased demand for public services, which would result in the need for the provision of fire and police protection

services, educational services, and parks and recreation facilities. However, development fees and/or construction of infrastructure by developers within the DDSP project area would meet the increased demand on public services and utilities. Therefore, cumulative impacts would be less than significant.

> **Conclusion:** The increased need for funding of public services would be covered in whole or in part by the City's public facilities fee (Chapter 7.78, of the City of Dublin Municipal Code), which is assessed on all new construction within the project area. Development fees are assessed on a project-by-project basis to fund improvements to meet the increased demand on public services and utilities. As a result, the proposed project would have a **less than significant cumulative impact** in regards to public services and utilities.

Transportation & Circulation

A discussion of the cumulative impacts associated with Transportation & Circulation are addressed in Section 3.9.

4.7. Project Alternatives

The alternatives discussion briefly identifies and describes a range of alternatives as developed by City staff that would feasibly attain most of the project objectives and would avoid or reduce significant environmental impacts of the proposed project including the following:

- Alternative #1 – No Project Alternative;
- Alternative #2 –Reduced Development Alternative; and
- Alternative #3 – Alternate Use Alternative

This section discusses the environmental impacts associated with each of these three alternatives as compared with the impacts resulting from the proposed project. The impact level of each of the alternatives (less, similar, greater) is noted in parentheses at the beginning of each comparison. Table 4.5-2: Comparison of Project Alternatives to the Proposed Project at the conclusion of this section provides a summary. This section also identifies the "environmentally superior" alternative.

4.10.1 Relationship to Project Objectives

Consistent with the CEQA Guidelines Section 15124(b), a clear statement of objectives and the underlying purpose of the proposed project can help the City develop a reasonable range of alternatives. Each alternative would be evaluated as to how well it meets the objectives of the project, as currently proposed.

The DDSP consists of a comprehensive set of incentives, standards, and requirements that will implement the vision for the future development in downtown Dublin. The DDSP will define the physical envelope for downtown Dublin's future growth using height limits, setbacks, density, and design standards. The DDSP will act as the planning tool to guide

and direct new development, economic development, transportation improvements (including pedestrian and transit-oriented development), parking, pedestrian amenities, and public open space (e.g. public plazas) through the DDSP Guiding Principles. The DDSP will be instrumental in promoting a more walkable, livable downtown Dublin, as well as providing incentives for development in keeping with the City's broader vision.

- As discussed in the project description, the DDSP project area has been divided into three districts, based on the existing building patterns and land uses within each area and the intended development envisioned for each district. A set of guiding principles were prepared as part of the DDSP and serve as the project objectives for this EIR and are described in Section 2.4: Proposed Project Characteristics and Objectives.

4.10.2 Alternatives Considered But Rejected

The following alternatives were considered by the City, but were rejected:

- Alternative Sites
- Alternative Development Plan - Shifting Uses
- Alternative Development Plan – Incorporation of Large Format Retail

Alternative Sites

- The project is specific to the downtown area. Alternative site locations were not considered as they would not be consistent with the City's objectives for the proposed project area of creating a vibrant and dynamic commercial and mixed-use center that provides a wide array of opportunities for shopping, services, dining, working, living, and entertainment that attracts both local and regional residents.

Alternate Development Plan – Shifting Uses

To potentially reduce the significant traffic impacts of the proposed project, the City considered shifting the distribution of land uses from areas with the greatest traffic impacts (e.g. along Dublin Boulevard and Saint Patrick Way) to the north along Amador Valley Boulevard where the roadways are generally less congested particularly during the AM and PM peak hours. Although this alternative would concentrate more development along Amador Valley Boulevard, it would not decrease the amount of traffic generated overall by the DDSP. Therefore, this alternative was rejected since it would just shift the same amount of traffic generated to another portion of the project area, which would potentially degrade the intersections along Amador Valley Boulevard.

Also this alternative would concentrate uses away from the transit opportunity on Dublin Boulevard and the West Dublin/Pleasanton BART Station. This would be contrary to many of the objectives in the DDSP.

More Large Format Retail

The City considered incorporation of more large-scale "big box" retail uses in the Transit Oriented District. However, this alternative was rejected as it was not consistent with the

City's Housing Element, which accounted for the proposed residential uses within this district as part of the total residential dwelling unit projections. In addition, this alternative would not reduce significant traffic and air quality impacts and was generally not consistent with the project objectives of creating a transit-oriented district that would compliment and support transit uses, particularly the West Dublin BART station.

4.10.3 Alternative #1 - No Project Alternative

Characteristics

CEQA Guidelines Section 15126.6(e)(3) requires that a "no-project" alternative be evaluated as part of an EIR, proceeding under one of two scenarios: the project area remaining in its current state or, for planning level projects such as the DDSP, development of the project area under its current zoning designation.

Alternative #1 – No Project Alternative considers the environmental effects of not approving the proposed project with the continuation of the existing permitted land uses and zoning into the future. Under this alternative, the existing zoning and entitlements from the existing five Specific Plans that encompass the proposed DDSP project area would continue to allow for additional development within the project area. However, Alternative #1 - No Project Alternative would not result in a net increase of an additional 460,000 square feet of additional non-residential development and additional residential units as proposed under the DDSP.

Comparative Analysis

Aesthetics and Visual Quality (greater). There would be a slight change to the visual character of the planning area with a reduction of the amount of development within the project area. However, the No Project Alternative would not require compliance with development standards and design guidelines proposed in the DDSP. Therefore, although No Project Alternative would result in a reduction in the amount of development within the project area in comparison to the proposed project, development would proceed under each of the five Specific Plans, which do not include a comprehensive set of development standards and design guidelines as proposed in the DDSP. Furthermore, the lack of comprehensive development standards and design guidelines are contrary to the project objective to enhance the visual quality of the downtown and to create a more mixed-use pedestrian friendly downtown. Therefore, the No Project Alternative would result in greater impacts in comparison to the proposed project.

Air Quality (slightly less). Due to a slight reduction in the amount of development that would be allowed under the No Project Alternative, this alternative would result in slightly less impacts to short-term and long-term air quality impacts as compared to the proposed project. Similar to the proposed project, the No Project Alternative would also result in a less than significant impact with respect to Greenhouse gas emissions.

Geology and Soils (similar). Impacts under the No Project Alternative would be similar to the proposed project in that the project area could still be exposed to seismic ground shaking, liquefaction, soil erosion, and expansive soils with development under the five

existing Specific Plans within the project area. Compliance with the City's Building Code and the California Building Code would ensure that the No Project Alternative would also result in a less than significant impact as compared to the proposed project.

Hazards and Hazardous Materials (slightly less). The No Project Alternative would have slightly less impacts in comparison to the proposed project with respect to hazards and hazardous materials with a decrease in the potential for storage and use of hazardous materials within the project area. However, similar to the proposed project, The No Project Alternative would result in a less than significant impact to hazards and hazardous materials

Hydrology and Water Quality (similar). Because the project area is already largely built-out, there is little remaining pervious surfaces. Surface water runoff under this alternative would be similar to the proposed project in that either would occur in an area that is mostly developed with buildings, paving and other impervious surfaces. Furthermore, mitigation measures MM 3.5-1a and 3.5-1b would also be required under this alternative to reduce potentially significant impacts to short and long-term surface water hydrology. Therefore, the No Project Alternative would result in similar impacts in comparison to the proposed project.

Land Use and Planning (greater). The No Project Alternative would reduce the total residential dwelling unit projections and therefore would not comply with the provisions of the Housing Element. Therefore, the No Project Alternative would result in greater impacts as compared to the proposed project.

Noise (slightly less). The No Project Alternative would result in a slight reduction in the generation of noise during short-term construction and long-term operations in comparison to the proposed project due to a slight reduction in the amount of traffic to the project area under this alternative. Therefore, the No Project Alternative would result in slightly less impacts from noise.

Public Services/Utilities (slightly less). The No Project Alternative would result in a slight reduction in the impacts to public services, utilities, and recreation in comparison to the proposed project with a reduction in the total amount of residential development in the project area as compared to the proposed project.

Transportation/Circulation (less). The No Project Alternative would result in less impacts to transportation and circulation with a reduction in the number of trips in comparison to the proposed project. Under the No Project Alternative, the only intersections operating that would operate below LOS D would be the Dublin Boulevard/San Ramon Road and the Dublin Boulevard/Regional Street intersections, which would operate at LOS E during the PM peak hour. However, similar to the proposed project, the No Project Alternative would include a General Plan Amendment to exempt these intersections from Guiding Policy G in the General Plan, which strives to maintain a LOS of D or better. In comparison to the proposed project, there is however a significant reduction of trips during

the PM peak hour in comparison to the proposed project. Therefore, the No Project Alternative would result in a less traffic and circulation impacts in comparison to the proposed project.

Ability to Meet Project Objectives

This alternative would generally not be consistent with the project's objectives. For example, this alternative would not be consistent with the DDSP's objective of increasing the amount of retail sales and related economic activity throughout downtown Dublin by not increasing the amount of commercial/retail uses within the project area. In addition, the No Project Alternative would not enhance the visual quality of downtown Dublin without the proposed design standards and guidelines included in the DDSP. Therefore, the No Project Alternative would be less consistent with the project objectives.

4.10.4 Alternative #2 – Reduced Development Alternative

Characteristics

Alternative #2 – Reduced Development Alternative assumes construction of existing entitled development of approximately 617 residential dwelling units; 157,500 square feet of commercial development; and 150 hotel units, plus a minor amount of additional plan development . As described in Chapter 2: Project Description Under the Base Floor to Area Ratio Alternative, an additional 709,820 square feet of non-residential uses would be constructed for a total of 867,320 square feet of commercial space; 617residential dwelling units; and 150 hotel rooms.

Comparative Analysis

Aesthetics and Visual Quality (similar). While this alternative would result in less total density as compared to the proposed project, both the proposed project and the Reduced Development Alternative would result in intensification of development within an existing developed urban setting. Furthermore, this alternative would also include development standards and design guidelines that seek to improve the visual quality and character of the project area. Therefore, aesthetic impacts are considered similar to the proposed project.

Air Quality (less). Due to a reduction in the amount of development that would be allowed under the Reduced Density Alternative, this alternative would result in slightly less impacts to short-term and long-term operational air quality. Therefore, this alternative would result in slightly less impacts in comparison to the proposed project. Similar to the proposed project, the Reduced Density Alternative would also result in a less than significant impact with respect to Greenhouse gas emissions.

Geology and Soils (similar). Impacts under the Reduced Density Alternative would be similar to the proposed project in that the project area would still be exposed to seismic ground shaking, liquefaction, soil erosion, and expansive soils with development within the project area. Compliance with the City's Building Code, and the California Building Code, the No Project Alternative would result in similar impacts to the proposed project.

Hazards and Hazardous Materials (slightly less). The Reduced Density Alternative would have slightly less impacts in comparison to the proposed project with a decrease in the square footage within the project area, which would subsequently decrease the potential for storage of hazardous materials within the project area.

Hydrology and Water Quality (similar). Because the project area is already largely built-out, there is little remaining pervious surfaces. Surface water runoff under this alternative would be similar to the proposed project in that either would occur in an area that is mostly developed with buildings, paving and other impervious surfaces. . Furthermore, mitigation measures MM 3.5-1a and 3.5-1b would also be required under this alternative in order to reduce potentially significant impacts to short and long-term surface water hydrology. Therefore, the Reduced Density Alternative would result in similar impacts in comparison to the proposed project.

Land Use and Planning (greater). The Reduced Development Alternative would reduce the total residential dwelling unit projections and therefore would not comply with the provisions of the Housing Element. Therefore, the Reduced Development Alternative would result in greater impacts as compared to the proposed project.

Noise (slightly less). The Reduced Development Alternative would result in a slight reduction in the generation of noise during short-term construction and long-term operations in comparison to the proposed project due to a reduction in the amount of development under this alternative, which would reduce short-term and long-term operational noise impacts.

Public Services/Utilities (slightly less). Due to a reduction in the amount of development under the Reduced Development Alternative, this alternative would result in a reduction in the impacts to public services, utilities, and recreation in comparison to the proposed project.

Transportation/Circulation (less). The Reduced Development Alternative would result in a total of 581 trips during the AM peak hour and 1,917 trips during the PM peak hour, which is a reduction of approximately 1,550 trips during the AM peak hour and 5,161 during the PM peak hour under the Maximum FAR. Under the Reduced Development Alternative, five intersections would operate at below LOS D during the PM peak hour, including the Dublin Boulevard/San Ramon Road; Dublin Boulevard/Regional Street; Dublin Boulevard/Amador Plaza Road; and Saint Patrick Way/Amador Plaza Road/I-680 SB Ramps intersection, which would operate at an unacceptable LOS F; and the Dublin Boulevard/Golden Gate Drive intersection, which would operate at an unacceptable LOS E. However, similar to the proposed project, the Reduced Development Alternative would include a General Plan Amendment to exempt these intersections from Guiding Policy G in the General Plan, which strives to maintain a LOS of D or better. In comparison to the proposed project, there is however a significant reduction of trips during the PM peak hour in comparison to the proposed project. Therefore, the Reduced Development Alternative would result in a less traffic and circulation impacts in comparison to the proposed project.

Consistency with Project Objectives

While generally consistent with the proposed project's objectives, some objectives would not be consistent or would be diminished under this alternative. For example, this alternative would preclude the opportunity to implement a community benefit program that would help fund public improvements within the project area. The ability to encourage and support large-format regional retail as an important community and financial asset of the City could be diminished. The ability to create multiple high density housing sites could also be diminished. And finally, the ability to create mixed-use projects that provide public and/or private plazas and outdoor gathering areas could be diminished. Therefore, this alternative would be slightly less consistent with the project objectives.

4.10.5 Alternative #3 - Alternate Use Alternative

Characteristics

Alternative #3 - Alternate Development Plan would alter the mix of land uses within the Transit-Oriented District with more office and commercial and fewer residential dwelling units. This alternative would result in a reduction of approximately 683 residential dwelling units with the construction of approximately 696,000 square feet of non-residential uses (e.g. office space and commercial uses) for a total of 3,731,540 square feet of non-residential uses and 617 residential units

Comparative Analysis

Aesthetics and Visual Quality (similar). While the type of land uses in the Transit Oriented District would be different, the overall density and visual character would be similar to the proposed project. Furthermore, this alternative would require compliance with development standards and guidelines identified in the DDSP and therefore would result in similar impacts in comparison to the proposed project.

Air Quality (greater). The Alternate Use Alternative would result in slightly greater impacts to short-term and long-term air quality due to an increase in traffic generated to the project area under this alternative. Both the proposed project and the Alternate Use Alternative would be required to implement basic control measures during short-term construction. However, due to an increase in the number of vehicle trips to the Transit Oriented District, this alternative would result in a greater range of impacts as compared to the proposed project. Similar to the proposed project, the Reduced Density Alternative would also result in a less than significant impact with respect to Greenhouse gas emissions.

Geology and Soils (similar). Impacts under the Alternate Use Alternative would be similar to the proposed project in that the project area could still be exposed to seismic ground shaking, liquefaction, soil erosion, and expansive soils. However, with compliance with the City's Building Code, the California Building Code, similar to the proposed project would result in similar impacts under this alternative. Compliance with the City's Building Code and the California Building Code would ensure that the No Project Alternative would also result in a less than significant impact as compared to the proposed project.

Hazards and Hazardous Materials (similar). The Alternate Use Alternative would have similar impacts as compared to the proposed project with a change in the mix of development within the Transit Oriented District. Office and residential uses would not result in a substantial increase in the storage and/or use of hazardous materials within the project area over existing conditions. Therefore, this alternative would result in similar impacts in comparison to the proposed project.

Hydrology and Water Quality (similar). Because the project area is already largely built-out and there is little remaining pervious surfaces within the project area, surface water runoff under this alternative would be similar in that the Alternate Design Alternative and the proposed project would require redevelopment of existing uses. Furthermore, mitigation measures incorporated herein (mitigation measures MM 3.5-1a and 3.5-1b) would also be required under this alternative in order to reduce potentially significant impacts to short and long-term surface water hydrology. Therefore, this alternative would result in similar impacts in comparison to the proposed project with respect to hydrology and water quality.

Land Use and Planning (greater). The Alternate Use Alternative would not have the potential for compatibility impacts, which in any case are less than significant for the proposed project. However, the City's recently adopted Housing Element identifies housing opportunity sites in the project area and these sites helped the City meet the City's Regional Housing Needs Assessment (RHNA) numbers as required by State law.

Noise (similar). The Alternate Use Alternative would result in similar impacts from noise during short-term construction and long-term operations as compared to the proposed project due to a similar type of development.

Public Services/Utilities (similar). Given the fact that the overall buildout density would be similar to the proposed project, the Alternate Use Alternative would result in similar impacts to public services, utilities, and recreation in comparison to the proposed project.

Transportation/Circulation (greater). The Alternate Use Alternative would result greater impacts to transportation and circulation with a decrease in the amount of residential dwelling units and an increase in the amount of non-residential uses (e.g. office space) within the Transit Oriented District. Construction of additional non-residential uses in the Transit Oriented District would likely increase the amount of daily traffic by approximately 26, 311 average trips per day. Trips to the study intersections during the AM and PM peak hours as compared to the proposed project would therefore increase. Therefore, impacts to intersections and roadway segments during the AM and PM peak hours would be greater under this alternative.

Consistency with the Project Objectives

While generally consistent with the project objectives, this alternative would not be consistent with some of the transit-oriented district guiding principles. For example, this alternative would not promote transit-oriented development to create a distinctive and

active district. It could also limit some future development that incorporates mixed-use within the district. Therefore, this alternative would be slightly less consistent with the project objectives.

4.10.3 Environmentally Superior Alternative

CEQA Guidelines Section 15126(e)(2) requires that the environmentally superior alternative be identified. If the environmentally superior alternative is the No Project Alternative, the EIR shall identify an environmentally superior alternative among the other alternatives. Alternative #2-Reduced Development Alternative would be the environmentally superior alternative as it would reduce impacts to air quality, hydrology and water quality, noise, public services/utilities, and traffic and circulation associated with development compared to the project. Among the other alternatives, Alternative #1-No Project Alternative would be considered the environmentally superior alternative, as it would reduce impacts related to air quality, hazardous materials, noise, public services/utilities, and traffic and circulation. Table 4-5.2: Comparison of Project Alternatives to the Proposed Project rates the impacts of the above alternatives compared to the impacts of the proposed project.

Table 4.5-2: Comparison of Project Alternatives to the Proposed Project

Environmental Category	Alternative #1 - No Project Alternative	Alternative #2 – Reduced Development Alternative	Alternative #3 – Alternate Use Alternative
Aesthetics and Visual Character	Greater	Similar	Similar
Air Quality	Slightly Less	Less	Greater
Geology and Soils	Similar	Similar	Similar
Hazards and Hazardous Materials	Slightly Less	Slightly Less	Similar
Hydrology and Water Quality	Similar	Slightly Less	Similar
Land Use and Planning	Greater	Greater	Greater
Noise	Slightly Less	Slightly Less	Similar
Public Services, Utilities, and Recreation	Slightly Less	Slightly Less	Similar
Transportation and Circulation	Less	Less	Greater
Ability to Meet Project Objectives	Less	Slightly Less	Slightly Less

None of the alternatives identified would avoid the significant unavoidable impacts identified in transportation Impacts 3.9-1 through 3.9-3 on eight Metropolitan Transportation System roadway segments. This is due to the fact that all three of the alternatives would allow for new development either under the previous five downtown area specific plans (Alternative #1) or under a variation of the proposed Downtown Dublin Specific Plan (Alternatives #2 and #3).

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5.2. List of Preparers

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Source: ESRI Data and Maps/StreetMap USA (2002)

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4/2010 JN 70-100239

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Regional Location

Figure 2-1

Source: City of Dublin (2009)

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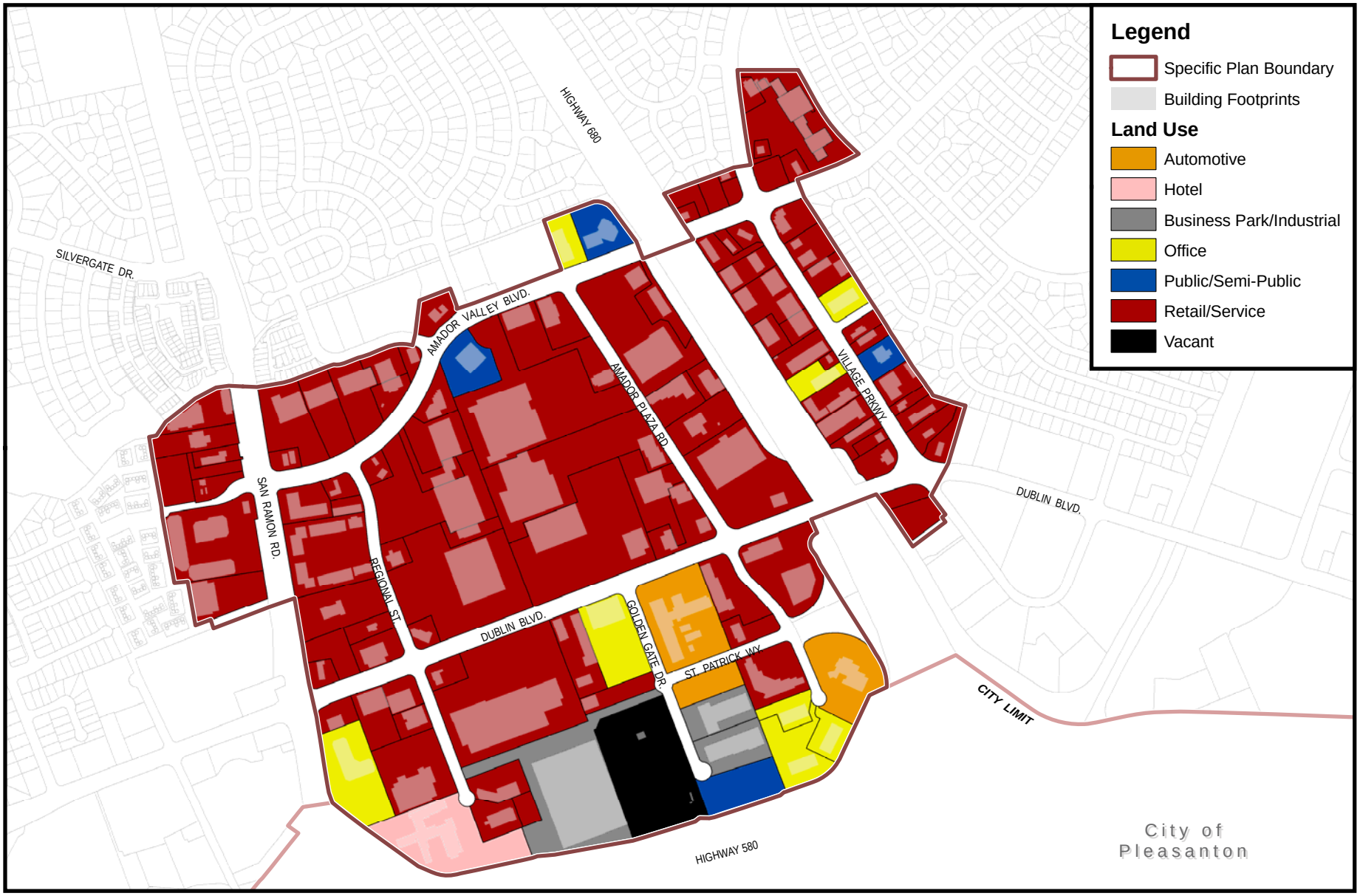
07/27/10 JN 70-100239

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Specific Plan Area

Figure 2-2



Source: City of Dublin (2008)

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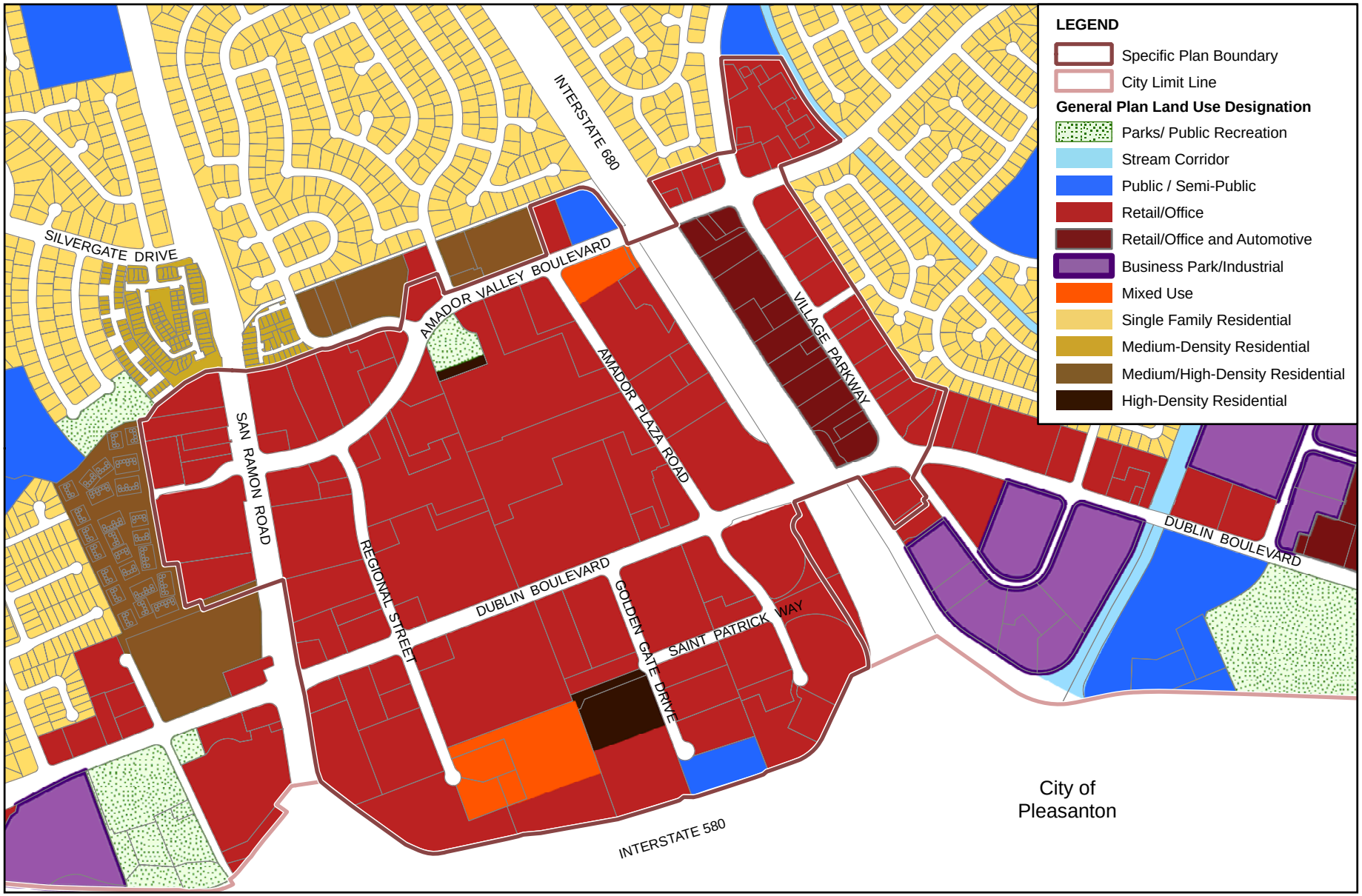
DUBLIN DOWNTOWN SPECIFIC PLAN EIR

Land Uses

Figure 2-3



Source: City of Dublin (2009)

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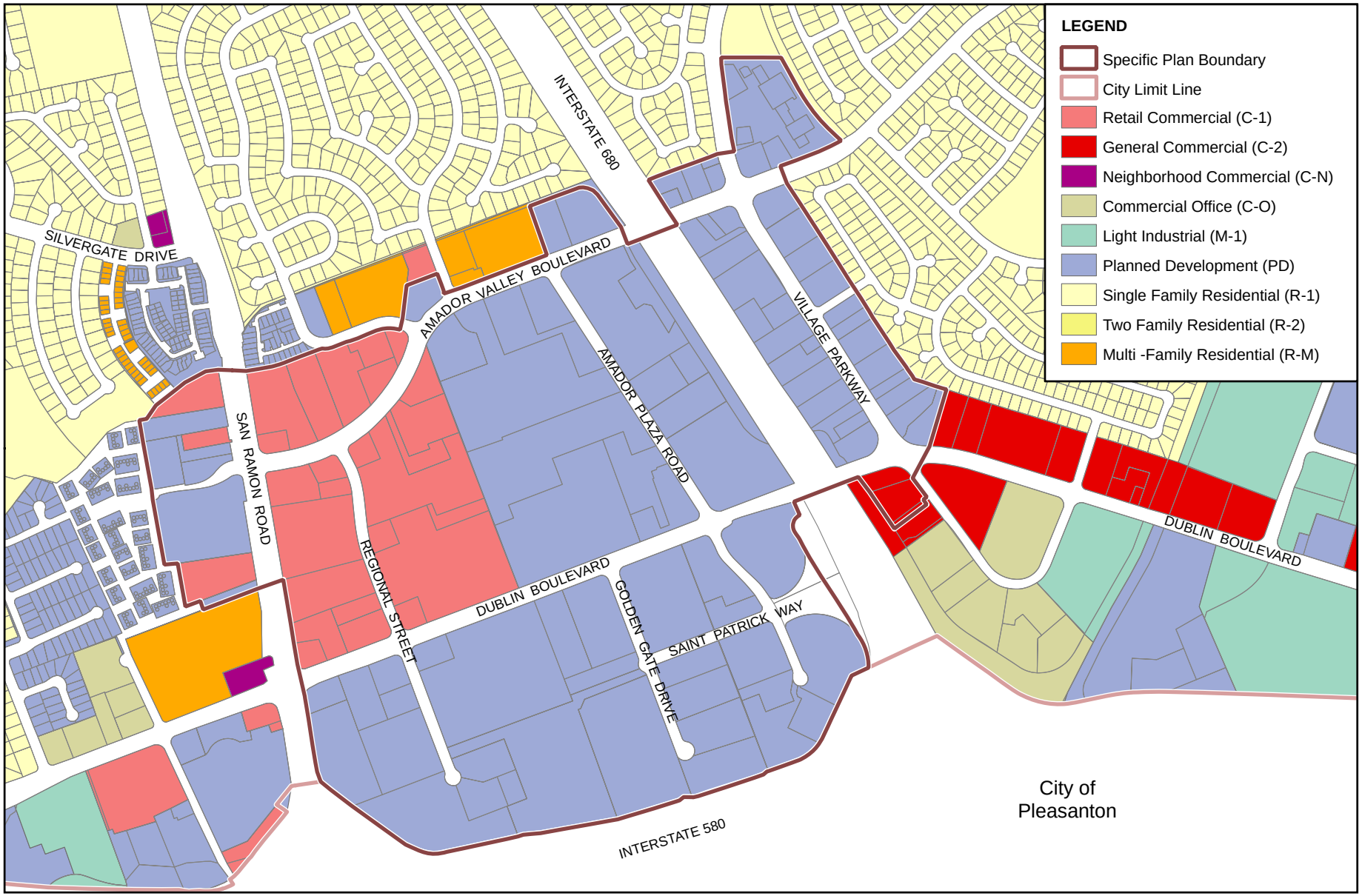
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

General Plan Land Use Designations

Figure 2-4



Source: City of Dublin (2009)

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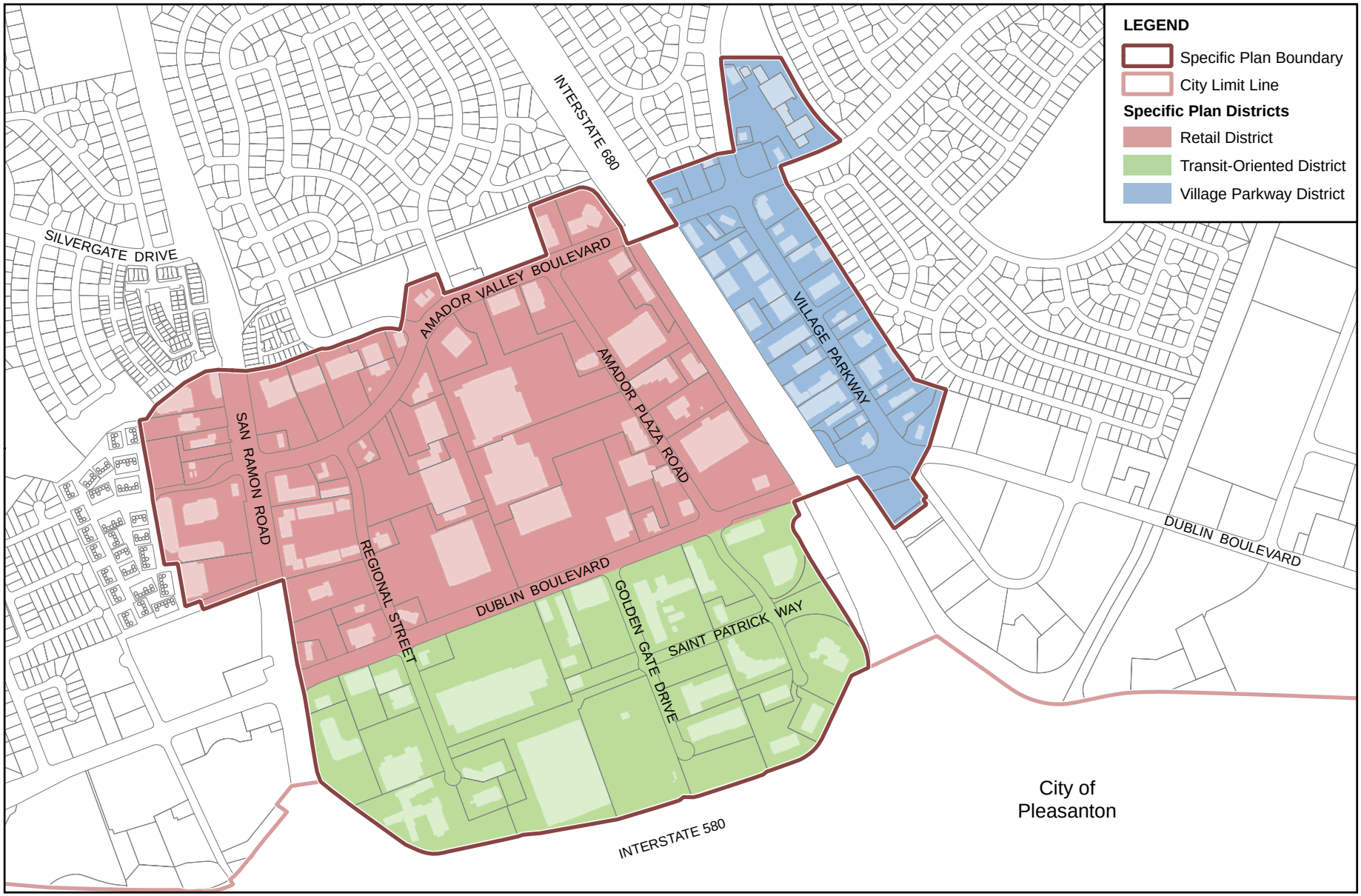
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Current Zoning

Figure 2-5



Source: City of Dublin (2009)

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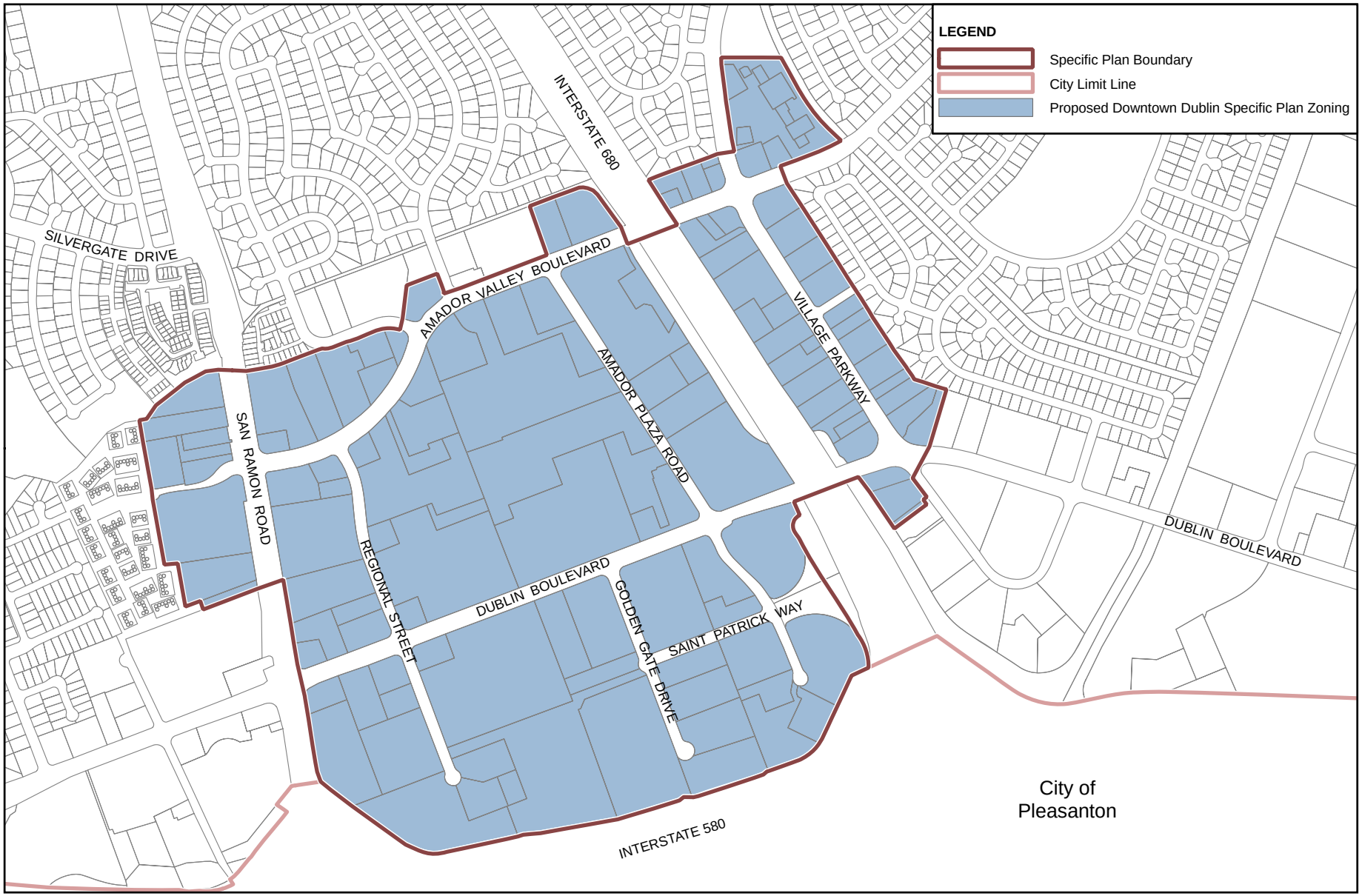
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Specific Plan Districts/Land Use Designations

Figure 2-6



Source: City of Dublin (2009)

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DOWNTOWN DUBLIN SPECIFIC PLAN NOTICE OF PREPARATION

Proposed Downtown Dublin Specific Plan Zoning

Figure 2-7

Photo: Recently developed commercial center located along Dublin Blvd. in between Village Pkwy. and Amador Plaza Rd.

Photo: Recently developed commercial center located on Amador Plaza Road in between Amador Valley Blvd. and Dublin Blvd.

Source: RBF Consulting (2007)

Photo: Recently vacated Mervyn's retail store located within the Dublin Place Shopping Center along Dublin Blvd.

Photo: Mature commercial retail center located on Regional Street in between Amador Valley Blvd. and Dublin Blvd.

Source: RBF Consulting (2007)

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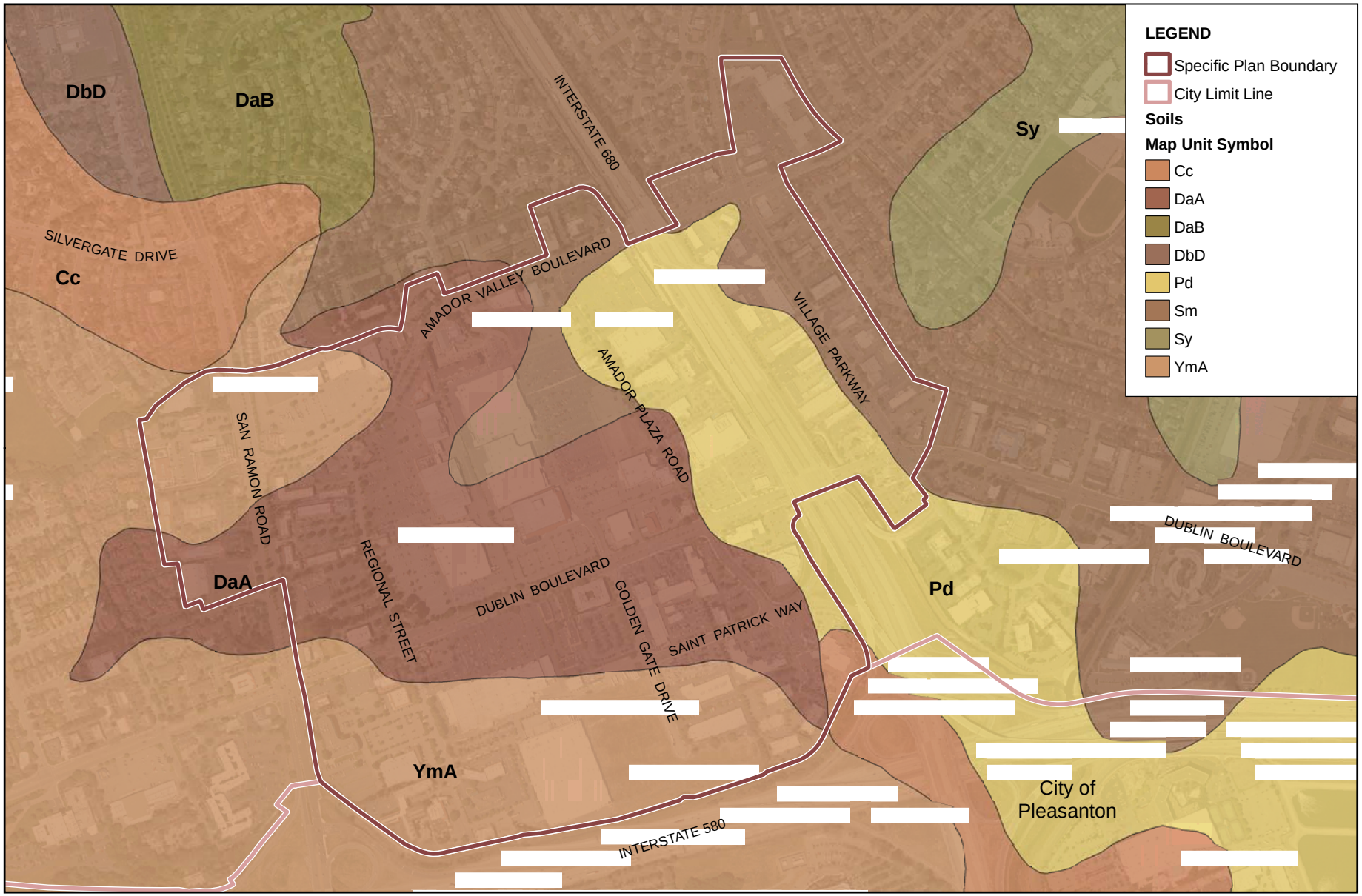
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Existing Visual Character

Figure 3.1-1b



Source: City of Dublin (2009), NRCS Web Soil Survey (2010)

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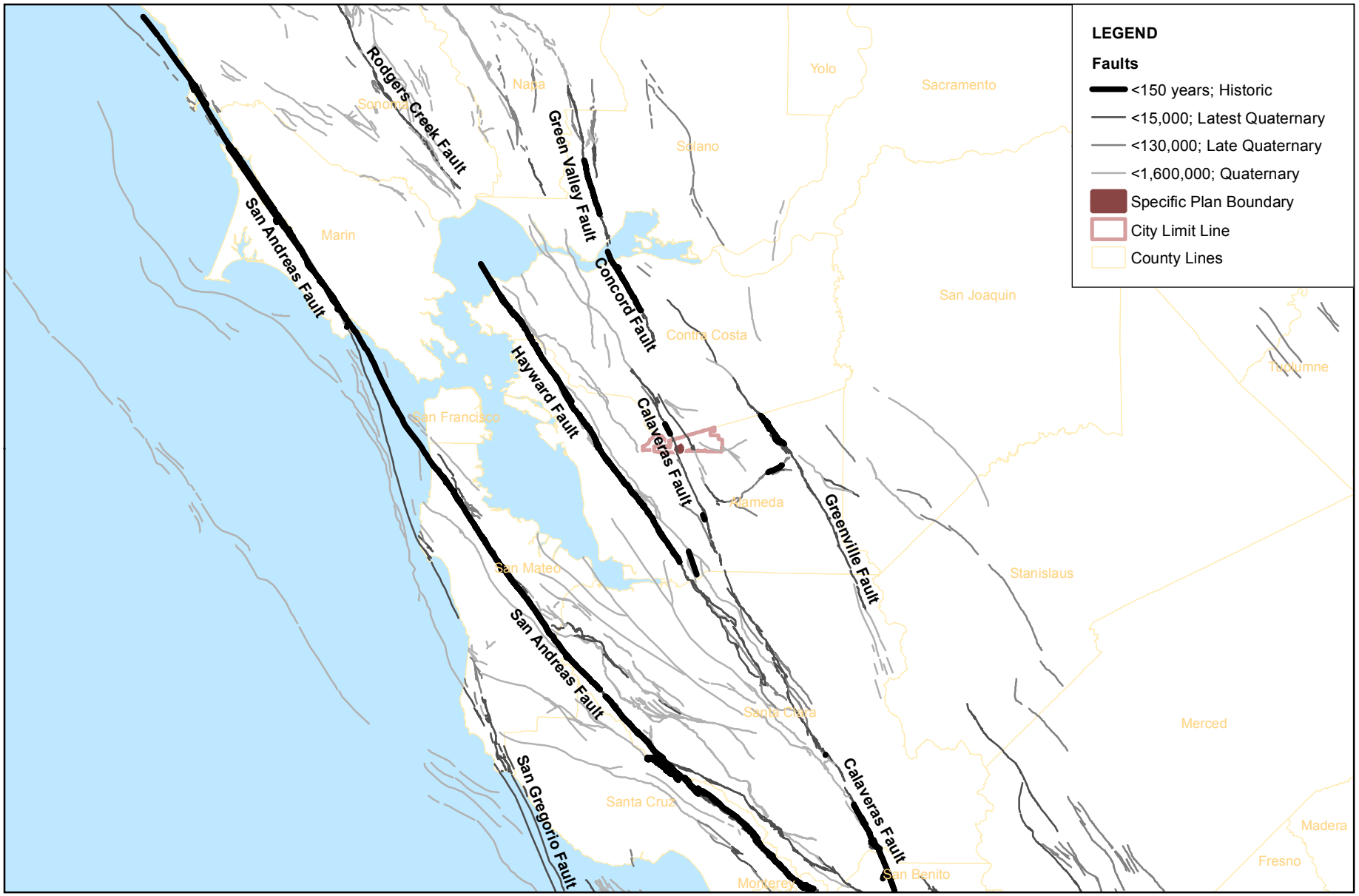
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

General Soil Map

Figure 3.3-1



Source: City of Dublin (2009), USGS Quaternary Fault and Fold Database of the US (2006)

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DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Fault Location Map

Figure 3.3-2

Source: City of Dublin (2009), USGS (2010), California Geological Survey (2002)

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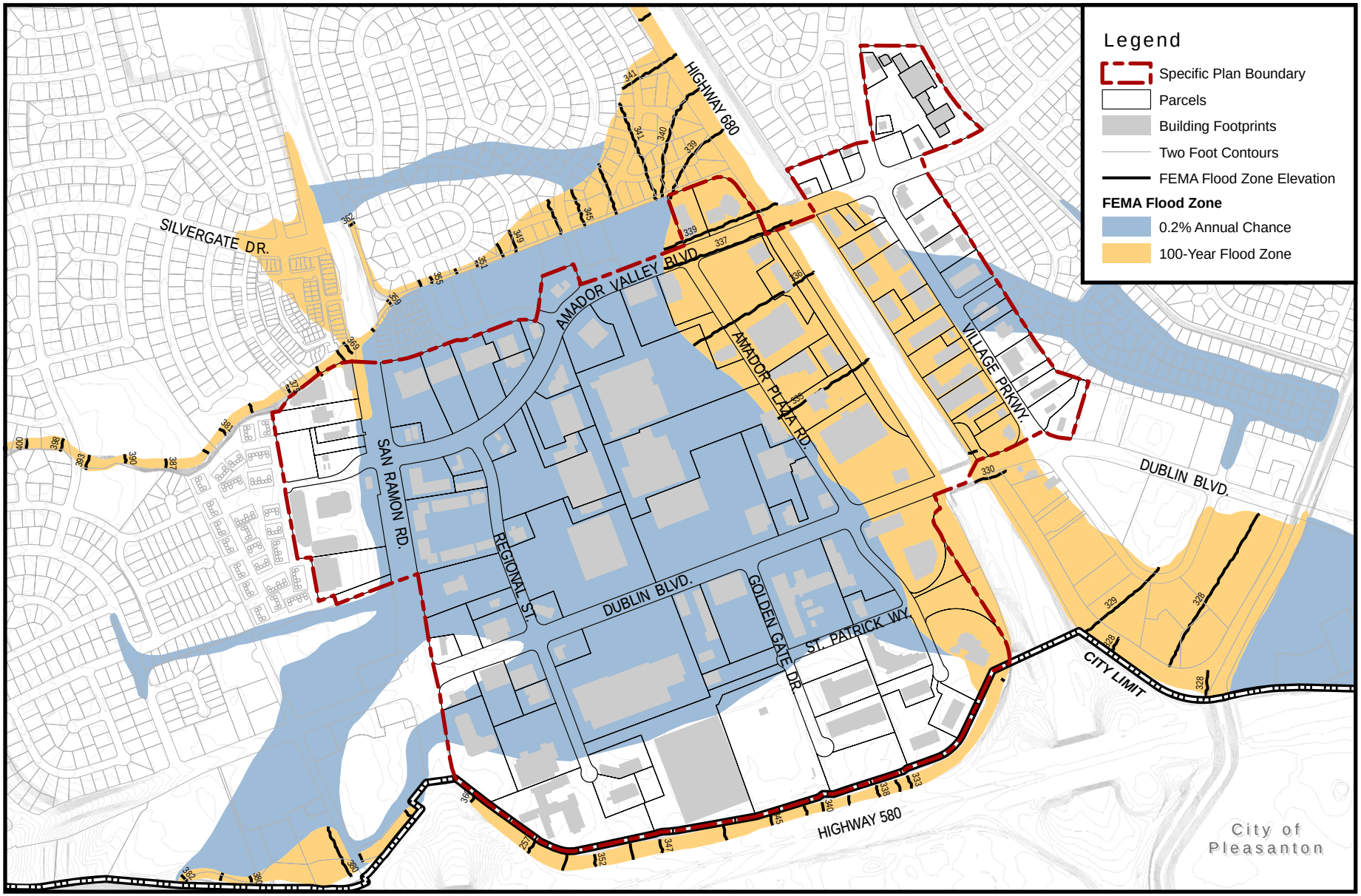
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Alquist-Priolo Earthquake Fault Zone Map

Figure 3.3-3



Source: City of Dublin (2008)

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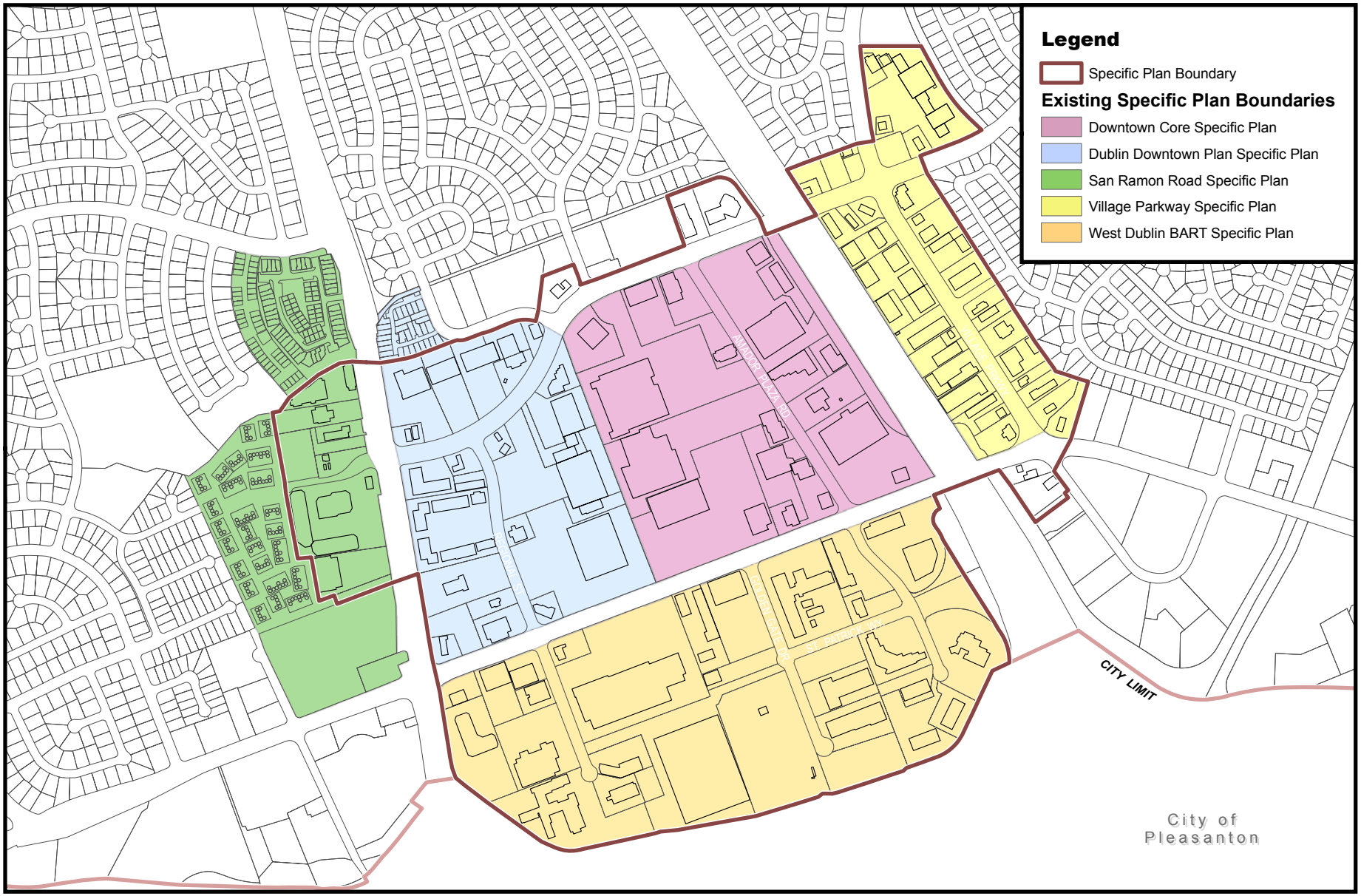
DUBLIN DOWNTOWN SPECIFIC PLAN EIR

Hydrologic Features

Figure 3.5-1



Source: City of Dublin (2008)

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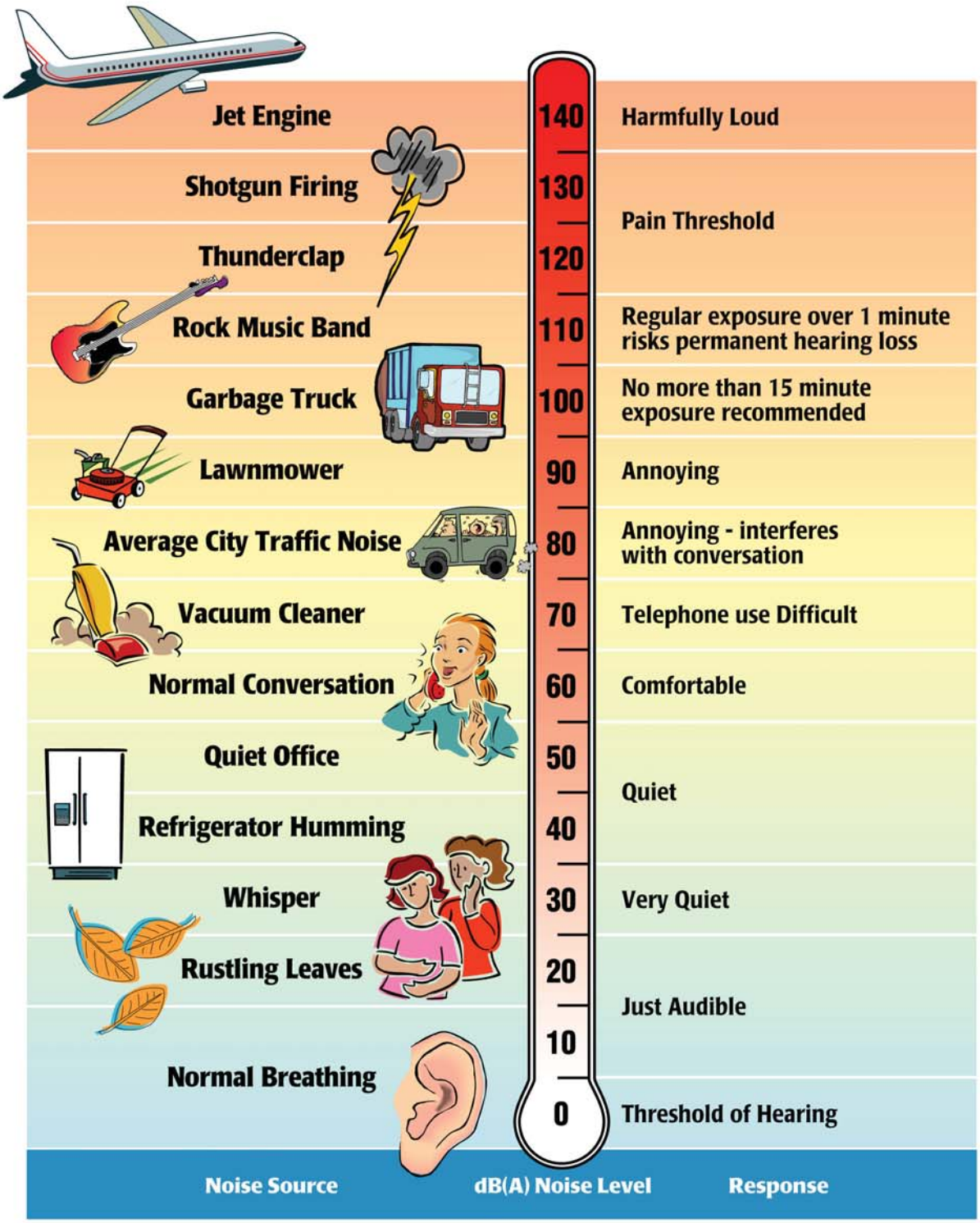
DUBLIN DOWNTOWN SPECIFIC PLAN EIR

Previous Specific Plans

Figure 3.6-1



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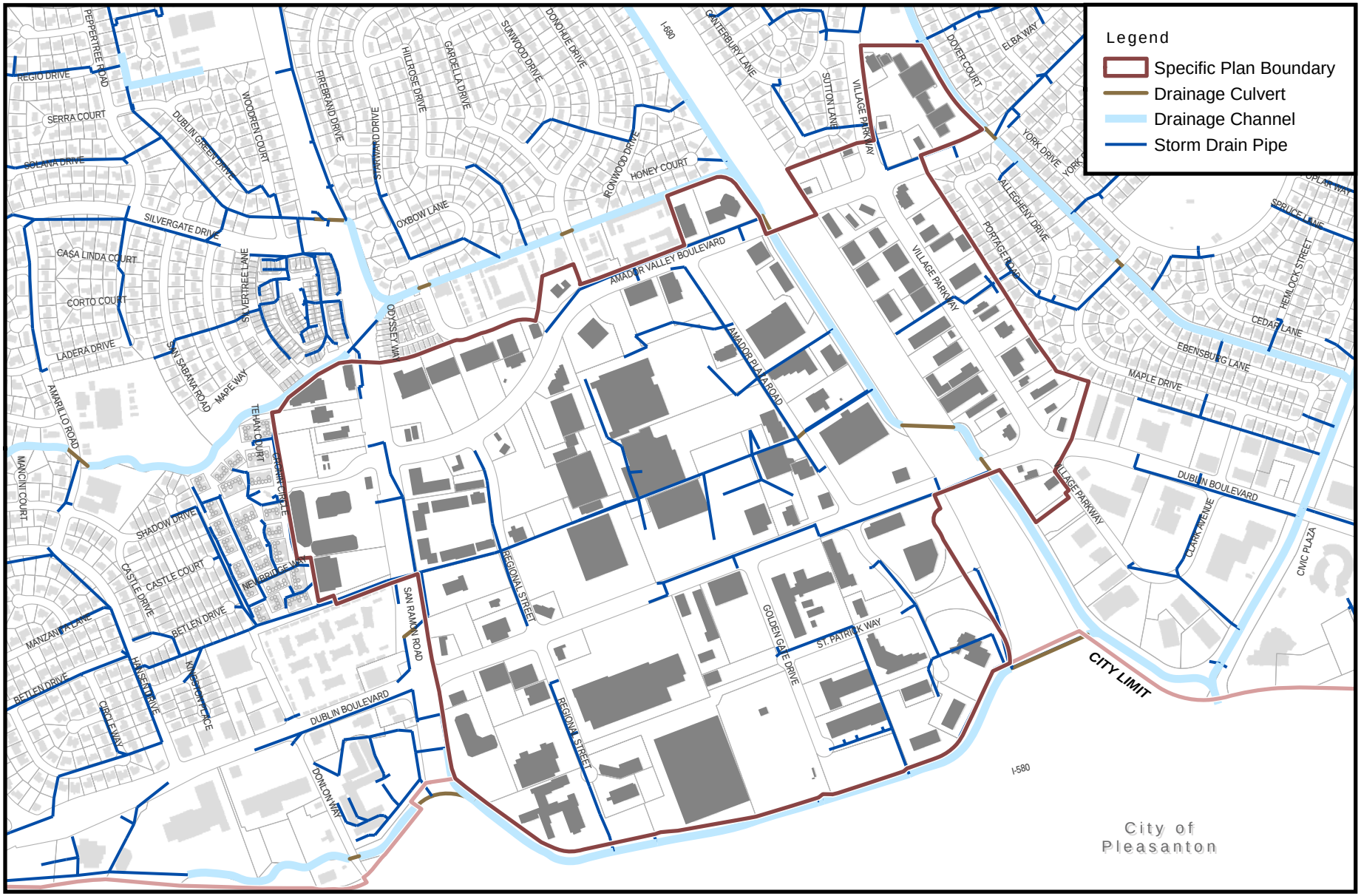
Source: (See Above)



Source: City of Dublin (2008)

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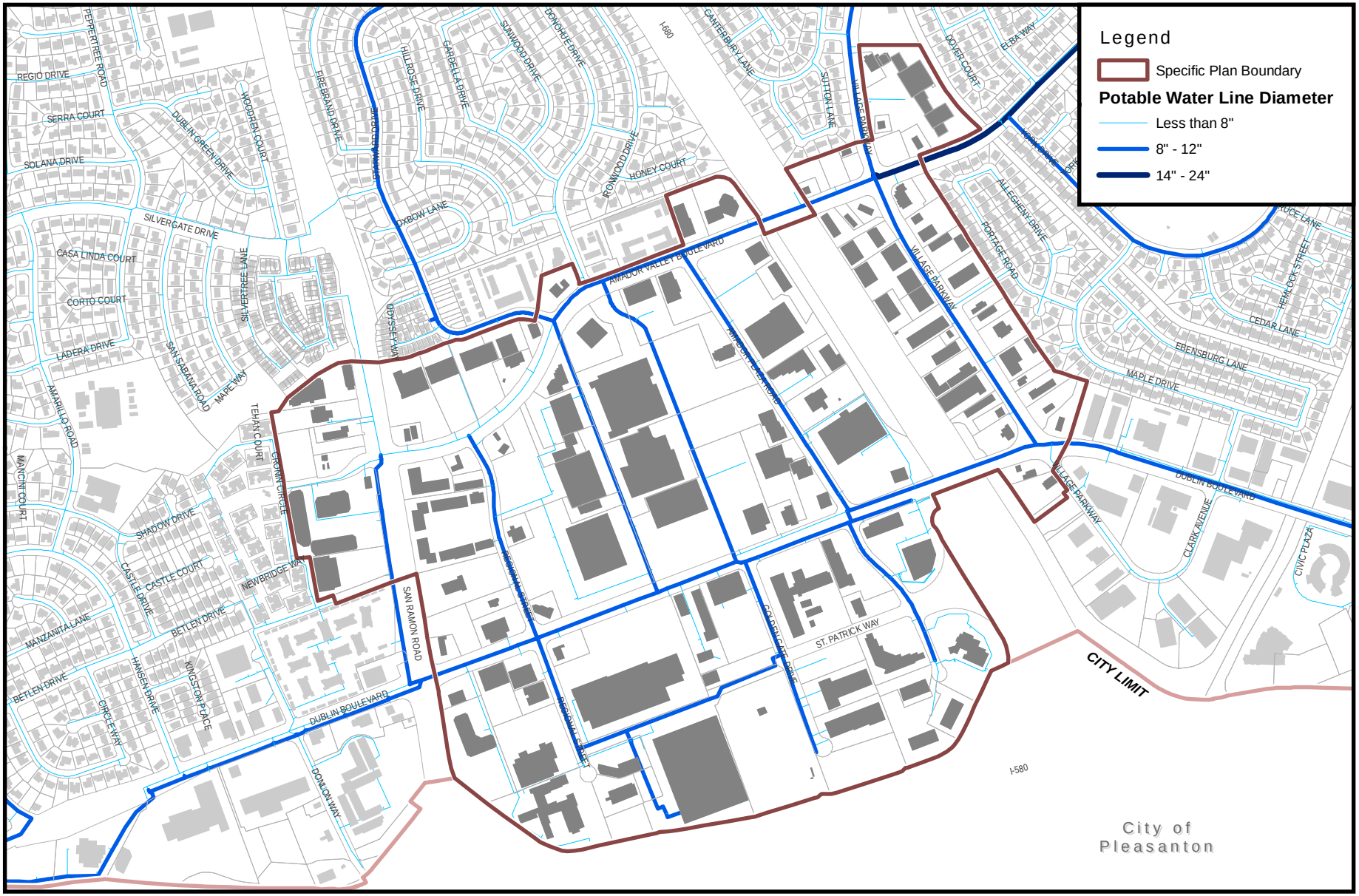
DUBLIN DOWNTOWN SPECIFIC PLAN EIR

Storm Drain System

Figure 3.8-1



Source: City of Dublin (2008)

RBF CONSULTING

0 500 1,000 2,000 Feet

07/27/2010 JN 70-100239

DUBLIN DOWNTOWN SPECIFIC PLAN EIR

Potable Water System

Figure 3.8-2

Source: City of Dublin (2008)

RBF CONSULTING

N

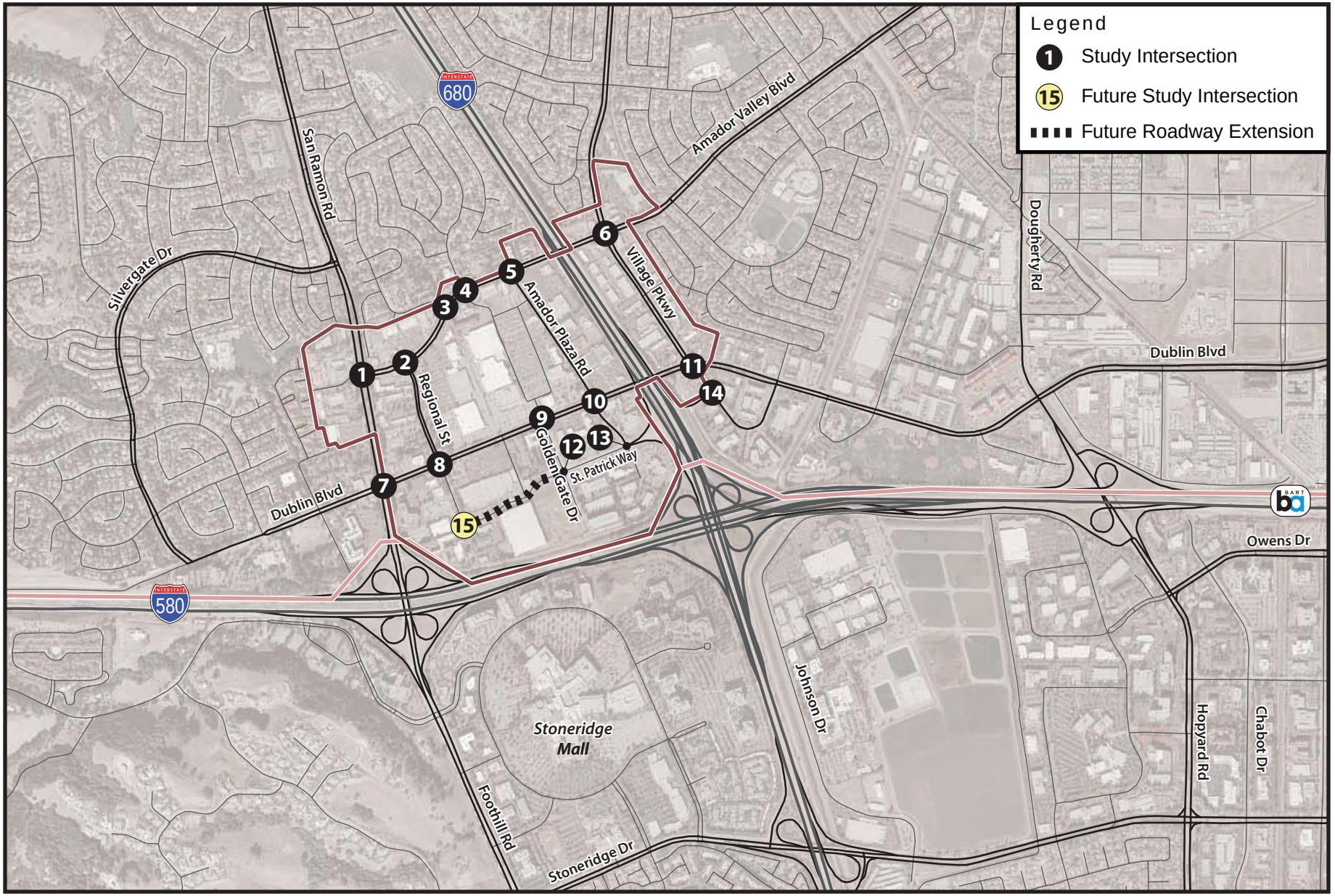
0 500 1,000 2,000 Feet

07/27/2010 JN 70-100239

DUBLIN DOWNTOWN SPECIFIC PLAN EIR

Sanitary Sewer

Figure 3.8-3



Source: Fehr & Peers (2010)

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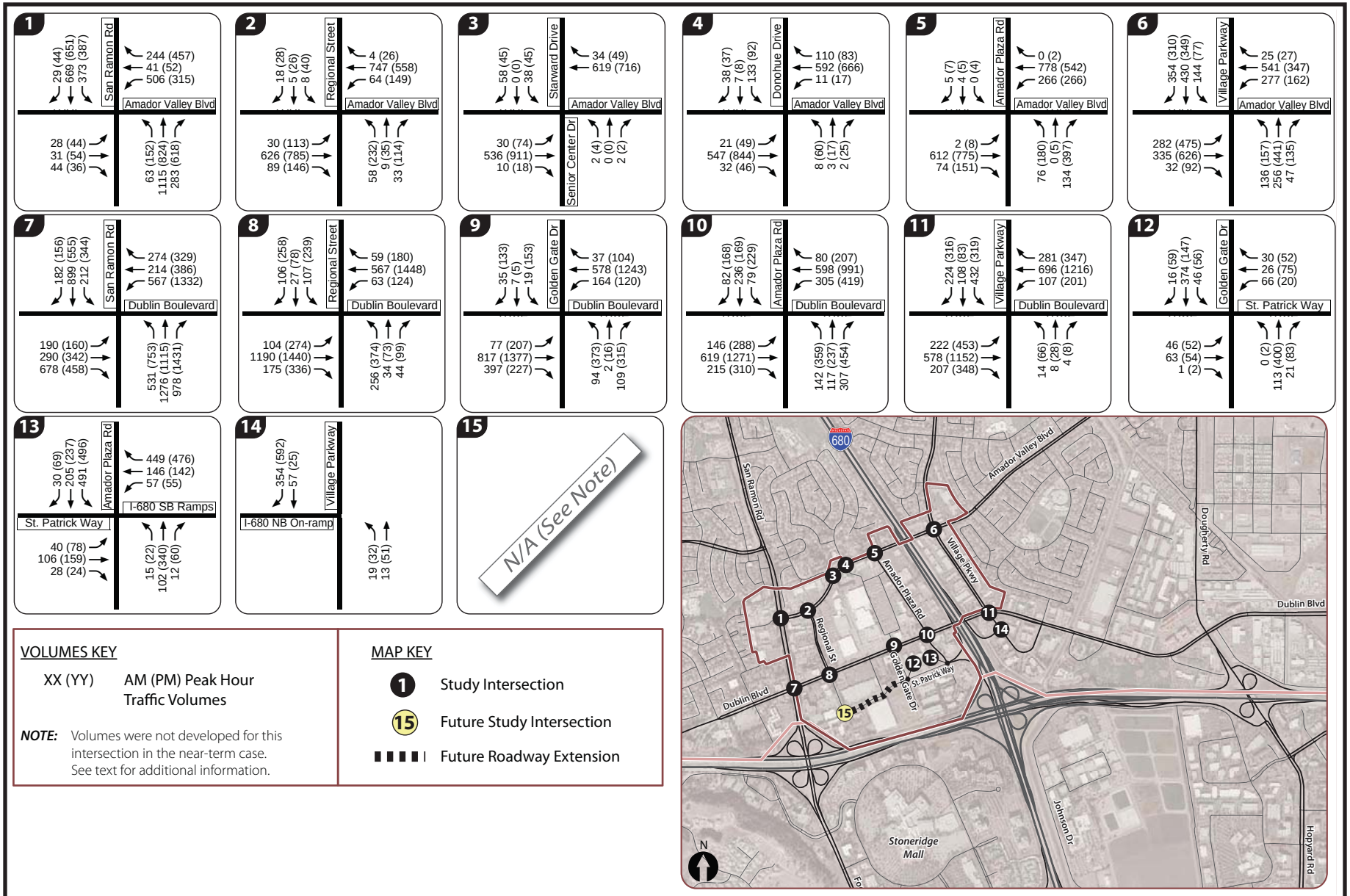
9/2010 JN 70-100239

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Transportation Study Area

Figure 3.9-1



Source: Fehr & Peers (2010)

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Near-Term Plus Project (Baseline FAR) Peak Hour Intersection Volumes

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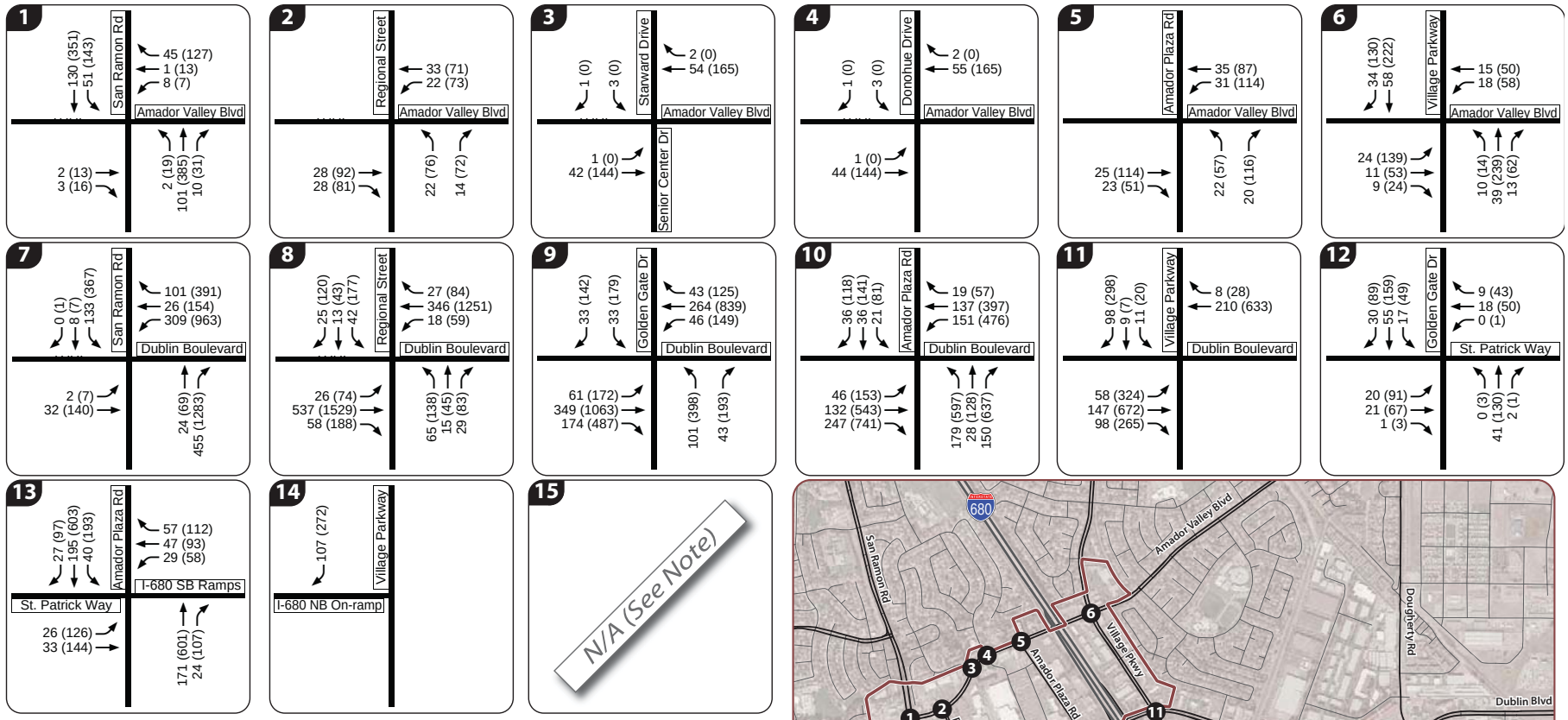
9/2010 JN 70-100239

Figure 3.9-10



VOLUMES KEY

XX (YY) AM (PM) Peak Hour Traffic Volumes

NOTE: Volumes were not developed for this intersection in the near-term case. See text for additional information.

MAP KEY

1 Study Intersection

15 Future Study Intersection

Future Roadway Extension

Source: Fehr & Peers (2010)

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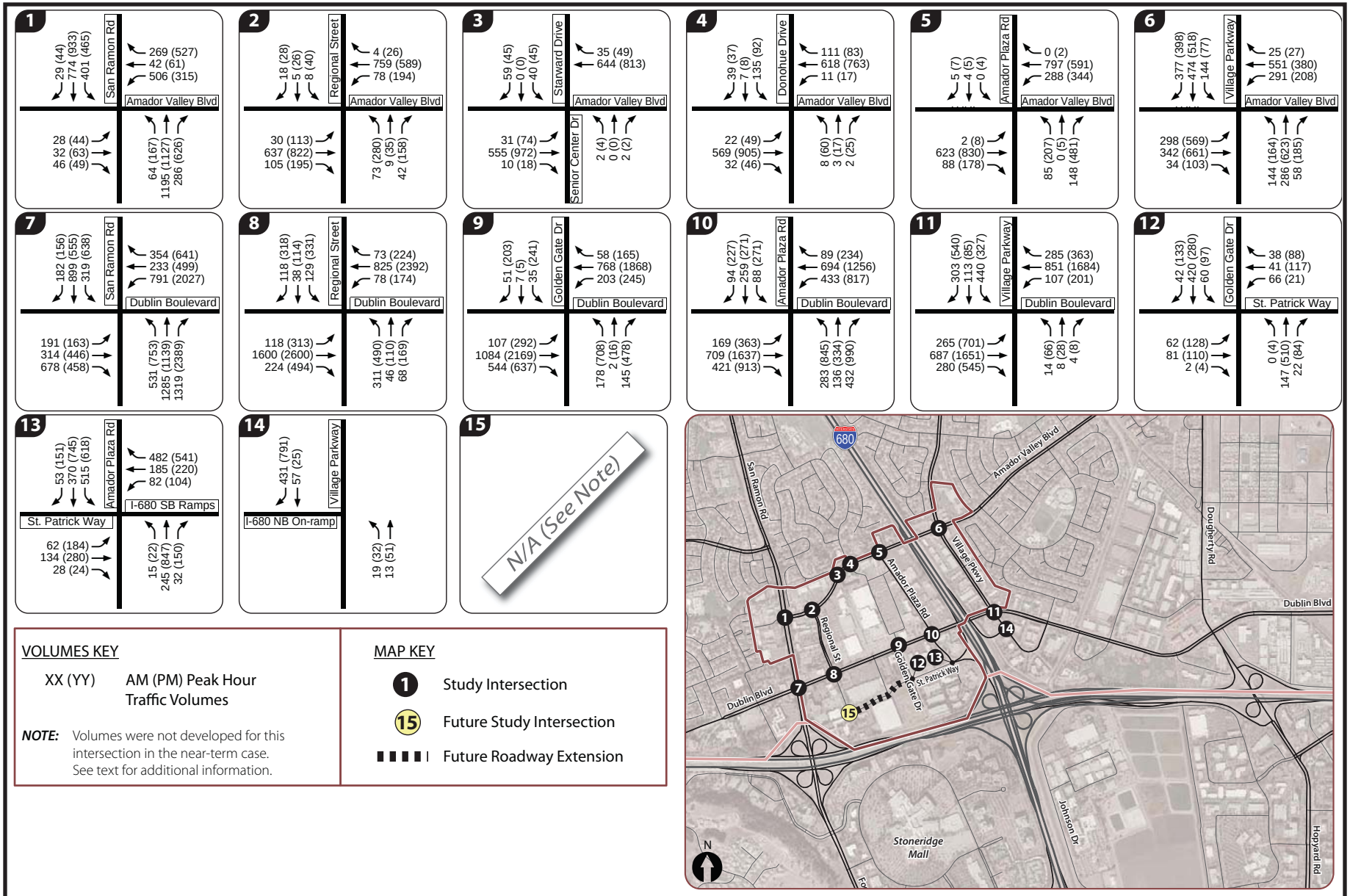
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Project (Max FAR) Peak Hour Intersection Volumes

Figure 3.9-11



VOLUMES KEY

XX (YY) AM (PM) Peak Hour Traffic Volumes

NOTE: Volumes were not developed for this intersection in the near-term case. See text for additional information.

MAP KEY

1 Study Intersection

15 Future Study Intersection

Future Roadway Extension

Source: Fehr & Peers (2010)

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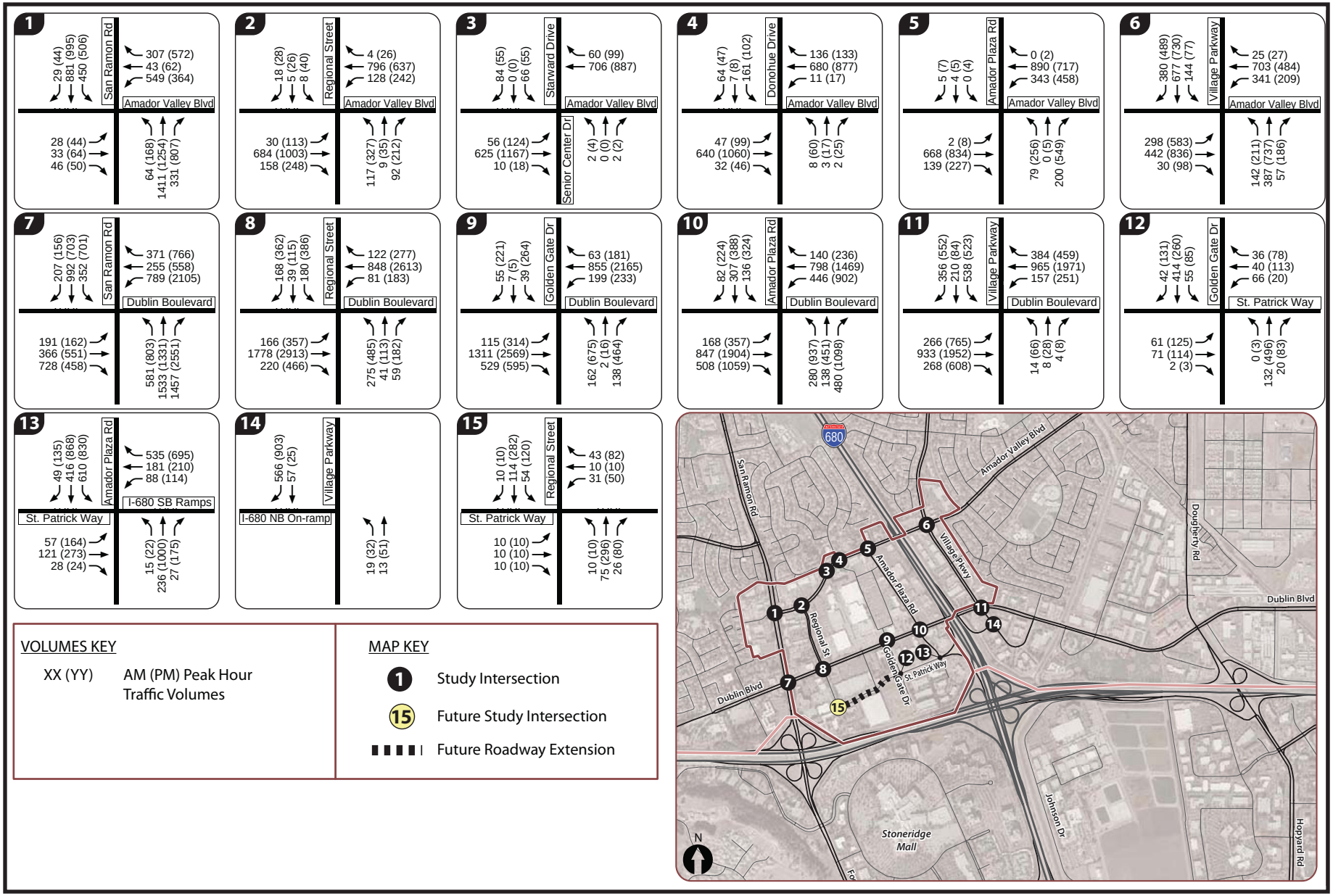
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Near-Term Plus Project (Max FAR) Peak Hour Intersection Volumes

Figure 3.9-12



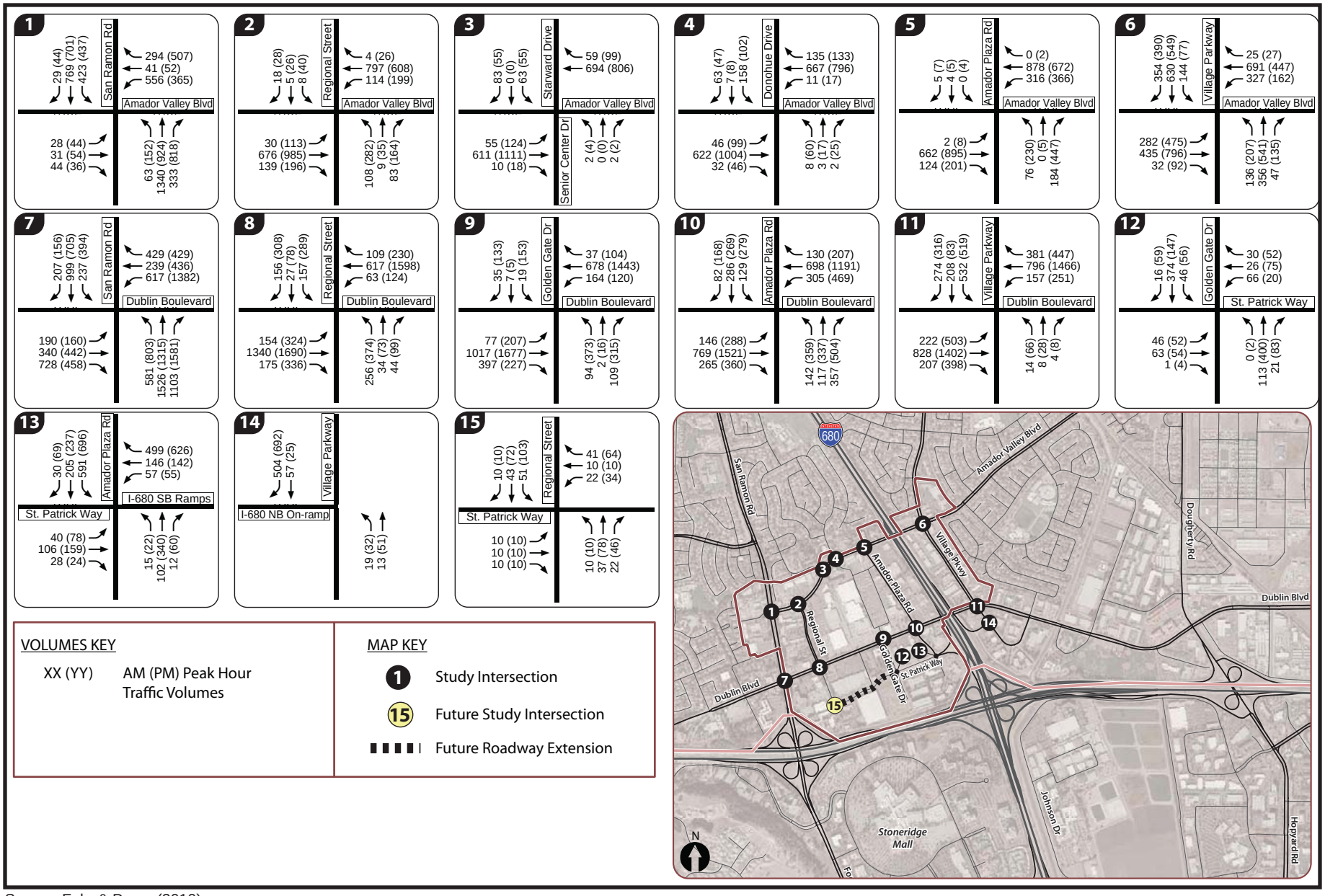
Source: Fehr & Peers (2010)

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Cumulative No Project (Current Specific Plans) Peak Hour Intersection Volumes

9/2010 JN 70-100239

Figure 3.9-13



Source: Fehr & Peers (2010)

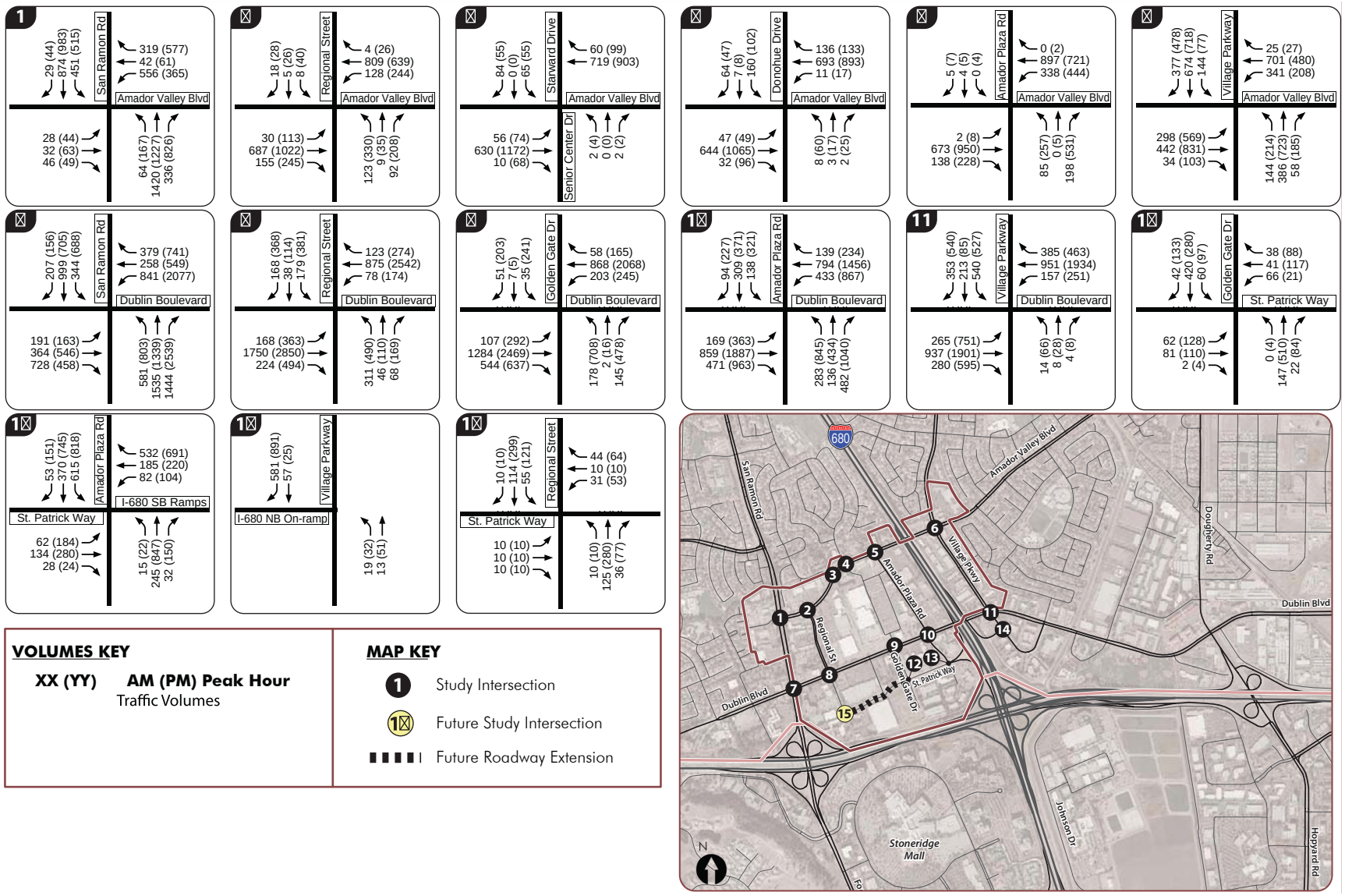
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Cumulative Plus Project (Base FAR) Peak Hour Intersection Volumes

RBF CONSULTING

9/2010 JN 70-100239

Figure 3.9-14



Source: Fehr & Peers (2010)

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Cumulative Plus Project (Max FAR) Peak Hour Intersecton Volumes

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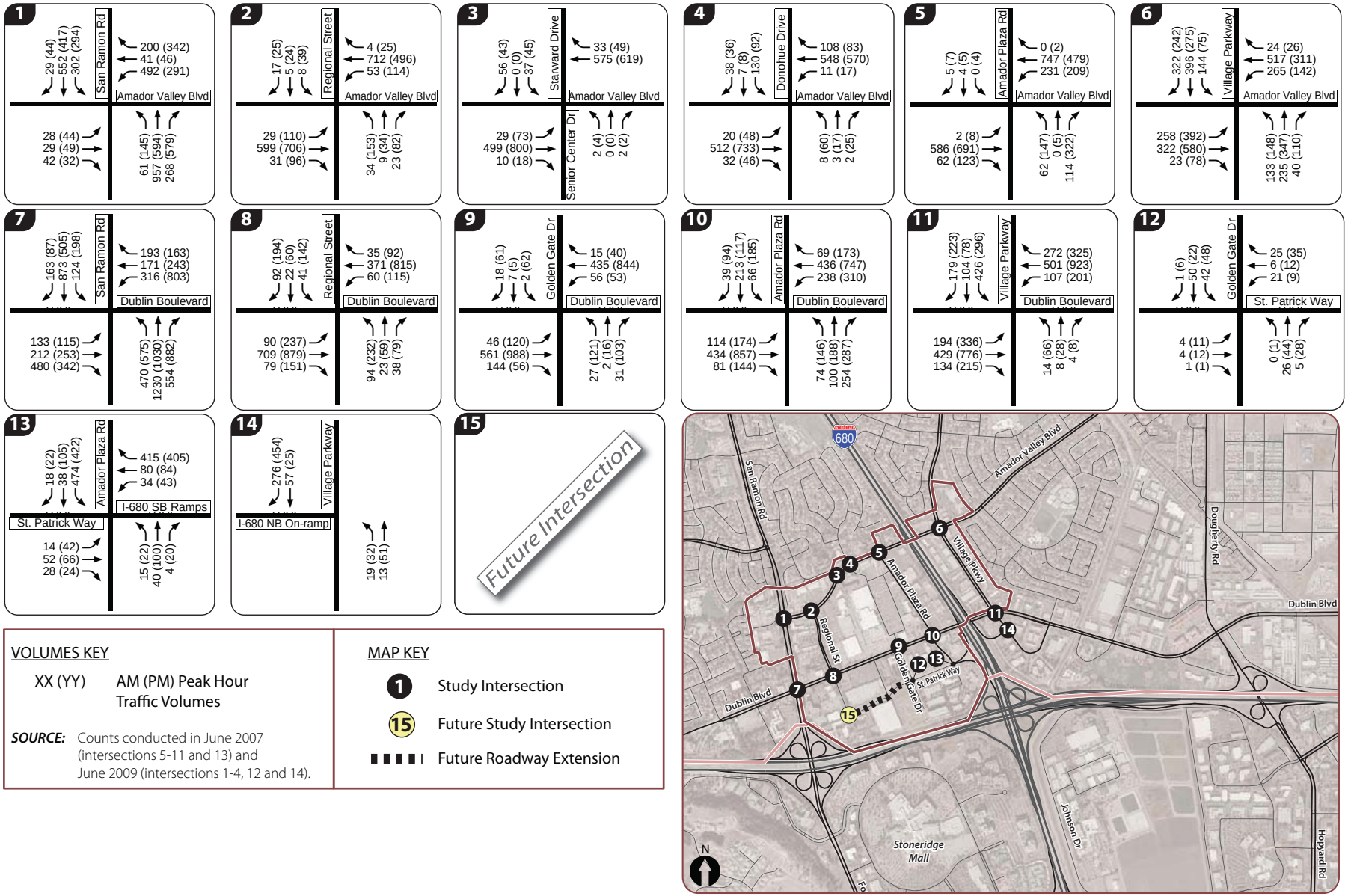
04/19/2010 JN 70-100239

Figure 3.9-15



VOLUMES KEY

XX (YY) AM (PM) Peak Hour Traffic Volumes

SOURCE: Counts conducted in June 2007 (intersections 5-11 and 13) and June 2009 (intersections 1-4, 12 and 14).

MAP KEY

1 Study Intersection

15 Future Study Intersection

Future Roadway Extension

Source: Fehr & Peers (2010)

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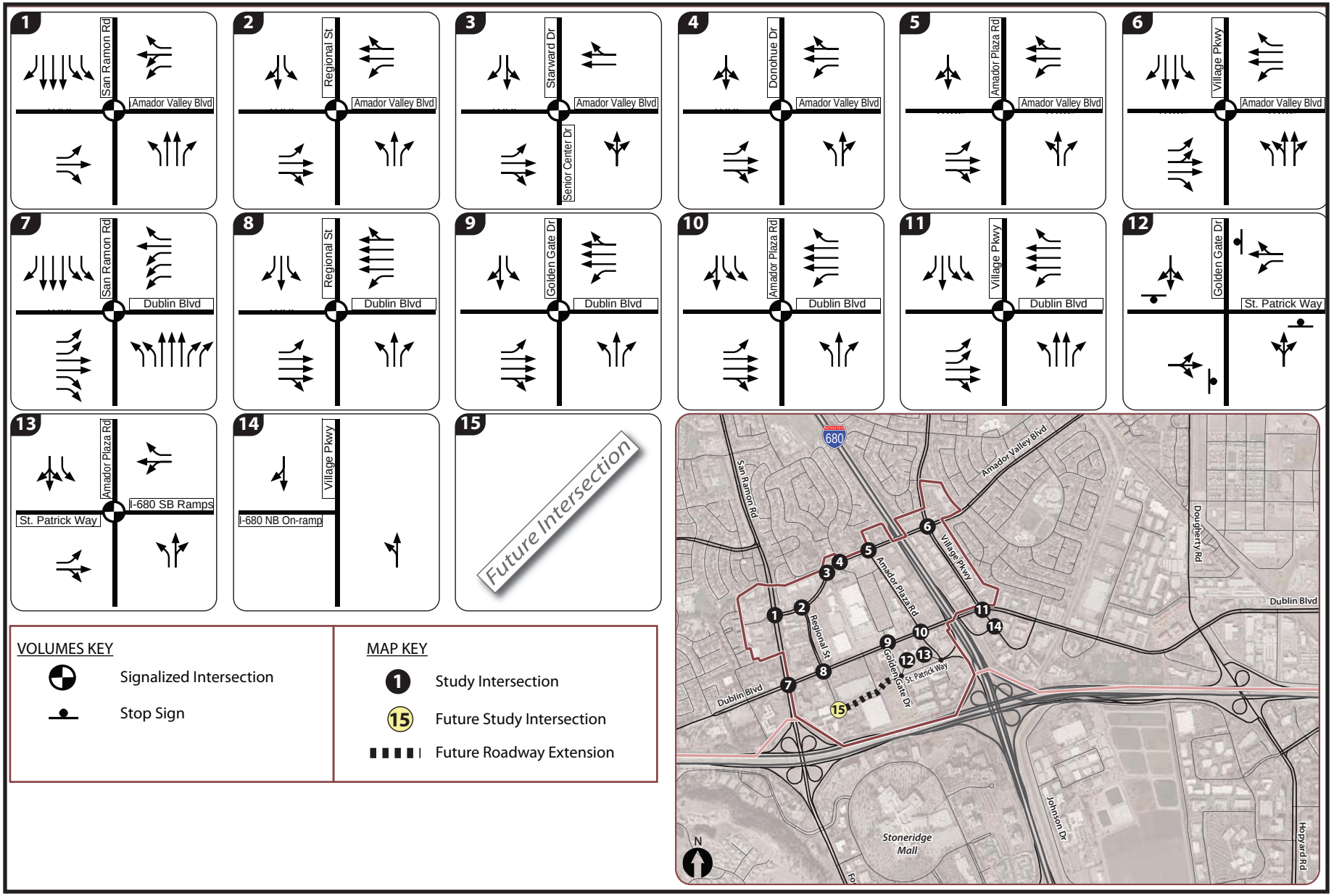
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Existing Peak Hour Intersection Volumes

Figure 3.9-2



Source: Fehr & Peers (2010)

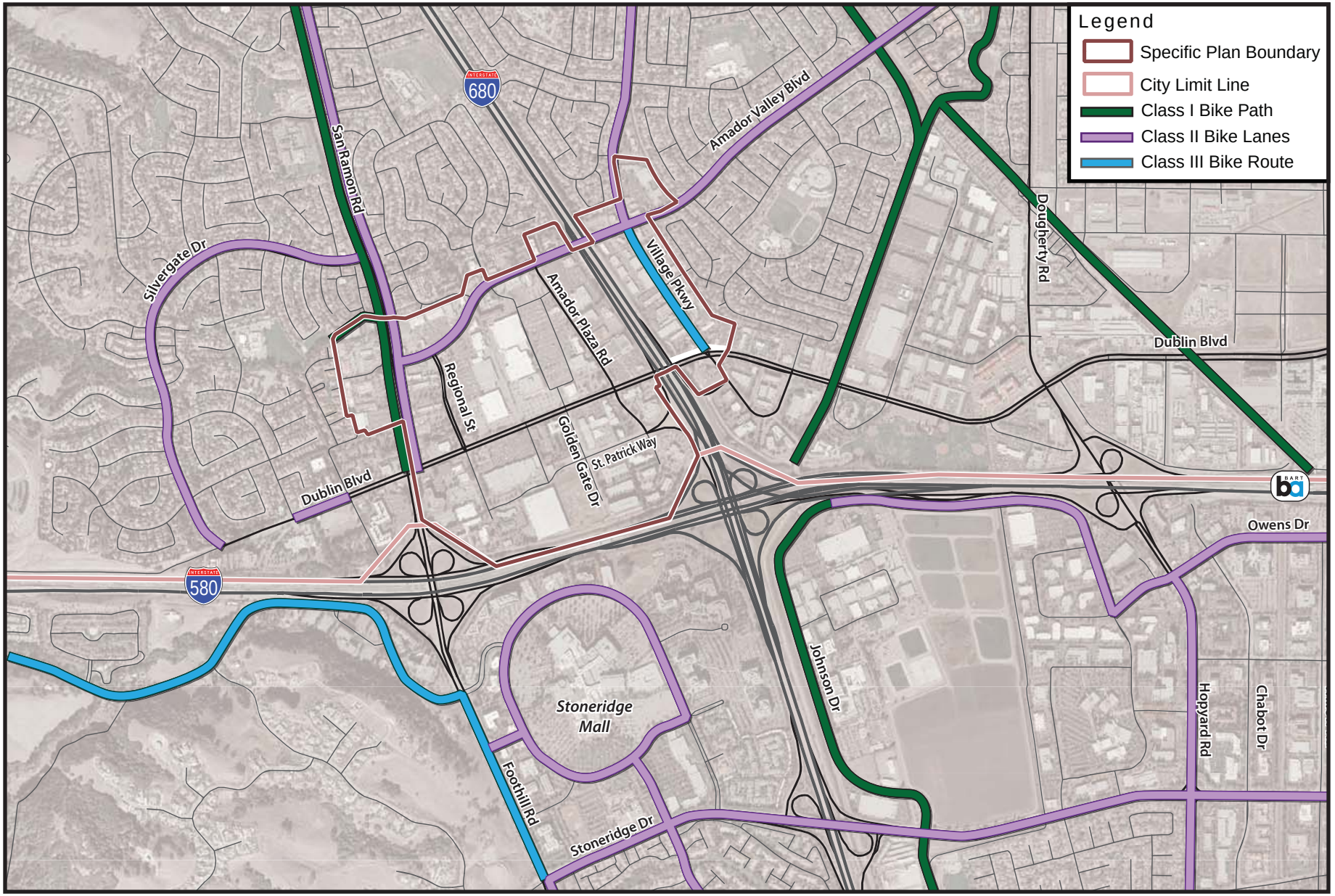
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Existing Lane Configurations and Traffic Control

RBF CONSULTING

9/2010 JN 70-100239

Figure 3.9-3



Source: Fehr & Peers (2010)

RBF CONSULTING

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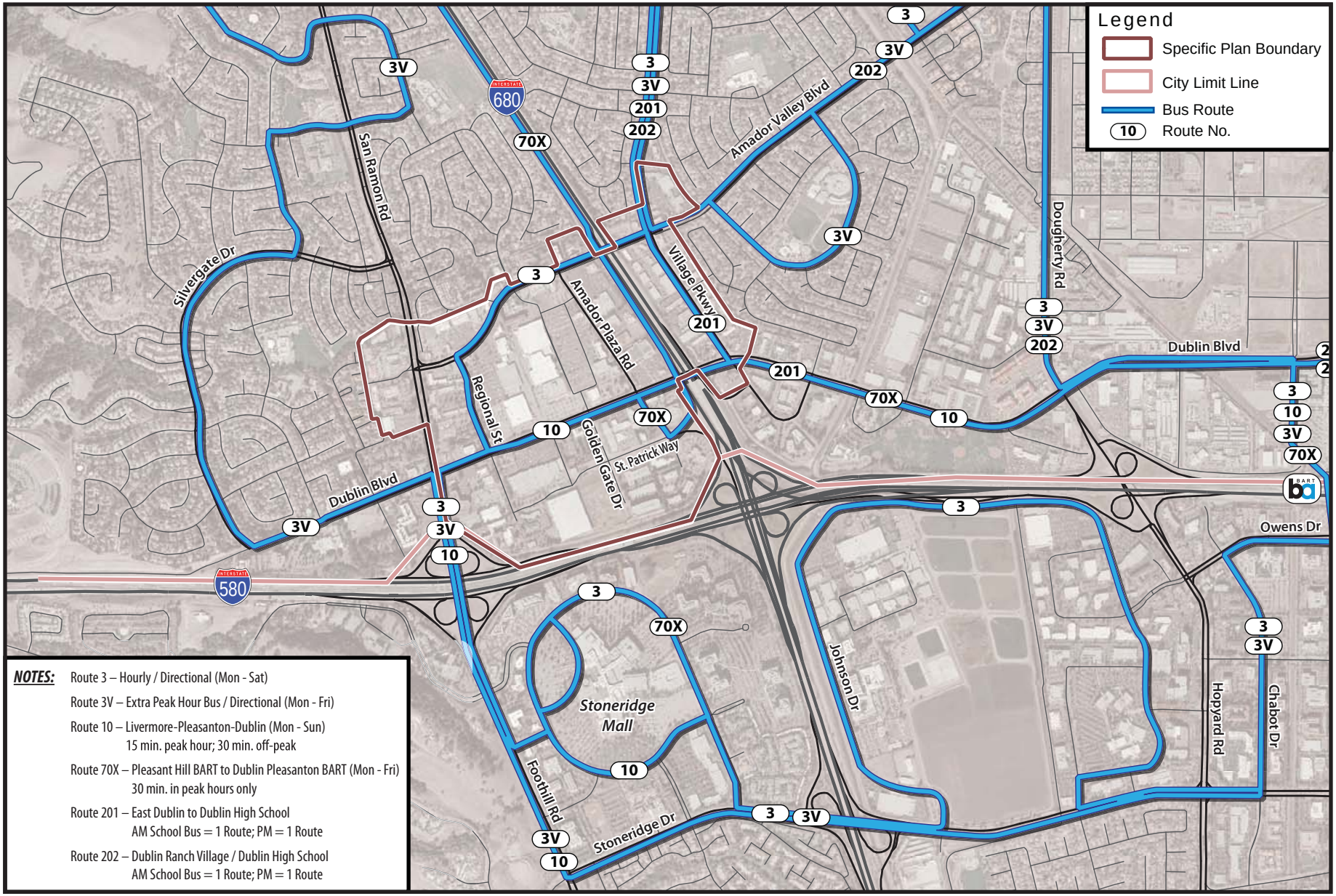
9/2010 JN 70-100239

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Existing Bicycle Facilities

Figure 3.9-4



Source: Fehr & Peers (2010)

RBF CONSULTING

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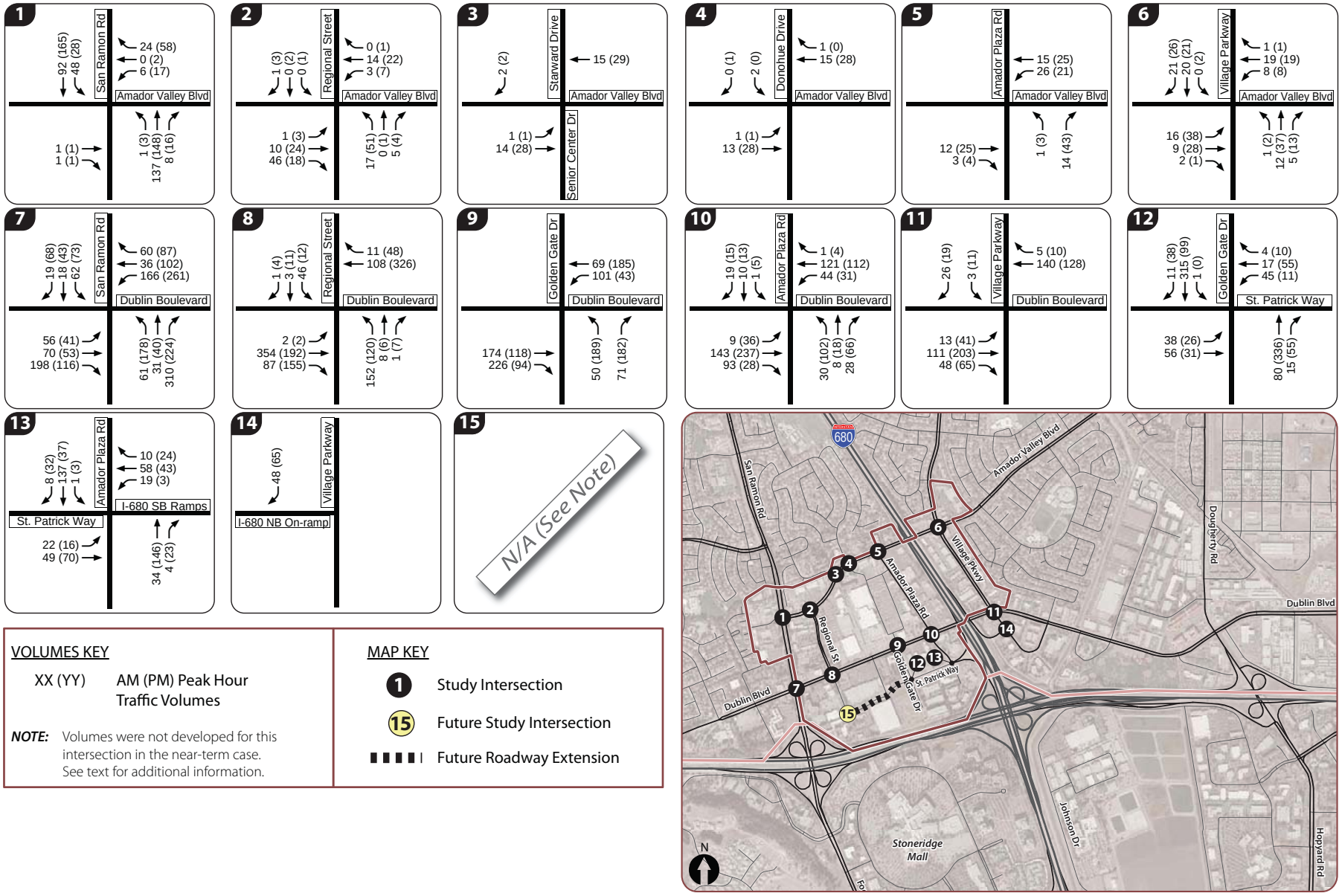
9/2010 JN 70-100239

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Existing Transit Routes

Figure 3.9-5



Source: Fehr & Peers (2010)

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Approved Project Peak Hour Intersection Volumes

Figure 3.9-6

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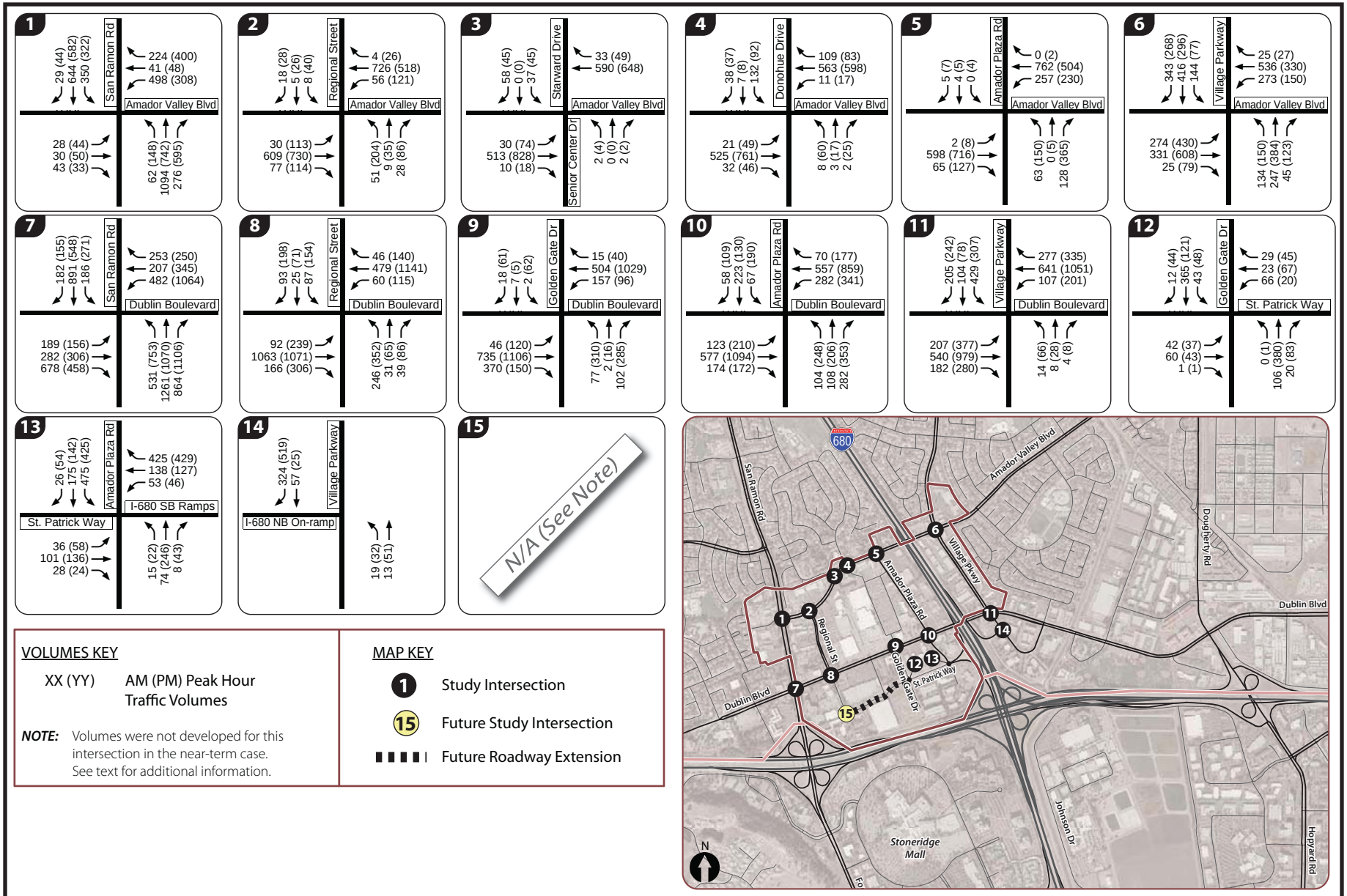

Source: Fehr & Peers (2010)

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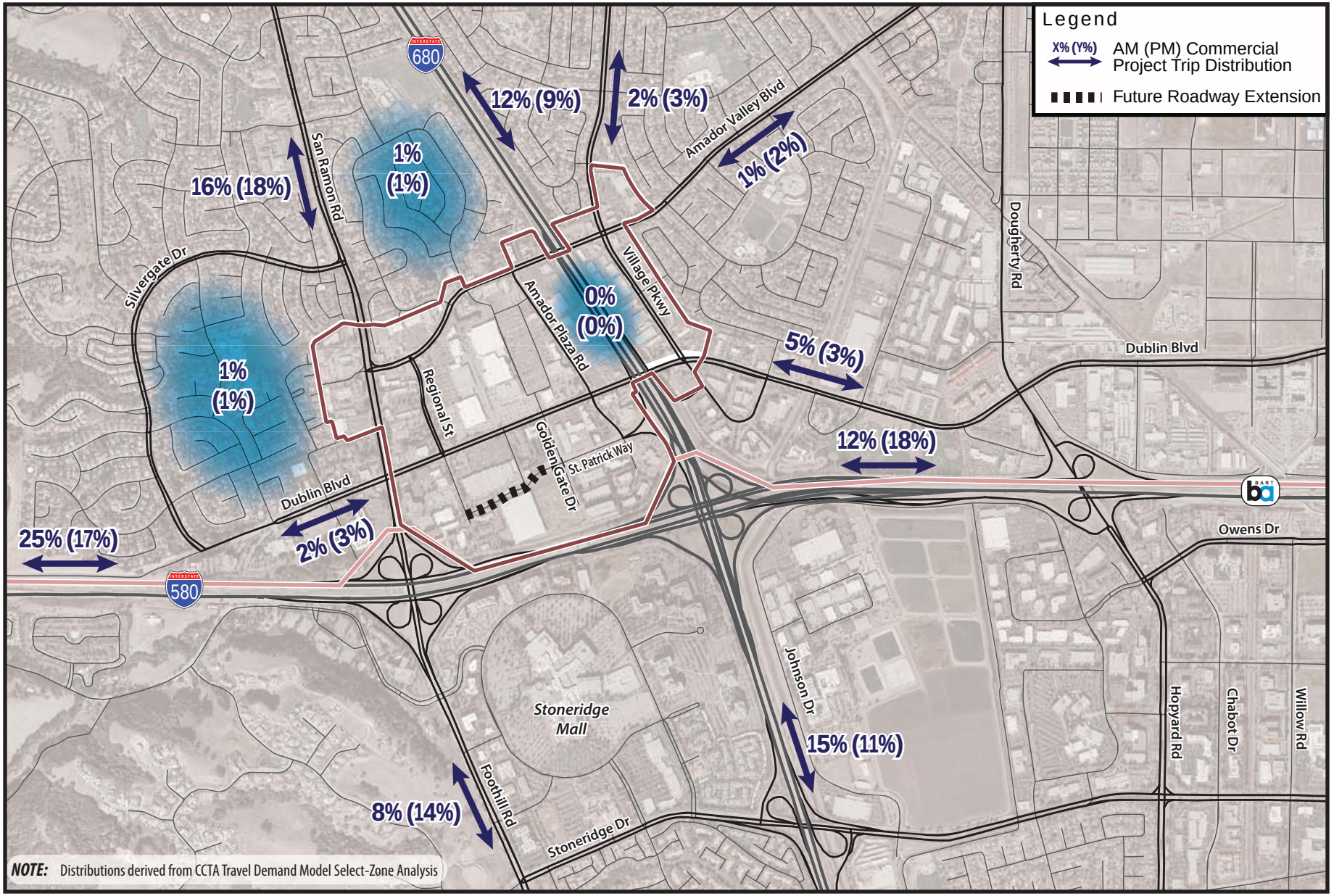
9/2010 JN 70-100239

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Near-Term Peak Hour Intersection Volumes

Figure 3.9-7



Source: Fehr & Peers (2010)

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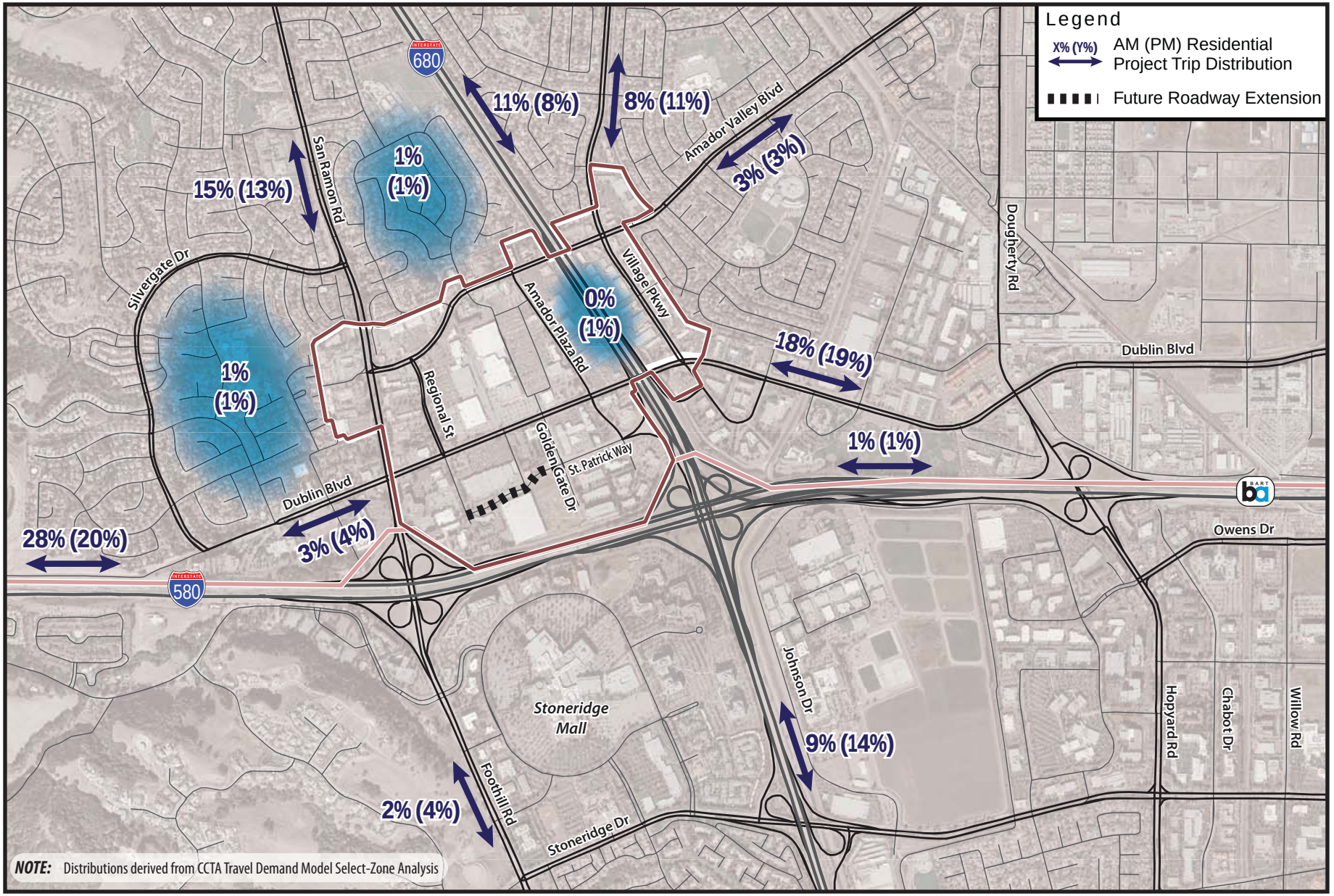
DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Commercial Project Trip Distribution

Figure 3.9-8a



Source: Fehr & Peers (2010)

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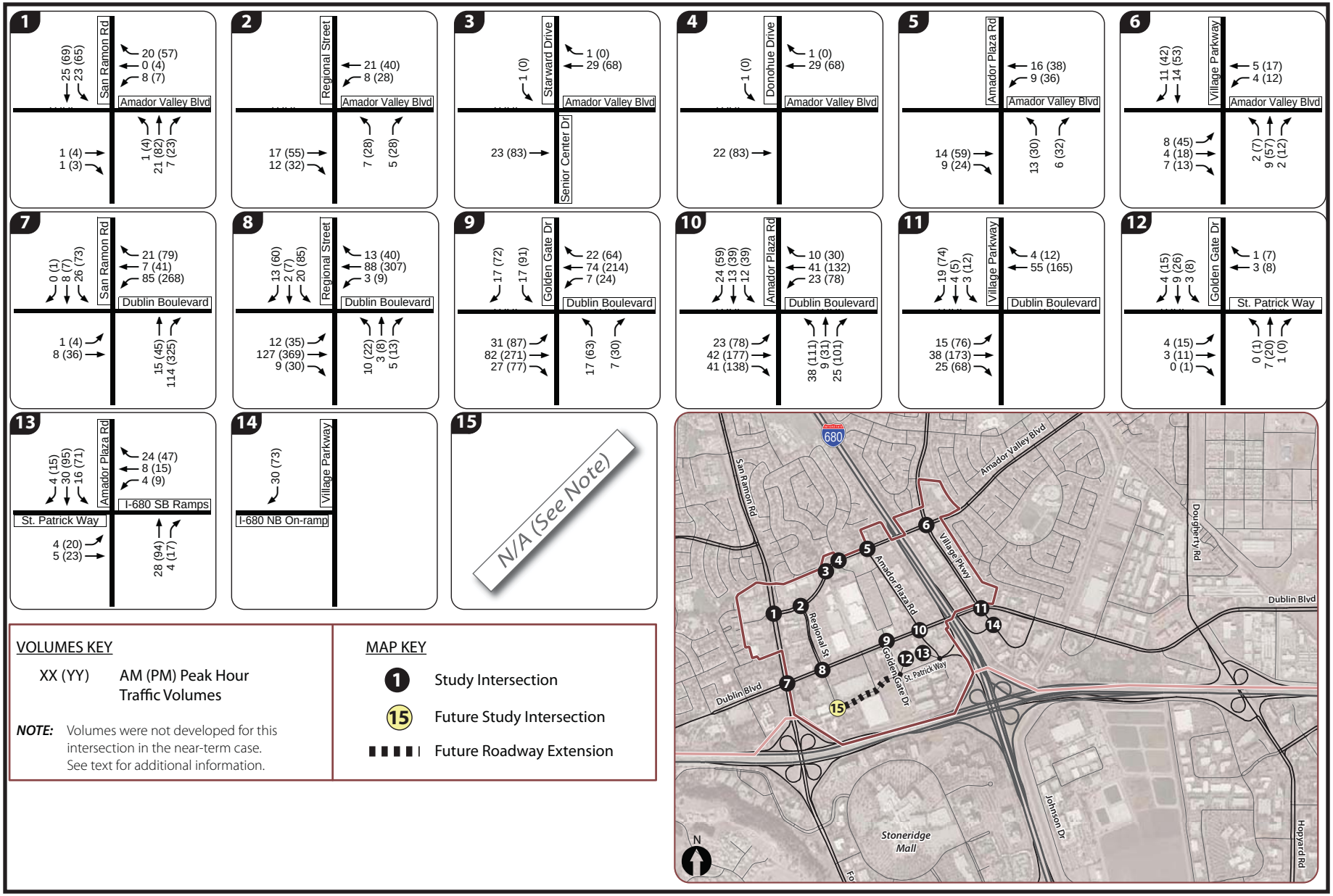
N

9/2010 JN 70-100239

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Residential Project Trip Distribution

Figure 3.9-8b



VOLUMES KEY

XX (YY) AM (PM) Peak Hour Traffic Volumes

NOTE: Volumes were not developed for this intersection in the near-term case. See text for additional information.

MAP KEY

1 Study Intersection

15 Future Study Intersection

Future Roadway Extension

Source: Fehr & Peers (2010)

RBF CONSULTING

9/2010 JN 70-100239

DOWNTOWN DUBLIN SPECIFIC PLAN EIR

Project (Baseline FAR) Peak Hour Intersection Volumes

Figure 3.9-9

Notice of Preparation of an Environmental Impact Report for the Downtown Dublin Specific Plan City of Dublin And Notice of Scoping Meeting (PA 07-0 36)

Notice is hereby given that the City of Dublin will be the Lead Agency and will prepare a Programmatic Environmental Impact Report (EIR) for the Downtown Dublin Specific Plan (DDSP). The City of Dublin is requesting comments on the scope and content of this EIR.

A Scoping Session will be held on February 11, 2010 at 6:00 pm in the Regional Meeting Room (City Hall, 100 Civic Plaza, Dublin, CA 94550). The Scoping Session is part of the EIR scoping process during which the City solicits input from the public and other agencies on specific topics they believe should be addressed in the environmental analysis.

The determination to prepare an EIR was made by the City of Dublin. As specified by the CEQA Guidelines, the Notice of Preparation (NOP) will be circulated for a 30-day review period. The City of Dublin welcomes responsible and trustee agency input during this review, specifically input is requested on the scope and content of environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the proposed project. In the event that no response or request for additional time is received by your agency by the end of the review period, the City of Dublin may presume that your agency has no comment.

Written comments on the scope of the EIR should be sent to:

Erica Fraser, Senior Planner
City of Dublin
Community Development Department
100 Civic Plaza
Dublin, CA 94568

The NOP comment period closes on **March 3, 2010**.

Project Location

The planning area is located in the City of Dublin in eastern Alameda County, just south of the border of Contra Costa County. Regional access to the City is from Interstate 580, Interstate 680, and the Dublin/Pleasanton line of Bay Area Rapid Transit (BART). Cities that border Dublin include San Ramon to the north (in Contra Costa County), Pleasanton to the south, and Livermore to the south and east. The regional location is shown in Figure 1: Regional Location.

Figure 1: Regional Location

Source: Google Maps, 2010

Project Site

The DDSP project area is located in the southwestern portion of the City and is approximately 284 acres in size. The project area is generally bound by Village Parkway to the east, Interstate 580 to the south, San Ramon Road to the west, and Amador Valley Boulevard to the north. There are some partial boundary limits that extend beyond those roadways, most notably for a portion of San Ramon Road, a portion of Amador Valley Boulevard, and all of the Village Parkway within the Specific Plan area. The project vicinity is shown in Figure 2: Specific Plan Area.

Project Description

The DDSP consists of a comprehensive set of incentives, standards, and requirements that will implement the vision for the future development in downtown Dublin. The DDSP will define the physical envelope for downtown Dublin's future growth using height limits, setbacks, density, and design standards. The DDSP will act as the planning tool to guide and direct new development, economic development, transportation improvements (including pedestrian improvements), transit-oriented development, parking, pedestrian amenities, and public open space (e.g. public plazas). The DDSP will be instrumental in promoting a more walkable, livable downtown Dublin, as well as providing incentives for development and supporting retail in keeping with the City's vision.

The DDSP area has been divided into three districts, based on the existing building patterns and land uses within each area and the intended development envisioned for each district. These three districts are shown in Figure 3: Downtown Dublin Specific Plan Districts/Land Use Designations.

As described in the DDSP, the vision for downtown Dublin is to become a vibrant and dynamic commercial and mixed-use center that provides a wide array of opportunities for shopping, services, dining, working, living and entertainment that attracts both local and regional residents. Each district will have a particular development focus, as described below.

Retail District

The Retail District is envisioned to continue to serve as the primary regional and community shopping destination in the City. Given their large building format and existing long-term leases, it is likely that many of the existing buildings will remain.

New and remodeled buildings will compliment the existing uses and be designed to create more inviting space that encourage walking between businesses and strengthening the economy of Downtown Dublin.

Businesses in the Retail District are envisioned to include a mix of retail (ranging from small independent retailers to national regional-serving retailers), service, office, civic, and limited residential uses.

Efforts to improve pedestrian connectivity and visually soften the large expansive parking lots through landscaping and reconfiguration of spaces will be strongly encouraged.

Transit-Oriented District

The vision for the Transit-Oriented District is to encourage development with land uses that support and compliment transit uses, particularly the West Dublin BART Station. These types of uses would include mixed-use that include office or residential above ground floor retail and are generally more urban than surrounding areas.

Land uses will provide the opportunity for a variety of activities such as offices, hotels, restaurants, shopping, etc. to encourage activity both during the day and at night for both youths and adults.

A pedestrian-scale, walkable environment will be encouraged by incorporating paseos, plazas, courtyards, benches, and informal gathering spaces. Connectivity within the district and to areas outside the district will be strongly encouraged.

Village Parkway District

Village Parkway will be a pedestrian-oriented district that also accommodates through traffic. Buildings will be sited at or near the sidewalk with parking provided at the rear to encourage walking and create a more consistent street edge.

Opportunities for live/work, mixed-use, and multi-family residential buildings will be encouraged in the district and compliment the predominantly commercial district, largely developed with retail, office, and certain automotive uses.

Revitalizing and continuing to upgrade the appearance and functionality of the Village Parkway District will be encouraged so that existing and new businesses, particularly those providing specialty commercial services, can continue to prosper.

Pedestrian-friendly amenities and features, including gathering places, and landscaping, will be strongly encouraged and thereby reduce vehicular trips.

Existing Entitled Projects

In addition to new development envisioned as part of the DDSP, there are a number of development projects within the Transit-Oriented District that are entitled but have not yet been constructed, and are identified in Table 1: Entitled Projects. All of the project sites are located between Golden Gate Drive and Regional Street.

Table 1: Entitled Projects

Development Project	Existing Development	Residential (DUs)	Retail / Commercial (sf)	Office (sf)	Hotel
Windstar Site	Vacant	309	--	--	--
AMB Site	208,829 sf warehouse building	308	--	150,000	--
BART Project Hotel (Stage 1 Development Plan only)	Vacant	--	7,500	--	150
Total		**617**	**7,500**	**150,000**	**150**

Source: City of Dublin, 2009.

These entitled projects are addressed as existing conditions in this EIR.

Development Plan

The DDSP provides a development plan for the next 15 + years. Each Specific Plan district identifies a broad range of land uses that can be developed, either by right or through a Conditional Use Permit. These land uses include regional retail, community retail, office, residential, mixed use and public uses.

Given the uncertainty in market conditions and the fact that no particular development projects are proposed as part of the DDSP, this approach will allow greater flexibility in the ultimate development pattern, while still maintaining a common vision for function and urban character within the DDSP project area.

For each district, the DDSP identifies a specific set of development standards that will apply to all new buildings and significantly remodeled buildings. These standards include lot size and building placement, access, parking, building density or floor-area ratio (FAR), and building height and setbacks.

The actual density of development allowed on a particular parcel will be regulated by the FAR. The DDSP identifies both a base FAR that is allowed by right and a maximum FAR that can be constructed based on the use and District. If a property owner would like to develop a project beyond the base FAR, they may obtain additional square footage up to the maximum FAR by drawing on a density development pool that has been established for specific uses in each district. The density development pool applies to both residential and non-residential development. As shown below in Table 2: DDSP Base and Maximum Floor Area Ratios and Density Development Pool, the maximum FAR would be greater than the base FAR for the Retail and Transit-Oriented District, but would remain the same in the Village Parkway District.

Table 2: DDSP Base and Maximum Floor Area Ratios and Density Development Pool (Residential and Non-Residential)

District	Base FAR	Maximum FAR	Density Development Pool (sf)*
Retail District	0.35	0.6	660,250
Transit-Oriented District	0.50	1.2	2,145,460
Village Parkway District	0.35	0.35	120,000

Source: Downtown Dublin Specific Plan, 2010.

*This number assumes residential development of 1,200 square feet per unit.

When a project applicant proposes to develop using a portion of the density development pool allocation, they will be required to enter into an agreement with the City and provide a community benefit in accordance with the Community Benefit Program which will be used to construct improvements in the DDSP project area, or construct improvements as part of the project which provide a community benefit (e. g. outdoor plazas, high quality

materials, etc.). The life of the agreement will be limited to a specific time period so that if a project is not constructed, the square footage can be returned to the density development pool and available for use by another development project within the respective district of the DDSP.

Future Build-out Development Potential

Collectively, the existing five Specific Plans that encompass the proposed DDSP project area allow for the additional development of nearly 3.2 million square feet of non-residential development, 717 dwelling units, and 150 hotel rooms. The proposed DDSP slightly increases this amount of future buildout development potential with 3.0 million square feet of non-residential development and 1,300 residential units.

Assuming an average of 1,200 square feet per residential unit and an average of 500 square feet per hotel room, the existing specific plans represent a gross future buildout development potential of 4.13 million square feet as compared to 4.59 million square feet under the proposed DDSP, for a net addition of 460,000 square feet.

A breakdown of the DDSP future buildout development potential is shown in Table 3, below.

Table 3: DDSP Future Buildout Development Potential (Including Base FAR, Development Pool and Projects which have been approved but not yet constructed)*

District	Non-Residential (sf)	Residential (du)
Retail District	737,094	100
Transit-Oriented District	2,277,716	1,100
Village Parkway District	20,730	100
Total	**3,035,540**	**1,300**

**Includes projects that have been approved, but not yet constructed.*

While this represents the theoretical buildout capacity of development in the DDSP project area, the ultimate amount of future development will likely be considerably less due non-tangibles such as market demand, ownership patterns, tenant lease terms, etc., as well as physical limitations such as parcel configurations, parking, and transportation circulation.

Given the fact that the most significant restriction on future growth in the DDSP project area is the capacity of the existing roadway network to accommodate additional traffic trips, particularly during the AM and PM peak hours, future development will be particularly limited to the total amount of traffic that can be accommodated on the roadway network under cumulative conditions, while still maintaining a Level of Service (LOS) standard consistent with City policy (as defined in the General Plan).

As such, the approach taken in the EIR will be to identify the limit of future new development by district that only requires minimal transportation improvements (i.e. signalization timing, re-striping of lanes, etc.) versus improvements that would be required under the future buildout development potential. The latter will require more significant

roadway improvements such as right-of-way acquisition, construction of additional lanes, and transportation demand management initiatives.

The EIR

The EIR will be prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) and the CEQA Guidelines. The EIR will provide information sufficient to evaluate the proposed Specific Plan and its potential to cause significant effects on the environment; examine methods of reducing environmental impacts; and identify alternatives to the proposed Specific Plan. The EIR will be a program EIR of planned public improvements and a maximum future development potential. Future individual projects will be subject to additional environmental review, in particular of site specific attributes (such as heritage trees), as appropriate. The EIR will include the following:

- Introduction
- Summary
- Project Description
- Environmental Setting, Impacts, and Mitigation Measures
- Other CEQA Considerations
- Report Preparers

Probable Environmental Effects

The EIR will analyze whether the proposed project would have significant environmental effects in the following areas:

Aesthetics and Visual Resources

The analysis will discuss the impacts of new development in terms of height and intensity, and the potential for increased light and glare impacts on the existing setting.

Air Quality

The analysis will address the requirements of the Bay Area Air Quality Management District (BAAQMD) and analyzes local and regional air quality impacts associated with project implementation including both short-term construction impacts and long-term operational impacts from mobile and stationary sources, as well as the potential exposure to objectionable odors from surrounding uses. The analysis will be based on air quality modeling performed for the proposed project as part of the traffic impact analysis.

Geology, Soils & Seismicity

The analysis will examine potential geologic and seismic hazards as well as any engineering constraints and general soil suitability for the land uses proposed as part of the proposed Specific Plan.

Hazards and Hazardous Materials

The analysis will evaluate the potential presence of hazardous materials and contaminated soil within the planning area. The potential for onsite sources of contamination such as leaking hazardous waste containers, residual agricultural chemicals, lead-based paints, and asbestos-containing building materials, among other items will also be addressed The potential risk of these conditions in proximity to proposed development and human activities will be evaluated.

Hydrology and Water Quality

The analysis will evaluate proposed project impacts related to hydrology, storm drainage, water resources and water quality. The analysis will identify existing drainage patterns, potential flood hazards and stormwater retention requirements of the City of Dublin. Several properties are located within the Federal Emergency Management Agency (FEMA) 100-year floodplain, which would be subject to floodplain regulations. To comply with the requirements of CEQA, the potential effects of the proposed project on flooding will be evaluated.

Land Use and Planning

The analysis will evaluate the relationship of the proposed project to relevant regional and local plans, and other local planning documents. The analysis will also address project consistency with adopted plans and policies, including the project's relationship to the *City of Dublin General Plan*.

Noise & Vibration

The analysis will evaluate the compatibility between the existing noise environment and anticipated noise levels generated by the project-generated traffic, by on-site activities and cumulative noise from area roadways upon completion of the proposed project. The analysis will be based on noise modeling conducted within the DDSP project area. The analysis will also evaluate the potential effects associated with both short-term construction vibration and long-term vibration associated with the adjacent Interstates 680 and 580 and the BART railway line.

Public Services, Utilities, and Recreation

The analysis will evaluate the availability of existing public facilities and services, and calculate demand generated by the proposed project for additional facilities such as schools, parks/recreation facilities, police, and fire services. It will also analyze additional system

requirements and physical improvements needed to serve the buildout demands of the proposed project. The provision of potable water service, wastewater treatment and disposal, natural gas and electric service, and solid waste impacts will also be addressed.

Transportation and Traffic

The analysis will evaluate the potential impacts on the area roadway network, including roadway segments and intersections. Scenarios evaluated will include: existing conditions, existing plus project conditions, and cumulative conditions based on *City of Dublin General Plan*. The analysis also will address alternatives modes of transportation (e.g. public transit, pedestrian access, and bicycle routes).

Other CEQA Considerations

This section of the EIR will address the required discussions and analyses of various topical issues mandated by CEQA Guidelines Section 15126.2, including: significant and unavoidable environmental effects; growth inducing impacts; irreversible environmental changes and effects found not to be significant.

This section will also address alternatives to the proposed project and cumulative impacts. As part of the cumulative analysis, the EIR will discuss the potential for the Specific Plan to generate greenhouse gases that have a significant impact on the environment, and the potential for conflict with any applicable plan, policy, or regulation adopted for the purposes of reducing emissions of greenhouse gases. As per CEQA Guidelines Section 15126.6, this section will also describe a range of reasonable alternatives to the proposed project, which could feasibly attain the basic objectives of the project and avoid and/or lessen the environmental effects of the project.

Environmental Effects Not Analyzed

The DDSP is not anticipated to result in significant impacts in the following areas:

- Agricultural Resources
- Biological Resources
- Cultural Resources
- Mineral Resources
- Population & Housing

The project site is an urban infill area and the above resources do not exist on the project site and /or are not considered to have the potential to cause a significant environmental impact. As such, detailed analysis of these environmental resources will not be included in the EIR.

The preparation of the Notice of Preparation has been financed in part by grants from the U.S. Department of Transportation. The contents of this NOP do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

Comment Form

Name: _____ Organization: _____

Would you like to be placed on the mailing list for future meetings on this project? If so, please provide us with your email or mailing address:

_____

Please submit your comments no later than Wednesday, March 3, 2010 to:

Erica Fraser, Senior Planner
City of Dublin
Community Development Department
100 Civic Plaza
Dublin, CA 94568

ALAMEDA COUNTY
CONGESTION MANAGEMENT AGENCY

1333 BROADWAY, SUITE 220 • OAKLAND, CA 94612 • PHONE: (510) 836-2560 • FAX: (510) 836-2185
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AC Transit
Director
Greg Harper

Alameda County
Supervisors
Nate Miley
Scott Haggerty

City of Alameda
Mayor
Beverly Johnson
Vice Chair

City of Albany
Vice Mayor
Farid Javandel

BART
Director
Thomas Blalock

City of Berkeley
Councilmember
Kriss Worthington

City of Dublin
Mayor
Tim Sbranti

City of Emeryville
Mayor
Ruth Atkin

City of Fremont
Vice Mayor
Robert Wieckowski

City of Hayward
Councilmember
Olden Henson

City of Livermore
Mayor
Marshall Kamena

City of Newark
Councilmember
Luis Freitas

City of Oakland
Councilmember
Larry Reid

City of Piedmont
Councilmember
John Chiang

City of Pleasanton
Mayor
Jennifer Hosterman

City of San Leandro
Vice Mayor
Joyce R. Starosciak

City of Union City
Mayor
Mark Green
Chair

Executive Director
Dennis R. Fay

March 3, 2010

Ms. Erica Fraser, AICP
Senior Planner
Community Development Department
City of Dublin
100 Civic Plaza
Dublin, CA 94568

SUBJECT: Comments on the Notice of Preparation of a Draft Environmental Impact Report for the Downtown Dublin Specific Plan

Dear Ms. Fraser:

Thank you for the opportunity to comment on the Notice of Preparation of a Draft Environmental Impact Report for the Downtown Dublin Specific Plan. The Plan consists of a set of incentives standards and requirements that will implement the vision for future development in downtown Dublin. It will include three districts and include a commercial and mixed use center, retail, transportation improvements, and open space.

The ACCMA respectfully submits the following comments:

- The City of Dublin adopted Resolution 120-92 on September 28, 1992 establishing guidelines for reviewing the impacts of local land use decisions consistent with the Alameda County Congestion Management Program (CMP). Based on our review of the NOP, the proposed project appears to generate at least 100 p.m. peak hour trips over existing conditions. If this is the case, the CMP Land Use Analysis Program requires the City to conduct a traffic analysis of the project using the Countywide Transportation Demand Model for projection years 2015 and 2035 conditions. Please note the following paragraph as it discusses the responsibility for modeling.

    - The CMA Board amended the CMP on March 26th, 1998 so that local jurisdictions are responsible for conducting the model runs themselves or through a consultant. The ACCMA has a Countywide model that is available for this purpose. The City of Dublin and the ACCMA signed a Countywide Model Agreement on July 17, 2008. Before the model can be used for this project, a letter must be submitted to the ACCMA requesting use of the model and describing the project. A copy of a sample letter agreement is available upon request.

- Potential impacts of the project on the Metropolitan Transportation System (MTS) need to be addressed. (See 2009 CMP Figures E-2 and E-3 and Figure 2). The DEIR should address all

potential impacts of the project on the MTS roadway and transit systems. These include MTS roadways as shown in the attached map as well as BART and AC Transit. Potential impacts of the project must be addressed for 2015 and 2035 conditions.

- Please note that the ACCMA does *not* have a policy for determining a threshold of significance for Level of Service for the Land Use Analysis Program of the CMP. Professional judgment should be applied to determine the significance of project impacts (Please see chapter 6 of 2009 CMP for more information).
- For the purposes of CMP Land Use Analysis, 2000 Highway Capacity Manual is used.

- The adequacy of any project mitigation measures should be discussed. On February 25, 1993, the CMA Board adopted three criteria for evaluating the adequacy of DEIR project mitigation measures:
  - Project mitigation measures must be adequate to sustain CMP service standards for roadways and transit;
  - Project mitigation measures must be fully funded to be considered adequate;
  - Project mitigation measures that rely on state or federal funds directed by or influenced by the CMA must be consistent with the project funding priorities established in the Capital Improvement Program (CIP) section of the CMP or the Regional Transportation Plan (RTP).

  The DEIR should include a discussion on the adequacy of proposed mitigation measures relative to these criteria. In particular, the DEIR should detail when proposed roadway or transit route improvements are expected to be completed, how they will be funded, and what would be the effect on LOS if only the funded portions of these projects were assumed to be built prior to project completion.

- Potential impacts of the project on CMP transit levels of service must be analyzed. (See 2009 CMP, Chapter 4). Transit service standards are 15-30 minute headways for bus service and 3.75-15 minute headways for BART during peak hours. The DEIR should address the issue of transit funding as a mitigation measure in the context of the CMA's policies as discussed above.

- The DEIR should also consider demand-related strategies that are designed to reduce the need for new roadway facilities over the long term and to make the most efficient use of existing facilities (see 2009 CMP, Chapter 5). The DEIR should consider the use of TDM measures, in conjunction with roadway and transit improvements, as a means of attaining acceptable levels of service. Whenever possible, mechanisms that encourage ridesharing, flextime, transit, bicycling, telecommuting and other means of reducing peak hour traffic trips should be considered. The Site Design Guidelines Checklist may be useful during the review of the development proposal. A copy of the checklist is enclosed.

- The EIR should consider opportunities to promote countywide bicycle routes identified in the Alameda Countywide Bicycle Plan, which was approved by the ACCMA Board on October 26, 2006. The approved Countywide Bike Plan is available at http://www.accma.ca.gov/pages/HomeBicyclePlan.aspx

- The Alameda County Pedestrian Plan, developed by ACTIA, was adopted by both the ACTIA and ACCMA Boards in September 2006 and October 2006, respectively. The EIR should consider opportunities to promote pedestrian improvements identified in the Plan through the project development review process. The approved Countywide Pedestrian Plan is available at http://www.acta2002.com/

- For projects adjacent to state roadway facilities, the analysis should address noise impacts of the project. If the analysis finds an impact, then mitigation measures (i.e., soundwalls) should be incorporated as part of the conditions of approval of the proposed project. It should not be assumed that federal or state funding is available.

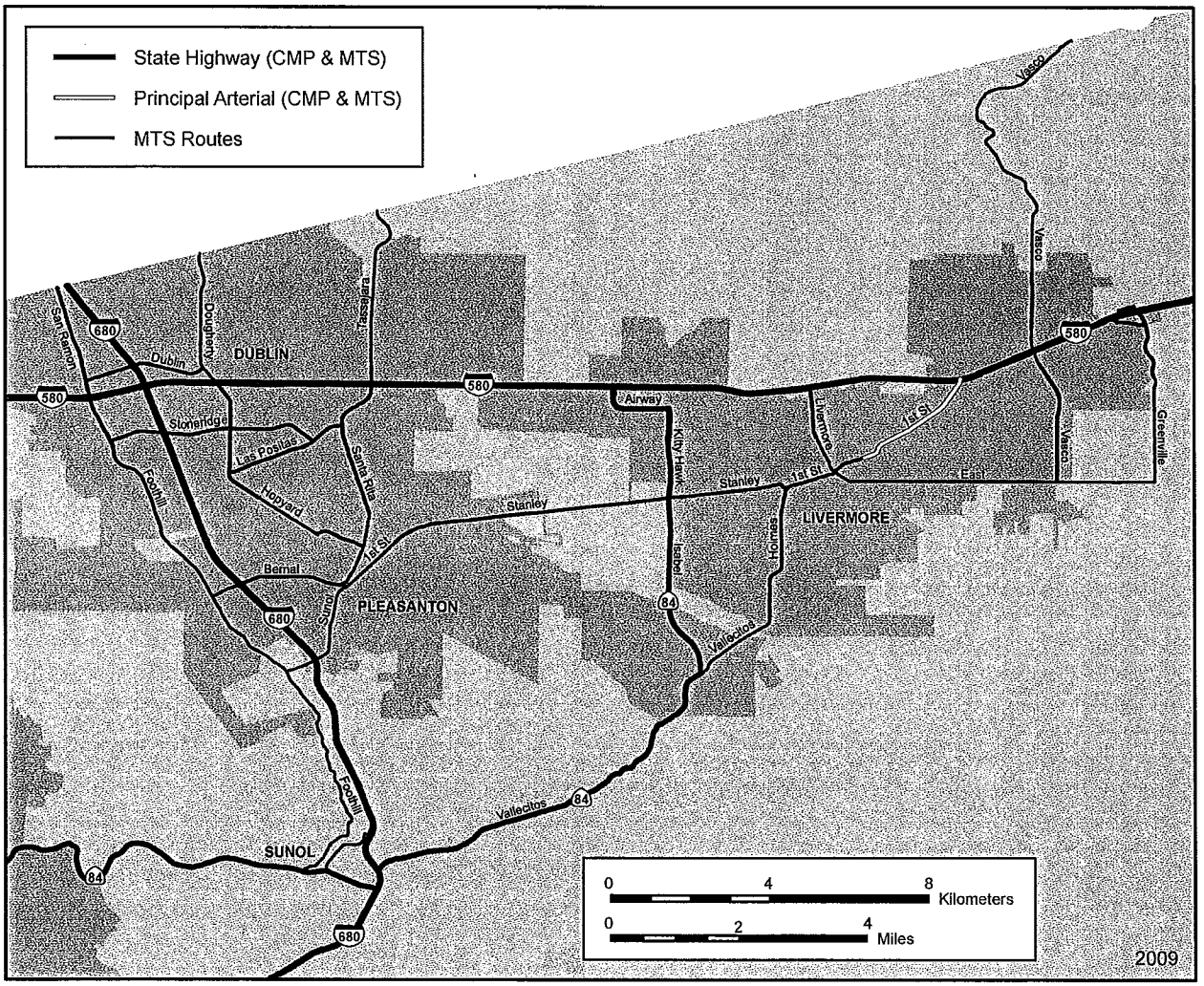
- Local jurisdictions are encouraged to consider a comprehensive Transit Oriented Development (TOD) Program, including environmentally clearing all access improvements necessary to support TOD development as part of the environmental documentation.

Thank you for the opportunity to comment on this Notice of Preparation. Please do not hesitate to contact me at 510.836.2560 if you require additional information.

Sincerely,

Diane Stark
Senior Transportation Planner

cc: Beth Walukas, Manager of Planning
file: CMP - Environmental Review Opinions - Responses - 2010


State Highway (CMP & MTS)
Principal Arterial (CMP & MTS)
MTS Routes
DUBLIN
PLEASANTON
LIVERMORE
SUNOL
Dublin
Dougherty
Tassajara
San Ramon
Foothill
Stoneridge
Las Positas
Hopyard
Santa Rita
1st St
Bernal
Stanley
Airway
Kitty Hawk
Isabel
Livermore
1st St
East
Vasco
Greenville
Holmes
Vallecitos
680
580
84
0 4 8 Kilometers
0 2 4 Miles
2009

Attachment

Design Strategies Checklist
for the
Transportation Demand Management Element
of the
Alameda County CMP

The Transportation Demand Management Element included in the Congestion Management Program requires each jurisdiction to comply with the "" Required Program". This requirement can be satisfied in three ways: 1) adoption of "Design Strategies for encouraging alternatives to auto use through local development review" prepared by ABAG and the Bay Area Quality Management District; 2) adoption of new design guidelines that meet the individual needs of the local jurisdictions and the intent of the goals of the TDM Element or 3) evidence that existing policies and programs meet the intent of the goals of the TDM Element.

For those jurisdictions who have chosen to satisfy this requirement by Option 2 or 3 the following checklist has been prepared. In order to insure consistency and equity throughout the County, this checklist identifies the components of a design strategy that should be included in a local program to meet the minimum CMP conformity requirements. The required components are highlighted in bold type and are shown at the beginning of each section. A jurisdiction must answer Yes to each of the required components to be considered consistent with the CMP. Each jurisdiction will be asked to annually certify that it is complying with the TDM Element. Local jurisdictions will not be asked to submit the back-up information to the CMA justifying its response; however it should be available at the request of the public or neighboring jurisdictions.

Questions regarding optional program components are also included. You are encouraged but not required to answer these questions. ACTAC and the TDM Task Force felt that it might be useful to include additional strategies that could be considered for implementation by each jurisdiction.

CHECKLIST

Bicycle Facilities

Goal: To develop and implement design strategies that foster the development of a countywide bicycle program that incorporates a wide range of bicycle facilities to reduce vehicle trips and promote bicycle use for commuting, shopping and school activities. (Note: an example of facilities are bike paths, lanes or racks.)

Note: Bold type face indicates those components that must be included the "Required Program" in order to be found in compliance with the Congestion Management Program.

Local Responsibilities:

1a. In order to achieve the above goal, does your jurisdiction have design strategies or adopted policies that include the following:

1a.1 provides a system of bicycle facilities that connect residential and/or non-residential development to other major activity centers?

Yes No

1a.2 bicycle facilities that provide access to transit?

Yes No

1a.3 that provide for construction of bicycle facilities needed to fill gaps, (i.e. gap clure), not provided through the development review process?

Yes No

1a.4 that consider bicycle safety such as safe crossing of busy arterials or along bike trails?

Yes No

1a.5 that provide for bicycle storage and bicycle parking for (A) multi-family residential and/or (B) non-residential developments?

Yes No

1b. How does your jurisdiction implement these strategies? Please identify.

Zoning ordinance
Design Review
Standard Conditions of Approval
Capital Improvement Program
Specific Plan
Other

Pedestrian Facilities

Goal: To develop and implement design strategies that reduce vehicle trips and foster walking for commuting, shopping and school activities.

Local Responsibilities

2a. In order to achieve the above goal, does your jurisdiction have design strategies or adopted policies that incorporate the following:

2a.1 that provides reasonably direct, convenient, accessible and safe pedestrian connections to major activity centers, transit stops or hubs parks/open space and other pedestrian facilities?

Yes No

Note: Bold type face indicates those components that must be included the "Required Program" in order to be found in compliance with the Congestion Management Program.

2a.2 that provide for construction of pedestrian paths needed to fill gaps, (i.e. gap closure), not provided through the development process?

Yes No

2a.3 that include safety elements such as convenient crossing at arterials?

Yes No

2a.4 that provide for amenities such as lighting, street trees, trash receptacles that promote walking?

Yes No

2a.5 that encourage uses on the first floor that are pedestrian oriented, entrances that are conveniently accessible from the sidewalk or transit stops or other strategies that promote pedestrian activities in commercial areas?

Yes No

2b. How does your jurisdiction implement these strategies? Please identify.

Zoning ordinance
Design Review, such as ADA Accessibility Design Standards
Standard Conditions of Approval
Capital Improvement Program
Specific Plan
Other

Transit

Goal: To develop and implement design strategies in cooperation with the appropriate transit agencies that reduce vehicle trips and foster the use of transit for commuting, shopping and school activities.

Local Responsibilities

3a. In order to achieve the above goal, does your jurisdiction have design strategies or adopted policies that include the following:

3a.1 provide for the location of transit stops that minimize access time, facilitate intermodal transfers, and promote reasonably direct, accessible, convenient and safe connections to residential uses and major activity centers?

Yes No

Note: Bold type face indicates those components that must be included the "Required Program" in order to be found in compliance with the Congestion Management Program.

3a.2 provide for transit stops that have shelters or benches, trash receptacles, street trees or other street furniture that promote transit use?

Yes No

3a.3 that includes a process for including transit operators in development review?

Yes No

3a.4 provide for directional signage for transit stations and/or stops?

Yes No

3a.5 that include specifications for pavement width, bus pads or pavement structure, length of bus stops, and turning radii that accommodates bus transit?

Yes No

3.b How does your jurisdiction implement these strategies? Please identify.

Zoning ordinance
Design Review
Standard Conditions of Approval
Capital Improvement Program
Specific Plan
Other

Carpools and Vanpools

Goal: To develop and implement design strategies that reduce the overall number of vehicle trips and foster carpool and vanpool use.

Local Responsibilities:

4a. In order to achieve the above goal, does your jurisdiction have design strategies or adopted policies that include the following:

4a.1 For publicly owned parking garages or lots, are there preferential parking spaces and/or charges for carpools or vanpools?

Yes No

4a.2 that provide for convenient or preferential parking for carpools and vanpools in non-residential developments?

Yes No

Note: Bold type face indicates those components that must be included the "Required Program" in order to be found in compliance with the Congestion Management Program.

4.b How does your jurisdiction implement these strategies? Please identify.

Zoning ordinance
Design Review
Standard Conditions of Approval
Capital Improvement Program
Specific Plan
Other

Park and Ride

Goal: To develop design strategies that reduce the overall number of vehicle trips and provide park and ride lots at strategic locations.

Local Responsibilities:
5a. In order to achieve the above goal, does your jurisdiction have design strategies or adopted policies that include the following:

5a.1 promote park and ride lots that are located near freeways or major transit hubs?

Yes No

5a.2 a process that provides input to Caltrans to insure HOV by-pass at metered freeway ramps?

Yes No

5b. How does your jurisdiction implement these strategies? Please identify.

Zoning ordinance
Design Review
Standard Conditions of Approval
Capital Improvement Program
Specific Plan
Other

Note: Bold type face indicates those components that must be included the "Required Program" in order to be found in compliance with the Congestion Management Program.

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100 NORTH CANYONS PARKWAY LIVERMORE, CA 94551 PHONE (925) 454-5000 FAX (925) 454-5727

RECEIVED
MAR - 2 2010
DUBLIN PLANNING

March 1, 2010

Ms. Erica Fraser
City of Dublin
Community Development Department
100 Civic Plaza
Dublin, Ca. 94568

Subject: Comments on Notice of Preparation of a Draft Environmental Impact Report for the Downtown Dublin Specific Plan

Dear Ms. Fraser:

Zone 7 Water Agency (Zone 7) has reviewed the referenced Notice of Preparation (NOP) in the context of Zone 7's mission to provide drinking water, non-potable water for agriculture/ irrigated turf, flood protection, and groundwater and stream management within the Livermore-Amador Valley. Following are our comments for your consideration:

Flood Control Facilities

Zone 7 maintains several flood control facilities within the Specific Plan area. Any changes in land use that may alter the hydrology and/or impact Zone 7 facilities should be evaluated through a hydrological analysis.

The Specific Plan area is adjacent to and drains into Lines F-4 and J-1 of Zone 7's flood protection and stormwater drainage system. Portions of these drainages may benefit from the implementation of low-impact development (LID) technologies, such as pervious pavement, rain-gardens, and green roofs. Zone 7 encourages review of such measures for possible inclusion in the project so as to alleviate site run-off and peaking issues in these discrete areas.

Known Toxic Sites

Zone 7 is tracking 9 active toxic site cases within the Specific Plan area (listed below). A map showing the location of these active cases along with past closed cases within the Specific Plan area can be viewed by visiting http://geotracker.swrcb.ca.gov/.

- The following 7 cases are fuel sites where petroleum-bases products such as total petroleum hydrocarbon from gasoline (TPHg), TPH from diesel (TPHd), benzene, toluene, ethylebenzene, xylene (collectively known as BTEX) and oxygenates including methyl teriary-butyl ether (MTBE) and tertiary-butyl alcohol (TBA):

    1. Former Quest Laboratory; 6511 Golden Gate Dr.
    2. Crown Chevrolet; 7544 Dublin Blvd
    3. Shamrock Ford; 7499 Dublin Blvd

4. Unocal; 7850 Amador Valley Blvd
5. Corwood Carwash; 6973 Village Parkway
6. Arco; 7249 Village Parkway
7. Shell Oil; 7194 Amador Valley Blvd

- The following 2 cases are chlorinated solvent sites where tetrachloroethylene (PCE) and/or teichloroethylene (TCE) have been detected:

1. Crow Canyon Cleaners; 7272/7242 San Ramon Rd
2. Village Parkway Shopping Center; 7054-7150 Village Parkway

We appreciate the opportunity to comment on your project. If you have any questions or comments, please feel free to contact me at your earliest convenience at 925-454-5036 or by e-mail at mlim@zone7water.com.

Sincerely,

for Mary Lim
Environmental Services Program Manager

cc: Kurt Arends, Joe Seto, Jeff Tang, Carol Mahoney, Cheryl Dizon

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 622-5491
FAX (510) 286-5559
TTY 711

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MAR - 9 2010
DUBLIN PLANNING

Flex your power!
Be energy efficient!

March 1, 2010

ALAGEN247
SCH#2010022005

Ms. Erica Fraser
City of Dublin
Community Development Department
100 Civic Plaza
Dublin, CA 94568

Dear Ms. Fraser:

Downtown Dublin Specific Plan – Notice of Preparation

Thank you for including the California Department of Transportation (Department) in the environmental review process for the Downtown Dublin Specific Plan (DDSP). The following comments are based on the Notice of Preparation (NOP). As lead agency, the City of Dublin is responsible for all project mitigation, including any needed improvements to State highways. The project's fair share contribution, financing, scheduling, and implementation responsibilities as well as lead agency monitoring should be fully discussed for all proposed mitigation measures and the project's traffic mitigation fees should be specifically identified in the environmental document. Any required roadway improvements should be completed prior to issuance of project occupancy permits. An encroachment permit is required when the project involves work in the State's right of way (ROW). The Department will not issue an encroachment permit until our concerns are adequately addressed. Therefore, we strongly recommend that the lead agency ensure resolution of the Department's California Environmental Quality Act (CEQA) concerns prior to submittal of the encroachment permit application; see the end of this letter for more information regarding the encroachment permit process.

Community Planning
The Department encourages the City of Dublin to locate any needed housing, jobs and neighborhood services near major mass transit nodes, and connect these nodes with streets configured to facilitate walking and biking, as a means of promoting mass transit use and reducing regional vehicle miles traveled and traffic impacts on the state highways.

As stated in the NOP, the DDSP will act as the planning tool to guide and direct new development. Therefore, to fully access all transportation impacts, the environmental document should include a multi-modal level of service and modeling analysis that includes pedestrian, bicyclist and transit performance or level/quality of service measures. In addition, mitigation measures resulting from vehicular impacts can include improving access for pedestrians, bicyclists and connectivity to transit facilities.

To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW to the address at the top of this letterhead, marked ATTN: Michael Condie, Mail Stop #5E.

Should you have any questions regarding this letter, please call Yatman Kwan of my staff at (510) 622-1670.

Sincerely,

Lisa Carboni

LISA CARBONI
District Branch Chief
Local Development - Intergovernmental Review

c: State Clearinghouse

CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512
www.energy.ca.gov

February 24, 2010

RECEIVED
FEB 26 2010
DUBLIN PLANNING

Erica Fraser
City of Dublin
100 Civic Plaza
Dublin, CA 94568

Dear Ms. Fraser:

The California Energy Commission has received the City of Dublin's Notice of Preparation titled Downtown Dublin Specific Plan, SCH 2010022005 that was submitted on 2/1/2010 for comments due by 3/2/2010. After careful review, the Energy Commission has found the following:

We would like to assist in reducing the energy usage involved in your project. Please refer to the enclosed Appendix F of the California Environmental Quality Act for how to achieve energy conservation.

In addition, the Energy Commission's *Energy Aware Planning Guide* is also available as a tool to assist in your land use planning. For further information on how to utilize this guide, please visit www.energy.ca.gov/energy_aware_guide/index.html.

Thank you for providing us the opportunity to review/comment on your project. We hope that our comments will be helpful in your environmental review process.

If you have any further questions, please call Gigi Tien at (916) 651-0566.

Sincerely,

Bill Pfanner

BILL PFANNER
Supervisor, Local Energy & Land Use Assistance Unit
Special Projects Office
Fuels and Transportation Division
California Energy Commission
1516 Ninth Street, MS 23
Sacramento, CA 95814

Enclosure

Appendix F
ENERGY CONSERVATION

I. Introduction

The goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal include:

(1) decreasing overall per capita energy consumption,
(2) decreasing reliance on natural gas and oil, and
(3) increasing reliance on renewable energy sources.

In order to assure that energy implications are considered in project decisions, the California Environmental Quality Act requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

Energy conservation implies that a project's cost effectiveness be reviewed not only in dollars, but also in terms of energy requirements. For many projects, lifetime costs may be determined more by energy efficiency than by initial dollar costs.

II. EIR Contents

Potentially significant energy implications of a project should be considered in an EIR. The following list of energy impact possibilities and potential conservation measures is designed to assist in the preparation of an EIR. In many instances, specific items may not apply or additional items may be needed.

A. Project Description may include the following items:
   1. Energy consuming equipment and processes which will be used during construction, operation, and/or removal of the project. If appropriate, this discussion should consider the energy intensiveness of materials and equipment required for the project.
   2. Total energy requirements of the project by fuel type and end use.
   3. Energy conservation equipment and design features.
   4. Initial and life-cycle energy costs or supplies.
   5. Total estimated daily trips to be generated by the project and the additional energy consumed per trip by mode.

B. Environmental Setting may include existing energy supplies and energy use patterns in the region and locality.

C. Environmental Impacts may include:
   1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project's life cycle including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
   2. The effects of the project on local and regional energy supplies and on requirements for additional capacity.
   3. The effects of the project on peak and base period demands for electricity and other forms of energy.
   4. The degree to which the project complies with existing energy standards.
   5. The effects of the project on energy resources.
   6. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

D. Mitigation Measures may include:
   1. Potential measures to reduce wasteful, inefficient and unnecessary consumption of energy during construction, operation, maintenance and/or removal. The discussion should explain why certain measures were incorporated in the project and why other measures were dismissed.
   2. The potential of siting, orientation, and design to minimize energy consumption, including transportation energy.
   3. The potential for reducing peak energy demand.
   4. Alternate fuels (particularly renewable ones) or energy systems.
   5. Energy conservation which could result from recycling efforts.

E. Alternatives should be compared in terms of overall energy consumption and in terms of reducing wasteful, inefficient and unnecessary consumption of energy.

F. Unavoidable Adverse Effects may include wasteful, inefficient and unnecessary consumption of energy during the project construction, operation, maintenance and/or removal that cannot be feasibly mitigated.

G. Irreversible Commitment of Resources may include a discussion of how the project preempts future energy development or future energy conservation.

H. Short-Term Gains versus Long-Term Impacts can be compared by calculating the energy costs over the lifetime of the project.

I. Growth Inducing Effects may include the estimated energy consumption of growth induced by the project.

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 03 Amador and Starward
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 0.5 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 1.4 PPM
SIGTH= 20. DEGREES TEMP= 15.0 DEGREE (C)

II. LINK VARIABLES

	LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	*	684	1256	711	1201	*	AG	110	0.9	0.0	21.3
2.	Y SB2	*	711	1201	745	1133	*	AG	55	1.7	0.0	21.3
3.	Y SB3	*	745	1133	800	1025	*	AG	55	0.9	0.0	21.3
4.	Y SB4	*	800	1025	858	906	*	AG	55	0.9	0.0	21.3
5.	Y NB1	*	868	911	813	1024	*	AG	6	0.9	0.0	21.3
6.	Y NB2	*	814	1024	761	1138	*	AG	2	1.7	0.0	21.3
7.	Y NB3	*	761	1138	728	1205	*	AG	76	0.9	0.0	21.3
8.	Y NB4	*	728	1205	700	1263	*	AG	76	0.9	0.0	21.3
9.	Y LT1	*	720	1198	753	1134	*	AG	55	1.7	0.0	21.3
10.	Y LT2	*	753	1134	802	1038	*	AG	4	1.7	0.0	21.3
11.	X EB1	*	596	1103	682	1125	*	AG	1314	0.9	0.0	27.4
12.	X EB2	*	682	1125	750	1141	*	AG	1240	1.7	0.0	27.4
13.	X EB3	*	750	1141	826	1158	*	AG	1295	0.9	0.0	27.4
14.	X EB4	*	826	1158	923	1182	*	AG	1295	0.9	0.0	27.4
15.	X WB1	*	924	1170	832	1147	*	AG	1002	0.9	0.0	27.4
16.	X WB2	*	832	1147	757	1128	*	AG	1002	1.7	0.0	27.4
17.	X WB3	*	757	1128	687	1111	*	AG	1006	0.9	0.0	27.4
18.	X WB4	*	687	1111	599	1090	*	AG	1006	0.9	0.0	27.4
19.	X LT1	*	674	1115	753	1134	*	AG	74	1.7	0.0	27.4
20.	X LT2	*	753	1134	841	1157	*	AG	0	1.7	0.0	27.4

III. RECEPTOR LOCATIONS

	RECEPTOR	*	COORDINATES (M) X	Y	Z
1.	Recpt 1	*	805	1099	1.8
2.	Recpt 2	*	691	1157	1.8
3.	Recpt 3	*	729	1093	1.8
4.	Recpt 4	*	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	301.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	106.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	51.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	230.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 04 Amador and Donohue
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	157	0.9	0.0	19.8
2.	Y SB2	711	1201	745	1133	AG	55	1.7	0.0	19.8
3.	Y SB3	745	1133	800	1025	AG	72	0.9	0.0	19.8
4.	Y SB4	800	1025	858	906	AG	72	0.9	0.0	19.8
5.	Y NB1	868	911	813	1024	AG	102	0.9	0.0	19.8
6.	Y NB2	814	1024	761	1138	AG	42	1.7	0.0	19.8
7.	Y NB3	761	1138	728	1205	AG	91	0.9	0.0	19.8
8.	Y NB4	728	1205	700	1263	AG	91	0.9	0.0	19.8
9.	Y LT1	720	1198	753	1134	AG	102	1.7	0.0	19.8
10.	Y LT2	753	1134	802	1038	AG	60	1.7	0.0	19.8
11.	X EB1	596	1103	682	1125	AG	1210	0.9	0.0	27.4
12.	X EB2	682	1125	750	1141	AG	1161	1.7	0.0	27.4
13.	X EB3	750	1141	826	1158	AG	1263	0.9	0.0	27.4
14.	X EB4	826	1158	923	1182	AG	1263	0.9	0.0	27.4
15.	X WB1	924	1170	832	1147	AG	1043	0.9	0.0	27.4
16.	X WB2	832	1147	757	1128	AG	1026	1.7	0.0	27.4
17.	X WB3	757	1128	687	1111	AG	1086	0.9	0.0	27.4
18.	X WB4	687	1111	599	1090	AG	1086	0.9	0.0	27.4
19.	X LT1	674	1115	753	1134	AG	49	1.7	0.0	27.4
20.	X LT2	753	1134	841	1157	AG	17	1.7	0.0	27.4

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	301.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	106.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	51.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	230.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

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Run Ended on 4/19/2010 at 9:29:34

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 4/19/2010 at 9:32:37

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 05 Amador and AmadorPlaza
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	16	0.9	0.0	21.3
2.	Y SB2	711	1201	745	1133	AG	12	1.7	0.0	21.3
3.	Y SB3	745	1133	800	1025	AG	456	0.9	0.0	21.3
4.	Y SB4	800	1025	858	906	AG	456	0.9	0.0	21.3
5.	Y NB1	868	911	813	1024	AG	793	0.9	0.0	21.3
6.	Y NB2	814	1024	761	1138	AG	536	1.7	0.0	21.3
7.	Y NB3	761	1138	728	1205	AG	544	0.9	0.0	21.3
8.	Y NB4	728	1205	700	1263	AG	544	0.9	0.0	21.3
9.	Y LT1	720	1198	753	1134	AG	4	1.7	0.0	21.3
10.	Y LT2	753	1134	802	1038	AG	257	1.7	0.0	21.3
11.	X EB1	596	1103	682	1125	AG	1186	0.9	0.0	30.5
12.	X EB2	682	1125	750	1141	AG	1178	1.7	0.0	30.5
13.	X EB3	750	1141	826	1158	AG	1182	0.9	0.0	30.5
14.	X EB4	826	1158	923	1182	AG	1182	0.9	0.0	30.5
15.	X WB1	924	1170	832	1147	AG	1167	0.9	0.0	30.5
16.	X WB2	832	1147	757	1128	AG	723	1.7	0.0	30.5
17.	X WB3	757	1128	687	1111	AG	980	0.9	0.0	30.5
18.	X WB4	687	1111	599	1090	AG	980	0.9	0.0	30.5
19.	X LT1	674	1115	753	1134	AG	8	1.7	0.0	30.5
20.	X LT2	753	1134	841	1157	AG	444	1.7	0.0	30.5

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	293.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	126.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	52.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	180.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

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Run Ended on 4/19/2010 at 9:32:37

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
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Run Began on 4/19/2010 at 9:34:30

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 05 Amador and Village Pky
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	1273	0.9	0.0	33.5
2.	Y SB2	711	1201	745	1133	AG	1196	1.7	0.0	33.5
3.	Y SB3	745	1133	800	1025	AG	1404	0.9	0.0	33.5
4.	Y SB4	800	1025	858	906	AG	1404	0.9	0.0	33.5
5.	Y NB1	868	911	813	1024	AG	1122	0.9	0.0	33.5
6.	Y NB2	814	1024	761	1138	AG	908	1.7	0.0	33.5
7.	Y NB3	761	1138	728	1205	AG	1477	0.9	0.0	33.5
8.	Y NB4	728	1205	700	1263	AG	1477	0.9	0.0	33.5
9.	Y LT1	720	1198	753	1134	AG	77	1.7	0.0	33.5
10.	Y LT2	753	1134	802	1038	AG	214	1.7	0.0	33.5
11.	X EB1	596	1103	682	1125	AG	1503	0.9	0.0	30.5
12.	X EB2	682	1125	750	1141	AG	934	1.7	0.0	30.5
13.	X EB3	750	1141	826	1158	AG	1011	0.9	0.0	30.5
14.	X EB4	826	1158	923	1182	AG	1011	0.9	0.0	30.5
15.	X WB1	924	1170	832	1147	AG	715	0.9	0.0	30.5
16.	X WB2	832	1147	757	1128	AG	507	1.7	0.0	30.5
17.	X WB3	757	1128	687	1111	AG	721	0.9	0.0	30.5
18.	X WB4	687	1111	599	1090	AG	721	0.9	0.0	30.5
19.	X LT1	674	1115	753	1134	AG	569	1.7	0.0	30.5
20.	X LT2	753	1134	841	1157	AG	208	1.7	0.0	30.5

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	303.	1.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	126.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	3.	1.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	230.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

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Run Ended on 4/19/2010 at 9:34:30

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
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Run Began on 4/19/2010 at 9:39:32

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 07 Dublin and San Ramon
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 0.5 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 1.4 PPM
SIGTH= 20. DEGREES TEMP= 15.0 DEGREE (C)

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	1549	0.9	0.0	42.7
2.	Y SB2	711	1201	745	1133	AG	861	1.7	0.0	42.7
3.	Y SB3	745	1133	800	1025	AG	2938	0.9	0.0	42.7
4.	Y SB4	800	1025	858	906	AG	2938	0.9	0.0	42.7
5.	Y NB1	868	911	813	1024	AG	4681	0.9	0.0	42.7
6.	Y NB2	814	1024	761	1138	AG	3878	1.7	0.0	42.7
7.	Y NB3	761	1138	728	1205	AG	4041	0.9	0.0	42.7
8.	Y NB4	728	1205	700	1263	AG	4041	0.9	0.0	42.7
9.	Y LT1	720	1198	753	1134	AG	688	1.7	0.0	42.7
10.	Y LT2	753	1134	802	1038	AG	803	1.7	0.0	42.7
11.	X EB1	596	1103	682	1125	AG	1167	0.9	0.0	36.6
12.	X EB2	682	1125	750	1141	AG	1004	1.7	0.0	36.6
13.	X EB3	750	1141	826	1158	AG	1692	0.9	0.0	36.6
14.	X EB4	826	1158	923	1182	AG	1692	0.9	0.0	36.6
15.	X WB1	924	1170	832	1147	AG	3367	0.9	0.0	36.6
16.	X WB2	832	1147	757	1128	AG	1290	1.7	0.0	36.6
17.	X WB3	757	1128	687	1111	AG	2093	0.9	0.0	36.6
18.	X WB4	687	1111	599	1090	AG	2093	0.9	0.0	36.6
19.	X LT1	674	1115	753	1134	AG	163	1.7	0.0	36.6
20.	X LT2	753	1134	841	1157	AG	2077	1.7	0.0	36.6

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	310.	1.9	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0
2. Recpt 2	106.	1.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3. Recpt 3	53.	1.9	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
4. Recpt 4	177.	1.9	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.1
2. Recpt 2	0.0	0.0	0.0	0.1
3. Recpt 3	0.0	0.0	0.0	0.1
4. Recpt 4	0.0	0.0	0.0	0.1

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Run Ended on 4/19/2010 at 9:39:33

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
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Run Began on 4/19/2010 at 9:42:00

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 08 Dublin and Regional
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	863	0.9	0.0	21.3
2.	Y SB2	711	1201	745	1133	AG	482	1.7	0.0	21.3
3.	Y SB3	745	1133	800	1025	AG	656	0.9	0.0	21.3
4.	Y SB4	800	1025	858	906	AG	656	0.9	0.0	21.3
5.	Y NB1	868	911	813	1024	AG	769	0.9	0.0	21.3
6.	Y NB2	814	1024	761	1138	AG	279	1.7	0.0	21.3
7.	Y NB3	761	1138	728	1205	AG	642	0.9	0.0	21.3
8.	Y NB4	728	1205	700	1263	AG	642	0.9	0.0	21.3
9.	Y LT1	720	1198	753	1134	AG	381	1.7	0.0	21.3
10.	Y LT2	753	1134	802	1038	AG	490	1.7	0.0	21.3
11.	X EB1	596	1103	682	1125	AG	3707	0.9	0.0	36.6
12.	X EB2	682	1125	750	1141	AG	3344	1.7	0.0	36.6
13.	X EB3	750	1141	826	1158	AG	3725	0.9	0.0	36.6
14.	X EB4	826	1158	923	1182	AG	3725	0.9	0.0	36.6
15.	X WB1	924	1170	832	1147	AG	2990	0.9	0.0	36.6
16.	X WB2	832	1147	757	1128	AG	2816	1.7	0.0	36.6
17.	X WB3	757	1128	687	1111	AG	3306	0.9	0.0	36.6
18.	X WB4	687	1111	599	1090	AG	3306	0.9	0.0	36.6
19.	X LT1	674	1115	753	1134	AG	363	1.7	0.0	36.6
20.	X LT2	753	1134	841	1157	AG	174	1.7	0.0	36.6

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	301.	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	106.	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	52.	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	230.	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
3. Recpt 3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
4. Recpt 4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.1	0.0	0.0	0.0

1

Run Ended on 4/19/2010 at 9:42:00

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 4/19/2010 at 9:43:44

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 09 Dublin and Golden Gate
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	449	0.9	0.0	42.7
2.	Y SB2	711	1201	745	1133	AG	208	1.7	0.0	42.7
3.	Y SB3	745	1133	800	1025	AG	453	0.9	0.0	42.7
4.	Y SB4	800	1025	858	906	AG	453	0.9	0.0	42.7
5.	Y NB1	868	911	813	1024	AG	1202	0.9	0.0	42.7
6.	Y NB2	814	1024	761	1138	AG	494	1.7	0.0	42.7
7.	Y NB3	761	1138	728	1205	AG	786	0.9	0.0	42.7
8.	Y NB4	728	1205	700	1263	AG	786	0.9	0.0	42.7
9.	Y LT1	720	1198	753	1134	AG	241	1.7	0.0	42.7
10.	Y LT2	753	1134	802	1038	AG	708	1.7	0.0	42.7
11.	X EB1	596	1103	682	1125	AG	3398	0.9	0.0	36.6
12.	X EB2	682	1125	750	1141	AG	3106	1.7	0.0	36.6
13.	X EB3	750	1141	826	1158	AG	3347	0.9	0.0	36.6
14.	X EB4	826	1158	923	1182	AG	3347	0.9	0.0	36.6
15.	X WB1	924	1170	832	1147	AG	2478	0.9	0.0	36.6
16.	X WB2	832	1147	757	1128	AG	2233	1.7	0.0	36.6
17.	X WB3	757	1128	687	1111	AG	2941	0.9	0.0	36.6
18.	X WB4	687	1111	599	1090	AG	2941	0.9	0.0	36.6
19.	X LT1	674	1115	753	1134	AG	292	1.7	0.0	36.6
20.	X LT2	753	1134	841	1157	AG	245	1.7	0.0	36.6

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	296.	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	109.	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	52.	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	229.	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
3. Recpt 3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
4. Recpt 4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 4/19/2010 at 9:43:44

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 4/19/2010 at 9:45:59

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 10 Dublin and Amador Plaza
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	919	0.9	0.0	21.3
2.	Y SB2	711	1201	745	1133	AG	598	1.7	0.0	21.3
3.	Y SB3	745	1133	800	1025	AG	843	0.9	0.0	21.3
4.	Y SB4	800	1025	858	906	AG	843	0.9	0.0	21.3
5.	Y NB1	868	911	813	1024	AG	2319	0.9	0.0	21.3
6.	Y NB2	814	1024	761	1138	AG	1474	1.7	0.0	21.3
7.	Y NB3	761	1138	728	1205	AG	1837	0.9	0.0	21.3
8.	Y NB4	728	1205	700	1263	AG	1837	0.9	0.0	21.3
9.	Y LT1	720	1198	753	1134	AG	321	1.7	0.0	21.3
10.	Y LT2	753	1134	802	1038	AG	845	1.7	0.0	21.3
11.	X EB1	596	1103	682	1125	AG	3213	0.9	0.0	30.5
12.	X EB2	682	1125	750	1141	AG	2850	1.7	0.0	30.5
13.	X EB3	750	1141	826	1158	AG	3171	0.9	0.0	30.5
14.	X EB4	826	1158	923	1182	AG	3171	0.9	0.0	30.5
15.	X WB1	924	1170	832	1147	AG	1935	0.9	0.0	30.5
16.	X WB2	832	1147	757	1128	AG	1690	1.7	0.0	30.5
17.	X WB3	757	1128	687	1111	AG	2535	0.9	0.0	30.5
18.	X WB4	687	1111	599	1090	AG	2535	0.9	0.0	30.5
19.	X LT1	674	1115	753	1134	AG	363	1.7	0.0	30.5
20.	X LT2	753	1134	841	1157	AG	245	1.7	0.0	30.5

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	293.	1.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	121.	1.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3. Recpt 3	51.	1.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
4. Recpt 4	181.	1.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
4. Recpt 4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 4/19/2010 at 9:45:59

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 4/19/2010 at 9:48:39

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 11 Dublin and Village Parkway
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	*	684	1256	711	1201	* AG	1152	0.9	0.0	33.5
2.	Y SB2	*	711	1201	745	1133	* AG	625	1.7	0.0	33.5
3.	Y SB3	*	745	1133	800	1025	* AG	876	0.9	0.0	33.5
4.	Y SB4	*	800	1025	858	906	* AG	876	0.9	0.0	33.5
5.	Y NB1	*	868	911	813	1024	* AG	102	0.9	0.0	33.5
6.	Y NB2	*	814	1024	761	1138	* AG	36	1.7	0.0	33.5
7.	Y NB3	*	761	1138	728	1205	* AG	787	0.9	0.0	33.5
8.	Y NB4	*	728	1205	700	1263	* AG	787	0.9	0.0	33.5
9.	Y LT1	*	720	1198	753	1134	* AG	527	1.7	0.0	33.5
10.	Y LT2	*	753	1134	802	1038	* AG	66	1.7	0.0	33.5
11.	X EB1	*	596	1103	682	1125	* AG	3247	0.9	0.0	30.5
12.	X EB2	*	682	1125	750	1141	* AG	2496	1.7	0.0	30.5
13.	X EB3	*	750	1141	826	1158	* AG	3023	0.9	0.0	30.5
14.	X EB4	*	826	1158	923	1182	* AG	3023	0.9	0.0	30.5
15.	X WB1	*	924	1170	832	1147	* AG	2648	0.9	0.0	30.5
16.	X WB2	*	832	1147	757	1128	* AG	2397	1.7	0.0	30.5
17.	X WB3	*	757	1128	687	1111	* AG	2463	0.9	0.0	30.5
18.	X WB4	*	687	1111	599	1090	* AG	2463	0.9	0.0	30.5
19.	X LT1	*	674	1115	753	1134	* AG	751	1.7	0.0	30.5
20.	X LT2	*	753	1134	841	1157	* AG	251	1.7	0.0	30.5

III. RECEPTOR LOCATIONS

	RECEPTOR	*	COORDINATES (M) X	Y	Z
1.	Recpt 1	*	805	1099	1.8
2.	Recpt 2	*	691	1157	1.8
3.	Recpt 3	*	729	1093	1.8
4.	Recpt 4	*	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	305.	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	105.	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	4.	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	230.	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
3. Recpt 3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.1	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 4/19/2010 at 9:48:39

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 4/19/2010 at 9:51:14

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 12 St. Patrick and Golden Gate
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	510	0.9	0.0	21.3
2.	Y SB2	711	1201	745	1133	AG	413	1.7	0.0	21.3
3.	Y SB3	745	1133	800	1025	AG	434	0.9	0.0	21.3
4.	Y SB4	800	1025	858	906	AG	434	0.9	0.0	21.3
5.	Y NB1	868	911	813	1024	AG	598	0.9	0.0	21.3
6.	Y NB2	814	1024	761	1138	AG	594	1.7	0.0	21.3
7.	Y NB3	761	1138	728	1205	AG	722	0.9	0.0	21.3
8.	Y NB4	728	1205	700	1263	AG	722	0.9	0.0	21.3
9.	Y LT1	720	1198	753	1134	AG	97	1.7	0.0	21.3
10.	Y LT2	753	1134	802	1038	AG	4	1.7	0.0	21.3
11.	X EB1	596	1103	682	1125	AG	242	0.9	0.0	21.3
12.	X EB2	682	1125	750	1141	AG	114	1.7	0.0	21.3
13.	X EB3	750	1141	826	1158	AG	211	0.9	0.0	21.3
14.	X EB4	826	1158	923	1182	AG	211	0.9	0.0	21.3
15.	X WB1	924	1170	832	1147	AG	226	0.9	0.0	21.3
16.	X WB2	832	1147	757	1128	AG	205	1.7	0.0	21.3
17.	X WB3	757	1128	687	1111	AG	209	0.9	0.0	21.3
18.	X WB4	687	1111	599	1090	AG	209	0.9	0.0	21.3
19.	X LT1	674	1115	753	1134	AG	128	1.7	0.0	21.3
20.	X LT2	753	1134	841	1157	AG	21	1.7	0.0	21.3

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	307.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	109.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	4.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	179.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 4/19/2010 at 9:51:14

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
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Run Began on 4/19/2010 at 9:52:49

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 13 St. Patrick and Amador Plaza
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	*	684	1256	711	1201	* AG	1714	0.9	0.0	21.3
2.	Y SB2	*	711	1201	745	1133	* AG	896	1.7	0.0	21.3
3.	Y SB3	*	745	1133	800	1025	* AG	1080	0.9	0.0	21.3
4.	Y SB4	*	800	1025	858	906	* AG	1080	0.9	0.0	21.3
5.	Y NB1	*	868	911	813	1024	* AG	1019	0.9	0.0	21.3
6.	Y NB2	*	814	1024	761	1138	* AG	997	1.7	0.0	21.3
7.	Y NB3	*	761	1138	728	1205	* AG	1181	0.9	0.0	21.3
8.	Y NB4	*	728	1205	700	1263	* AG	1181	0.9	0.0	21.3
9.	Y LT1	*	720	1198	753	1134	* AG	818	1.7	0.0	21.3
10.	Y LT2	*	753	1134	802	1038	* AG	22	1.7	0.0	21.3
11.	X EB1	*	596	1103	682	1125	* AG	488	0.9	0.0	21.3
12.	X EB2	*	682	1125	750	1141	* AG	304	1.7	0.0	21.3
13.	X EB3	*	750	1141	826	1158	* AG	1122	0.9	0.0	21.3
14.	X EB4	*	826	1158	923	1182	* AG	1122	0.9	0.0	21.3
15.	X WB1	*	924	1170	832	1147	* AG	488	0.9	0.0	21.3
16.	X WB2	*	832	1147	757	1128	* AG	304	1.7	0.0	21.3
17.	X WB3	*	757	1128	687	1111	* AG	326	0.9	0.0	21.3
18.	X WB4	*	687	1111	599	1090	* AG	326	0.9	0.0	21.3
19.	X LT1	*	674	1115	753	1134	* AG	184	1.7	0.0	21.3
20.	X LT2	*	753	1134	841	1157	* AG	184	1.7	0.0	21.3

III. RECEPTOR LOCATIONS

	RECEPTOR	*	COORDINATES (M) X	Y	Z
1.	Recpt 1	*	805	1099	1.8
2.	Recpt 2	*	691	1157	1.8
3.	Recpt 3	*	729	1093	1.8
4.	Recpt 4	*	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	310.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	98.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	10.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	179.	1.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 4/19/2010 at 9:52:49

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 4/19/2010 at 9:56:36

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 14 Village Parkway and 680 NB Ramp
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	5. DEGREES	TEMP=	4.4 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1. Link A	6284	-181	6284	-246	AG	83	0.9	0.0	18.3
2. Link B	6284	-246	6284	-300	AG	51	1.7	0.0	18.3
3. Link C	6284	-300	6279	-453	AG	51	0.9	0.0	18.3
4. Link D	6297	-460	6298	-378	AG	916	0.9	0.0	18.3
5. Link E	6298	-378	6298	-319	AG	916	0.9	0.0	18.3
6. Link F	6298	-319	6297	-176	AG	916	0.9	0.0	18.3
7. Link G	6284	-265	6300	-314	AG	32	1.7	0.0	18.3
8. Link H	6300	-314	6462	-325	AG	32	0.9	0.0	16.8
9. Link I	6523	-313	6380	-311	AG	0	0.9	0.0	16.8
10. Link J	6380	-311	6298	-301	AG	0	1.7	0.0	16.8
11. Link K	6370	-310	6284	-326	AG	0	1.7	0.0	16.8

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	6325	-280	1.7
2. Recpt 2	6315	-339	1.7
3. Recpt 3	6243	-327	1.7
4. Recpt 4	6246	-277	1.7

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	195.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	347.	1.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3. Recpt 3	28.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	158.	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	*CONC/LINK *(PPM) * 9	10	11
1. Recpt 1	* 0.0	0.0	0.0
2. Recpt 2	* 0.0	0.0	0.0
3. Recpt 3	* 0.0	0.0	0.0
4. Recpt 4	* 0.0	0.0	0.0

1

Run Ended on 4/19/2010 at 9:56:36

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
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Run Began on 4/19/2010 at 9:22:53

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 01 Amador and San Ramon
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 0.5 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 1.4 PPM
SIGTH= 20. DEGREES TEMP= 15.0 DEGREE (C)

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	1542	0.9	0.0	42.7
2.	Y SB2	711	1201	745	1133	AG	1027	1.7	0.0	42.7
3.	Y SB3	745	1133	800	1025	AG	1392	0.9	0.0	42.7
4.	Y SB4	800	1025	858	906	AG	1392	0.9	0.0	42.7
5.	Y NB1	868	911	813	1024	AG	2220	0.9	0.0	42.7
6.	Y NB2	814	1024	761	1138	AG	2053	1.7	0.0	42.7
7.	Y NB3	761	1138	728	1205	AG	2097	0.9	0.0	42.7
8.	Y NB4	728	1205	700	1263	AG	2097	0.9	0.0	42.7
9.	Y LT1	720	1198	753	1134	AG	515	1.7	0.0	42.7
10.	Y LT2	753	1134	802	1038	AG	167	1.7	0.0	42.7
11.	X EB1	596	1103	682	1125	AG	156	0.9	0.0	27.4
12.	X EB2	682	1125	750	1141	AG	112	1.7	0.0	27.4
13.	X EB3	750	1141	826	1158	AG	627	0.9	0.0	27.4
14.	X EB4	826	1158	923	1182	AG	627	0.9	0.0	27.4
15.	X WB1	924	1170	832	1147	AG	1003	0.9	0.0	27.4
16.	X WB2	832	1147	757	1128	AG	638	1.7	0.0	27.4
17.	X WB3	757	1128	687	1111	AG	805	0.9	0.0	27.4
18.	X WB4	687	1111	599	1090	AG	805	0.9	0.0	27.4
19.	X LT1	674	1115	753	1134	AG	44	1.7	0.0	27.4
20.	X LT2	753	1134	841	1157	AG	365	1.7	0.0	27.4

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	312.	1.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	103.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	52.	1.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
4. Recpt 4	176.	1.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 4/19/2010 at 9:22:53

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
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Run Began on 4/19/2010 at 9:24:53

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 02 Amador and Regional Street
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	1.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	94	0.9	0.0	21.3
2.	Y SB2	711	1201	745	1133	AG	54	1.7	0.0	21.3
3.	Y SB3	745	1133	800	1025	AG	298	0.9	0.0	21.3
4.	Y SB4	800	1025	858	906	AG	298	0.9	0.0	21.3
5.	Y NB1	868	911	813	1024	AG	573	0.9	0.0	21.3
6.	Y NB2	814	1024	761	1138	AG	243	1.7	0.0	21.3
7.	Y NB3	761	1138	728	1205	AG	356	0.9	0.0	21.3
8.	Y NB4	728	1205	700	1263	AG	356	0.9	0.0	21.3
9.	Y LT1	720	1198	753	1134	AG	40	1.7	0.0	21.3
10.	Y LT2	753	1134	802	1038	AG	330	1.7	0.0	21.3
11.	X EB1	596	1103	682	1125	AG	1380	0.9	0.0	27.4
12.	X EB2	682	1125	750	1141	AG	1267	1.7	0.0	27.4
13.	X EB3	750	1141	826	1158	AG	1307	0.9	0.0	27.4
14.	X EB4	826	1158	923	1182	AG	1307	0.9	0.0	27.4
15.	X WB1	924	1170	832	1147	AG	909	0.9	0.0	27.4
16.	X WB2	832	1147	757	1128	AG	665	1.7	0.0	27.4
17.	X WB3	757	1128	687	1111	AG	995	0.9	0.0	27.4
18.	X WB4	687	1111	599	1090	AG	995	0.9	0.0	27.4
19.	X LT1	674	1115	753	1134	AG	113	1.7	0.0	27.4
20.	X LT2	753	1134	841	1157	AG	244	1.7	0.0	27.4

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	292.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	120.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	51.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	181.	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 4/19/2010 at 9:24:53

Title : San Francisco Air Basin Avg Winter CYr 2030 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/19 09:14:15
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : San Francisco

****

Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.051	0.093	0.129	1.216	1.774	4.680	0.160
35	0.008	0.014	0.021	0.155	0.398	1.804	0.033

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.964	1.654	2.050	5.125	12.327	22.073	1.665
35	0.570	0.965	1.108	1.083	2.093	14.292	0.889

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.085	0.171	0.315	4.579	24.765	1.387	0.403
35	0.048	0.095	0.188	1.901	10.873	1.263	0.195

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	943.988	1189.129	1681.973	2636.665	2502.932	266.271	1155.518
35	307.093	387.092	522.203	1488.433	2076.256	139.907	402.401

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.016	0.025	0.024	0.003	0.011
35	0.003	0.004	0.005	0.014	0.020	0.002	0.004

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.048	0.102	0.118	0.191	0.551	0.023	0.080
35	0.008	0.017	0.020	0.076	0.134	0.011	0.015

Pollutant Name: PM2.5 - Tire Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.002	0.006	0.002	0.001	0.002
35	0.002	0.002	0.002	0.006	0.002	0.001	0.002

Pollutant Name: PM2.5 - Break Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.005	0.005	0.005	0.008	0.005	0.003	0.005
35	0.005	0.005	0.005	0.008	0.005	0.003	0.005

Pollutant Name: Gasoline - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	9.369	7.427	5.166	3.511	3.470	28.044	8.446
35	28.768	22.796	16.908	17.742	17.545	52.655	25.778

Pollutant Name: Diesel - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.156	29.156	19.477	4.688	4.032	0.000	6.817
35	29.156	29.156	19.477	6.115	4.032	0.000	7.943

Title : San Francisco Air Basin Avg Winter CYr 2030 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/19 09:14:15
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : San Francisco
****

Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.006	0.010	0.030	0.055	0.087	0.652	0.019
10	0.011	0.020	0.059	0.107	0.170	0.803	0.033
20	0.021	0.038	0.115	0.204	0.323	1.095	0.059
30	0.031	0.056	0.168	0.289	0.458	1.371	0.083
40	0.040	0.072	0.218	0.362	0.575	1.631	0.106
50	0.048	0.086	0.265	0.425	0.674	1.874	0.126
60	0.056	0.100	0.310	0.477	0.756	2.052	0.145
120	0.086	0.156	0.510	0.536	0.850	2.319	0.208
180	0.083	0.153	0.507	0.569	0.902	2.347	0.207
240	0.088	0.162	0.539	0.600	0.952	2.495	0.220
300	0.094	0.171	0.571	0.631	1.001	2.640	0.232
360	0.099	0.181	0.602	0.660	1.048	2.782	0.245
420	0.104	0.190	0.634	0.689	1.093	2.921	0.257
480	0.108	0.199	0.665	0.717	1.137	3.057	0.269
540	0.113	0.208	0.696	0.743	1.179	3.190	0.281
600	0.118	0.217	0.727	0.768	1.219	3.320	0.292
660	0.123	0.226	0.758	0.793	1.258	3.446	0.304
720	0.128	0.235	0.788	0.816	1.295	3.570	0.315

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.084	0.150	0.400	0.836	0.905	2.976	0.215
10	0.166	0.296	0.791	1.639	1.774	3.587	0.401
20	0.324	0.577	1.545	3.142	3.400	4.757	0.757
30	0.473	0.842	2.263	4.509	4.880	5.858	1.091
40	0.614	1.091	2.943	5.740	6.212	6.890	1.403
50	0.745	1.326	3.587	6.835	7.397	7.854	1.692
60	0.869	1.544	4.194	7.795	8.435	8.749	1.960
120	1.364	2.404	6.652	9.103	9.851	12.384	2.886
180	1.283	2.269	6.375	9.369	10.139	12.001	2.782
240	1.388	2.452	6.932	9.644	10.436	13.017	2.984
300	1.481	2.614	7.423	9.927	10.743	13.956	3.167
360	1.561	2.755	7.847	10.220	11.060	14.818	3.328
420	1.630	2.876	8.205	10.521	11.385	15.602	3.469
480	1.687	2.976	8.496	10.831	11.721	16.310	3.589
540	1.732	3.056	8.721	11.150	12.066	16.939	3.688
600	1.766	3.115	8.879	11.477	12.420	17.492	3.766
660	1.787	3.154	8.971	11.813	12.784	17.967	3.824
720	1.796	3.171	8.996	12.158	13.158	18.365	3.861

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.037	0.083	0.560	0.210	0.409	0.154	0.127
10	0.040	0.089	0.588	0.317	0.616	0.193	0.140
20	0.045	0.100	0.638	0.504	0.979	0.262	0.164
30	0.049	0.109	0.682	0.656	1.275	0.320	0.184
40	0.053	0.116	0.719	0.774	1.504	0.365	0.200

50	0.056	0.122	0.749	0.857	1.666	0.398	0.212
60	0.058	0.127	0.773	0.906	1.760	0.419	0.220
120	0.062	0.136	0.843	0.912	1.773	0.422	0.234
180	0.062	0.137	0.843	0.909	1.766	0.418	0.234
240	0.062	0.136	0.837	0.904	1.756	0.411	0.233
300	0.061	0.134	0.826	0.897	1.743	0.403	0.230
360	0.060	0.132	0.811	0.888	1.726	0.393	0.226
420	0.059	0.129	0.792	0.878	1.706	0.382	0.222
480	0.057	0.126	0.769	0.865	1.682	0.369	0.216
540	0.056	0.122	0.742	0.851	1.655	0.354	0.210
600	0.053	0.117	0.710	0.836	1.625	0.337	0.202
660	0.051	0.111	0.675	0.818	1.590	0.319	0.194
720	0.048	0.105	0.635	0.799	1.553	0.298	0.184

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.214	15.293	21.445	2.822	2.014	13.235	13.752
10	13.711	17.212	24.221	5.628	4.016	15.431	15.616
20	17.206	21.672	30.643	11.193	7.987	19.742	19.890
30	21.368	26.964	38.224	16.696	11.914	23.946	24.891
40	26.197	33.087	46.963	22.137	15.797	28.044	30.620
50	31.693	40.042	56.860	27.515	19.634	32.034	37.077
60	37.856	47.828	67.915	32.831	23.427	35.918	44.262
120	88.220	111.091	157.025	55.839	39.846	53.357	101.401
180	100.137	126.143	178.392	65.970	47.075	57.601	115.250
240	112.035	141.161	199.690	75.502	53.877	61.595	129.035
300	123.914	156.146	220.919	84.437	60.253	65.341	142.755
360	135.774	171.096	242.080	92.774	66.202	68.837	156.409
420	147.616	186.011	263.172	100.513	71.724	72.084	169.999
480	159.439	200.893	284.195	107.654	76.820	75.082	183.523
540	171.243	215.741	305.150	114.197	81.489	77.831	196.983
600	183.028	230.555	326.035	120.142	85.731	80.331	210.377
660	194.794	245.334	346.852	125.489	89.547	82.582	223.706
720	206.542	260.080	367.600	130.238	92.936	84.584	236.971

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.000	0.000	0.000
50	0.000	0.000	0.001	0.000	0.000	0.000	0.000
60	0.000	0.000	0.001	0.000	0.000	0.001	0.000
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.001
360	0.001	0.002	0.002	0.001	0.001	0.001	0.002
420	0.001	0.002	0.003	0.001	0.001	0.001	0.002
480	0.002	0.002	0.003	0.001	0.001	0.001	0.002
540	0.002	0.002	0.003	0.001	0.001	0.001	0.002
600	0.002	0.002	0.003	0.001	0.001	0.001	0.002
660	0.002	0.002	0.003	0.001	0.001	0.001	0.002
720	0.002	0.003	0.004	0.001	0.001	0.001	0.002

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.001	0.001	0.000	0.000	0.005	0.001
10	0.001	0.002	0.002	0.001	0.001	0.005	0.001
20	0.002	0.004	0.003	0.001	0.001	0.004	0.002
30	0.003	0.005	0.005	0.002	0.002	0.003	0.004
40	0.003	0.007	0.007	0.002	0.002	0.003	0.005
50	0.004	0.008	0.008	0.003	0.002	0.002	0.006
60	0.005	0.010	0.009	0.003	0.003	0.002	0.007
120	0.008	0.016	0.015	0.004	0.004	0.005	0.011
180	0.009	0.018	0.017	0.005	0.004	0.007	0.012
240	0.009	0.019	0.019	0.005	0.004	0.008	0.013
300	0.010	0.021	0.020	0.005	0.004	0.010	0.014
360	0.011	0.022	0.021	0.005	0.004	0.011	0.015
420	0.011	0.023	0.022	0.005	0.004	0.012	0.016
480	0.012	0.024	0.023	0.005	0.005	0.013	0.016
540	0.012	0.025	0.024	0.005	0.005	0.014	0.017
600	0.012	0.025	0.024	0.006	0.005	0.014	0.017
660	0.012	0.025	0.024	0.006	0.005	0.015	0.017
720	0.012	0.025	0.024	0.006	0.005	0.015	0.017

Title : San Francisco Air Basin Avg Winter CYr 2030 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/19 09:14:15
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : San Francisco

****

Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.026	0.048	0.034	0.004	0.023	0.182	0.034
10	0.047	0.089	0.062	0.007	0.042	0.340	0.062
20	0.081	0.152	0.107	0.012	0.072	0.594	0.107
30	0.105	0.197	0.139	0.016	0.093	0.784	0.138
40	0.114	0.214	0.152	0.017	0.101	0.860	0.150

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Francisco Air Basin Avg Winter CYr 2030 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/19 09:14:15
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : San Francisco

****

Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.033	0.071	0.062	0.002	0.001	0.455	0.061

Title : San Francisco Air Basin Avg Winter CYr 2030 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/19 09:14:15
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : San Francisco

****

Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.003	0.005	0.004	0.000	0.000	0.043	0.005

Title : San Francisco Air Basin Avg Winter CYr 2030 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/19 09:14:15
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : San Francisco

Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.014	0.040	0.042	0.001	0.001	0.144	0.028

Title : San Francisco Air Basin Avg Winter CYr 2030 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/19 09:14:15
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : San Francisco

Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.003	0.003	0.000	0.000	0.014	0.002

Title : San Francisco Air Basin Avg Winter CYr 2030 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/19 09:14:15
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : San Francisco

Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.526	0.335	0.089	0.038	0.004	0.008	1.000
%TRIP	0.509	0.300	0.124	0.057	0.001	0.010	1.000
%VEH	0.540	0.324	0.082	0.021	0.001	0.032	1.000

Title : San Francisco Air Basin Avg Winter CYr 2030 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/19 09:14:15
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : San Francisco

****

Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.008	0.247	0.228	0.057	0.294	0.004	0.111
2	0.006	0.129	0.119	0.030	0.152	0.038	0.059
3	0.007	0.092	0.086	0.021	0.106	0.057	0.044
4	0.009	0.075	0.071	0.017	0.083	0.069	0.037
5	0.010	0.065	0.062	0.015	0.069	0.078	0.034
10	0.013	0.046	0.045	0.010	0.043	0.100	0.028
15	0.014	0.042	0.042	0.009	0.035	0.114	0.027
20	0.016	0.041	0.041	0.009	0.033	0.125	0.027
25	0.017	0.042	0.042	0.009	0.032	0.134	0.028
30	0.017	0.044	0.044	0.010	0.034	0.142	0.029
35	0.018	0.045	0.046	0.010	0.035	0.148	0.031
40	0.019	0.047	0.048	0.011	0.037	0.155	0.032
45	0.019	0.049	0.049	0.011	0.038	0.161	0.033
50	0.020	0.050	0.051	0.011	0.039	0.167	0.034
55	0.020	0.052	0.052	0.012	0.041	0.173	0.035
60	0.021	0.053	0.053	0.012	0.042	0.179	0.036

Emissions From Natural Gas Consumed By Land Uses

Land Use	*Amount*	Cubic feet per unit/square feet/customer per month	*CO* 2.00E+01	*ROG* 5.30E+00	*NO_X* *Residential* 8.00E+01	*NO_X* *Non-Residential* 1.20E+02	*SO_X* negligible	*PM_{10}* 2.00E-01	*CO_2* 0.12	*N_2O* 2.20E-06	*CH_4* 2.30E-06
Residential											
Single Family Units	740	6,665	3.29	0.87	13.15	19.73	--	0.03	19,468.82	0.36	0.37
Multi-Family Units		4,011.5	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00
NonResidential											
Indutsrial		241,611	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00
Hotel/Motel	80,000	4.8	0.26	0.07	1.02	1.54	--	0.00	1,515.79	0.03	0.03
Retail/Shopping Center	3,011,000	2.9	5.82	1.54	23.29	34.93	--	0.06	34,468.03	0.63	0.66
Office	104,000	2.0	0.14	0.04	0.55	0.83	--	0.00	821.05	0.02	0.02
Blank		5.0	0.00	0.00	0.00		--	0.00	0.00	0.00	0.00
TOTAL - pounds per day	**--**	**--**	**9.50E+00**	**2.52E+00**	**3.80E+01**	**5.70E+01**	**--**	**9.50E-02**	**56,273.68**	**1.03**	**1.08**
TOTAL - tons per year	**--**	**--**	**1.73E+00**	**4.60E-01**	**6.94E+00**	**1.04E+01**	**--**	**1.73E-02**	**10,269.9474**	**0.1883**	**0.1968**
TOTAL - metric tons per year	**--**	**--**	**1.57E+00**	**4.17E-01**	**6.29E+00**	**9.44E+00**	**--**	**1.57E-02**	**9.32E+03**	**1.71E-01**	**1.79E-01**

	CO_2	N_2O	CH_4
metric tons per year	9,316.74	0.17	0.18
metric tons CO_2eq per year	9,316.74	52.95	3.75

Source:

U.S. Energy Information Administration Independent Statistics and Analysis (http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html

Emissions From Electricity Consumed By Land Uses

Land Use	*Amount*	kilowatt-hours per year[1]	*CO* 2.00E-04	*ROG* 1.00E-05	*NO_X* 1.15E-03	*SO_X* 1.20E-04	*PM_{10}* 4.00E-05	*CO_2* 0.772	*N_2O* 6.59E-06	*CH_4* 4.04E-05
Residential (Dwelling Units)	740	5626.5	2.28	0.11	13.12	1.37	0.46	8,806.32	0.08	0.46
Food Store (SF)		53.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Restaurant (SF)		47.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hospitals (SF)		21.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Retail (SF)	3,011,000	13.55	22.36	1.12	128.54	13.41	4.47	86,292.79	0.74	4.51
College/University (SF)		11.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High School (SF)		10.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elementary School (SF)		5.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Office (SF)	104,000	12.95	0.74	0.04	4.24	0.44	0.15	2,848.57	0.02	0.15
Hotel/Motel (SF)	80,000	9.95	0.44	0.02	2.51	0.26	0.09	1,683.59	0.01	0.09
Warehouse (SF)		4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous (SF)		10.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blank			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL - pounds per day	**--**	**--**	**2.58E-02**	**1.29E+00**	**1.48E+02**	**1.55E+01**	**5.16E+00**	**99,631.27**	**0.85**	**5.21**
TOTAL - tons per year	**--**	**--**	**4.71E-03**	**2.36E-01**	**2.71E+01**	**2.83E+00**	**9.42E-01**	**18,182.71**	**0.16**	**0.95**
TOTAL - metric tons per year	**--**	**--**	**4.27E-03**	**2.14E-01**	**2.46E+01**	**2.56E+00**	**8.55E-01**	**16495.07**	**0.14**	**0.86**

	CO_2	N_2O	CH_4
metric tons per year	16,495.07	0.14	0.86
metric tons CO_2eq per year	16,495.07	43.65	18.11

Notes:

1. Usage rate; average for SCE and LADWP.

Source for greenhouse gas emissions rates:

California Energy Commission, *Reference Appendices for the 2008 Building Energy Efficiency Standards for Residential and Nonresidential Buildings* , Revised June 2009.

U.S. Energy Information Administration, *Domestic Electricity Emissions Factors 1999-2002* , October 2007. http://www.eia.doe.gov/oiaf/1605/techassist.html

Mobile Source Emissions Calculations

	Total	Breakdown		Emission Factor		Total Emis Passenger	Total Emis Delivery	Passnger	Delivery	Total Emissions	
	VMT	Passnger	Delivery	Passnger	Delivery	pounds/day		tons/year	tons/year	tons/year	metric tons/year
CO	704,500	669275.00	35225.00	0.00709228	0.01407778	4746.69	495.89	866.27	90.50	956.77	867.97
NO_X	704,500	669275.00	35225.00	0.00071158	0.01577311	476.24	555.61	86.91	101.40	188.31	170.83
N_2O[1]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.18	8.32
ROG	704,500	669275.00	35225.00	0.00074567	0.00206295	499.06	72.67	91.08	13.26	104.34	94.66
SO_X	704,500	669275.00	35225.00	0.00001072	0.00002682	7.17	0.94	1.31	0.17	1.48	1.34
PM_{10}	704,500	669275.00	35225.00	0.00009067	0.00059956	60.68	21.12	11.07	3.85	14.93	13.54
$PM_{2.5}$	704,500	669275.00	35225.00	0.00005834	0.00050174	39.05	17.67	7.13	3.23	10.35	9.39
CH_4	704,500	669275.00	35225.00	0.00006707	0.00009703	44.89	3.42	8.19	0.62	8.82	8.00
CO_2	704,500	669275.00	35225.00	1.10087435	2.78163459	736787.68	97983.08	134463.75	17881.91	152345.66	138,205.66

	CO_2	N_2O	CH_4
metric tons per year	138,205.66	8.32	8.00
metric tons CO_2eq per year	138,205.66	2,580.68	167.95

Notes:

1. VMT based upon data from Fehr and Peers.
2. Emission Factor based upon EMFAC 2007 (version 2.3), *Highest (Most Conservative) Emission Factors fo On-Road Passenger Vehicles and Delivery Trucks* .
3. Breakdown of Passenger and Delivery Trucks assumes 95% auto and 5% truck.
4. Emission Factor for N_2O based upon a conversion ratio of 0.04873 from NO_X to N_2O. Based upon California Air Resources Board: *Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging* , 2005.

Water Consumption Indirect Emissions

	Acre Feet per year	Electricity Usage kWh/year	Units	CO	ROG	NO_X	SO_X	PM_{10}	CO_2	N_2O	CH_4
				2.00E-04	1.00E-05	1.15E-03	1.20E-04	4.00E-05	0.772	6.59E-06	4.04E-05
Project Demand	135.63	45,572	pounds/yr	9.11E+00	4.56E-01	5.24E+01	5.47E+00	1.82E+00	3.52E+04	3.00E-01	1.84E+00
			tons/yr	4.56E-03	2.28E-04	2.62E-02	2.73E-03	9.11E-04	1.76E+01	1.50E-04	9.20E-04
			mt/yr	4.13E-03	2.07E-04	2.38E-02	2.48E-03	8.27E-04	1.60E+01	0.00	0.00
								$MTCO_2EQ$	15.96	0.05	0.02

Energy Factor 336 kWh/acre-foot

Based on energy usage factors for water conveyance from the California Energy Commission, Water Energy Use in California, Accessed May 2009.
http://www.energy.ca.gov/research/iaw/industry/water.html

Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Plaza		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	7,610
Peak Hour Traffic:	761
Vehicle Speed:	25
Centerline Separation:	30

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

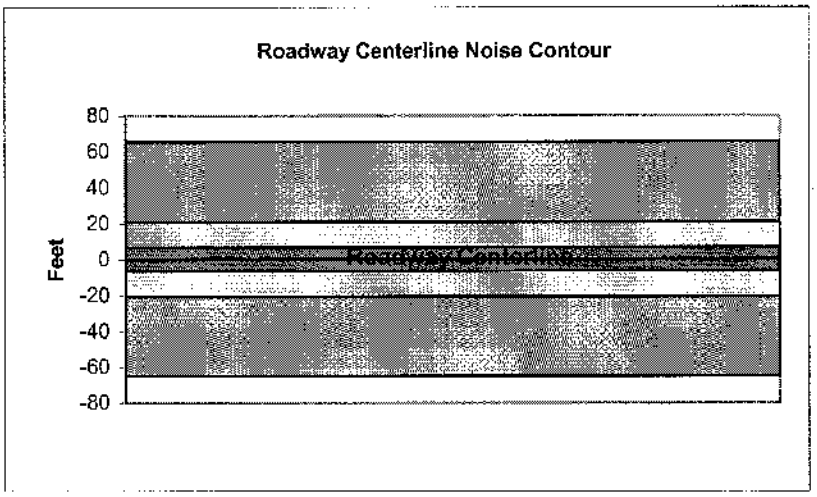
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.5	53.3	51.5	45.4	54.1	54.7
Medium Trucks:	56.2	48.1	41.7	40.1	48.6	48.9
Heavy Trucks:	62.3	50.4	41.3	42.5	52.9	53.1
Vehicle Noise:	**65.0**	**56.5**	**52.5**	**48.7**	**57.2**	**57.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	65
65 dBA	21
70 dBA	7
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Plaza		
Road Segment:	Between Dublin Blvd. and St. Patrick Way		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	10,770
Peak Hour Traffic:	1077
Vehicle Speed:	25
Centerline Separation:	27

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

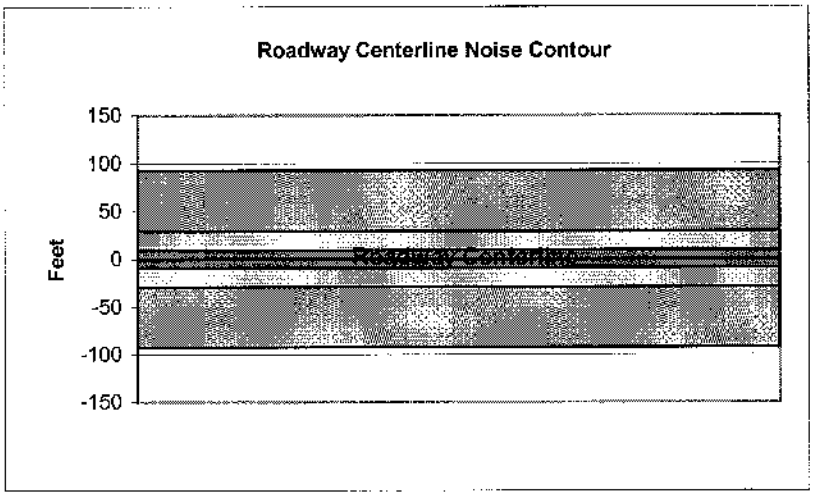
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	46.1	54.9	53.1	47.0	55.6	56.2
Medium Trucks:	57.7	49.7	43.3	41.7	50.2	50.4
Heavy Trucks:	63.9	51.9	42.9	44.1	54.5	54.6
Vehicle Noise:	**66.5**	**58.1**	**54.1**	**50.2**	**58.8**	**59.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	92
65 dBA	29
70 dBA	9
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Amador Plaza Rd. and Village Pkwy.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	16,930
Receiver Barrier Dist:	0	Peak Hour Traffic:	1693
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

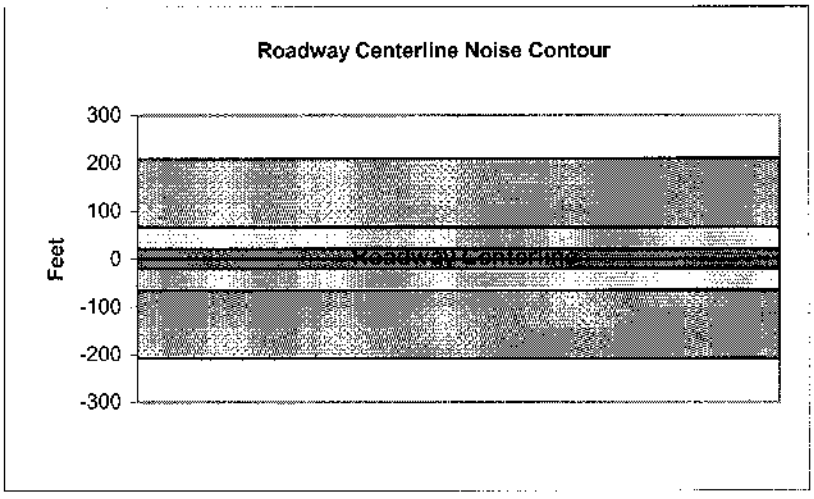
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.1	58.9	57.1	51.0	59.6	60.2
Medium Trucks:	60.7	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	66.3	54.4	45.3	46.6	56.7	56.8
Vehicle Noise:	**68.9**	**61.3**	**57.8**	**53.5**	**62.0**	**62.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	209
65 dBA	66
70 dBA	21
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Donahue Dr. and Amador Plaza Rd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	14,610
Receiver Barrier Dist:	0	Peak Hour Traffic:	1461
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

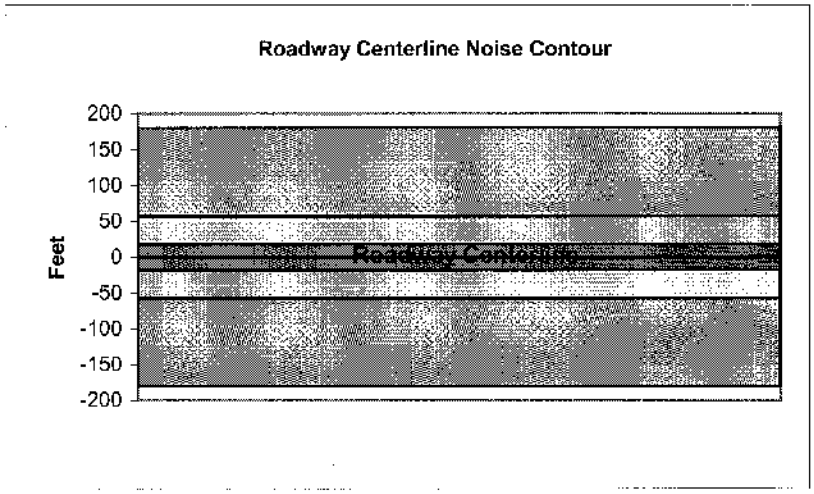
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.4	58.2	56.4	50.4	59.0	59.6
Medium Trucks:	60.0	52.0	45.6	44.0	52.5	52.7
Heavy Trucks:	65.7	53.8	44.7	45.9	56.0	56.2
Vehicle Noise:	**68.2**	**60.7**	**57.2**	**52.8**	**61.4**	**61.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	180
65 dBA	57
70 dBA	18
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	East of Village Pkwy.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	12,790
Receiver Barrier Dist:	0	Peak Hour Traffic:	1279
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

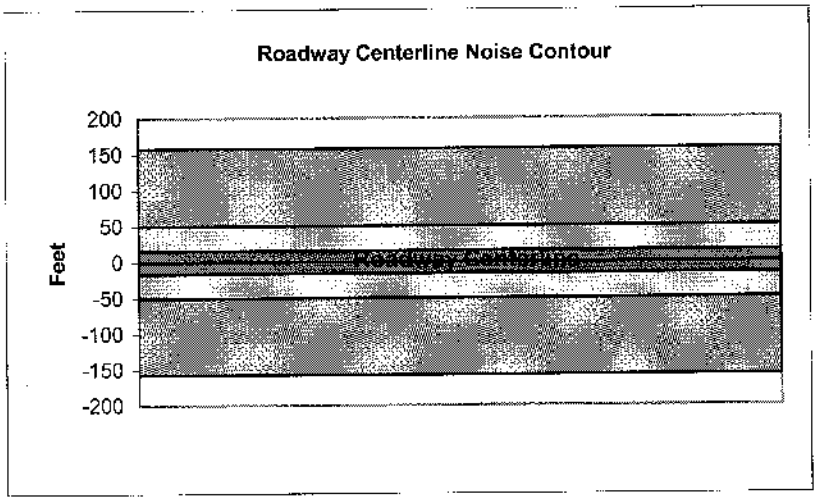
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.9	57.6	55.9	49.8	58.4	59.0
Medium Trucks:	59.5	51.4	45.0	43.4	51.9	52.2
Heavy Trucks:	65.1	53.2	44.1	45.3	55.5	55.6
Vehicle Noise:	**67.6**	**60.1**	**56.6**	**52.3**	**60.8**	**61.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	158
65 dBA	50
70 dBA	16
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Regional St. and Starward Dr.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	14,330
Peak Hour Traffic:	1433
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

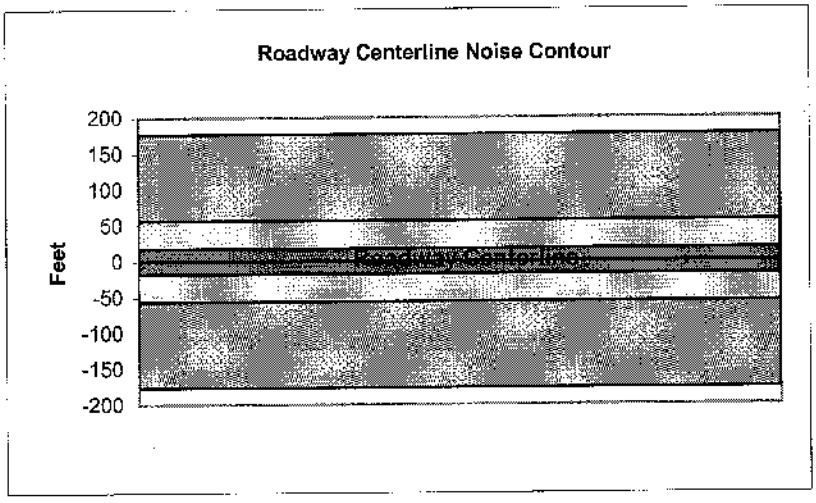
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.4	58.1	56.3	50.3	58.9	59.5
Medium Trucks:	60.0	51.9	45.5	43.9	52.4	52.7
Heavy Trucks:	65.6	53.7	44.6	45.8	56.0	56.1
Vehicle Noise:	**68.1**	**60.6**	**57.1**	**52.7**	**61.3**	**61.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	177
65 dBA	56
70 dBA	18
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between San Ramon Rd. and Regional St.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	15,060
Peak Hour Traffic:	1506
Vehicle Speed:	30
Centerline Separation:	41

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

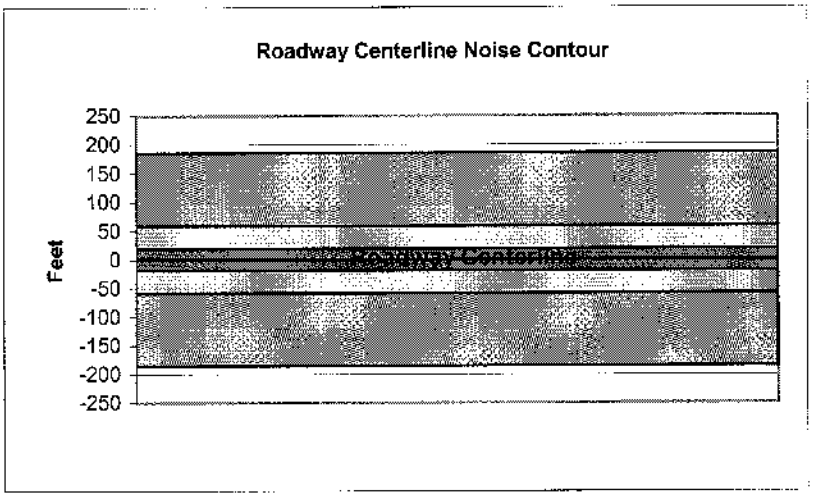
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.6	58.4	56.6	50.5	59.1	59.8
Medium Trucks:	60.2	52.1	45.7	44.2	52.7	52.9
Heavy Trucks:	65.8	53.9	44.8	46.1	56.2	56.3
Vehicle Noise:	**68.4**	**60.9**	**57.3**	**53.0**	**61.5**	**62.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	186
65 dBA	59
70 dBA	19
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Starward Dr. and Donahue Dr.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	13,310
Receiver Barrier Dist:	0	Peak Hour Traffic:	1331
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

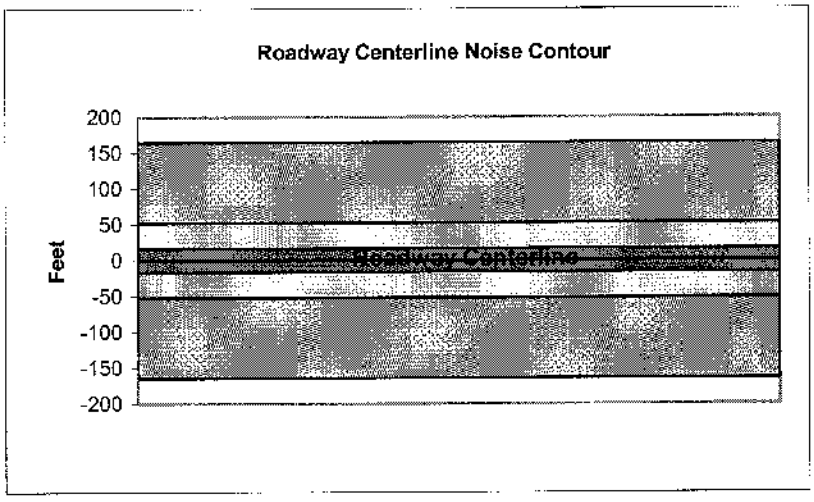
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.0	57.8	56.0	49.9	58.6	59.2
Medium Trucks:	59.6	51.6	45.2	43.6	52.1	52.3
Heavy Trucks:	65.3	53.3	44.3	45.5	55.6	55.8
Vehicle Noise:	**67.8**	**60.3**	**56.8**	**52.4**	**61.0**	**61.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	165
65 dBA	52
70 dBA	16
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	West of San Ramon Rd.		

PROJECT DATA			
Centerline Dist to Barrier	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	100		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	2,960
Peak Hour Traffic:	296
Vehicle Speed:	30
Centerline Separation:	37

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

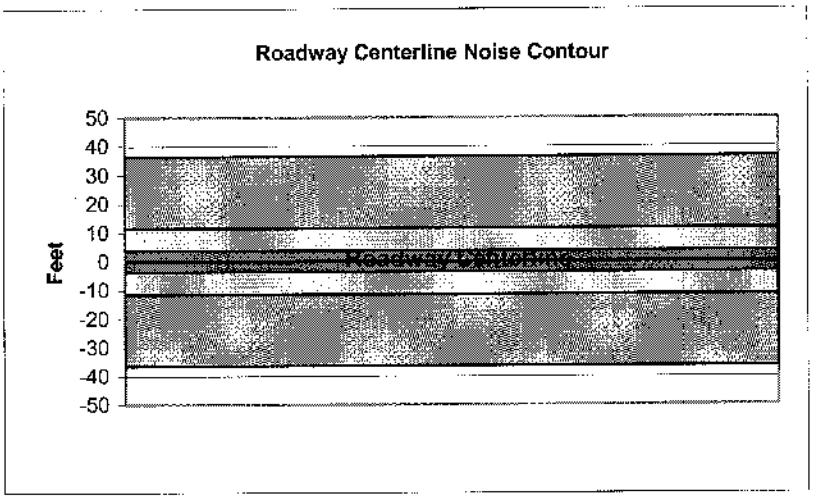
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	42.6	51.4	49.6	43.5	52.1	52.8
Medium Trucks:	53.2	45.1	38.7	37.2	45.7	45.9
Heavy Trucks:	58.8	46.9	37.8	39.1	49.2	49.3
Vehicle Noise:	**61.4**	**53.8**	**50.3**	**46.0**	**54.5**	**54.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	37
65 dBA	12
70 dBA	4
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Amador Plaza Road and Village Parkway		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	20,300
Receiver Barrier Dist:	0	Peak Hour Traffic:	2030
Centerline Dist. To Observer:	100	Vehicle Speed:	35
Barrier Near Lane CL Dist:	0	Centerline Separation:	40
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

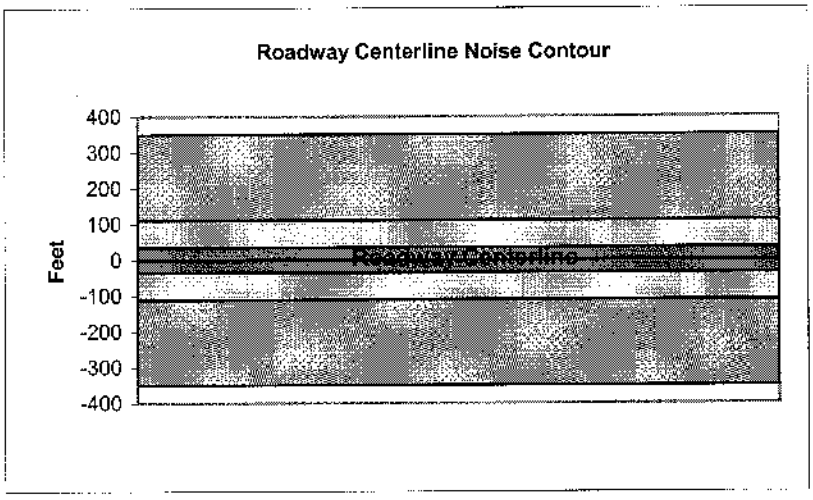
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.8	61.6	59.8	53.7	62.4	63.0
Medium Trucks:	62.5	54.5	48.1	46.5	55.0	55.2
Heavy Trucks:	67.8	55.8	46.8	48.0	57.9	58.0
Vehicle Noise:	**70.2**	**63.6**	**60.4**	**55.7**	**64.3**	**64.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	350
65 dBA	111
70 dBA	35
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	East of Village Parkway		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

	0
Average Daily Traffic:	21,350
Peak Hour Traffic:	2135
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

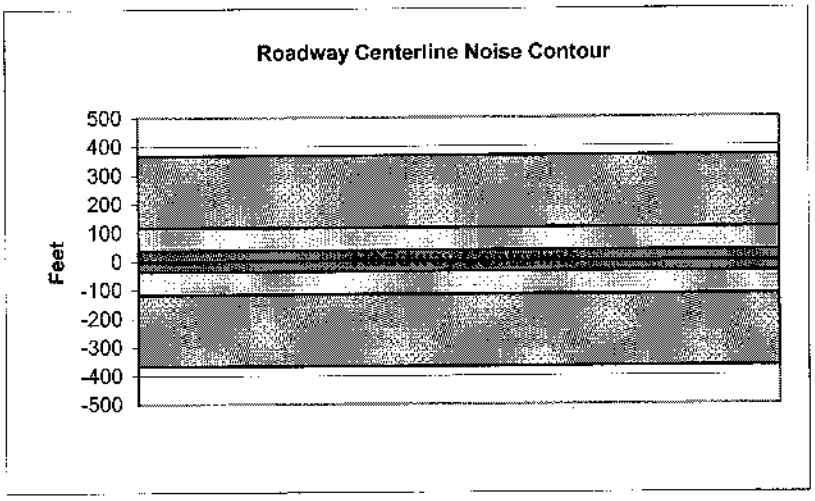
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.0	61.8	60.0	54.0	62.6	63.2
Medium Trucks:	62.8	54.7	48.3	46.7	55.2	55.5
Heavy Trucks:	68.0	56.0	47.0	48.2	58.1	58.2
Vehicle Noise:	**70.4**	**63.8**	**60.6**	**55.9**	**64.5**	**64.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	368
65 dBA	116
70 dBA	37
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Golden Gate Drive and Amador Plaza Road		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	16,720
Peak Hour Traffic:	1672
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

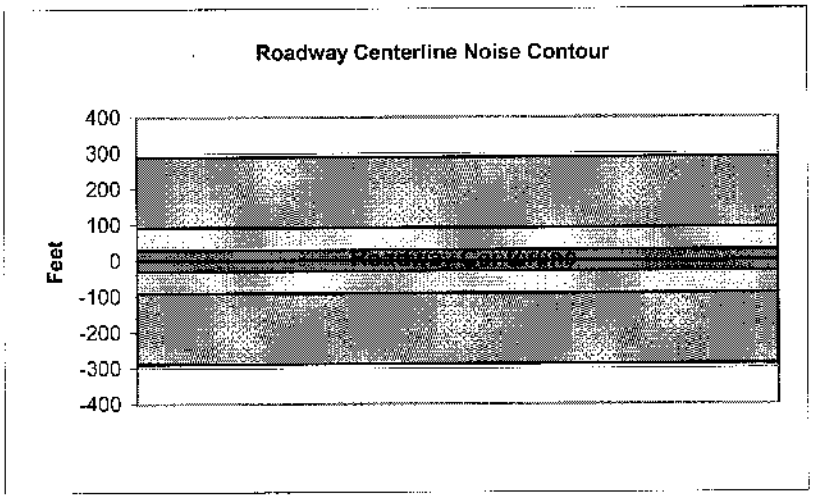
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.0	60.8	59.0	52.9	61.5	62.2
Medium Trucks:	61.7	53.6	47.3	45.7	54.2	54.4
Heavy Trucks:	66.9	55.0	45.9	47.1	57.1	57.2
Vehicle Noise:	**69.4**	**62.7**	**59.5**	**54.8**	**63.4**	**63.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	288
65 dBA	91
70 dBA	29
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Regional Street and Golden Gate Drive		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	17,120
Peak Hour Traffic:	1712
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

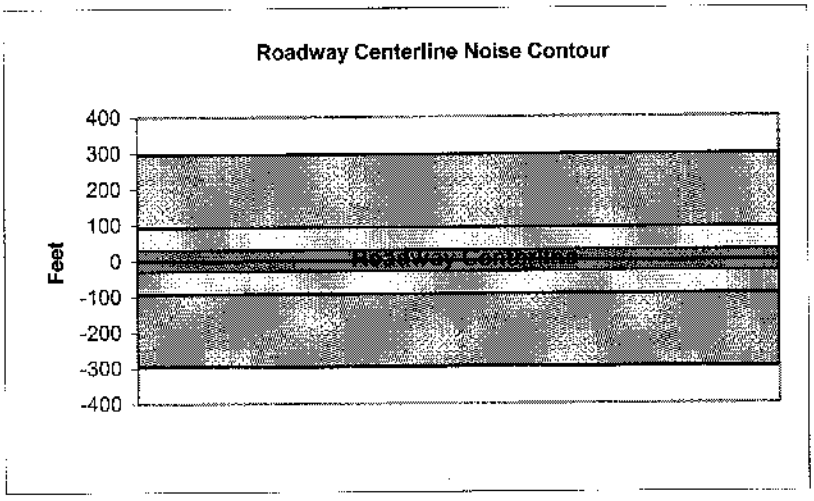
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.1	60.9	59.1	53.0	61.6	62.3
Medium Trucks:	61.8	53.7	47.4	45.8	54.3	54.5
Heavy Trucks:	67.0	55.1	46.0	47.3	57.2	57.3
Vehicle Noise:	**69.5**	**62.8**	**59.6**	**55.0**	**63.5**	**64.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	295
65 dBA	93
70 dBA	30
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between San Ramon Road and Regional Street		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	20,220
Receiver Barrier Dist:	0	Peak Hour Traffic:	2022
Centerline Dist. To Observer:	100	Vehicle Speed:	35
Barrier Near Lane CL Dist:	0	Centerline Separation:	45
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

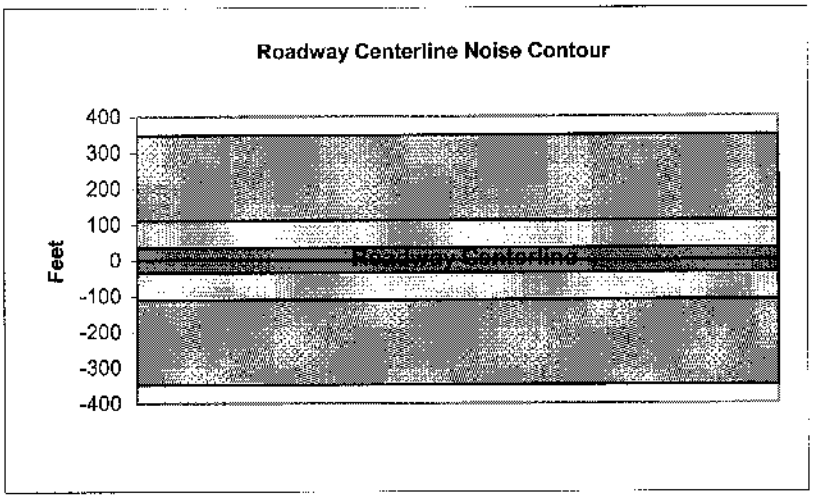
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.7	61.5	59.7	53.6	62.3	62.9
Medium Trucks:	62.5	54.4	48.0	46.4	54.9	55.2
Heavy Trucks:	67.7	55.7	46.7	47.9	57.8	57.9
Vehicle Noise:	**70.1**	**63.5**	**60.3**	**55.6**	**64.2**	**64.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	349
65 dBA	110
70 dBA	35
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	West of San Ramon Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	16,230
Peak Hour Traffic:	1623
Vehicle Speed:	35
Centerline Separation:	51

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

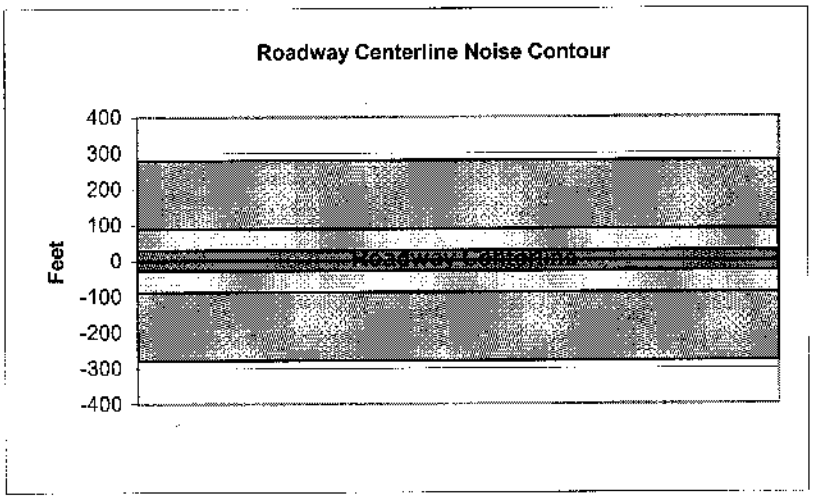
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.7	60.5	58.7	52.6	61.3	61.9
Medium Trucks:	61.4	53.3	47.0	45.4	53.9	54.1
Heavy Trucks:	66.6	54.7	45.6	46.9	56.8	56.9
Vehicle Noise:	**69.1**	**62.4**	**59.2**	**54.6**	**63.1**	**63.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	280
65 dBA	88
70 dBA	28
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Golden Gate Drive		
Road Segment:	Between Dublin Blvd. and St. Patrick Way		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	3,110
Peak Hour Traffic:	311
Vehicle Speed:	25
Centerline Separation:	24

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

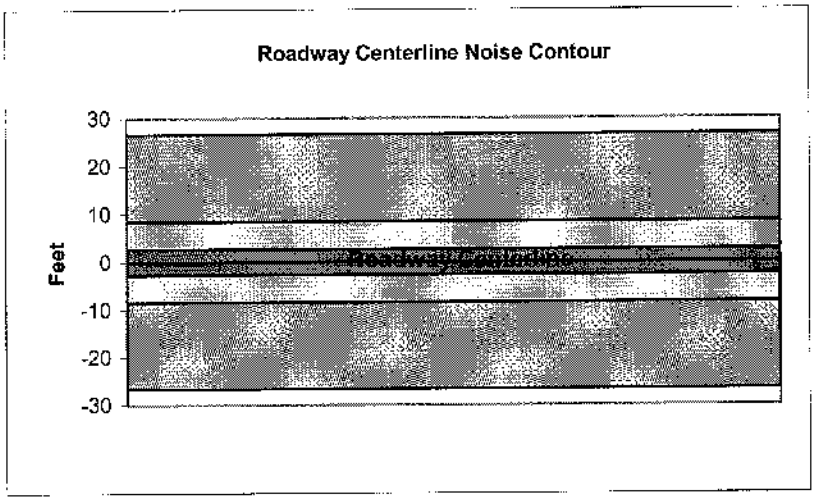
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	40.7	49.5	47.7	41.6	50.3	50.9
Medium Trucks:	52.4	44.3	37.9	36.4	44.8	45.1
Heavy Trucks:	58.5	46.6	37.5	38.8	49.2	49.3
Vehicle Noise:	**61.2**	**52.8**	**48.7**	**44.9**	**53.4**	**53.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	27
65 dBA	8
70 dBA	3
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Golden Gate Drive		
Road Segment:	South of St. Patrick Way		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	1,050
Peak Hour Traffic:	105
Vehicle Speed:	25
Centerline Separation:	23

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

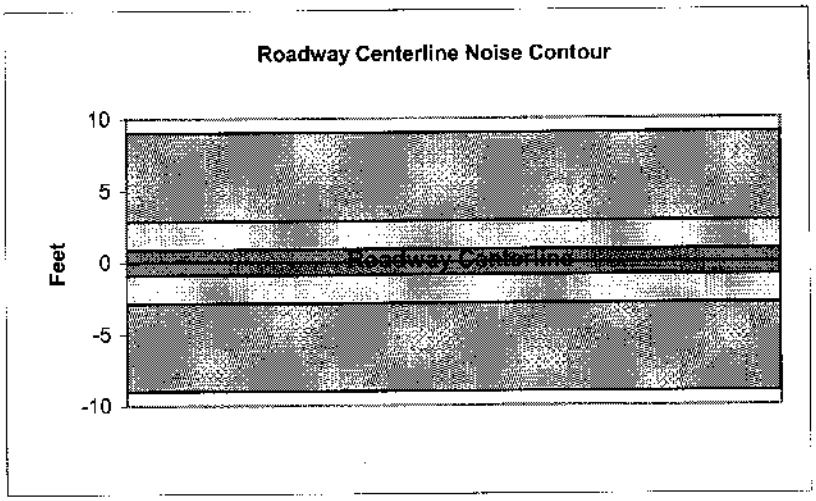
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	36.0	44.8	43.0	36.9	45.6	46.2
Medium Trucks:	47.7	39.6	33.2	31.7	40.2	40.4
Heavy Trucks:	53.8	41.9	32.8	34.1	44.5	44.6
Vehicle Noise:	**56.5**	**48.1**	**44.0**	**40.2**	**48.7**	**49.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	9
65 dBA	3
70 dBA	1
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Regional Street		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	5,450
Receiver Barrier Dist:	0	Peak Hour Traffic:	545
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	26
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

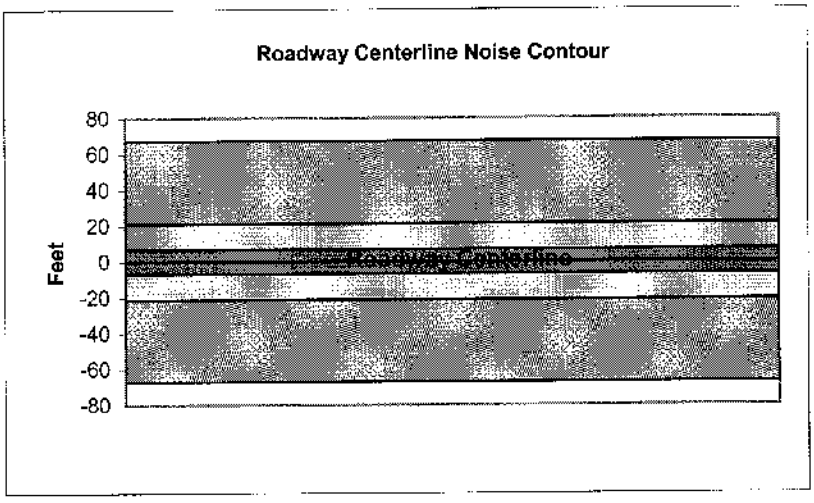
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	45.4	54.2	52.4	46.3	55.0	55.6
Medium Trucks:	56.0	48.0	41.6	40.0	48.5	48.7
Heavy Trucks:	61.7	49.7	40.7	41.9	52.0	52.1
Vehicle Noise:	**64.2**	**56.7**	**53.1**	**48.8**	**57.4**	**57.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	67
65 dBA	21
70 dBA	7
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Regional Street		
Road Segment:	South of Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	5,570
Peak Hour Traffic:	557
Vehicle Speed:	30
Centerline Separation:	26

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

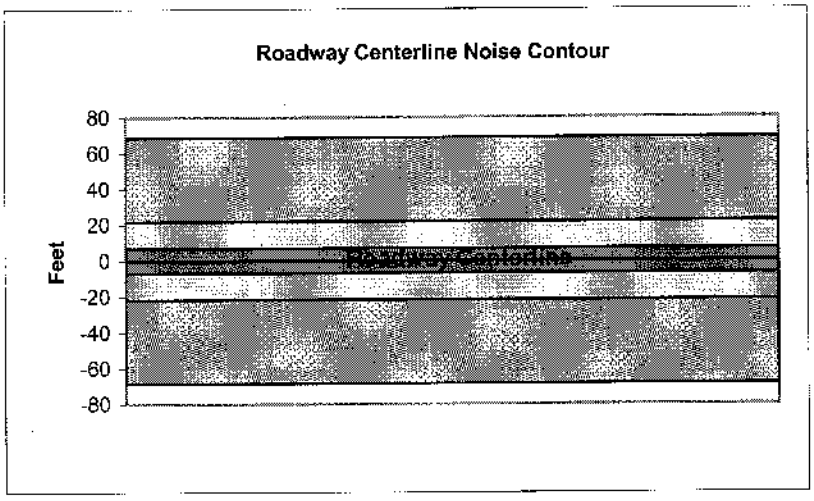
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	45.5	54.3	52.5	46.4	55.1	55.7
Medium Trucks:	56.1	48.0	41.7	40.1	48.6	48.8
Heavy Trucks:	61.8	49.8	40.8	42.0	52.1	52.2
Vehicle Noise:	**64.3**	**56.8**	**53.2**	**48.9**	**57.5**	**57.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	69
65 dBA	22
70 dBA	7
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	24,070
Peak Hour Traffic:	2407
Vehicle Speed:	40
Centerline Separation:	65

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

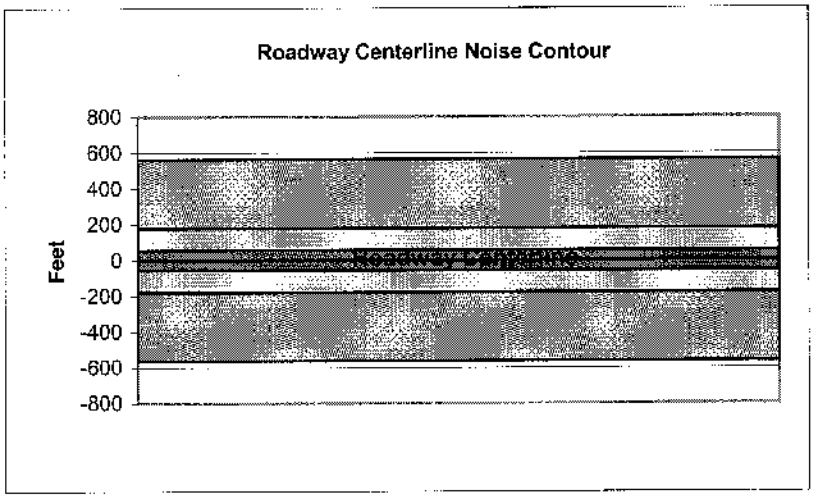
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.9	63.7	61.9	55.8	64.4	65.0
Medium Trucks:	63.8	55.8	49.4	47.8	56.3	56.5
Heavy Trucks:	68.7	56.7	47.7	48.9	58.6	58.7
Vehicle Noise:	**71.1**	**65.2**	**62.3**	**57.4**	**65.9**	**66.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	565
65 dBA	179
70 dBA	56
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	North of Amador Valley Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	19,030
Peak Hour Traffic:	1903
Vehicle Speed:	40
Centerline Separation:	60

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

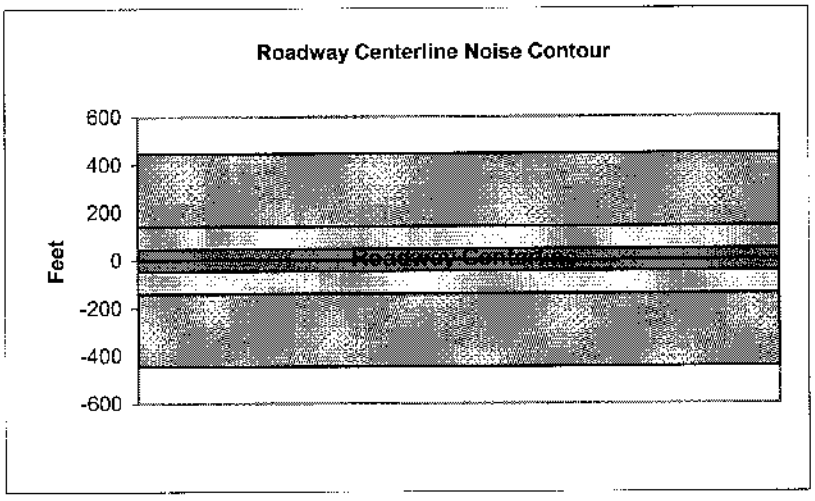
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.9	62.7	60.9	54.8	63.5	64.1
Medium Trucks:	62.9	54.8	48.4	46.9	55.3	55.6
Heavy Trucks:	67.7	55.8	46.7	48.0	57.7	57.8
Vehicle Noise:	**70.1**	**64.3**	**61.4**	**56.4**	**65.0**	**65.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	446
65 dBA	141
70 dBA	45
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	South of Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	37,040
Peak Hour Traffic:	3704
Vehicle Speed:	40
Centerline Separation:	65

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

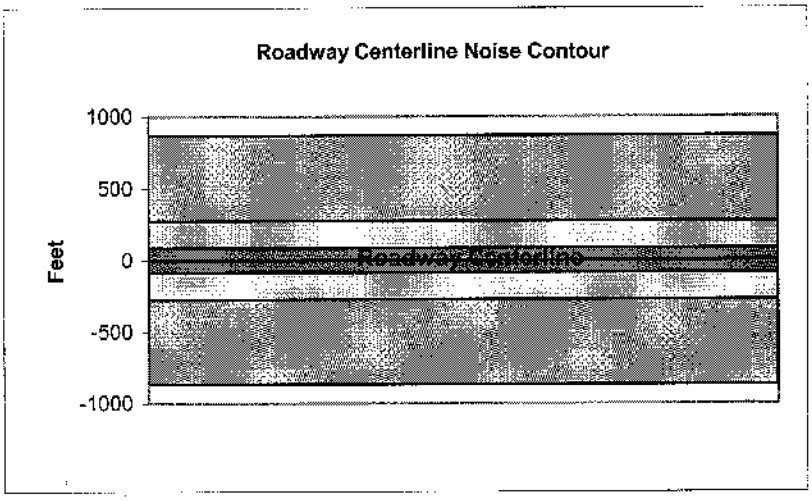
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.8	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	65.7	57.6	51.3	49.7	58.2	58.4
Heavy Trucks:	70.6	58.6	49.6	50.8	60.5	60.6
Vehicle Noise:	**72.9**	**67.1**	**64.2**	**59.2**	**67.8**	**68.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	869
65 dBA	275
70 dBA	87
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	East of Amador Plaza Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	10,500
Peak Hour Traffic:	1050
Vehicle Speed:	25
Centerline Separation:	20

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

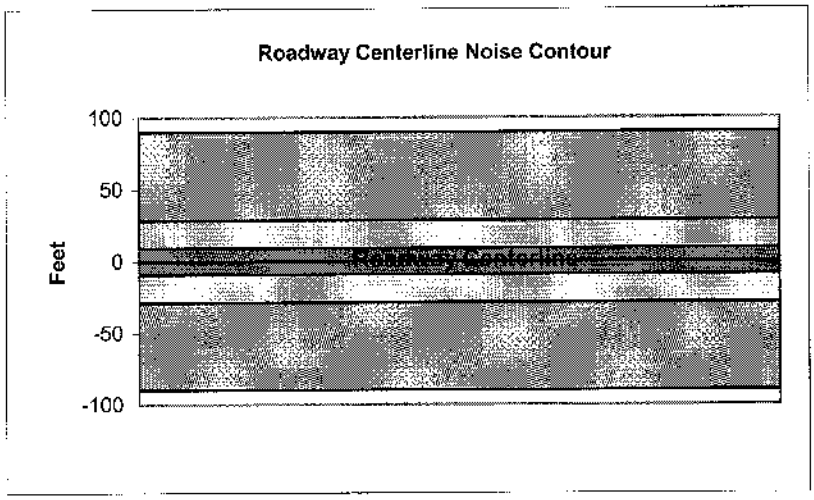
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	46.1	54.9	53.1	47.0	55.7	56.3
Medium Trucks:	57.7	49.7	43.3	41.7	50.2	50.4
Heavy Trucks:	63.9	52.0	42.9	44.1	54.5	54.6
Vehicle Noise:	**66.6**	**58.1**	**54.1**	**50.3**	**58.8**	**59.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	90
65 dBA	28
70 dBA	9
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	Between Golden Gate Drive and Amador Plaza Road		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	2,340
Receiver Barrier Dist:	0	Peak Hour Traffic:	234
Centerline Dist. To Observer:	100	Vehicle Speed:	25
Barrier Near Lane CL Dist:	0	Centerline Separation:	20
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

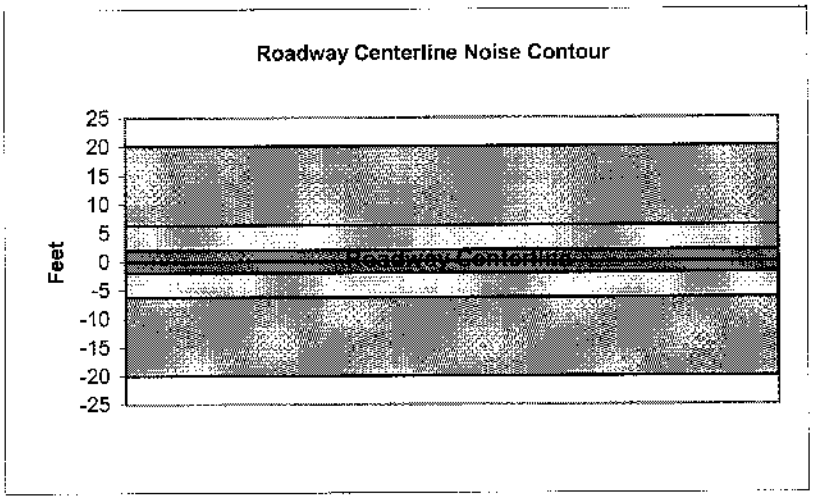
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	39.6	48.4	46.6	40.5	49.1	49.7
Medium Trucks:	51.2	43.2	36.8	35.2	43.7	43.9
Heavy Trucks:	57.4	45.4	36.4	37.6	48.0	48.1
Vehicle Noise:	**60.0**	**51.6**	**47.6**	**43.7**	**52.3**	**52.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	20
65 dBA	6
70 dBA	2
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	West of Golden Gate Drive		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	310
Peak Hour Traffic:	31
Vehicle Speed:	25
Centerline Separation:	20

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

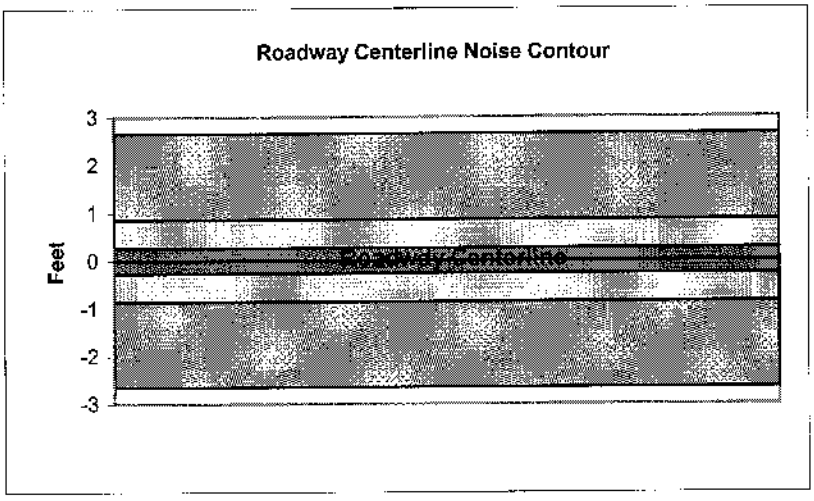
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	30.8	39.6	37.8	31.7	40.4	41.0
Medium Trucks:	42.4	34.4	28.0	26.4	34.9	35.1
Heavy Trucks:	48.6	36.7	27.6	28.8	39.2	39.3
Vehicle Noise:	**51.3**	**42.8**	**38.8**	**35.0**	**43.5**	**43.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	3
65 dBA	1
70 dBA	0
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	12,350
Peak Hour Traffic:	1235
Vehicle Speed:	30
Centerline Separation:	49

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

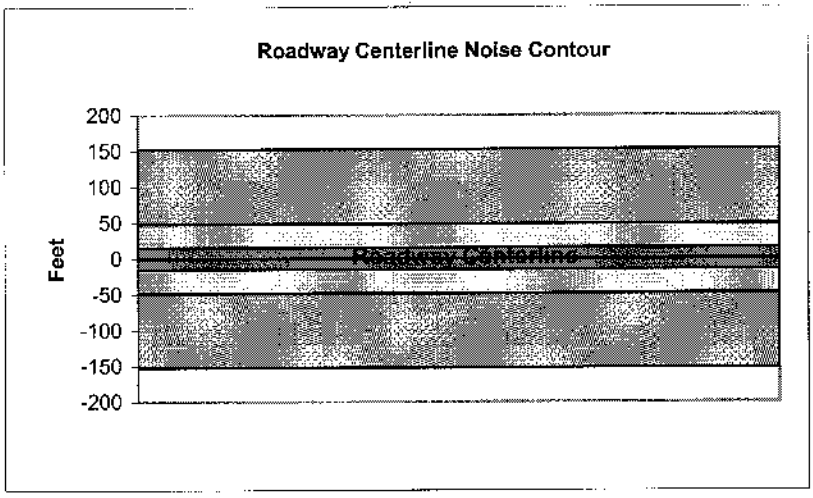
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.6	57.4	55.6	49.5	58.2	58.8
Medium Trucks:	59.2	51.1	44.8	43.2	51.7	51.9
Heavy Trucks:	64.9	52.9	43.9	45.1	55.2	55.3
Vehicle Noise:	**67.4**	**59.9**	**56.3**	**52.0**	**60.5**	**61.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	153
65 dBA	48
70 dBA	15
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	Between Dublin Blvd. and I-680 NB On Ramp		

PROJECT DATA			
Centerline Dist to Barrier	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	100		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	4,840
Peak Hour Traffic:	484
Vehicle Speed:	30
Centerline Separation:	25

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

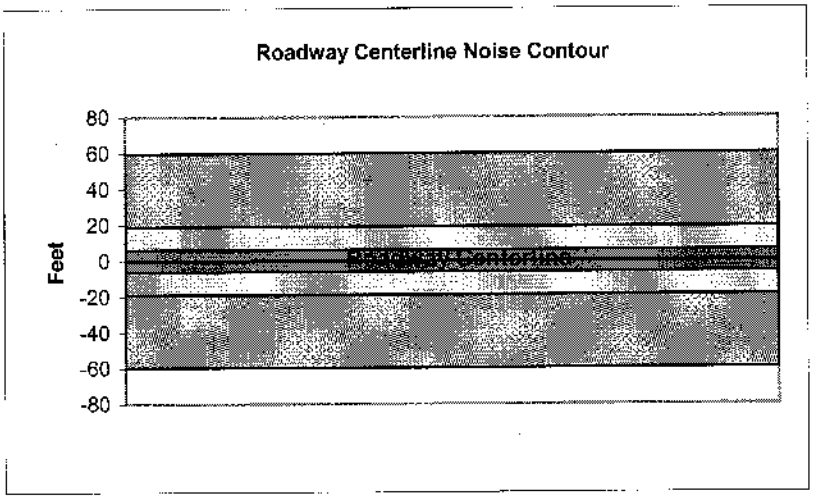
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.9	53.7	51.9	45.8	54.5	55.1
Medium Trucks:	55.5	47.5	41.1	39.5	48.0	48.2
Heavy Trucks:	61.2	49.2	40.2	41.4	51.5	51.6
Vehicle Noise:	**63.7**	**56.2**	**52.6**	**48.3**	**56.9**	**57.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	60
65 dBA	19
70 dBA	6
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	North of Amador Valley Blvd.		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	13,690
Peak Hour Traffic:	1369
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

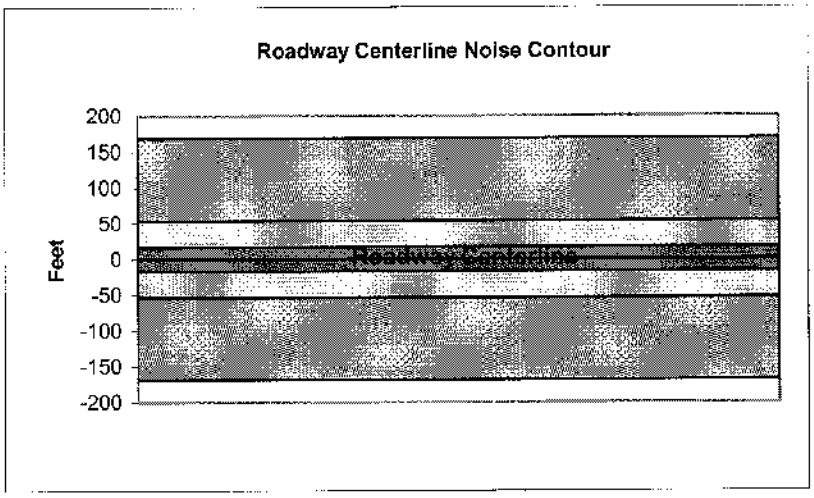
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.2	57.9	56.2	50.1	58.7	59.3
Medium Trucks:	59.8	51.7	45.3	43.7	52.2	52.5
Heavy Trucks:	65.4	53.5	44.4	45.6	55.8	55.9
Vehicle Noise:	**67.9**	**60.4**	**56.9**	**52.6**	**61.1**	**61.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	169
65 dBA	53
70 dBA	17
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Existing
Analyst:	Brian Ailee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	South of I-680 NB On Ramp		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	990
Peak Hour Traffic:	99
Vehicle Speed:	30
Centerline Separation:	25

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

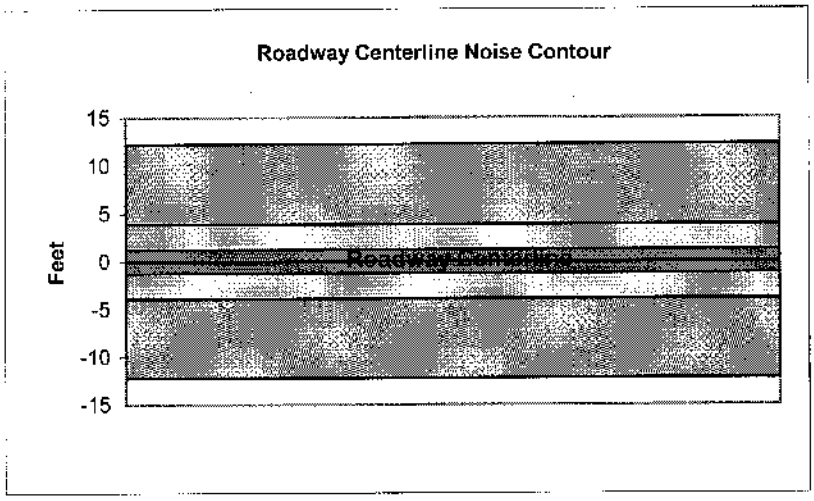
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	38.0	46.8	45.0	38.9	47.6	48.2
Medium Trucks:	48.6	40.6	34.2	32.6	41.1	41.3
Heavy Trucks:	54.3	42.3	33.3	34.5	44.6	44.8
Vehicle Noise:	**56.8**	**49.3**	**45.7**	**41.4**	**50.0**	**50.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	12
65 dBA	4
70 dBA	1
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Plaza		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	8,380
Receiver Barrier Dist:	0	Peak Hour Traffic:	838
Centerline Dist. To Observer:	100	Vehicle Speed:	25
Barrier Near Lane CL Dist:	0	Centerline Separation:	30
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

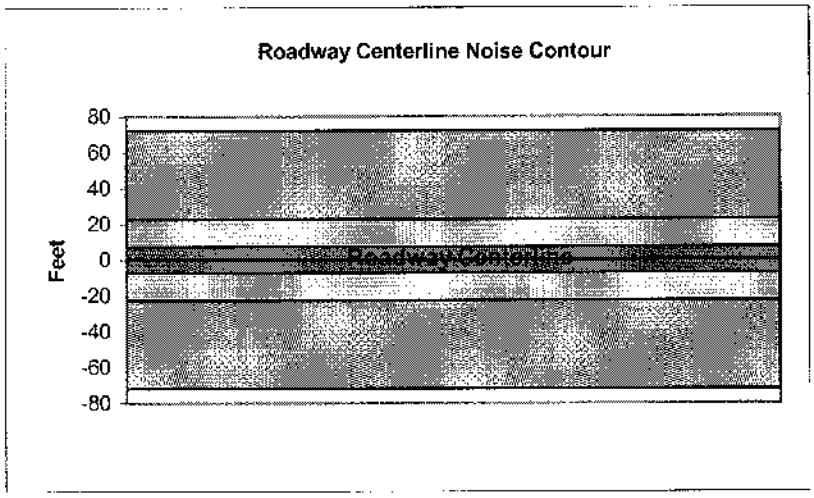
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.9	53.7	51.9	45.8	54.5	55.1
Medium Trucks:	56.6	48.5	42.1	40.6	49.1	49.3
Heavy Trucks:	62.7	50.8	41.7	43.0	53.4	53.5
Vehicle Noise:	**65.4**	**57.0**	**52.9**	**49.1**	**57.6**	**58.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	72
65 dBA	23
70 dBA	7
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Plaza		
Road Segment:	Between Dublin Blvd. and St. Patrick Way		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	13,130
Peak Hour Traffic:	1313
Vehicle Speed:	25
Centerline Separation:	27

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

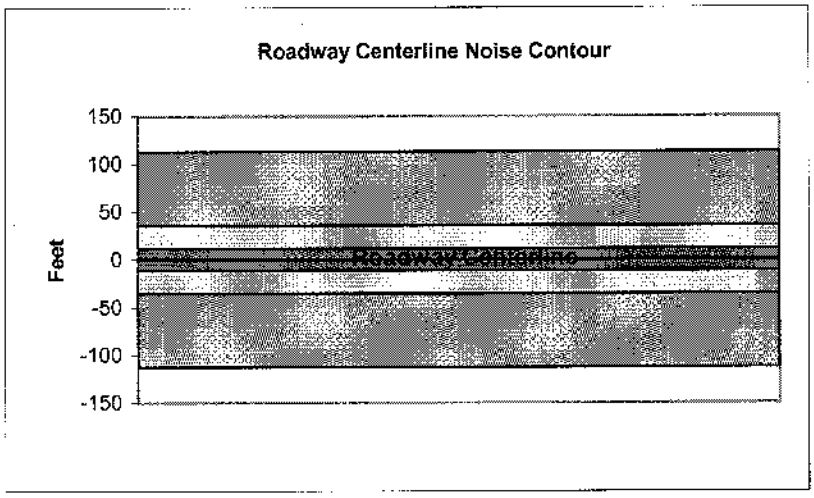
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	46.9	55.7	53.9	47.8	56.5	57.1
Medium Trucks:	58.6	50.5	44.1	42.6	51.1	51.3
Heavy Trucks:	64.7	52.8	43.7	45.0	55.4	55.5
Vehicle Noise:	**67.4**	**59.0**	**54.9**	**51.1**	**59.6**	**60.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	113
65 dBA	36
70 dBA	11
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Amador Plaza Rd. and Village Pkwy.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	17,840
Receiver Barrier Dist:	0	Peak Hour Traffic:	1784
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

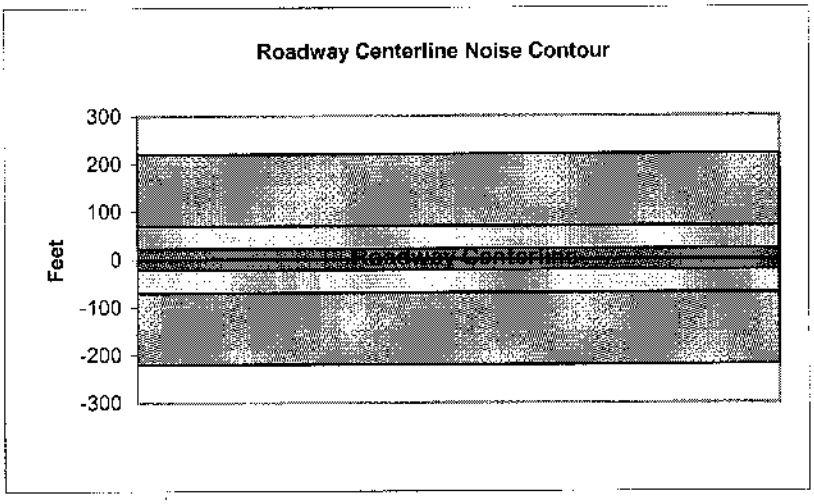
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.3	59.1	57.3	51.2	59.9	60.5
Medium Trucks:	60.9	52.8	46.5	44.9	53.4	53.6
Heavy Trucks:	66.6	54.6	45.6	46.8	56.9	57.0
Vehicle Noise:	**69.1**	**61.6**	**58.0**	**53.7**	**62.2**	**62.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	220
65 dBA	70
70 dBA	22
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Donahue Dr. and Amador Plaza Rd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	15,040
Peak Hour Traffic:	1504
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

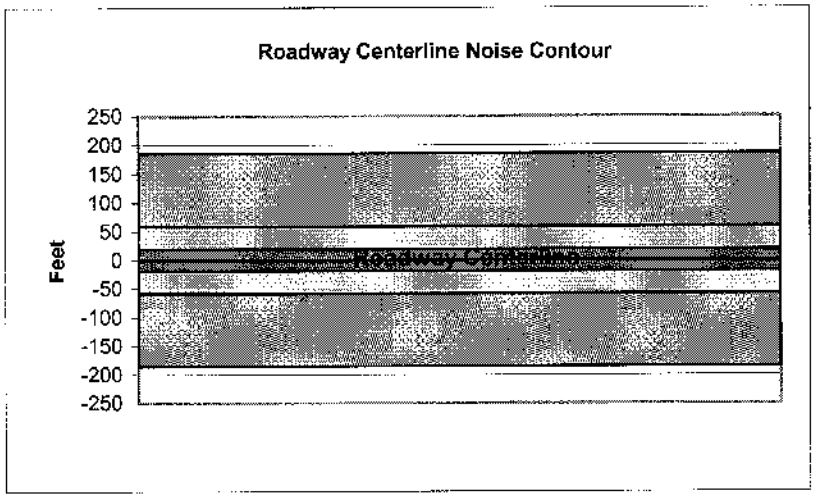
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.6	58.3	56.6	50.5	59.1	59.7
Medium Trucks:	60.2	52.1	45.7	44.1	52.6	52.9
Heavy Trucks:	65.8	53.9	44.8	46.0	56.2	56.3
Vehicle Noise:	**68.3**	**60.8**	**57.3**	**53.0**	**61.5**	**61.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	186
65 dBA	59
70 dBA	19
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	East of Village Pkwy.		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	13,360
Peak Hour Traffic:	1336
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

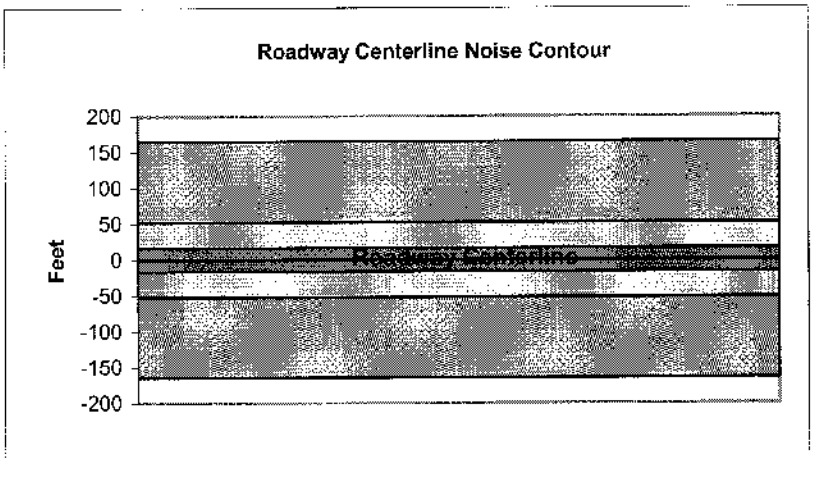
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.1	57.8	56.0	50.0	58.6	59.2
Medium Trucks:	59.7	51.6	45.2	43.6	52.1	52.4
Heavy Trucks:	65.3	53.4	44.3	45.5	55.7	55.8
Vehicle Noise:	**67.8**	**60.3**	**56.8**	**52.4**	**61.0**	**61.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	165
65 dBA	52
70 dBA	17
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Regional St. and Starward Dr.		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	14,770
Peak Hour Traffic:	1477
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

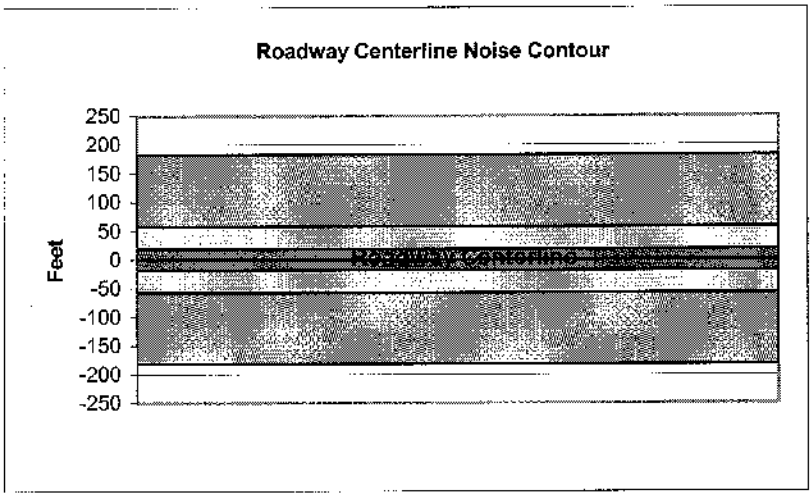
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.5	58.3	56.5	50.4	59.0	59.7
Medium Trucks:	60.1	52.0	45.6	44.1	52.6	52.8
Heavy Trucks:	65.7	53.8	44.7	46.0	56.1	56.2
Vehicle Noise:	**68.3**	**60.8**	**57.2**	**52.9**	**61.4**	**61.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	182
65 dBA	58
70 dBA	18
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between San Ramon Rd. and Regional St.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	16,110
Receiver Barrier Dist:	0	Peak Hour Traffic:	1611
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	41
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

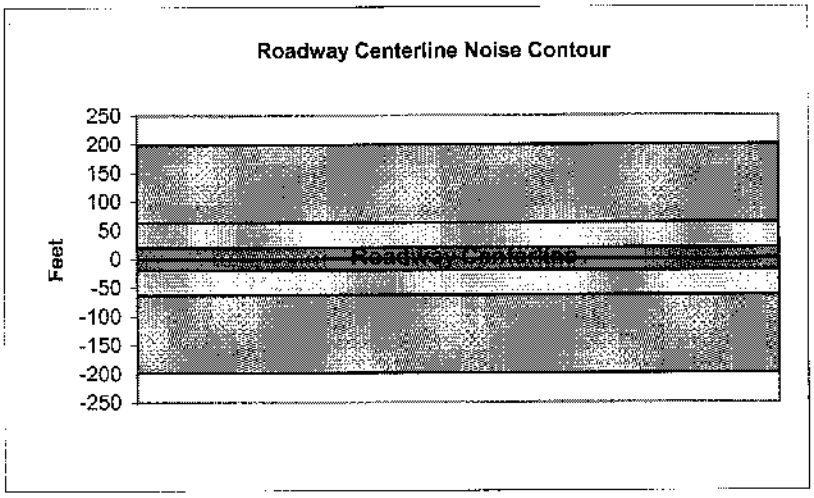
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.9	58.7	56.9	50.8	59.4	60.0
Medium Trucks:	60.5	52.4	46.0	44.5	52.9	53.2
Heavy Trucks:	66.1	54.2	45.1	46.4	56.5	56.6
Vehicle Noise:	**68.7**	**61.1**	**57.6**	**53.3**	**61.8**	**62.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	199
65 dBA	63
70 dBA	20
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Starward Dr. and Donahue Dr.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	13,740
Peak Hour Traffic:	1374
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

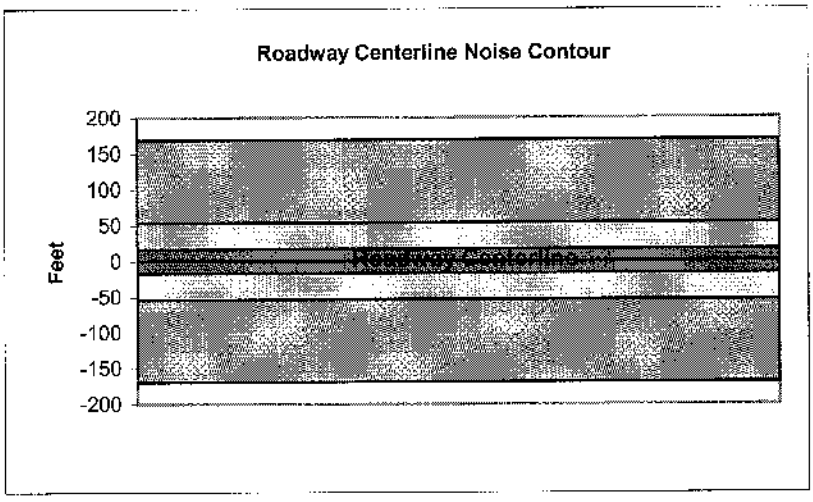
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.2	58.0	56.2	50.1	58.7	59.3
Medium Trucks:	59.8	51.7	45.3	43.8	52.2	52.5
Heavy Trucks:	65.4	53.5	44.4	45.6	55.8	55.9
Vehicle Noise:	**68.0**	**60.4**	**56.9**	**52.6**	**61.1**	**61.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	169
65 dBA	54
70 dBA	17
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	West of San Ramon Rd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	3,010
Peak Hour Traffic:	301
Vehicle Speed:	30
Centerline Separation:	37

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

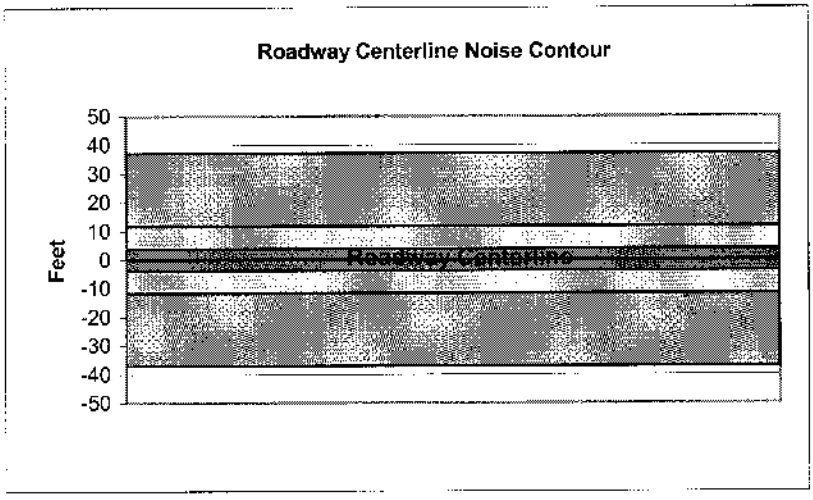
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	42.7	51.4	49.7	43.6	52.2	52.8
Medium Trucks:	53.3	45.2	38.8	37.2	45.7	46.0
Heavy Trucks:	58.9	47.0	37.9	39.1	49.3	49.4
Vehicle Noise:	**61.4**	**53.9**	**50.4**	**46.0**	**54.6**	**55.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	37
65 dBA	12
70 dBA	4
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Amador Plaza Road and Village Parkway		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	24,270
Peak Hour Traffic:	2427
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

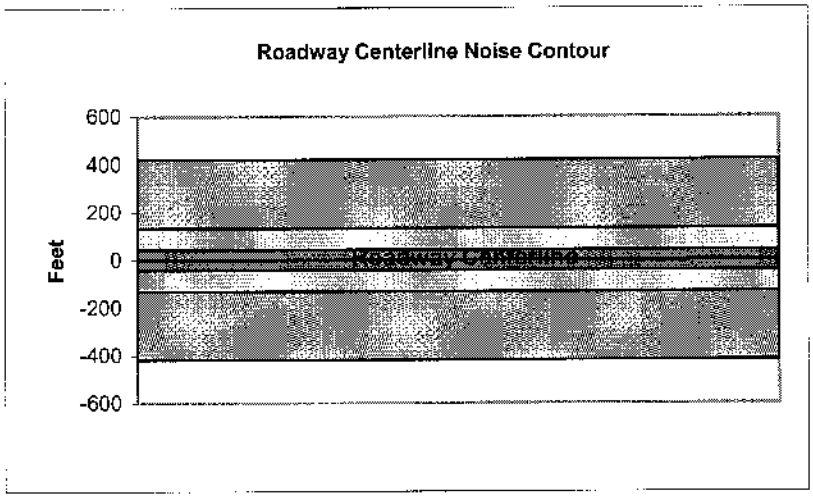
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.6	62.4	60.6	54.5	63.2	63.8
Medium Trucks:	63.3	55.3	48.9	47.3	55.8	56.0
Heavy Trucks:	68.5	56.6	47.5	48.8	58.7	58.8
Vehicle Noise:	**71.0**	**64.3**	**61.2**	**56.5**	**65.0**	**65.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	419
65 dBA	132
70 dBA	42
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	East of Village Parkway		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	24,400
Receiver Barrier Dist:	0	Peak Hour Traffic:	2440
Centerline Dist. To Observer:	100	Vehicle Speed:	35
Barrier Near Lane CL Dist:	0	Centerline Separation:	40
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

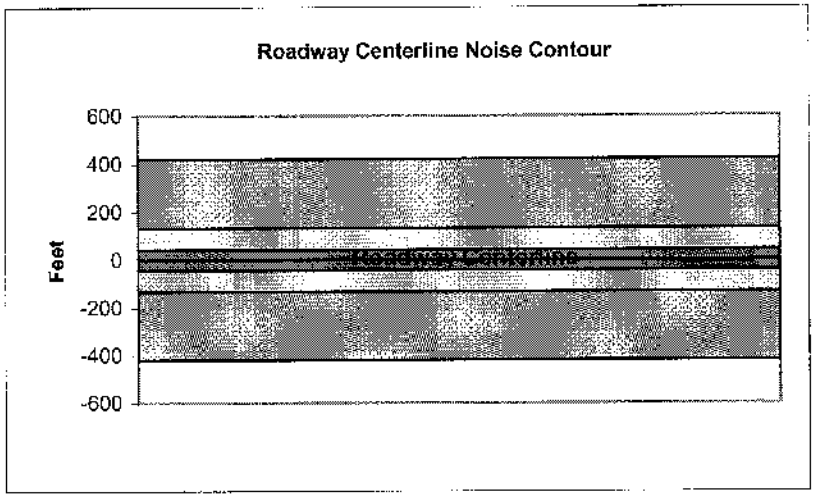
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.6	62.4	60.6	54.5	63.2	63.8
Medium Trucks:	63.3	55.3	48.9	47.3	55.8	56.0
Heavy Trucks:	68.6	56.6	47.6	48.8	58.7	58.8
Vehicle Noise:	**71.0**	**64.4**	**61.2**	**56.5**	**65.1**	**65.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	421
65 dBA	133
70 dBA	42
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Golden Gate Drive and Amador Plaza Road		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	21,440
Peak Hour Traffic:	2144
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

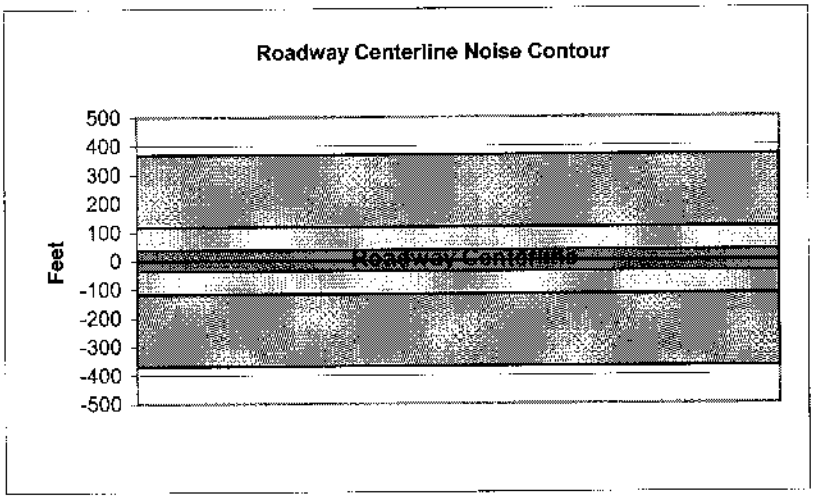
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.1	61.8	60.1	54.0	62.6	63.2
Medium Trucks:	62.8	54.7	48.3	46.8	55.2	55.5
Heavy Trucks:	68.0	56.1	47.0	48.2	58.1	58.3
Vehicle Noise:	**70.4**	**63.8**	**60.6**	**55.9**	**64.5**	**65.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	370
65 dBA	117
70 dBA	37
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Regional Street and Golden Gate Drive		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	22,650
Peak Hour Traffic:	2265
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

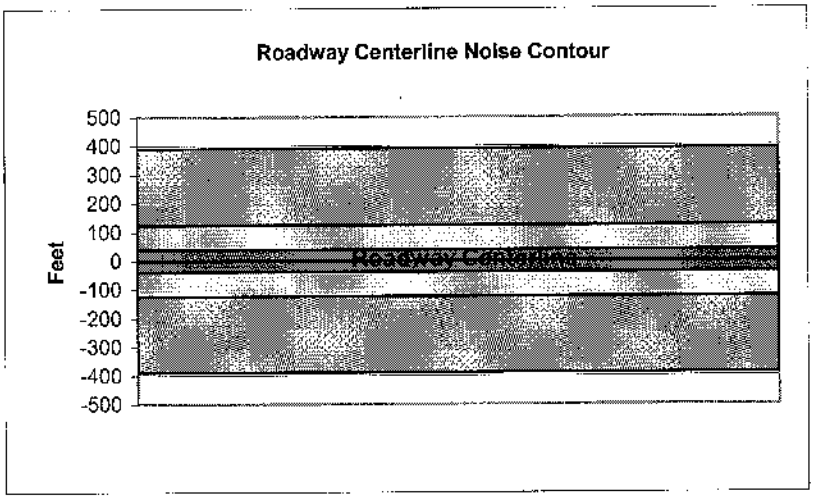
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.3	62.1	60.3	54.2	62.9	63.5
Medium Trucks:	63.0	55.0	48.6	47.0	55.5	55.7
Heavy Trucks:	68.2	56.3	47.2	48.5	58.4	58.5
Vehicle Noise:	**70.7**	**64.0**	**60.9**	**56.2**	**64.7**	**65.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	391
65 dBA	124
70 dBA	39
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between San Ramon Road and Regional Street		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	28,090
Peak Hour Traffic:	2809
Vehicle Speed:	35
Centerline Separation:	45

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

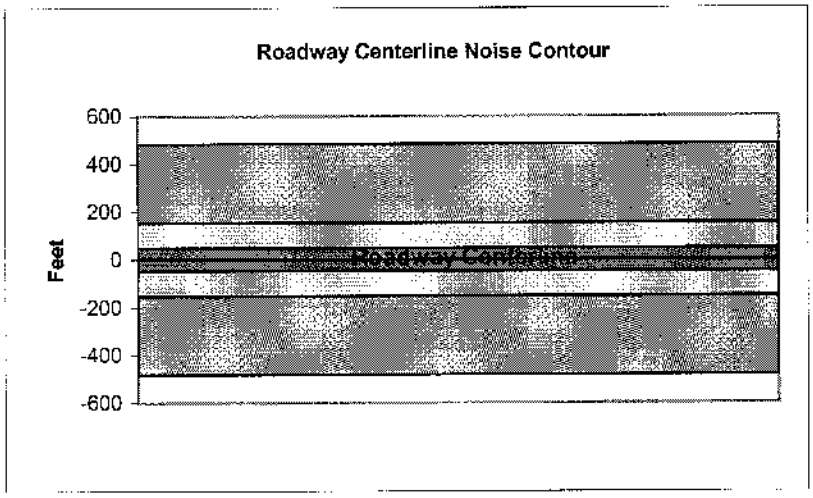
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.2	62.9	61.2	55.1	63.7	64.3
Medium Trucks:	63.9	55.8	49.4	47.9	56.3	56.6
Heavy Trucks:	69.1	57.2	48.1	49.3	59.2	59.4
Vehicle Noise:	**71.5**	**64.9**	**61.7**	**57.0**	**65.6**	**66.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	484
65 dBA	153
70 dBA	48
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	West of San Ramon Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	21,220
Peak Hour Traffic:	2122
Vehicle Speed:	35
Centerline Separation:	51

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

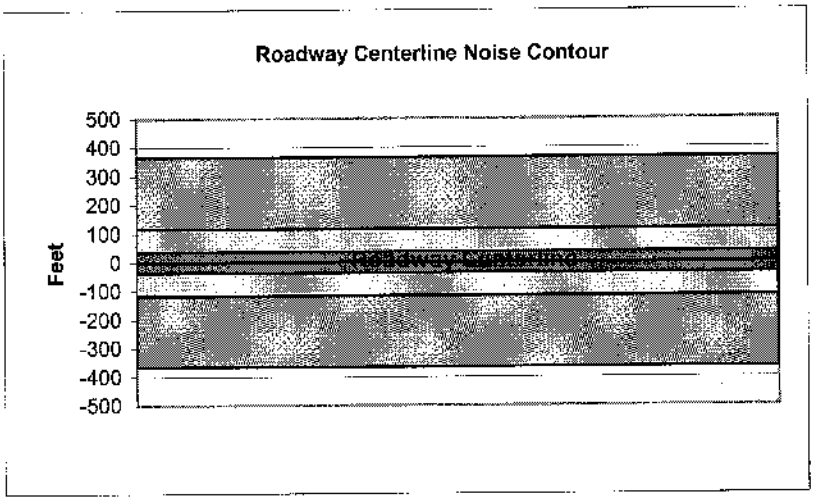
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.9	61.6	59.8	53.8	62.4	63.0
Medium Trucks:	62.6	54.5	48.1	46.6	55.0	55.3
Heavy Trucks:	67.8	55.9	46.8	48.0	57.9	58.1
Vehicle Noise:	**70.2**	**63.6**	**60.4**	**55.7**	**64.3**	**64.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	366
65 dBA	116
70 dBA	37
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Golden Gate Drive		
Road Segment:	Between Dublin Blvd. and St. Patrick Way		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	7,900
Peak Hour Traffic:	790
Vehicle Speed:	25
Centerline Separation:	24

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

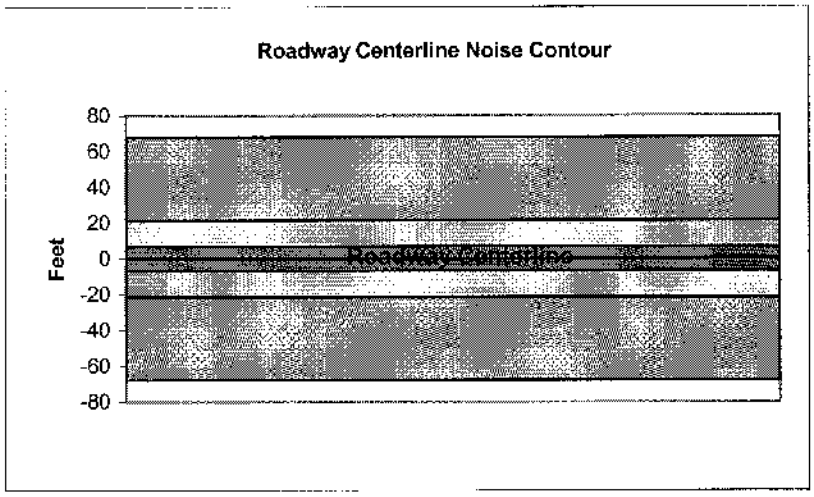
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.8	53.6	51.8	45.7	54.3	55.0
Medium Trucks:	56.4	48.4	42.0	40.4	48.9	49.1
Heavy Trucks:	62.6	50.6	41.6	42.8	53.2	53.3
Vehicle Noise:	**65.2**	**56.8**	**52.8**	**48.9**	**57.5**	**57.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	68
65 dBA	21
70 dBA	7
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Golden Gate Drive		
Road Segment:	South of St. Patrick Way		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	5,830
Peak Hour Traffic:	583
Vehicle Speed:	25
Centerline Separation:	23

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

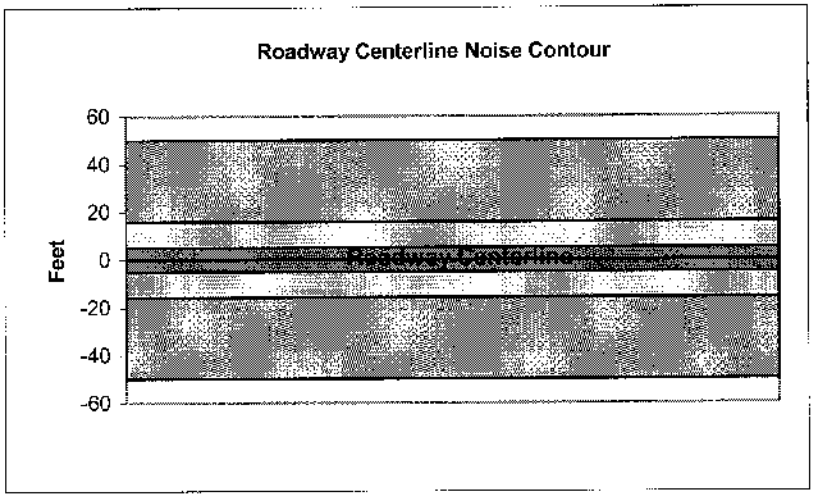
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	43.5	52.3	50.5	44.4	53.0	53.6
Medium Trucks:	55.1	47.1	40.7	39.1	47.6	47.8
Heavy Trucks:	61.3	49.3	40.3	41.5	51.9	52.0
Vehicle Noise:	**63.9**	**55.5**	**51.5**	**47.6**	**56.2**	**56.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	50
65 dBA	16
70 dBA	5
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Regional Street		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	6,220
Receiver Barrier Dist:	0	Peak Hour Traffic:	622
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	26
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

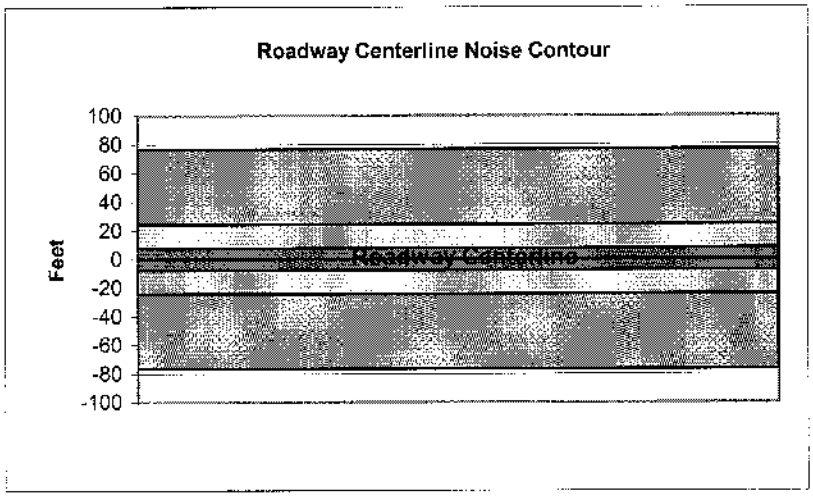
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	46.0	54.8	53.0	46.9	55.6	56.2
Medium Trucks:	56.6	48.5	42.1	40.6	49.1	49.3
Heavy Trucks:	62.2	50.3	41.2	42.5	52.6	52.7
Vehicle Noise:	**64.8**	**57.3**	**53.7**	**49.4**	**57.9**	**58.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	77
65 dBA	24
70 dBA	8
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Regional Street		
Road Segment:	South of Dublin Blvd.		

PROJECT DATA			
Centerline Dist to Barrier	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	100		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	7,820
Peak Hour Traffic:	782
Vehicle Speed:	30
Centerline Separation:	26

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

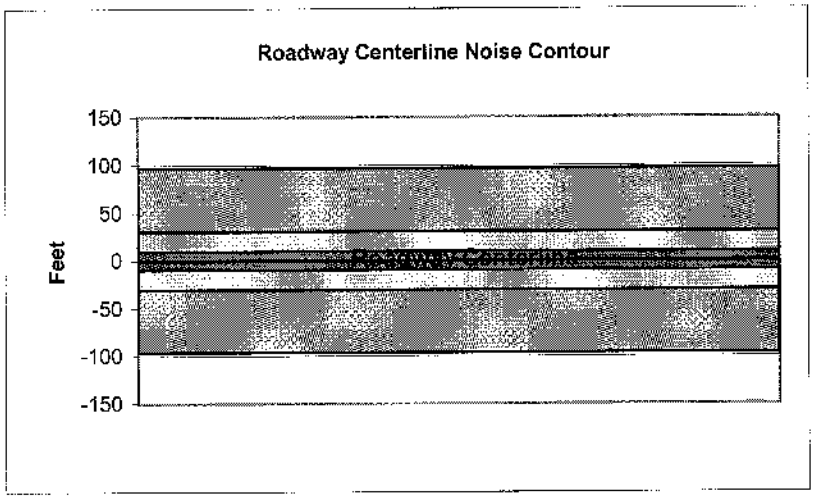
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.0	55.8	54.0	47.9	56.5	57.2
Medium Trucks:	57.6	49.5	43.1	41.6	50.1	50.3
Heavy Trucks:	63.2	51.3	42.2	43.5	53.6	53.7
Vehicle Noise:	**65.8**	**58.2**	**54.7**	**50.4**	**58.9**	**59.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	97
65 dBA	31
70 dBA	10
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	27,000
Peak Hour Traffic:	2709
Vehicle Speed:	40
Centerline Separation:	65

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

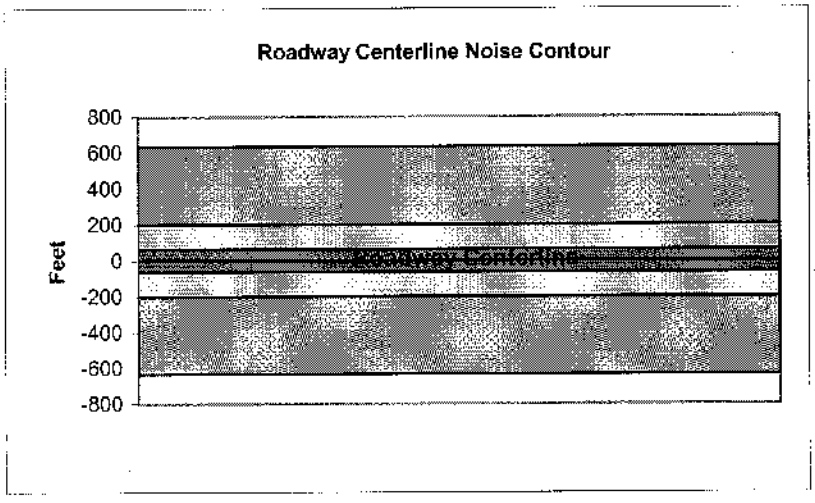
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.4	64.2	62.4	56.3	65.0	65.6
Medium Trucks:	64.3	56.3	49.9	48.3	56.8	57.0
Heavy Trucks:	69.2	57.3	48.2	49.4	59.1	59.3
Vehicle Noise:	**71.6**	**65.8**	**62.8**	**57.9**	**66.5**	**66.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	635
65 dBA	201
70 dBA	63
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	North of Amador Valley Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	22,520
Peak Hour Traffic:	2252
Vehicle Speed:	40
Centerline Separation:	60

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

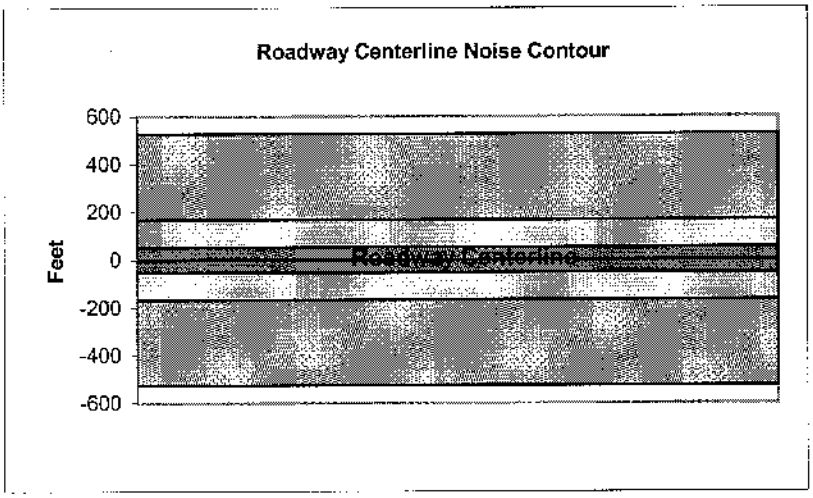
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.7	63.4	61.7	55.6	64.2	64.8
Medium Trucks:	63.6	55.5	49.2	47.6	56.1	56.3
Heavy Trucks:	68.5	56.5	47.5	48.7	58.4	58.5
Vehicle Noise:	**70.8**	**65.0**	**62.1**	**57.1**	**65.7**	**66.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	527
65 dBA	167
70 dBA	53
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	South of Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	48,540
Peak Hour Traffic:	4854
Vehicle Speed:	40
Centerline Separation:	65

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

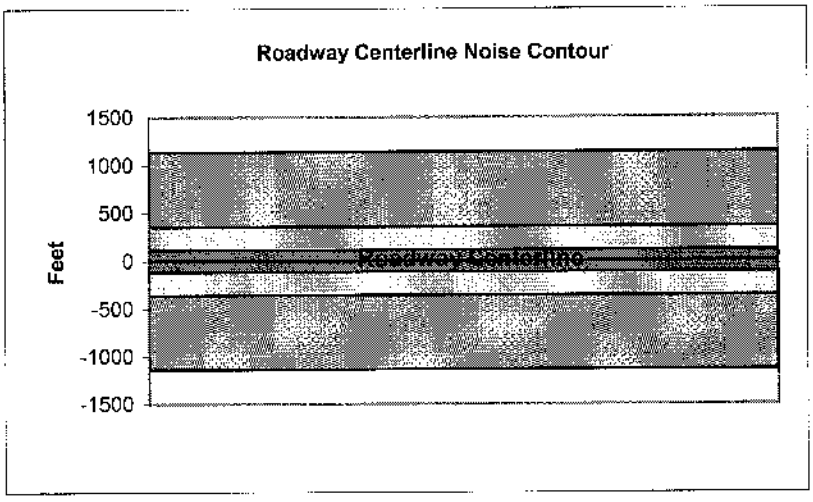
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.9	66.7	64.9	58.8	67.5	68.1
Medium Trucks:	66.9	58.8	52.4	50.9	59.3	59.6
Heavy Trucks:	71.7	59.8	50.7	52.0	61.7	61.8
Vehicle Noise:	**74.1**	**68.3**	**65.4**	**60.4**	**69.0**	**69.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	1137
65 dBA	360
70 dBA	114
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	East of Amador Plaza Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	12,050
Peak Hour Traffic:	1205
Vehicle Speed:	25
Centerline Separation:	20

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

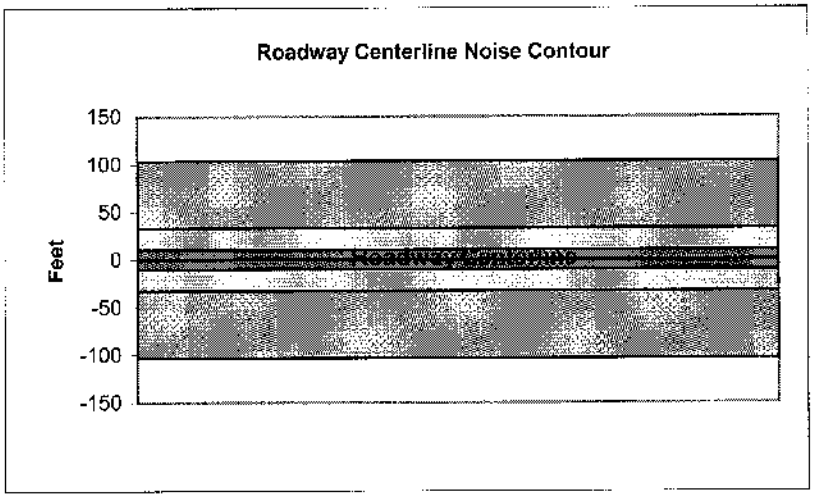
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	46.7	55.5	53.7	47.6	56.2	56.9
Medium Trucks:	58.3	50.3	43.9	42.3	50.8	51.0
Heavy Trucks:	64.5	52.6	43.5	44.7	55.1	55.2
Vehicle Noise:	**67.2**	**58.7**	**54.7**	**50.8**	**59.4**	**59.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	103
65 dBA	33
70 dBA	10
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	Between Golden Gate Drive and Amador Plaza Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	3,840
Peak Hour Traffic:	384
Vehicle Speed:	25
Centerline Separation:	20

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

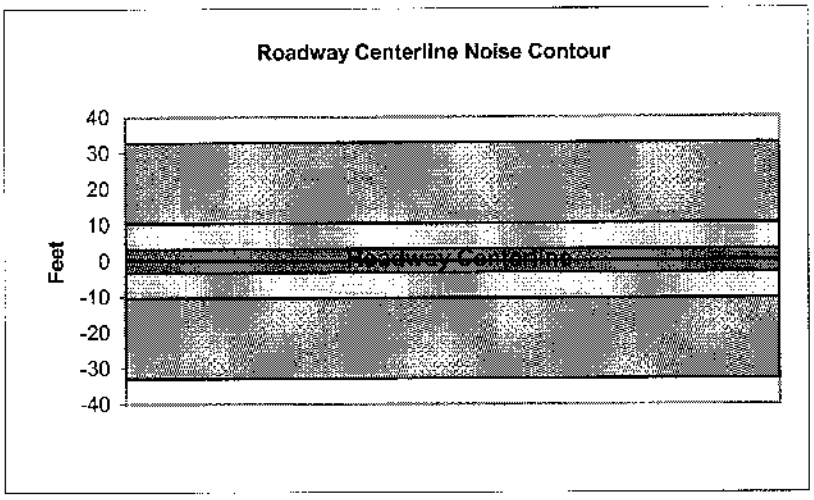
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	41.7	50.5	48.7	42.6	51.3	51.9
Medium Trucks:	53.4	45.3	38.9	37.3	45.8	46.1
Heavy Trucks:	59.5	47.6	38.5	39.8	50.1	50.3
Vehicle Noise:	**62.2**	**53.8**	**49.7**	**45.9**	**54.4**	**54.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	33
65 dBA	10
70 dBA	3
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	West of Golden Gate Drive		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	1,670
Peak Hour Traffic:	167
Vehicle Speed:	25
Centerline Separation:	20

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

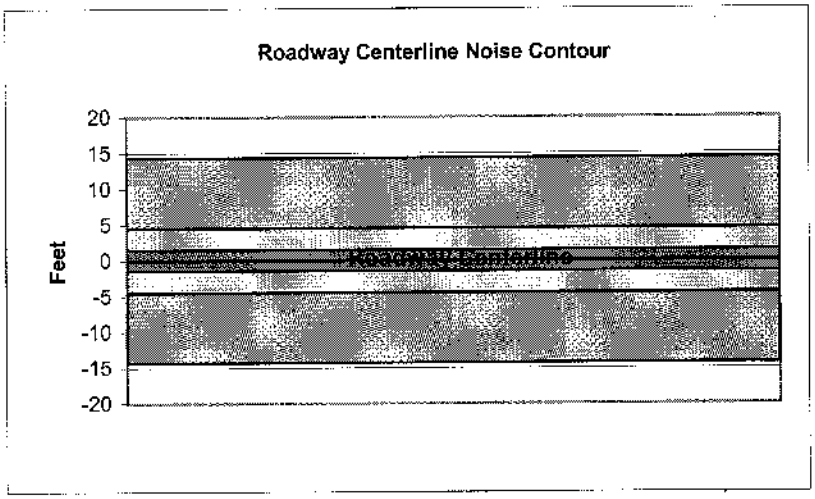
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	38.1	46.9	45.1	39.0	47.7	48.3
Medium Trucks:	49.8	41.7	35.3	33.7	42.2	42.5
Heavy Trucks:	55.9	44.0	34.9	36.1	46.5	46.6
Vehicle Noise:	**58.6**	**50.1**	**46.1**	**42.3**	**50.8**	**51.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	14
65 dBA	5
70 dBA	1
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	12,990
Peak Hour Traffic:	1299
Vehicle Speed:	30
Centerline Separation:	49

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

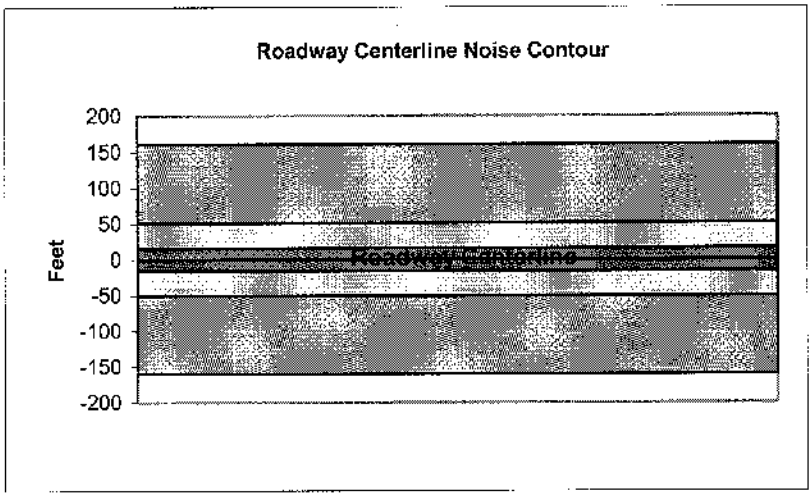
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.8	57.6	55.8	49.7	58.4	59.0
Medium Trucks:	59.4	51.4	45.0	43.4	51.9	52.1
Heavy Trucks:	65.1	53.1	44.1	45.3	55.4	55.6
Vehicle Noise:	**67.6**	**60.1**	**56.5**	**52.2**	**60.8**	**61.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	161
65 dBA	51
70 dBA	16
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	Between Dublin Blvd. and I-680 NB On Ramp		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	5,400
Receiver Barrier Dist:	0	Peak Hour Traffic:	540
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	25
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

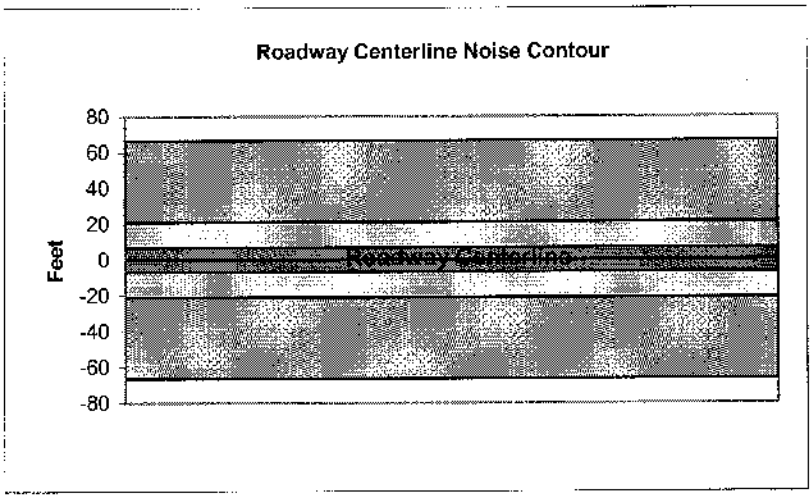
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	45.4	54.2	52.4	46.3	55.0	55.6
Medium Trucks:	56.0	47.9	41.5	40.0	48.5	48.7
Heavy Trucks:	61.6	49.7	40.7	41.9	52.0	52.1
Vehicle Noise:	**64.2**	**56.7**	**53.1**	**48.8**	**57.3**	**57.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	67
65 dBA	21
70 dBA	7
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	North of Amador Valley Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	14,670
Peak Hour Traffic:	1467
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

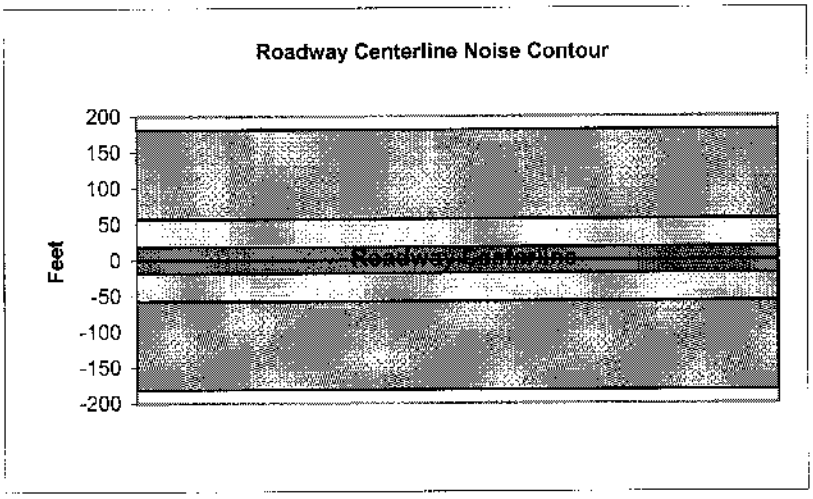
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.5	58.2	56.5	50.4	59.0	59.6
Medium Trucks:	60.1	52.0	45.6	44.0	52.5	52.8
Heavy Trucks:	65.7	53.8	44.7	45.9	56.1	56.2
Vehicle Noise:	**68.2**	**60.7**	**57.2**	**52.9**	**61.4**	**61.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	181
65 dBA	57
70 dBA	18
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	South of I-680 NB On Ramp		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	990
Receiver Barrier Dist:	0	Peak Hour Traffic:	99
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	25
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

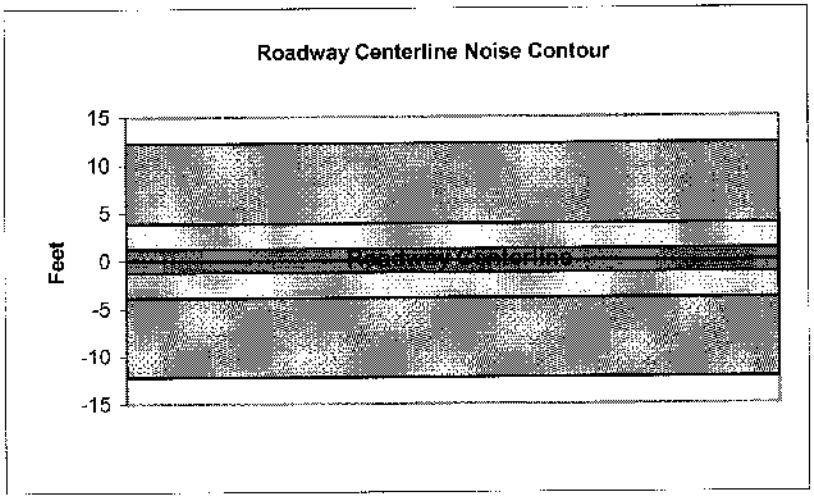
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	38.0	46.8	45.0	38.9	47.6	48.2
Medium Trucks:	48.6	40.6	34.2	32.6	41.1	41.3
Heavy Trucks:	54.3	42.3	33.3	34.5	44.6	44.8
Vehicle Noise:	**56.8**	**49.3**	**45.7**	**41.4**	**50.0**	**50.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	12
65 dBA	4
70 dBA	1
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Plaza		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	12,690
Peak Hour Traffic:	1269
Vehicle Speed:	25
Centerline Separation:	30

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

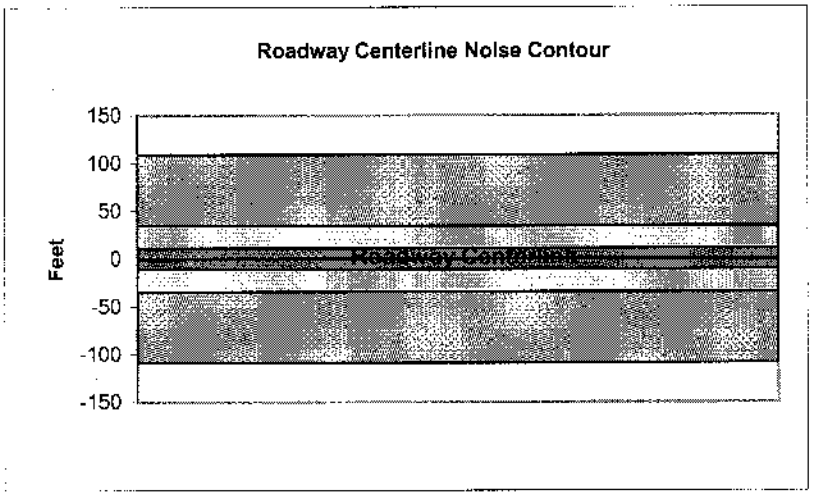
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	46.7	55.5	53.7	47.7	56.3	56.9
Medium Trucks:	58.4	50.3	43.9	42.4	50.9	51.1
Heavy Trucks:	64.5	52.6	43.5	44.8	55.2	55.3
Vehicle Noise:	**67.2**	**58.8**	**54.7**	**50.9**	**59.4**	**59.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	109
65 dBA	34
70 dBA	11
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Plaza		
Road Segment:	Between Dublin Blvd. and St. Patrick Way		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	30,670
Peak Hour Traffic:	3067
Vehicle Speed:	25
Centerline Separation:	27

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

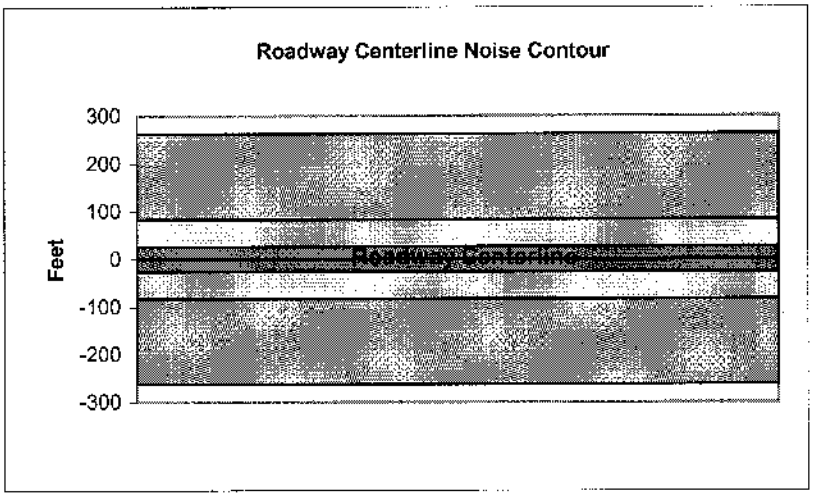
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.6	59.4	57.6	51.5	60.2	60.8
Medium Trucks:	62.3	54.2	47.8	46.2	54.7	55.0
Heavy Trucks:	68.4	56.5	47.4	48.7	59.0	59.2
Vehicle Noise:	**71.1**	**62.7**	**58.6**	**54.8**	**63.3**	**63.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	263
65 dBA	83
70 dBA	26
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Amador Plaza Rd. and Village Pkwy.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	20,550
Receiver Barrier Dist:	0	Peak Hour Traffic:	2055
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

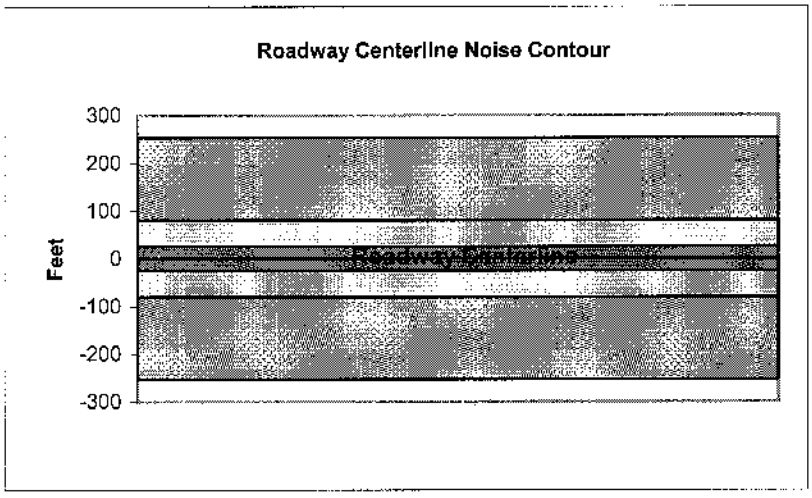
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.9	59.7	57.9	51.8	60.5	61.1
Medium Trucks:	61.5	53.5	47.1	45.5	54.0	54.2
Heavy Trucks:	67.2	55.2	46.2	47.4	57.5	57.7
Vehicle Noise:	**69.7**	**62.2**	**58.6**	**54.3**	**62.9**	**63.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	254
65 dBA	80
70 dBA	25
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Donahue Dr. and Amador Plaza Rd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	17,110
Peak Hour Traffic:	1711
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

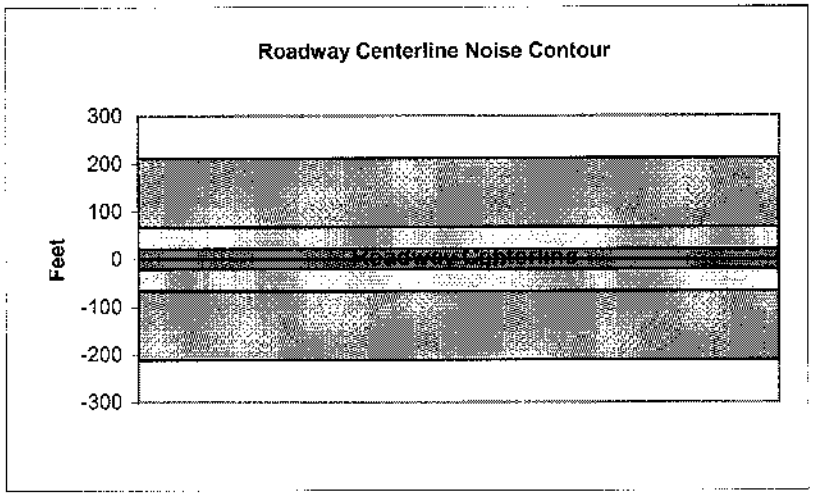
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.1	58.9	57.1	51.0	59.7	60.3
Medium Trucks:	60.7	52.7	46.3	44.7	53.2	53.4
Heavy Trucks:	66.4	54.4	45.4	46.6	56.7	56.9
Vehicle Noise:	**68.9**	**61.4**	**57.8**	**53.5**	**62.1**	**62.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	211
65 dBA	67
70 dBA	21
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	East of Village Pkwy.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	14,770
Receiver Barrier Dist:	0	Peak Hour Traffic:	1477
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

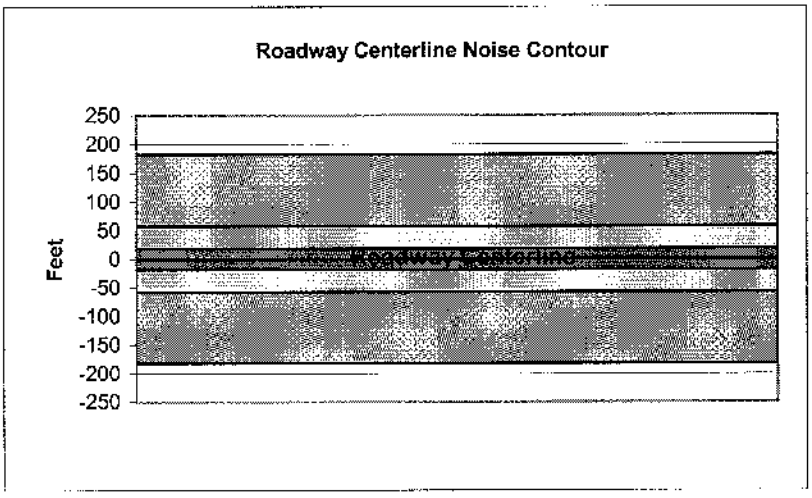
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.5	58.3	56.5	50.4	59.0	59.7
Medium Trucks:	60.1	52.0	45.6	44.1	52.6	52.8
Heavy Trucks:	65.7	53.8	44.7	46.0	56.1	56.2
Vehicle Noise:	**68.3**	**60.8**	**57.2**	**52.9**	**61.4**	**61.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	182
65 dBA	58
70 dBA	18
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Regional St. and Starward Dr.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	16,790
Receiver Barrier Dist:	0	Peak Hour Traffic:	1679
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

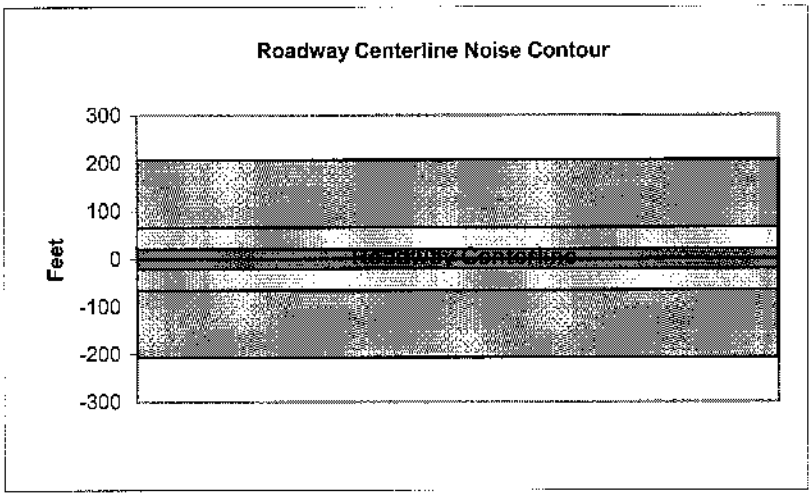
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.0	58.8	57.0	51.0	59.6	60.2
Medium Trucks:	60.6	52.6	46.2	44.6	53.1	53.3
Heavy Trucks:	66.3	54.4	45.3	46.5	56.6	56.8
Vehicle Noise:	**68.8**	**61.3**	**57.8**	**53.4**	**62.0**	**62.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	207
65 dBA	65
70 dBA	21
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between San Ramon Rd. and Regional St.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	18,260
Receiver Barrier Dist:	0	Peak Hour Traffic:	1826
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	41
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

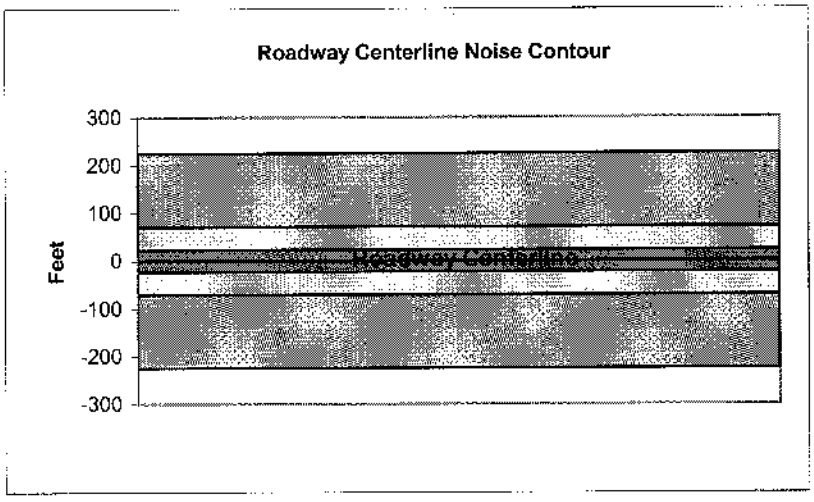
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.4	59.2	57.4	51.3	60.0	60.6
Medium Trucks:	61.0	53.0	46.6	45.0	53.5	53.7
Heavy Trucks:	66.7	54.7	45.7	46.9	57.0	57.2
Vehicle Noise:	**69.2**	**61.7**	**58.1**	**53.8**	**62.4**	**62.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	225
65 dBA	71
70 dBA	23
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Starward Dr. and Donahue Dr.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	15,800
Peak Hour Traffic:	1580
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

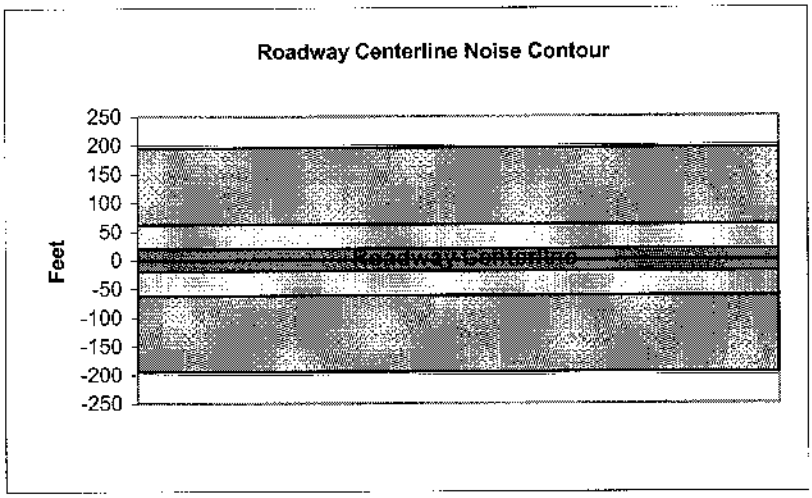
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	58.6	56.8	50.7	59.3	59.9
Medium Trucks:	60.4	52.3	45.9	44.4	52.8	53.1
Heavy Trucks:	66.0	54.1	45.0	46.3	56.4	56.5
Vehicle Noise:	**68.6**	**61.0**	**57.5**	**53.2**	**61.7**	**62.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	195
65 dBA	62
70 dBA	20
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	West of San Ramon Rd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	3,370
Peak Hour Traffic:	337
Vehicle Speed:	30
Centerline Separation:	37

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

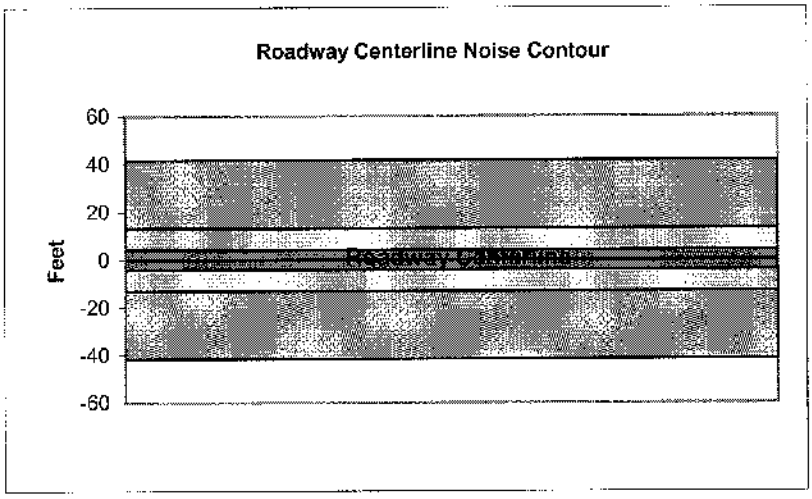
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	43.1	51.9	50.1	44.1	52.7	53.3
Medium Trucks:	53.8	45.7	39.3	37.7	46.2	46.4
Heavy Trucks:	59.4	47.5	38.4	39.6	49.7	49.9
Vehicle Noise:	**61.9**	**54.4**	**50.9**	**46.5**	**55.1**	**55.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	42
65 dBA	13
70 dBA	4
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Amador Plaza Road and Village Parkway		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	38,260
Receiver Barrier Dist:	0	Peak Hour Traffic:	3826
Centerline Dist. To Observer:	100	Vehicle Speed:	35
Barrier Near Lane CL Dist:	0	Centerline Separation:	40
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

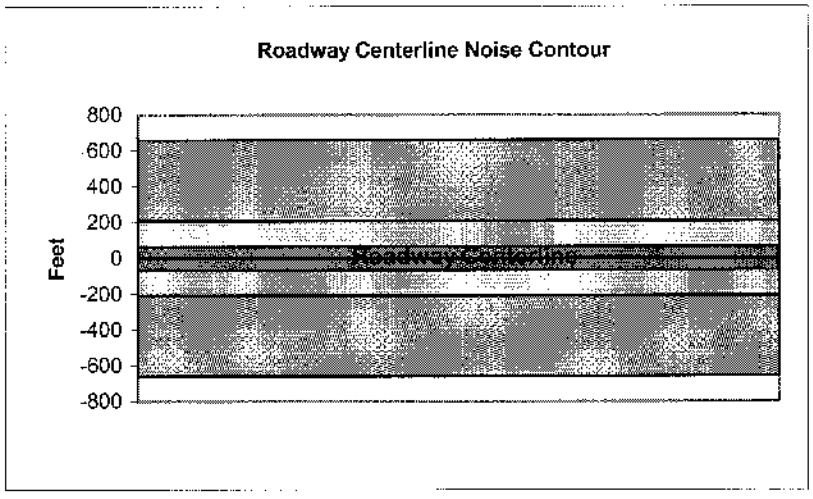
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.6	64.4	62.6	56.5	65.1	65.7
Medium Trucks:	65.3	57.2	50.8	49.3	57.8	58.0
Heavy Trucks:	70.5	58.6	49.5	50.7	60.6	60.8
Vehicle Noise:	**73.0**	**66.3**	**63.1**	**58.4**	**67.0**	**67.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	659
65 dBA	209
70 dBA	66
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	East of Village Parkway		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	33,050
Receiver Barrier Dist:	0	Peak Hour Traffic:	3305
Centerline Dist. To Observer:	100	Vehicle Speed:	35
Barrier Near Lane CL Dist:	0	Centerline Separation:	40
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

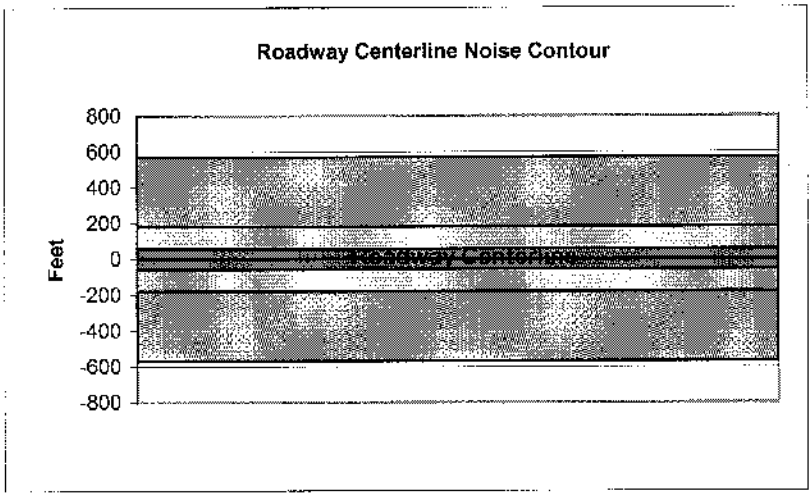
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.9	63.7	61.9	55.9	64.5	65.1
Medium Trucks:	64.7	56.6	50.2	48.6	57.1	57.4
Heavy Trucks:	69.9	57.9	48.9	50.1	60.0	60.1
Vehicle Noise:	**72.3**	**65.7**	**62.5**	**57.8**	**66.4**	**66.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	570
65 dBA	180
70 dBA	57
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Golden Gate Drive and Amador Plaza Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	38,060
Peak Hour Traffic:	3806
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

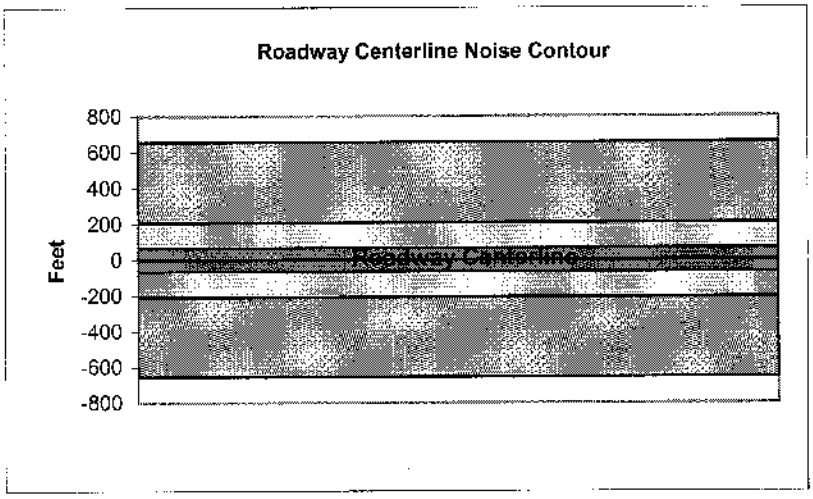
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.6	64.3	62.6	56.5	65.1	65.7
Medium Trucks:	65.3	57.2	50.8	49.3	57.7	58.0
Heavy Trucks:	70.5	58.6	49.5	50.7	60.6	60.8
Vehicle Noise:	**72.9**	**66.3**	**63.1**	**58.4**	**67.0**	**67.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	656
65 dBA	208
70 dBA	66
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Regional Street and Golden Gate Drive		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	43,330
Receiver Barrier Dist:	0	Peak Hour Traffic:	4333
Centerline Dist. To Observer:	100	Vehicle Speed:	35
Barrier Near Lane CL Dist:	0	Centerline Separation:	40
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

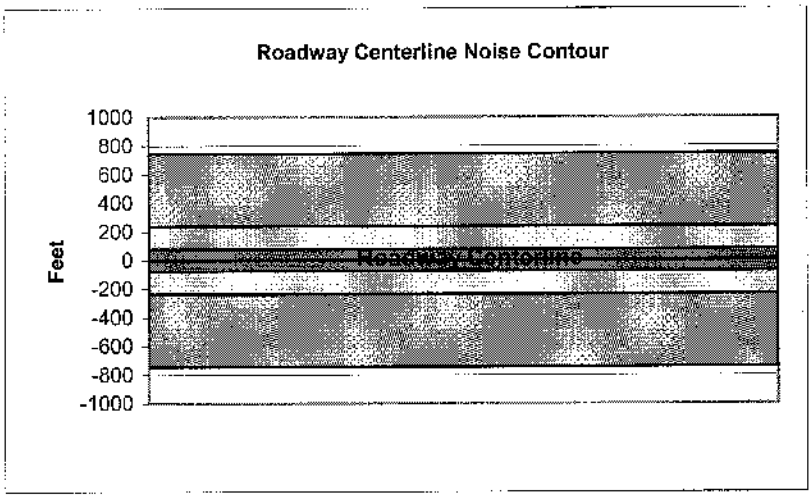
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.1	64.9	63.1	57.0	65.7	66.3
Medium Trucks:	65.8	57.8	51.4	49.8	58.3	58.5
Heavy Trucks:	71.1	59.1	50.1	51.3	61.2	61.3
Vehicle Noise:	**73.5**	**66.9**	**63.7**	**59.0**	**67.6**	**68.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	747
65 dBA	236
70 dBA	75
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between San Ramon Road and Regional Street		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	49,860
Peak Hour Traffic:	4986
Vehicle Speed:	35
Centerline Separation:	45

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

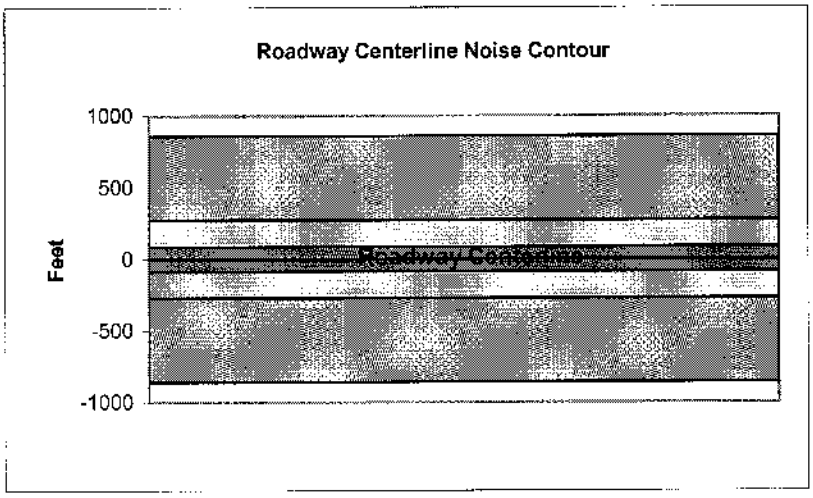
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.7	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	66.4	58.3	51.9	50.3	58.8	59.1
Heavy Trucks:	71.6	59.7	50.6	51.8	61.7	61.8
Vehicle Noise:	**74.0**	**67.4**	**64.2**	**59.5**	**68.1**	**68.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	860
65 dBA	272
70 dBA	86
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	West of San Ramon Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	23,020
Peak Hour Traffic:	2302
Vehicle Speed:	35
Centerline Separation:	51

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

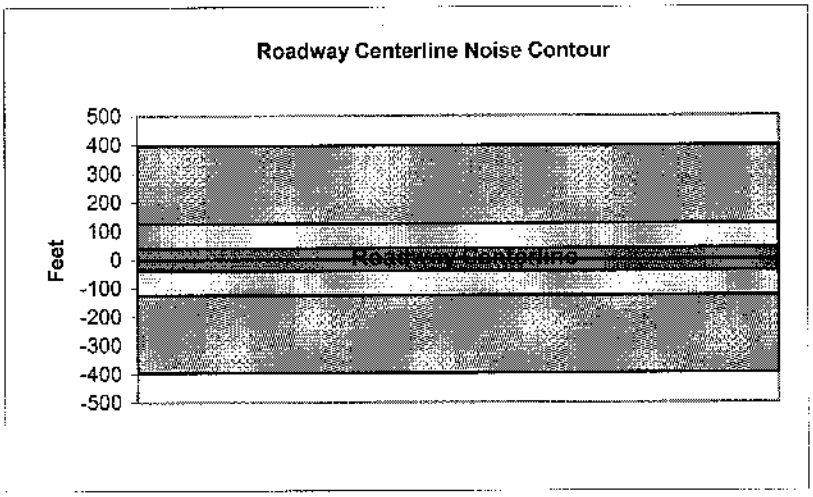
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.2	62.0	60.2	54.1	62.8	63.4
Medium Trucks:	62.9	54.9	48.5	46.9	55.4	55.6
Heavy Trucks:	68.1	56.2	47.2	48.4	58.3	58.4
Vehicle Noise:	**70.6**	**63.9**	**60.8**	**56.1**	**64.6**	**65.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	397
65 dBA	125
70 dBA	40
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Golden Gate Drive		
Road Segment:	Between Dublin Blvd. and St. Patrick Way		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	15,850
Receiver Barrier Dist:	0	Peak Hour Traffic:	1585
Centerline Dist. To Observer:	100	Vehicle Speed:	25
Barrier Near Lane CL Dist:	0	Centerline Separation:	24
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

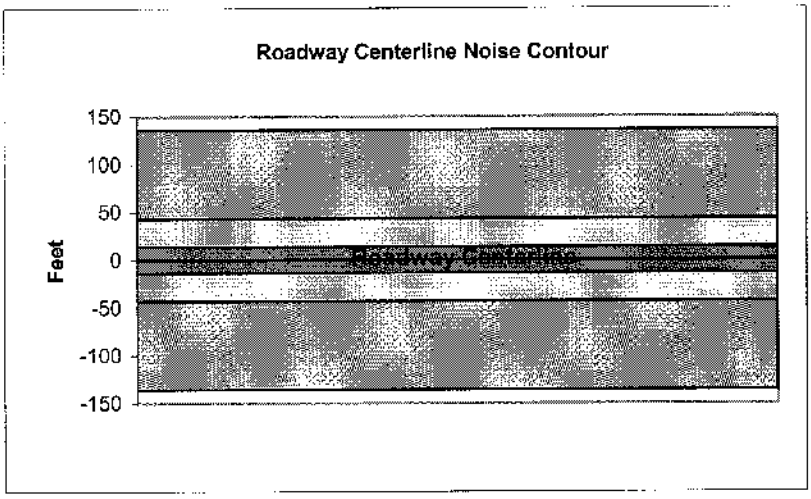
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.8	56.6	54.8	48.7	57.4	58.0
Medium Trucks:	59.5	51.4	45.0	43.4	51.9	52.2
Heavy Trucks:	65.6	53.7	44.6	45.8	56.2	56.4
Vehicle Noise:	**68.3**	**59.8**	**55.8**	**52.0**	**60.5**	**60.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	136
65 dBA	43
70 dBA	14
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Golden Gate Drive		
Road Segment:	South of St. Patrick Way		

PROJECT DATA			
Centerline Dist to Barrier	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	100		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	7,810
Peak Hour Traffic:	781
Vehicle Speed:	25
Centerline Separation:	23

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

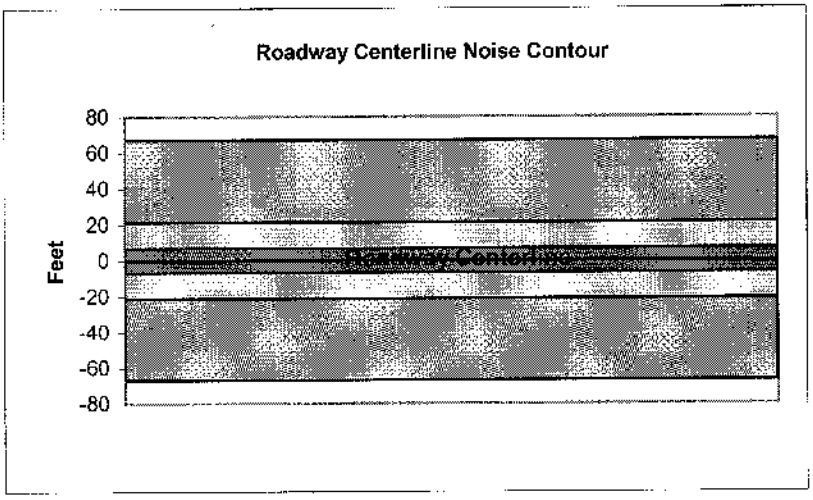
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.8	53.5	51.7	45.7	54.3	54.9
Medium Trucks:	56.4	48.3	42.0	40.4	48.9	49.1
Heavy Trucks:	62.6	50.6	41.6	42.8	53.2	53.3
Vehicle Noise:	**65.2**	**56.8**	**52.7**	**48.9**	**57.4**	**57.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	67
65 dBA	21
70 dBA	7
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Regional Street		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	9,670
Receiver Barrier Dist:	0	Peak Hour Traffic:	967
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	26
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

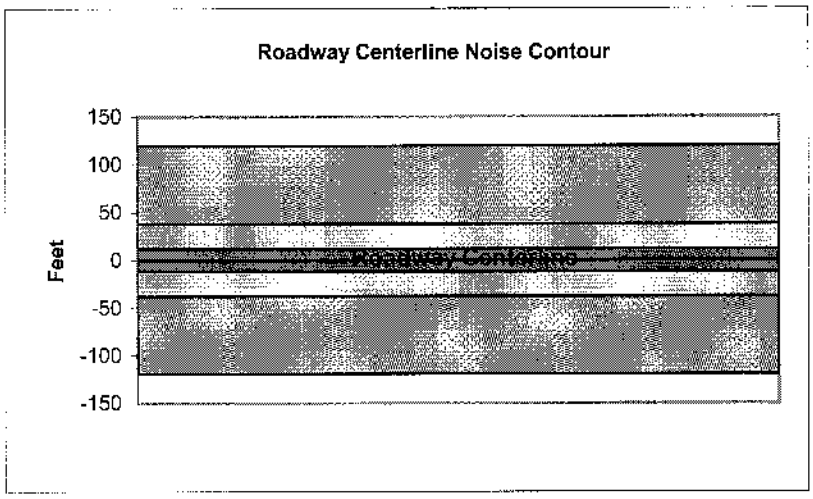
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.9	56.7	54.9	48.8	57.5	58.1
Medium Trucks:	58.5	50.4	44.1	42.5	51.0	51.2
Heavy Trucks:	64.2	52.2	43.2	44.4	54.5	54.6
Vehicle Noise:	**66.7**	**59.2**	**55.6**	**51.3**	**59.8**	**60.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	119
65 dBA	38
70 dBA	12
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Regional Street		
Road Segment:	South of Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	11,590
Peak Hour Traffic:	1159
Vehicle Speed:	30
Centerline Separation:	26

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

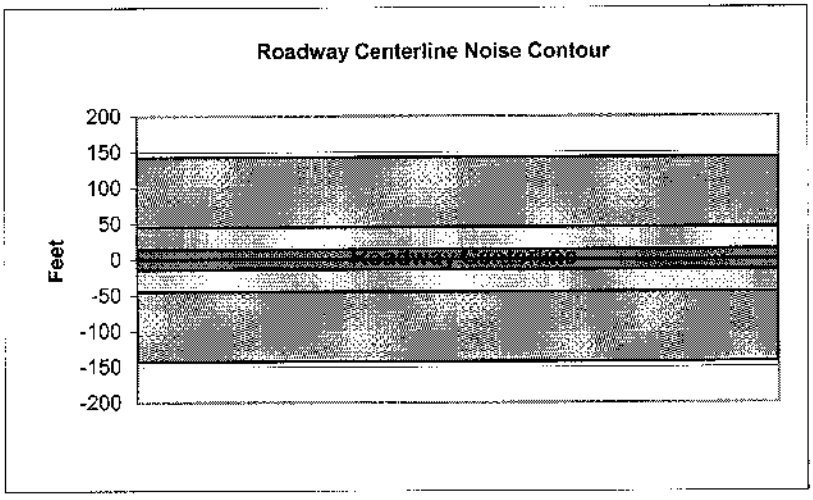
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.7	57.5	55.7	49.6	58.3	58.9
Medium Trucks:	59.3	51.2	44.8	43.3	51.8	52.0
Heavy Trucks:	64.9	53.0	43.9	45.2	55.3	55.4
Vehicle Noise:	**67.5**	**60.0**	**56.4**	**52.1**	**60.6**	**61.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	143
65 dBA	45
70 dBA	14
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	32,620
Peak Hour Traffic:	3262
Vehicle Speed:	40
Centerline Separation:	65

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

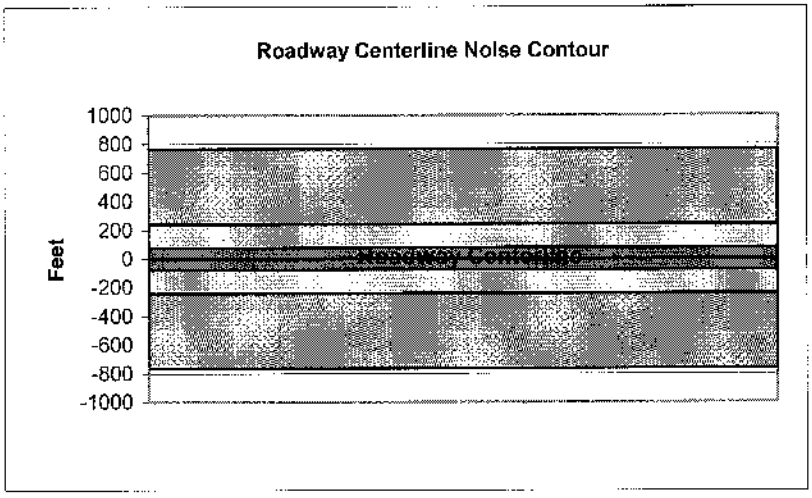
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.2	65.0	63.2	57.1	65.8	66.4
Medium Trucks:	65.2	57.1	50.7	49.1	57.6	57.9
Heavy Trucks:	70.0	58.1	49.0	50.2	59.9	60.1
Vehicle Noise:	**72.4**	**66.6**	**63.6**	**58.7**	**67.3**	**67.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	765
65 dBA	242
70 dBA	77
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	North of Amador Valley Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	29,190
Peak Hour Traffic:	2919
Vehicle Speed:	40
Centerline Separation:	60

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

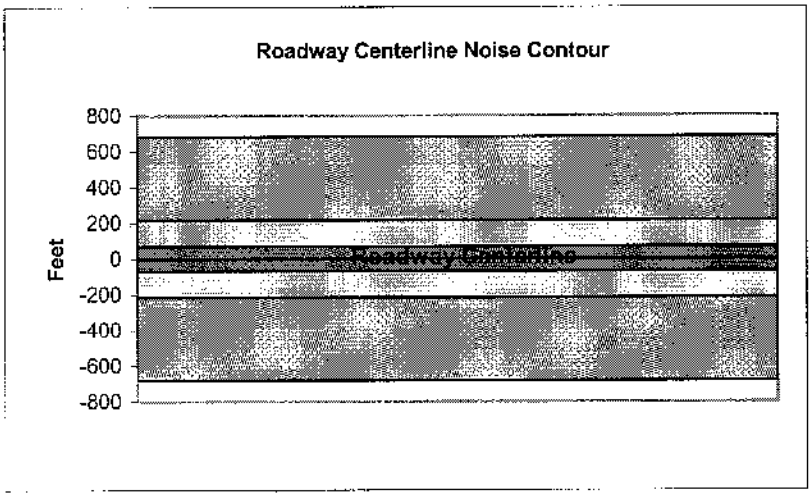
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.8	64.6	62.8	56.7	65.3	66.0
Medium Trucks:	64.7	56.7	50.3	48.7	57.2	57.4
Heavy Trucks:	69.6	57.6	48.6	49.8	59.5	59.7
Vehicle Noise:	**72.0**	**66.1**	**63.2**	**58.3**	**66.9**	**67.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	684
65 dBA	216
70 dBA	68
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	South of Dublin Blvd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	64,120
Receiver Barrier Dist:	0	Peak Hour Traffic:	6412
Centerline Dist. To Observer:	100	Vehicle Speed:	40
Barrier Near Lane CL Dist:	0	Centerline Separation:	65
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

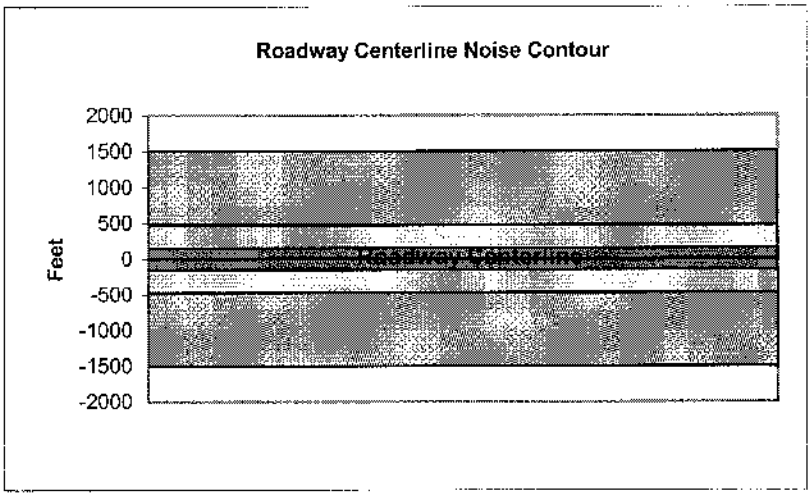
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.1	67.9	66.1	60.0	68.7	69.3
Medium Trucks:	68.1	60.0	53.6	52.1	60.6	60.8
Heavy Trucks:	72.9	61.0	51.9	53.2	62.9	63.0
Vehicle Noise:	**75.3**	**69.5**	**66.6**	**61.6**	**70.2**	**70.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	1502
65 dBA	475
70 dBA	150
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	East of Amador Plaza Road		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	16,730
Receiver Barrier Dist:	0	Peak Hour Traffic:	1673
Centerline Dist. To Observer:	100	Vehicle Speed:	25
Barrier Near Lane CL Dist:	0	Centerline Separation:	20
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

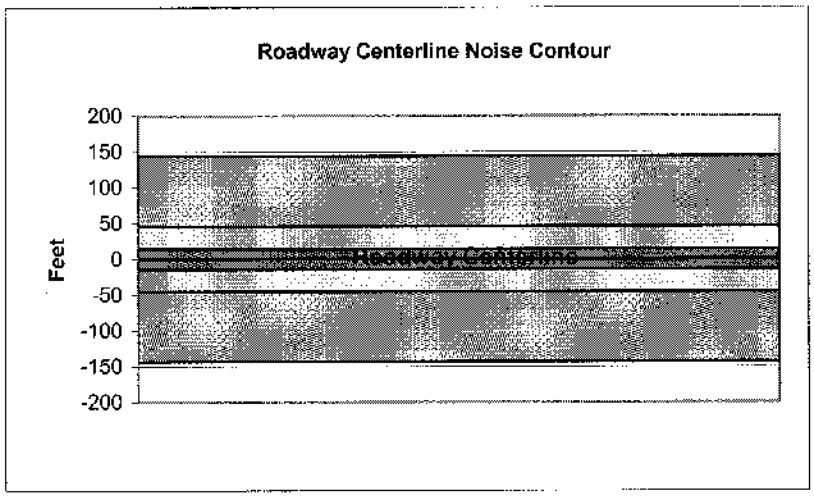
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.1	56.9	55.1	49.0	57.7	58.3
Medium Trucks:	59.8	51.7	45.3	43.7	52.2	52.5
Heavy Trucks:	65.9	54.0	44.9	46.1	56.5	56.7
Vehicle Noise:	**68.6**	**60.1**	**56.1**	**52.3**	**60.8**	**61.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	144
65 dBA	45
70 dBA	14
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	Between Golden Gate Drive and Amador Plaza Road		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	6,800
Receiver Barrier Dist:	0	Peak Hour Traffic:	680
Centerline Dist. To Observer:	100	Vehicle Speed:	25
Barrier Near Lane CL Dist:	0	Centerline Separation:	20
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

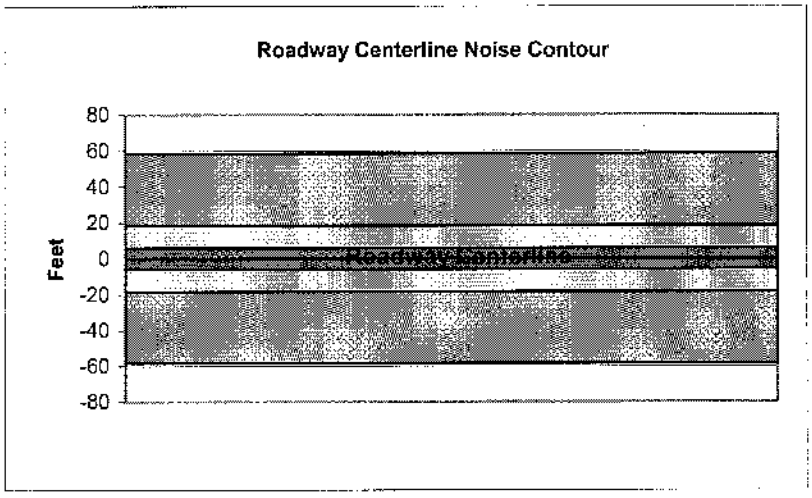
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.2	53.0	51.2	45.1	53.8	54.4
Medium Trucks:	55.9	47.8	41.4	39.8	48.3	48.5
Heavy Trucks:	62.0	50.1	41.0	42.2	52.6	52.7
Vehicle Noise:	**64.7**	**56.2**	**52.2**	**48.4**	**56.9**	**57.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	58
65 dBA	18
70 dBA	6
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	West of Golden Gate Drive		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	3,630
Receiver Barrier Dist:	0	Peak Hour Traffic:	363
Centerline Dist. To Observer:	100	Vehicle Speed:	25
Barrier Near Lane CL Dist:	0	Centerline Separation:	20
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

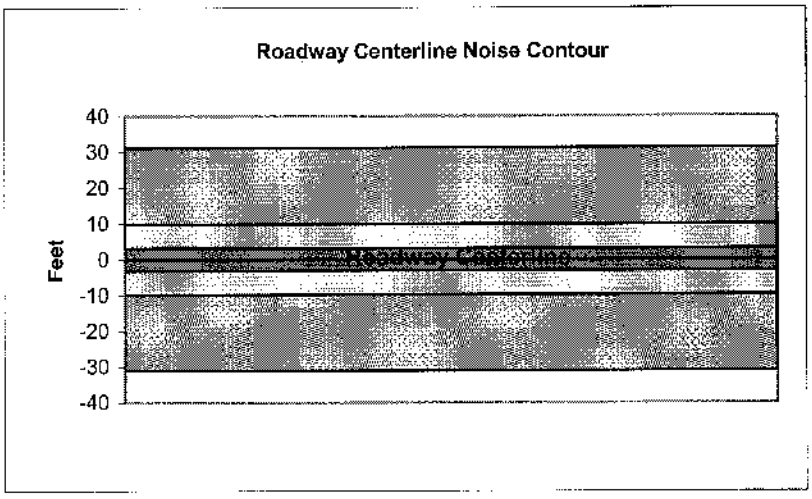
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	41.5	50.3	48.5	42.4	51.0	51.6
Medium Trucks:	53.1	45.1	38.7	37.1	45.6	45.8
Heavy Trucks:	59.3	47.3	38.3	39.5	49.9	50.0
Vehicle Noise:	**61.9**	**53.5**	**49.5**	**45.6**	**54.2**	**54.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	31
65 dBA	10
70 dBA	3
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	17,300
Peak Hour Traffic:	1730
Vehicle Speed:	30
Centerline Separation:	49

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

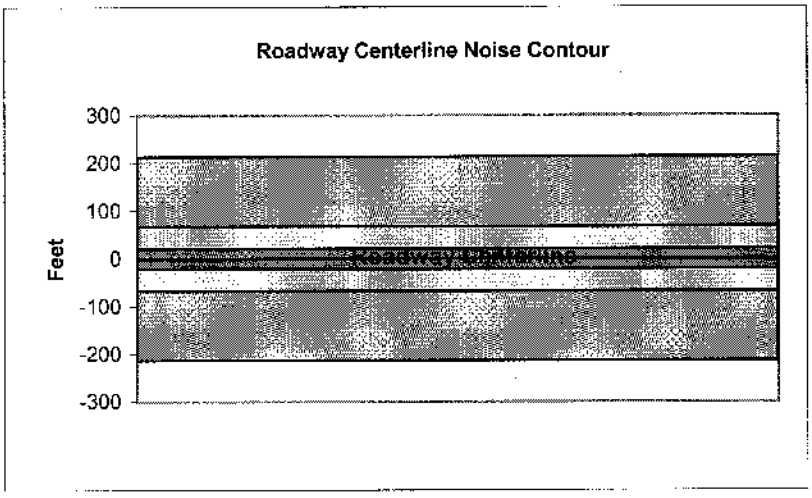
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.1	58.9	57.1	51.0	59.6	60.2
Medium Trucks:	60.7	52.6	46.2	44.6	53.1	53.4
Heavy Trucks:	66.3	54.4	45.3	46.5	56.7	56.8
Vehicle Noise:	**68.8**	**61.3**	**57.8**	**53.5**	**62.0**	**62.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	214
65 dBA	68
70 dBA	21
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	Between Dublin Blvd. and I-680 NB On Ramp		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	7,300
Receiver Barrier Dist:	0	Peak Hour Traffic:	730
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	25
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

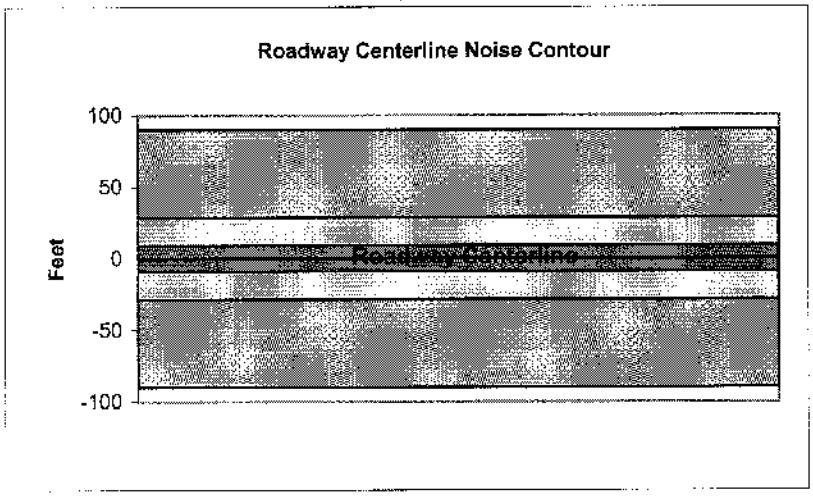
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	46.7	55.5	53.7	47.6	56.3	56.9
Medium Trucks:	57.3	49.2	42.9	41.3	49.8	50.0
Heavy Trucks:	63.0	51.0	42.0	43.2	53.3	53.4
Vehicle Noise:	**65.5**	**58.0**	**54.4**	**50.1**	**58.6**	**59.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	90
65 dBA	28
70 dBA	9
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	North of Amador Valley Blvd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	19,100
Receiver Barrier Dist:	0	Peak Hour Traffic:	1910
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

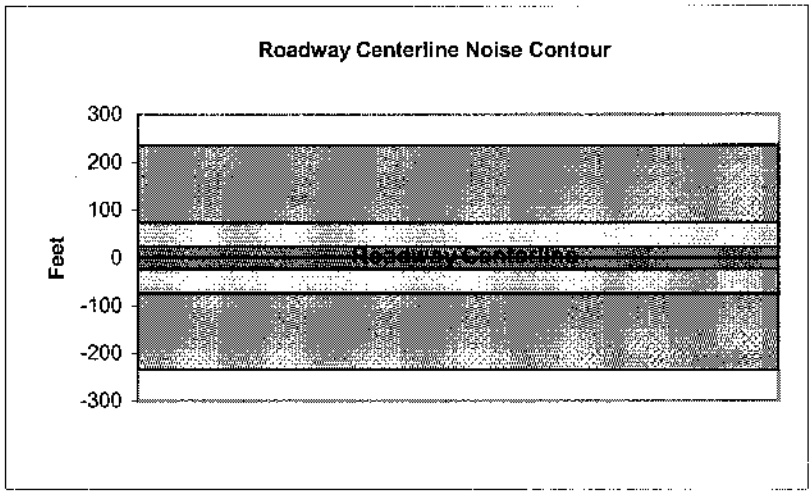
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.6	59.4	57.6	51.5	60.2	60.8
Medium Trucks:	61.2	53.1	46.8	45.2	53.7	53.9
Heavy Trucks:	66.9	54.9	45.9	47.1	57.2	57.3
Vehicle Noise:	**69.4**	**61.9**	**58.3**	**54.0**	**62.5**	**63.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	236
65 dBA	75
70 dBA	24
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Near Term Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	South of I-680 NB On Ramp		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	990
Receiver Barrier Dist:	0	Peak Hour Traffic:	99
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	25
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

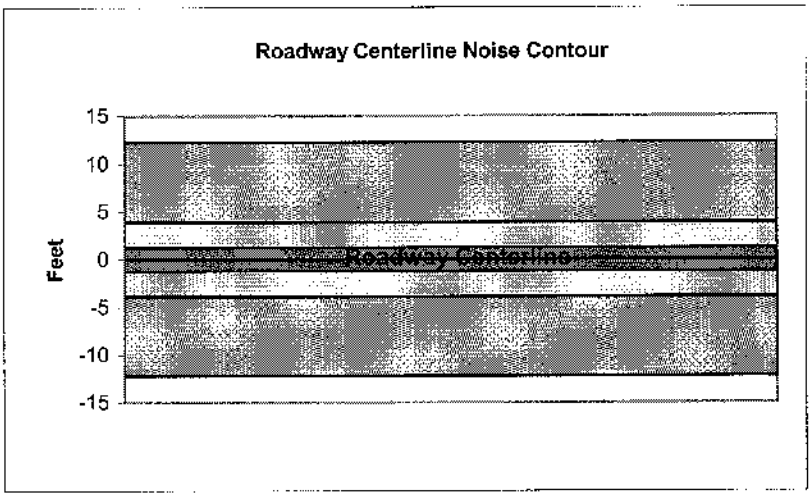
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	38.0	46.8	45.0	38.9	47.6	48.2
Medium Trucks:	48.6	40.6	34.2	32.6	41.1	41.3
Heavy Trucks:	54.3	42.3	33.3	34.5	44.6	44.8
Vehicle Noise:	**56.8**	**49.3**	**45.7**	**41.4**	**50.0**	**50.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	12
65 dBA	4
70 dBA	1
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Plaza		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	13,330
Peak Hour Traffic:	1333
Vehicle Speed:	25
Centerline Separation:	30

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

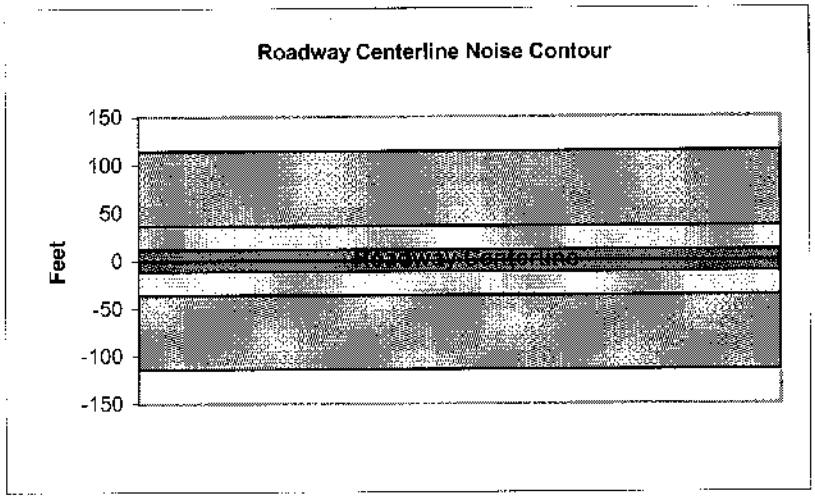
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.0	55.7	53.9	47.9	56.5	57.1
Medium Trucks:	58.6	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	64.8	52.8	43.8	45.0	55.4	55.5
Vehicle Noise:	**67.4**	**59.0**	**54.9**	**51.1**	**59.6**	**60.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	114
65 dBA	36
70 dBA	11
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Plaza		
Road Segment:	Between Dublin Blvd. and St. Patrick Way		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	29,110
Peak Hour Traffic:	2911
Vehicle Speed:	25
Centerline Separation:	27

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

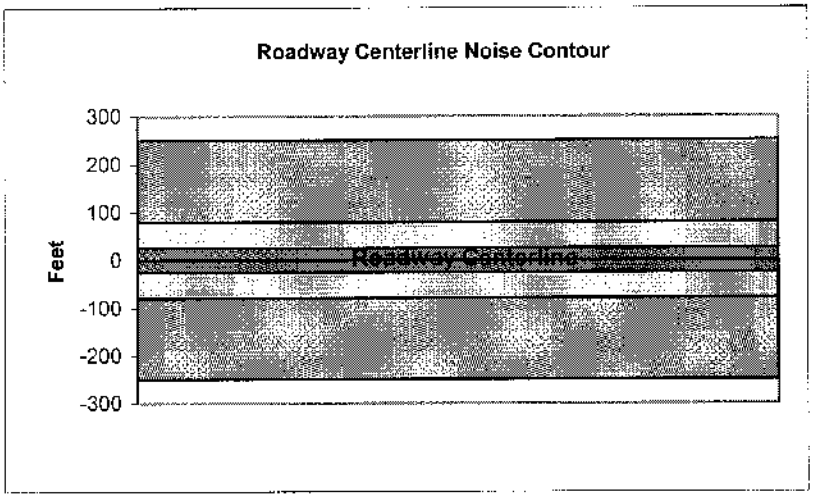
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.4	59.2	57.4	51.3	60.0	60.6
Medium Trucks:	62.0	54.0	47.6	46.0	54.5	54.7
Heavy Trucks:	68.2	56.3	47.2	48.4	58.8	58.9
Vehicle Noise:	**70.9**	**62.4**	**58.4**	**54.6**	**63.1**	**63.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	250
65 dBA	79
70 dBA	25
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Amador Plaza Rd. and Village Pkwy.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	23,060
Peak Hour Traffic:	2306
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

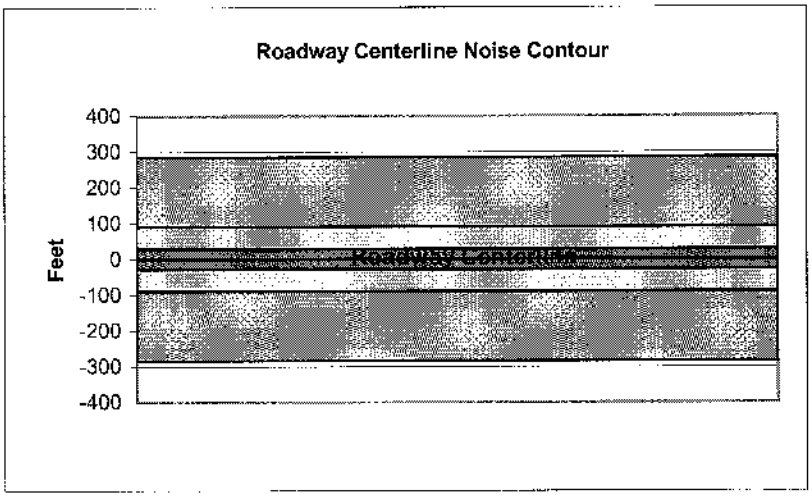
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.4	60.2	58.4	52.3	61.0	61.6
Medium Trucks:	62.0	54.0	47.6	46.0	54.5	54.7
Heavy Trucks:	67.7	55.7	46.7	47.9	58.0	58.2
Vehicle Noise:	**70.2**	**62.7**	**59.1**	**54.8**	**63.4**	**63.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	285
65 dBA	90
70 dBA	28
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Donahue Dr. and Amador Plaza Rd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	18,750
Peak Hour Traffic:	1875
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

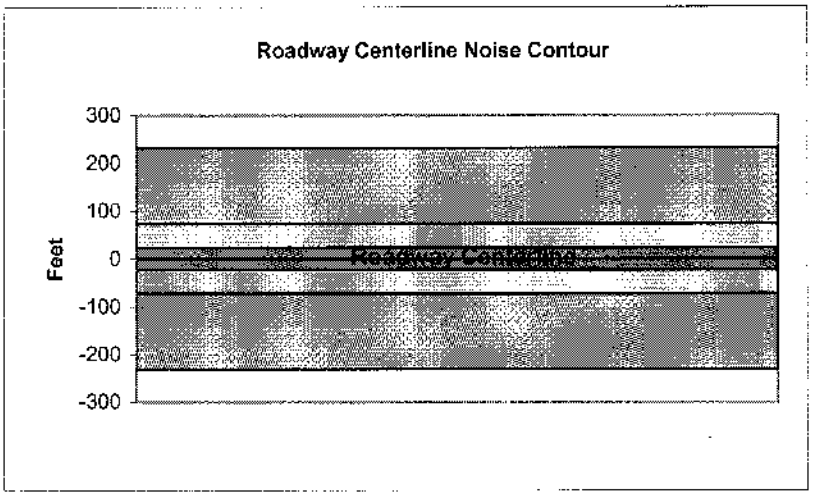
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.5	59.3	57.5	51.4	60.1	60.7
Medium Trucks:	61.1	53.1	46.7	45.1	53.6	53.8
Heavy Trucks:	66.8	54.8	45.8	47.0	57.1	57.3
Vehicle Noise:	**69.3**	**61.8**	**58.2**	**53.9**	**62.5**	**62.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	231
65 dBA	73
70 dBA	23
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	East of Village Pkwy.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	17,200
Receiver Barrier Dist:	0	Peak Hour Traffic:	1720
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

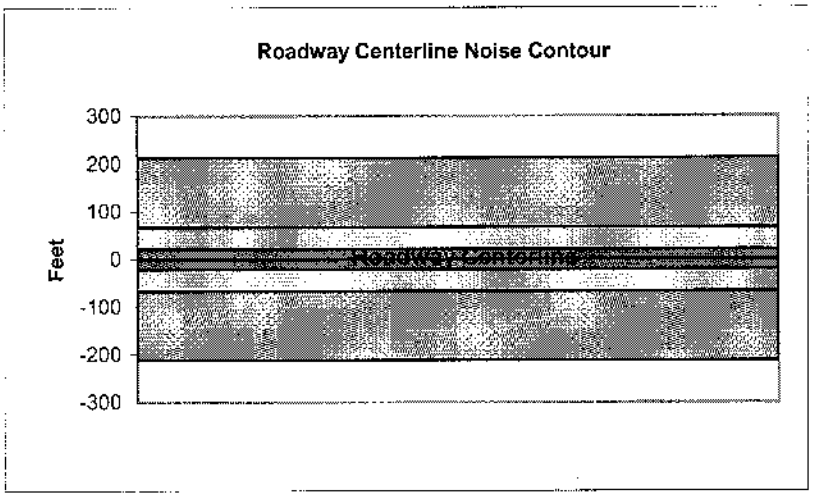
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.2	58.9	57.1	51.1	59.7	60.3
Medium Trucks:	60.8	52.7	46.3	44.7	53.2	53.4
Heavy Trucks:	66.4	54.5	45.4	46.6	56.8	56.9
Vehicle Noise:	**68.9**	**61.4**	**57.9**	**53.5**	**62.1**	**62.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	212
65 dBA	67
70 dBA	21
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Regional St. and Starward Dr.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	18,870
Peak Hour Traffic:	1887
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

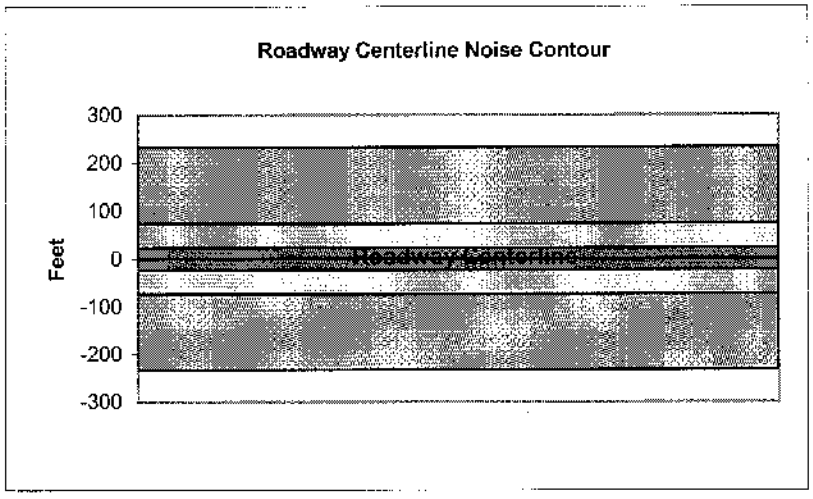
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.6	59.3	57.5	51.5	60.1	60.7
Medium Trucks:	61.2	53.1	46.7	45.1	53.6	53.9
Heavy Trucks:	66.8	54.9	45.8	47.0	57.2	57.3
Vehicle Noise:	**69.3**	**61.8**	**58.3**	**53.9**	**62.5**	**62.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	233
65 dBA	74
70 dBA	23
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between San Ramon Rd. and Regional St.		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	20,250
Peak Hour Traffic:	2025
Vehicle Speed:	30
Centerline Separation:	41

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

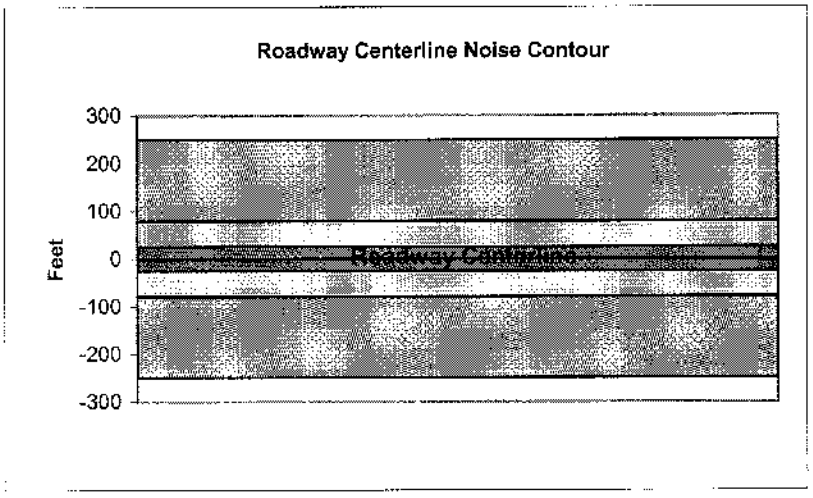
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.9	59.7	57.9	51.8	60.4	61.0
Medium Trucks:	61.5	53.4	47.0	45.5	53.9	54.2
Heavy Trucks:	67.1	55.2	46.1	47.3	57.5	57.6
Vehicle Noise:	**69.7**	**62.1**	**58.6**	**54.3**	**62.8**	**63.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	250
65 dBA	79
70 dBA	25
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Starward Dr. and Donahue Dr.		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	17,870
Peak Hour Traffic:	1787
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

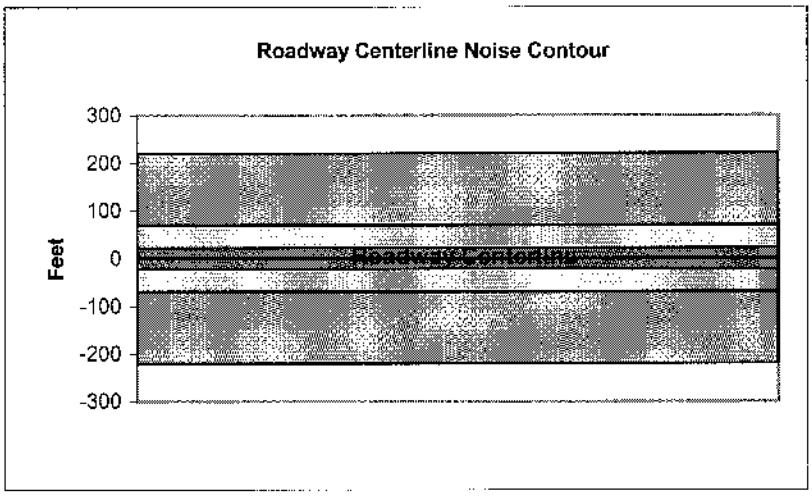
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.3	59.1	57.3	51.2	59.9	60.5
Medium Trucks:	60.9	52.9	46.5	44.9	53.4	53.6
Heavy Trucks:	66.6	54.6	45.6	46.8	56.9	57.0
Vehicle Noise:	**69.1**	**61.6**	**58.0**	**53.7**	**62.3**	**62.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	220
65 dBA	70
70 dBA	22
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	West of San Ramon Rd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	3,270
Receiver Barrier Dist:	0	Peak Hour Traffic:	327
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	37
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

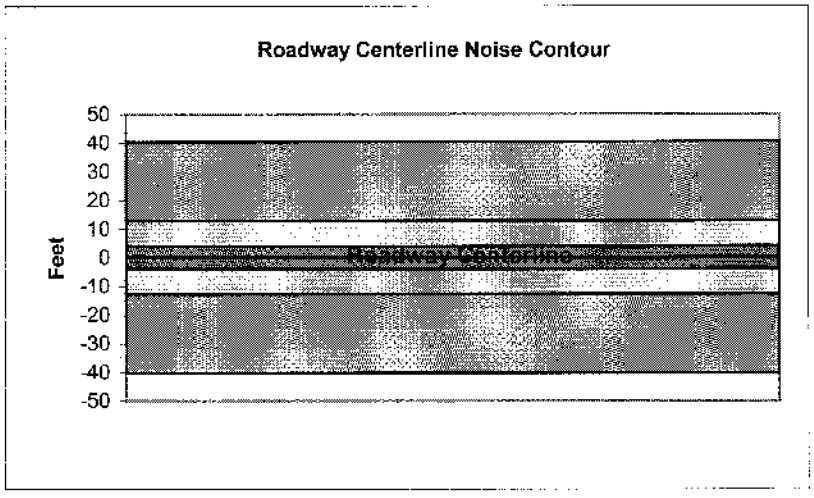
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	43.0	51.8	50.0	43.9	52.6	53.2
Medium Trucks:	53.6	45.6	39.2	37.6	46.1	46.3
Heavy Trucks:	59.3	47.3	38.3	39.5	49.6	49.7
Vehicle Noise:	**61.8**	**54.3**	**50.7**	**46.4**	**55.0**	**55.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	40
65 dBA	13
70 dBA	4
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Amador Plaza Road and Village Parkway		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	39,270
Receiver Barrier Dist:	0	Peak Hour Traffic:	3927
Centerline Dist. To Observer:	100	Vehicle Speed:	35
Barrier Near Lane CL Dist:	0	Centerline Separation:	40
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

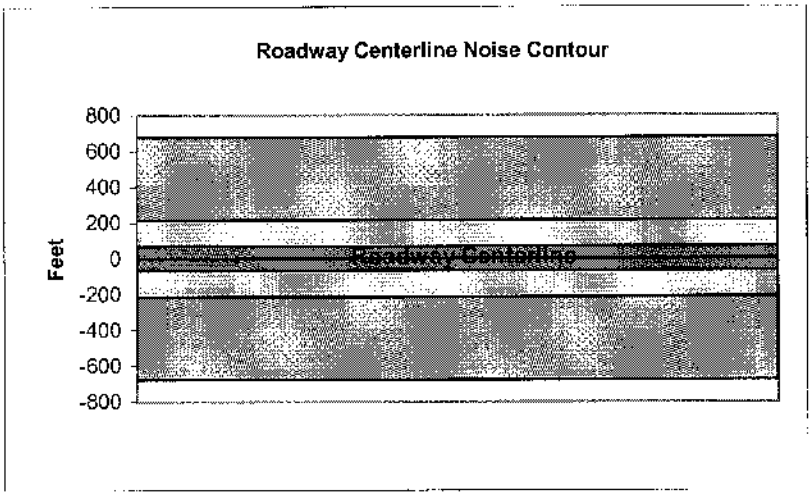
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.7	64.5	62.7	56.6	65.3	65.9
Medium Trucks:	65.4	57.3	51.0	49.4	57.9	58.1
Heavy Trucks:	70.6	58.7	49.6	50.9	60.8	60.9
Vehicle Noise:	**73.1**	**66.4**	**63.2**	**58.6**	**67.1**	**67.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	678
65 dBA	214
70 dBA	68
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	East of Village Parkway		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	37,990
Peak Hour Traffic:	3799
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

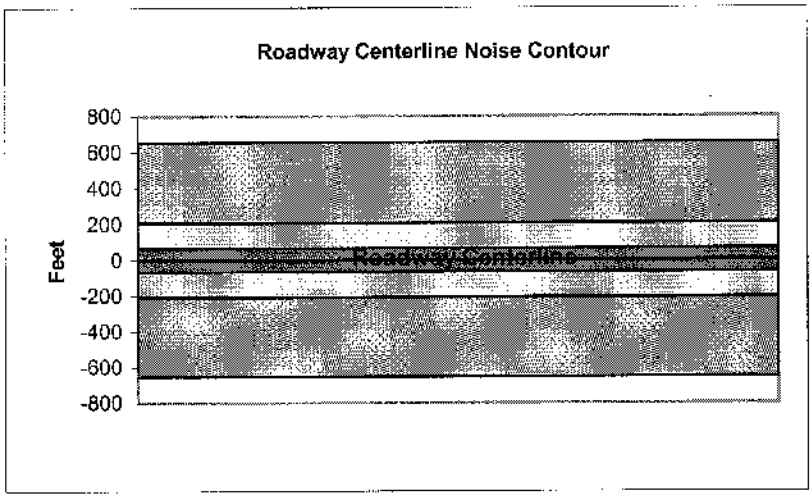
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.6	64.3	62.5	56.5	65.1	65.7
Medium Trucks:	65.3	57.2	50.8	49.2	57.7	58.0
Heavy Trucks:	70.5	58.5	49.5	50.7	60.6	60.7
Vehicle Noise:	**72.9**	**66.3**	**63.1**	**58.4**	**67.0**	**67.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	655
65 dBA	207
70 dBA	65
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Golden Gate Drive and Amador Plaza Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	37,510
Peak Hour Traffic:	3751
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

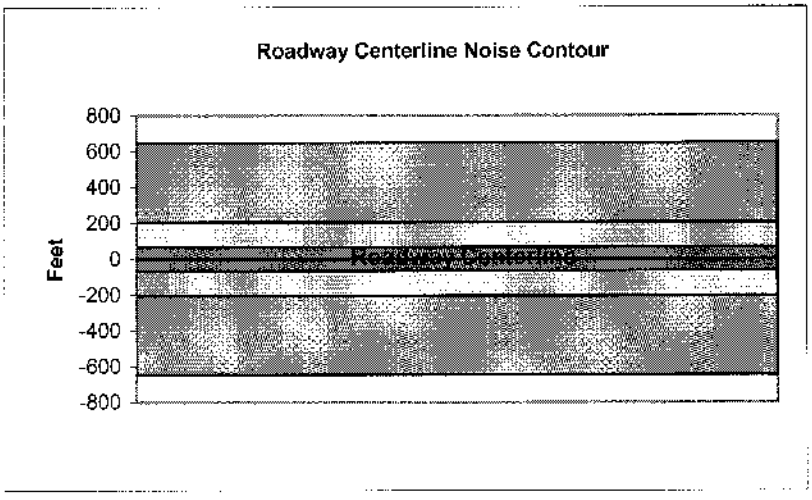
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.5	64.3	62.5	56.4	65.1	65.7
Medium Trucks:	65.2	57.1	50.8	49.2	57.7	57.9
Heavy Trucks:	70.4	58.5	49.4	50.7	60.6	60.7
Vehicle Noise:	**72.9**	**66.2**	**63.0**	**58.4**	**66.9**	**67.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	647
65 dBA	205
70 dBA	65
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Regional Street and Golden Gate Drive		

PROJECT DATA			
Centerline Dist to Barrier	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	100		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	41,200
Peak Hour Traffic:	4120
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

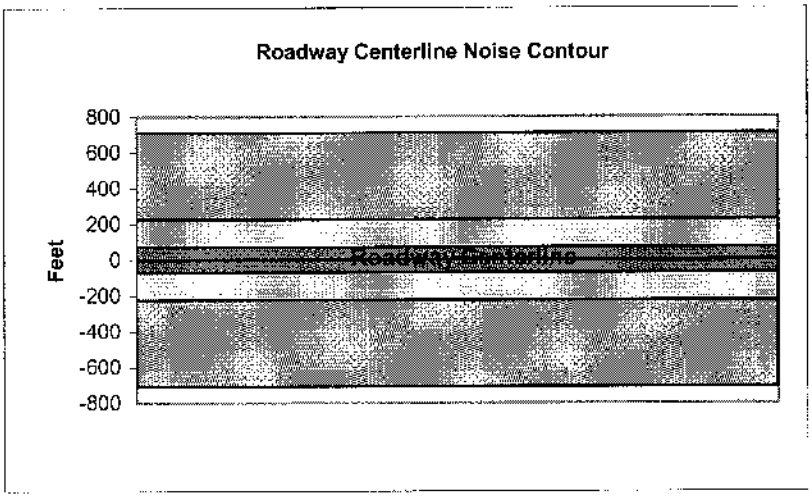
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.9	64.7	62.9	56.8	65.5	66.1
Medium Trucks:	65.6	57.6	51.2	49.6	58.1	58.3
Heavy Trucks:	70.8	58.9	49.8	51.1	61.0	61.1
Vehicle Noise:	**73.3**	**66.6**	**63.5**	**58.8**	**67.3**	**67.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	710
65 dBA	224
70 dBA	71
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between San Ramon Road and Regional Street		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	47,150
Peak Hour Traffic:	4715
Vehicle Speed:	35
Centerline Separation:	45

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

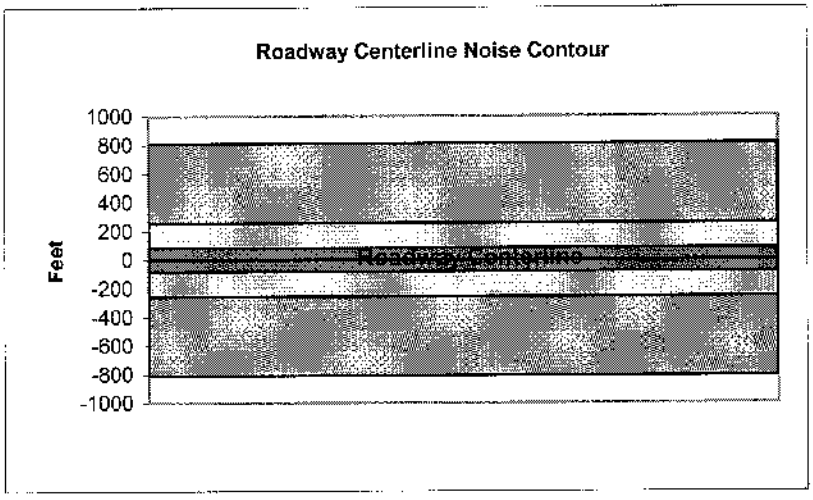
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.4	65.2	63.4	57.3	66.0	66.6
Medium Trucks:	66.1	58.1	51.7	50.1	58.6	58.8
Heavy Trucks:	71.3	59.4	50.4	51.6	61.5	61.6
Vehicle Noise:	**73.8**	**67.1**	**64.0**	**59.3**	**67.8**	**68.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	812
65 dBA	257
70 dBA	81
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	West of San Ramon Road		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	24,480
Peak Hour Traffic:	2448
Vehicle Speed:	35
Centerline Separation:	51

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

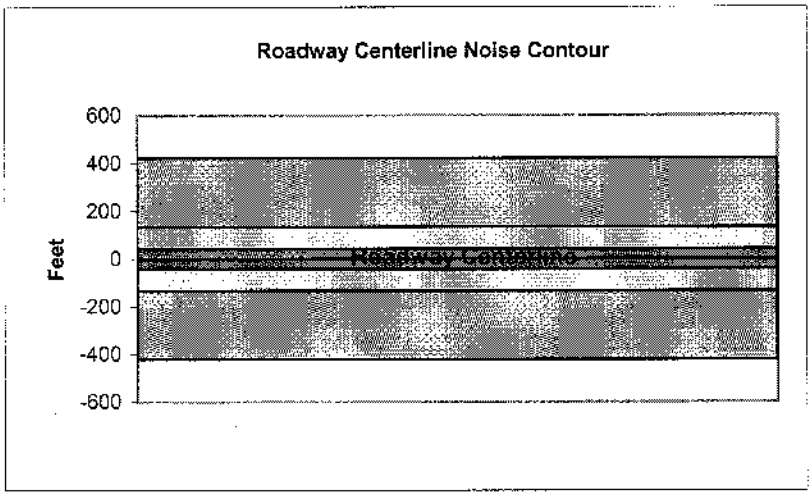
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.5	62.3	60.5	54.4	63.0	63.6
Medium Trucks:	63.2	55.1	48.7	47.2	55.7	55.9
Heavy Trucks:	68.4	56.5	47.4	48.6	58.5	58.7
Vehicle Noise:	**70.9**	**64.2**	**61.0**	**56.3**	**64.9**	**65.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	422
65 dBA	134
70 dBA	42
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Golden Gate Drive		
Road Segment:	Between Dublin Blvd. and St. Patrick Way		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	12,980
Peak Hour Traffic:	1298
Vehicle Speed:	25
Centerline Separation:	24

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

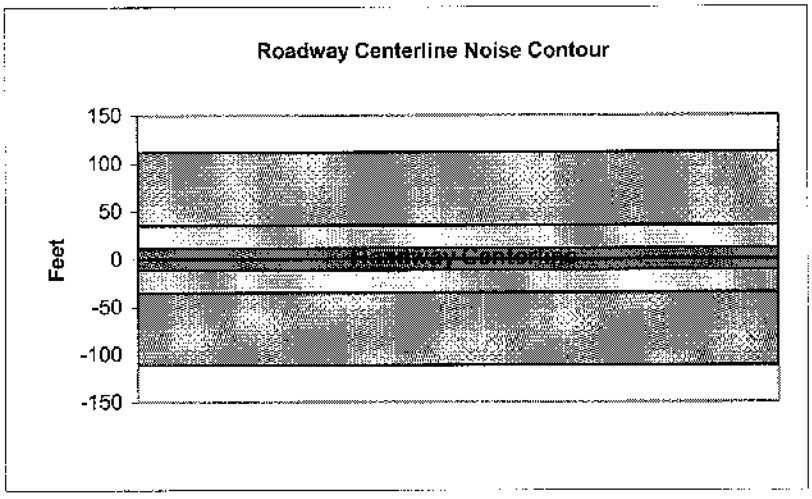
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	46.9	55.7	53.9	47.9	56.5	57.1
Medium Trucks:	58.6	50.5	44.1	42.6	51.1	51.3
Heavy Trucks:	64.7	52.8	43.7	45.0	55.4	55.5
Vehicle Noise:	**67.4**	**59.0**	**54.9**	**51.1**	**59.6**	**60.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	111
65 dBA	35
70 dBA	11
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Golden Gate Drive		
Road Segment:	South of St. Patrick Way		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	7,010
Peak Hour Traffic:	701
Vehicle Speed:	25
Centerline Separation:	23

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

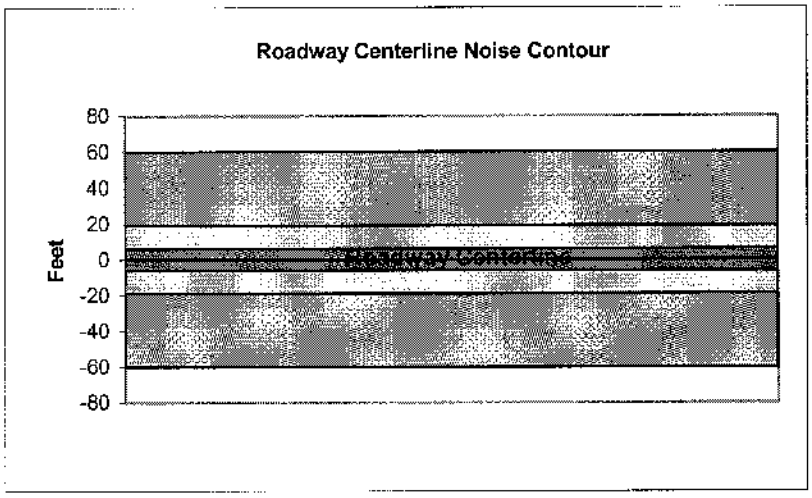
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.3	53.1	51.3	45.2	53.8	54.4
Medium Trucks:	55.9	47.9	41.5	39.9	48.4	48.6
Heavy Trucks:	62.1	50.1	41.1	42.3	52.7	52.8
Vehicle Noise:	**64.7**	**56.3**	**52.3**	**48.4**	**57.0**	**57.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	60
65 dBA	19
70 dBA	6
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Regional Street		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	10,380
Receiver Barrier Dist:	0	Peak Hour Traffic:	1038
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	26
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

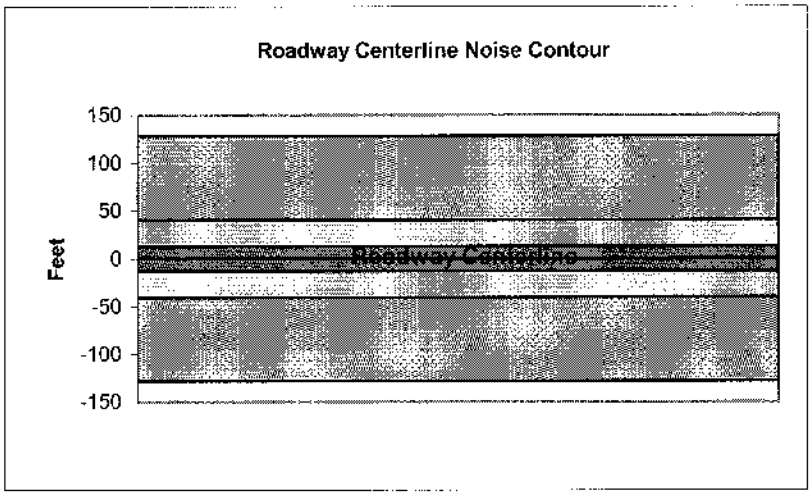
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.2	57.0	55.2	49.1	57.8	58.4
Medium Trucks:	58.8	50.8	44.4	42.8	51.3	51.5
Heavy Trucks:	64.5	52.5	43.5	44.7	54.8	54.9
Vehicle Noise:	**67.0**	**59.5**	**55.9**	**51.6**	**60.2**	**60.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	128
65 dBA	41
70 dBA	13
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Regional Street		
Road Segment:	South of Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	10,270
Peak Hour Traffic:	1027
Vehicle Speed:	30
Centerline Separation:	26

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

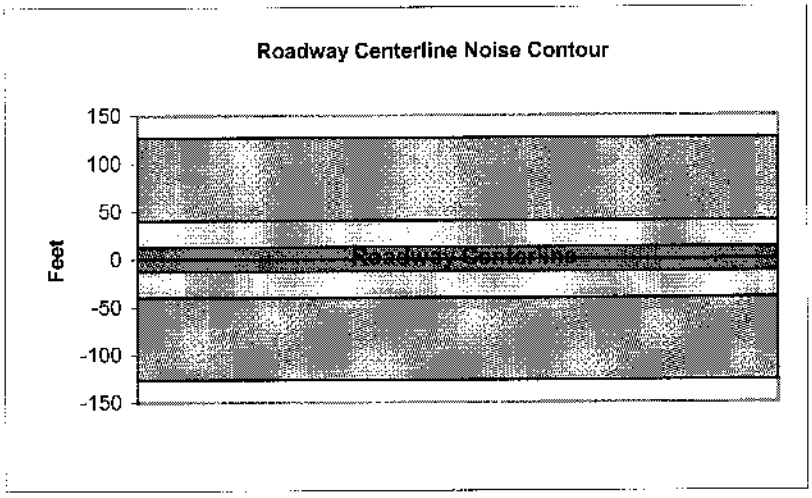
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.2	56.9	55.2	49.1	57.7	58.3
Medium Trucks:	58.8	50.7	44.3	42.7	51.2	51.5
Heavy Trucks:	64.4	52.5	43.4	44.6	54.8	54.9
Vehicle Noise:	**66.9**	**59.4**	**55.9**	**51.6**	**60.1**	**60.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	127
65 dBA	40
70 dBA	13
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	35,590
Peak Hour Traffic:	3559
Vehicle Speed:	40
Centerline Separation:	65

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

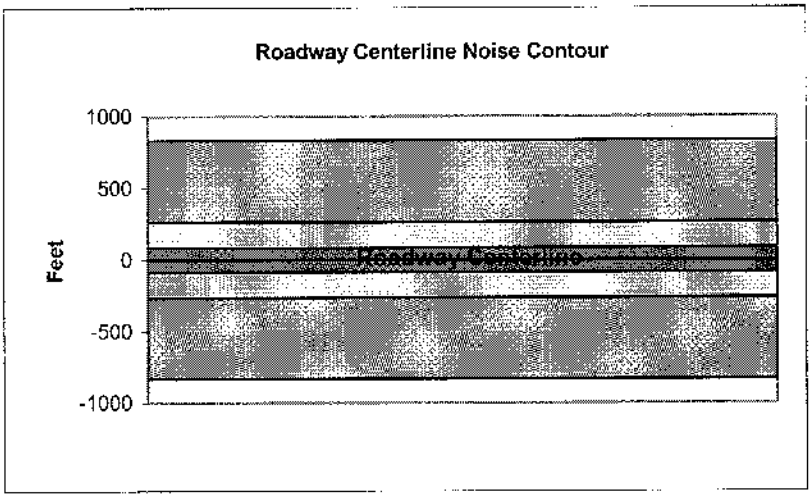
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.6	65.4	63.6	57.5	66.1	66.7
Medium Trucks:	65.5	57.5	51.1	49.5	58.0	58.2
Heavy Trucks:	70.4	58.4	49.4	50.6	60.3	60.4
Vehicle Noise:	**72.8**	**66.9**	**64.0**	**59.1**	**67.6**	**68.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	833
65 dBA	263
70 dBA	83
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	North of Amador Valley Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	30,520
Peak Hour Traffic:	3052
Vehicle Speed:	40
Centerline Separation:	60

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

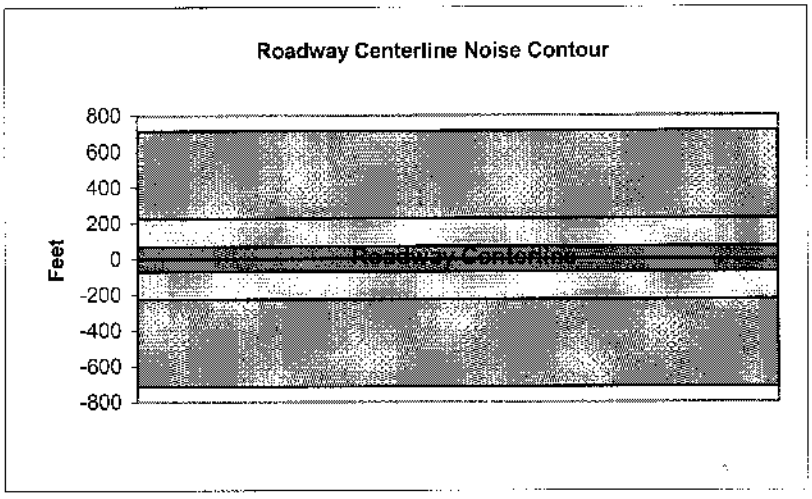
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.0	64.8	63.0	56.9	65.5	66.1
Medium Trucks:	64.9	56.9	50.5	48.9	57.4	57.6
Heavy Trucks:	69.8	57.8	48.8	50.0	59.7	59.8
Vehicle Noise:	**72.2**	**66.3**	**63.4**	**58.5**	**67.0**	**67.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	715
65 dBA	226
70 dBA	71
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	South of Dublin Blvd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	65,300
Receiver Barrier Dist:	0	Peak Hour Traffic:	6530
Centerline Dist. To Observer:	100	Vehicle Speed:	40
Barrier Near Lane CL Dist:	0	Centerline Separation:	65
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

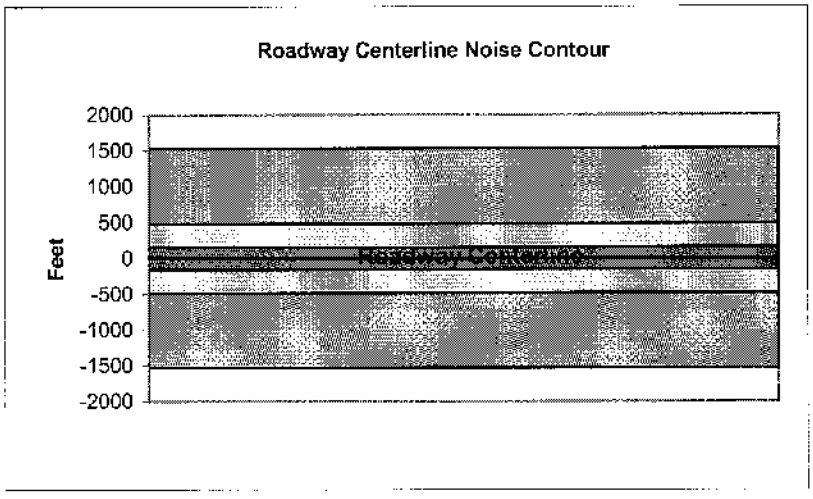
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.2	68.0	66.2	60.1	68.8	69.4
Medium Trucks:	68.2	60.1	53.7	52.1	60.6	60.9
Heavy Trucks:	73.0	61.1	52.0	53.2	63.0	63.1
Vehicle Noise:	**75.4**	**69.6**	**66.7**	**61.7**	**70.3**	**70.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	1530
65 dBA	484
70 dBA	153
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	East of Amador Plaza Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	17,830
Peak Hour Traffic:	1783
Vehicle Speed:	25
Centerline Separation:	20

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

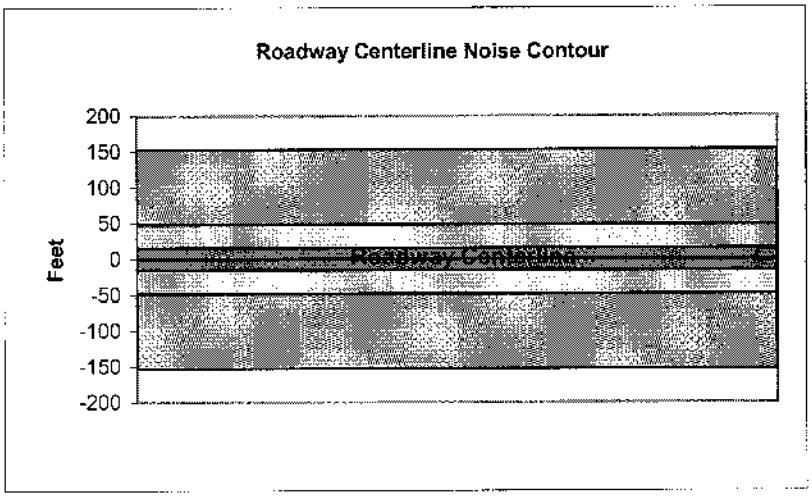
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.4	57.2	55.4	49.3	58.0	58.6
Medium Trucks:	60.0	52.0	45.6	44.0	52.5	52.7
Heavy Trucks:	66.2	54.3	45.2	46.4	56.8	56.9
Vehicle Noise:	**68.9**	**60.4**	**56.4**	**52.6**	**61.1**	**61.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	153
65 dBA	48
70 dBA	15
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	Between Golden Gate Drive and Amador Plaza Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	5,650
Peak Hour Traffic:	565
Vehicle Speed:	25
Centerline Separation:	20

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

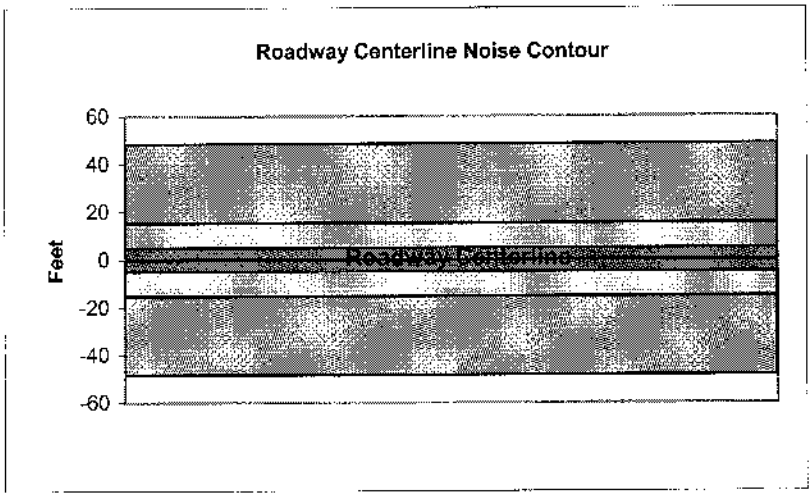
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	43.4	52.2	50.4	44.3	53.0	53.6
Medium Trucks:	55.0	47.0	40.6	39.0	47.5	47.7
Heavy Trucks:	61.2	49.3	40.2	41.4	51.8	51.9
Vehicle Noise:	**63.9**	**55.4**	**51.4**	**47.6**	**56.1**	**56.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	48
65 dBA	15
70 dBA	5
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	West of Golden Gate Drive		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	2,980
Receiver Barrier Dist:	0	Peak Hour Traffic:	298
Centerline Dist. To Observer:	100	Vehicle Speed:	25
Barrier Near Lane CL Dist:	0	Centerline Separation:	20
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

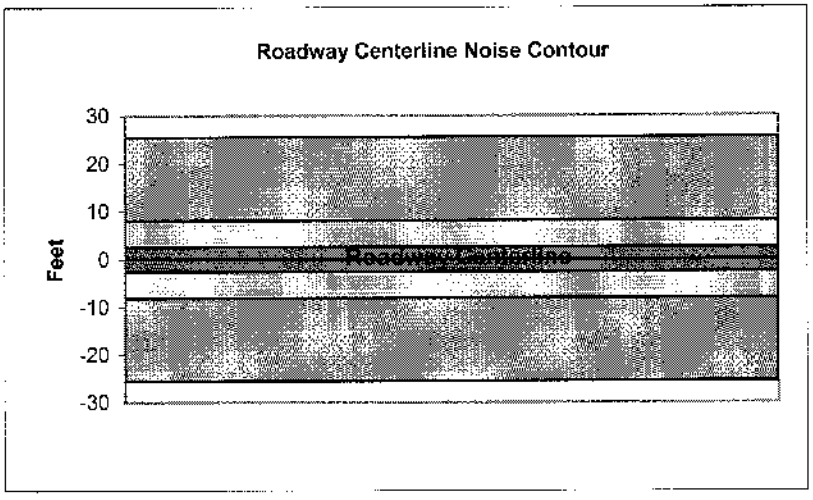
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	40.6	49.4	47.6	41.5	50.2	50.8
Medium Trucks:	52.3	44.2	37.8	36.2	44.7	45.0
Heavy Trucks:	58.4	46.5	37.4	38.6	49.0	49.2
Vehicle Noise:	**61.1**	**52.6**	**48.6**	**44.8**	**53.3**	**53.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	26
65 dBA	8
70 dBA	3
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	19,880
Peak Hour Traffic:	1988
Vehicle Speed:	30
Centerline Separation:	49

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

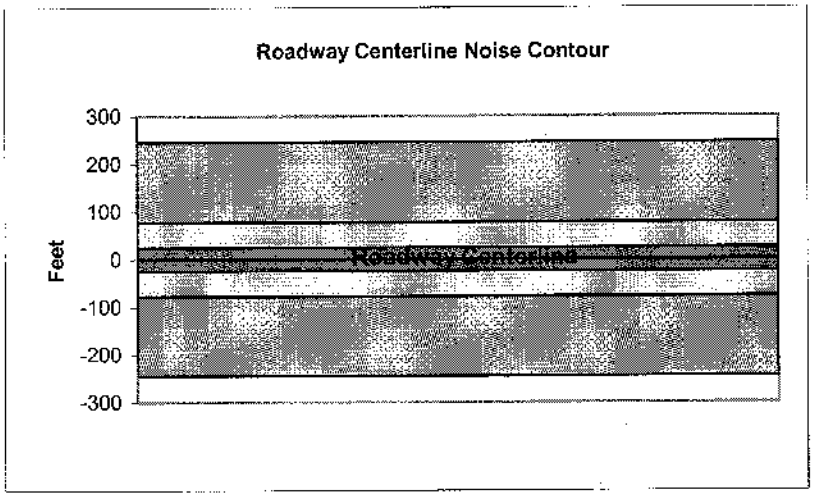
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.7	59.5	57.7	51.6	60.2	60.8
Medium Trucks:	61.3	53.2	46.8	45.3	53.7	54.0
Heavy Trucks:	66.9	55.0	45.9	47.1	57.3	57.4
Vehicle Noise:	**69.5**	**61.9**	**58.4**	**54.1**	**62.6**	**63.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	245
65 dBA	78
70 dBA	25
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	Between Dublin Blvd. and I-680 NB On Ramp		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	7,950
Receiver Barrier Dist:	0	Peak Hour Traffic:	795
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	25
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

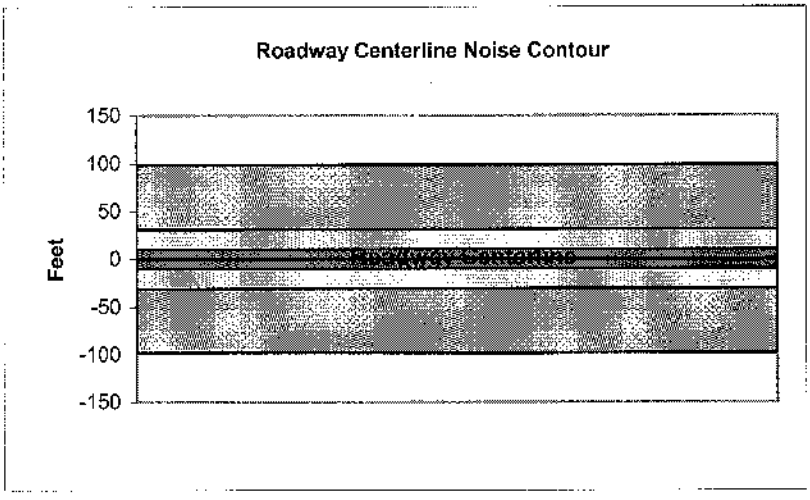
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.1	55.9	54.1	48.0	56.6	57.2
Medium Trucks:	57.7	49.6	43.2	41.7	50.1	50.4
Heavy Trucks:	63.3	51.4	42.3	43.6	53.7	53.8
Vehicle Noise:	**65.9**	**58.3**	**54.8**	**50.5**	**59.0**	**59.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	98
65 dBA	31
70 dBA	10
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	North of Amador Valley Blvd.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	21,250
Receiver Barrier Dist:	0	Peak Hour Traffic:	2125
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

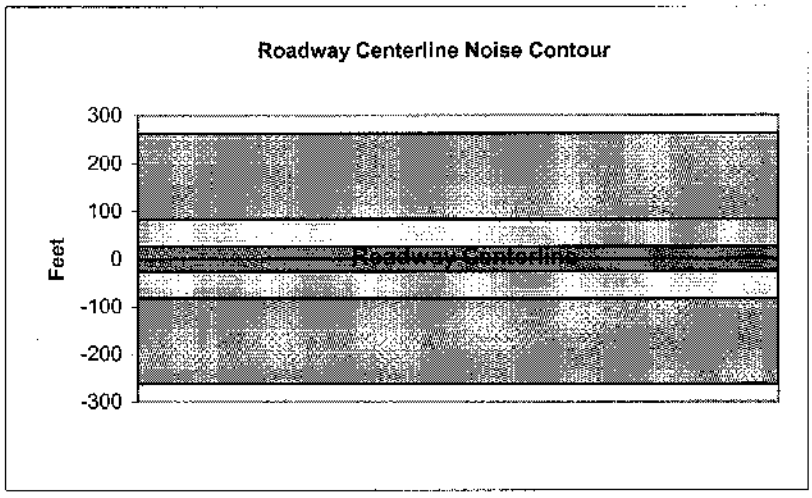
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.1	59.8	58.1	52.0	60.6	61.2
Medium Trucks:	61.7	53.6	47.2	45.6	54.1	54.4
Heavy Trucks:	67.3	55.4	46.3	47.5	57.7	57.8
Vehicle Noise:	**69.8**	**62.3**	**58.8**	**54.5**	**63.0**	**63.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	263
65 dBA	83
70 dBA	26
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	South of I-680 NB On Ramp		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	990
Receiver Barrier Dist:	0	Peak Hour Traffic:	99
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	25
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

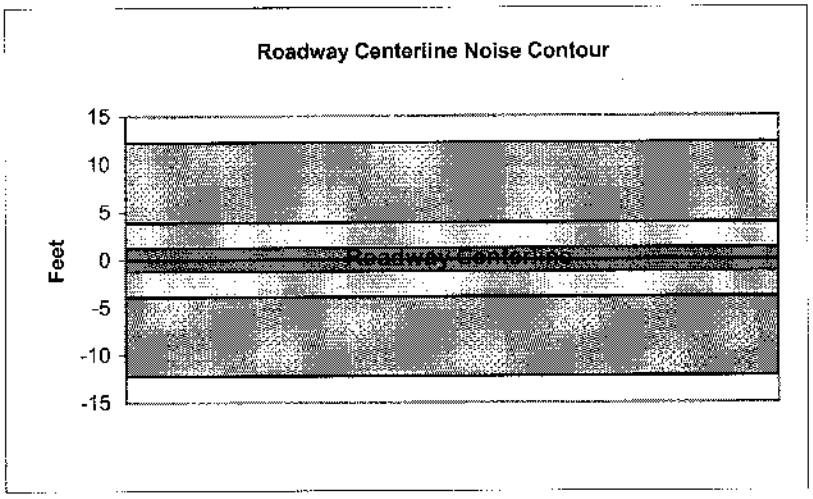
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	38.0	46.8	45.0	38.9	47.6	48.2
Medium Trucks:	48.6	40.6	34.2	32.6	41.1	41.3
Heavy Trucks:	54.3	42.3	33.3	34.5	44.6	44.8
Vehicle Noise:	**56.8**	**49.3**	**45.7**	**41.4**	**50.0**	**50.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	12
65 dBA	4
70 dBA	1
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Plaza		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	14,090
Peak Hour Traffic:	1409
Vehicle Speed:	25
Centerline Separation:	30

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

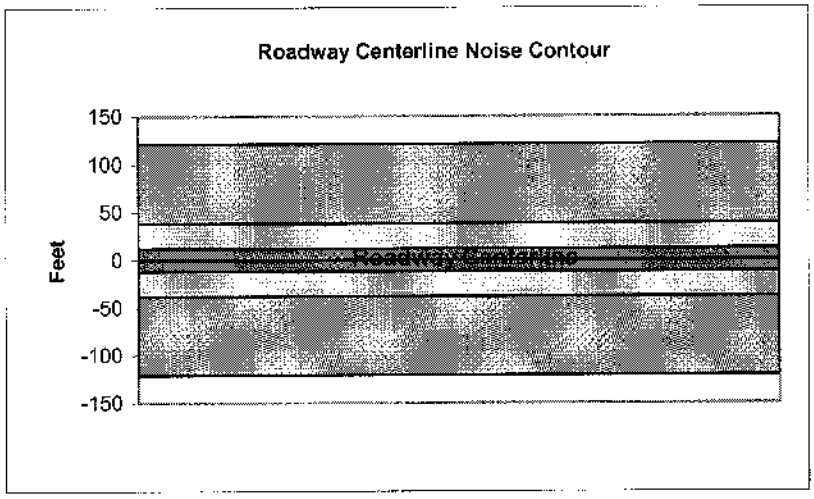
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.2	56.0	54.2	48.1	56.8	57.4
Medium Trucks:	58.8	50.8	44.4	42.8	51.3	51.5
Heavy Trucks:	65.0	53.1	44.0	45.2	55.6	55.7
Vehicle Noise:	**67.7**	**59.2**	**55.2**	**51.4**	**59.9**	**60.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	121
65 dBA	38
70 dBA	12
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Plaza		
Road Segment:	Between Dublin Blvd. and St. Patrick Way		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	33,170
Peak Hour Traffic:	3317
Vehicle Speed:	25
Centerline Separation:	27

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

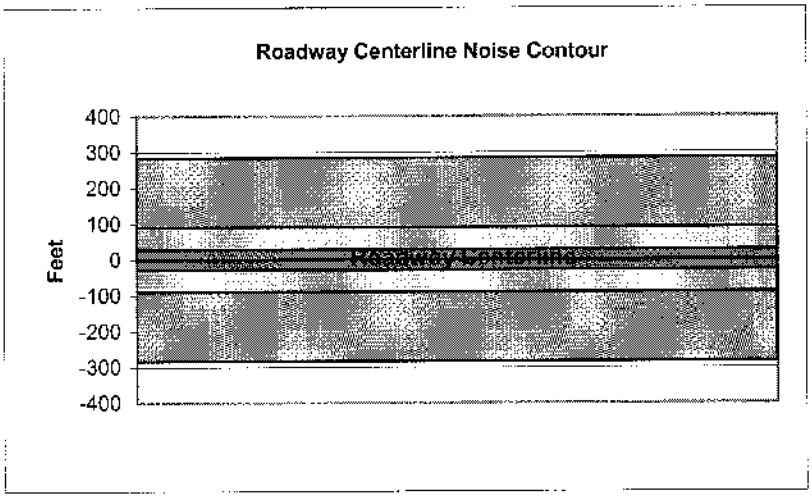
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.0	59.7	58.0	51.9	60.5	61.1
Medium Trucks:	62.6	54.5	48.2	46.6	55.1	55.3
Heavy Trucks:	68.8	56.8	47.8	49.0	59.4	59.5
Vehicle Noise:	**71.4**	**63.0**	**58.9**	**55.1**	**63.6**	**64.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	284
65 dBA	90
70 dBA	28
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Amador Plaza Rd. and Village Pkwy.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	23,800
Peak Hour Traffic:	2380
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

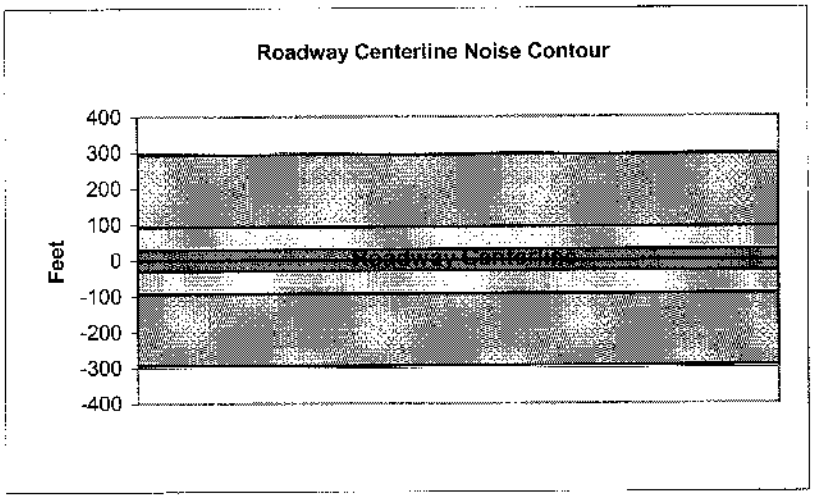
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.6	60.3	58.6	52.5	61.1	61.7
Medium Trucks:	62.2	54.1	47.7	46.1	54.6	54.9
Heavy Trucks:	67.8	55.9	46.8	48.0	58.2	58.3
Vehicle Noise:	**70.3**	**62.8**	**59.3**	**55.0**	**63.5**	**63.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	294
65 dBA	93
70 dBA	29
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Donahue Dr. and Amador Plaza Rd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	19,860
Peak Hour Traffic:	1986
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

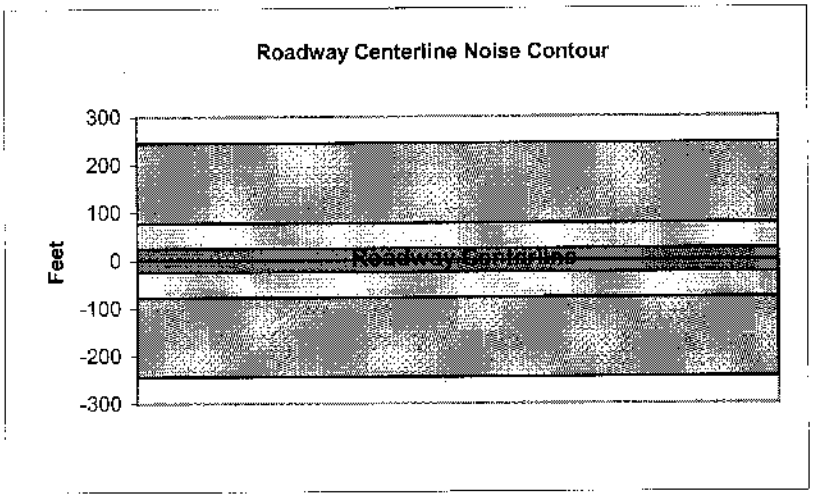
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.8	59.6	57.8	51.7	60.3	60.9
Medium Trucks:	61.4	53.3	46.9	45.4	53.8	54.1
Heavy Trucks:	67.0	55.1	46.0	47.2	57.4	57.5
Vehicle Noise:	**69.6**	**62.0**	**58.5**	**54.2**	**62.7**	**63.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	245
65 dBA	77
70 dBA	25
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	East of Village Pkwy.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	17,620
Receiver Barrier Dist:	0	Peak Hour Traffic:	1762
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

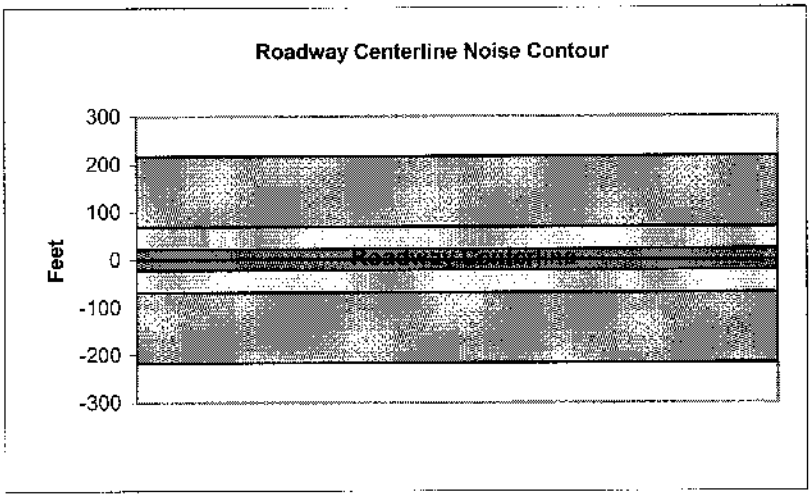
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.3	59.0	57.2	51.2	59.8	60.4
Medium Trucks:	60.9	52.8	46.4	44.8	53.3	53.6
Heavy Trucks:	66.5	54.6	45.5	46.7	56.9	57.0
Vehicle Noise:	**69.0**	**61.5**	**58.0**	**53.6**	**62.2**	**62.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	217
65 dBA	69
70 dBA	22
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Regional St. and Starward Dr.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	19,540
Peak Hour Traffic:	1954
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

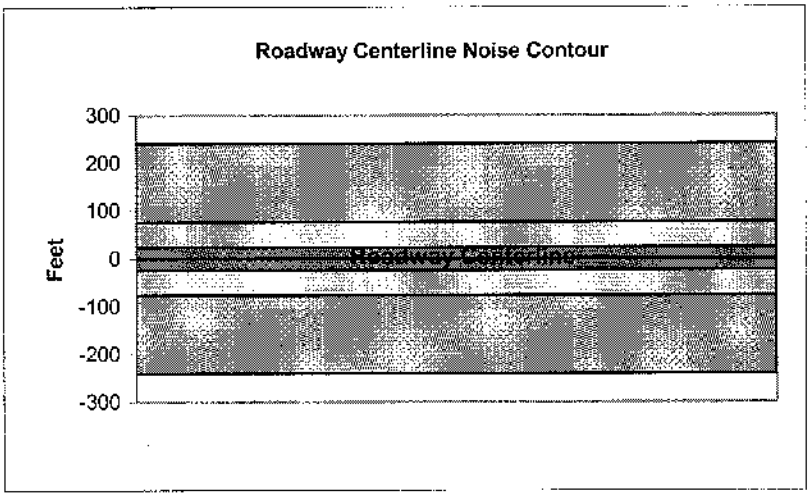
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.7	59.5	57.7	51.6	60.3	60.9
Medium Trucks:	61.3	53.2	46.9	45.3	53.8	54.0
Heavy Trucks:	67.0	55.0	46.0	47.2	57.3	57.4
Vehicle Noise:	**69.5**	**62.0**	**58.4**	**54.1**	**62.6**	**63.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	241
65 dBA	76
70 dBA	24
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between San Ramon Rd. and Regional St.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	21,010
Peak Hour Traffic:	2101
Vehicle Speed:	30
Centerline Separation:	41

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

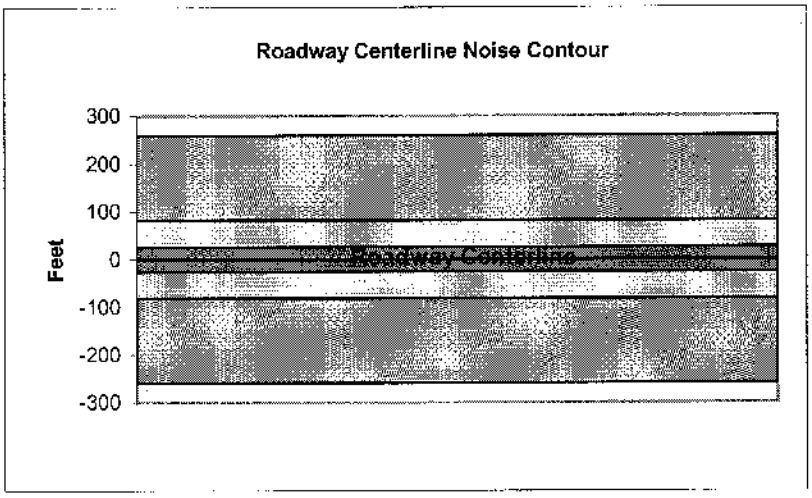
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.0	59.8	58.0	51.9	60.6	61.2
Medium Trucks:	61.6	53.6	47.2	45.6	54.1	54.3
Heavy Trucks:	67.3	55.3	46.3	47.5	57.6	57.8
Vehicle Noise:	**69.8**	**62.3**	**58.8**	**54.4**	**63.0**	**63.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	259
65 dBA	82
70 dBA	26
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	Between Starward Dr. and Donahue Dr.		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	18,540
Receiver Barrier Dist:	0	Peak Hour Traffic:	1854
Centerline Dist. To Observer:	100	Vehicle Speed:	30
Barrier Near Lane CL Dist:	0	Centerline Separation:	42
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

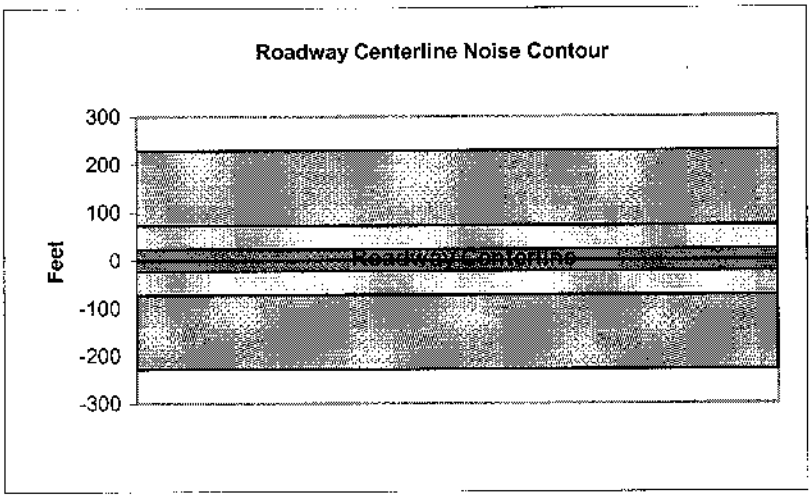
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.5	59.3	57.5	51.4	60.0	60.6
Medium Trucks:	61.1	53.0	46.6	45.1	53.5	53.8
Heavy Trucks:	66.7	54.8	45.7	47.0	57.1	57.2
Vehicle Noise:	**69.3**	**61.7**	**58.2**	**53.9**	**62.4**	**62.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	229
65 dBA	72
70 dBA	23
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Amador Valley Boulevard		
Road Segment:	West of San Ramon Rd.		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	3,370
Peak Hour Traffic:	337
Vehicle Speed:	30
Centerline Separation:	37

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

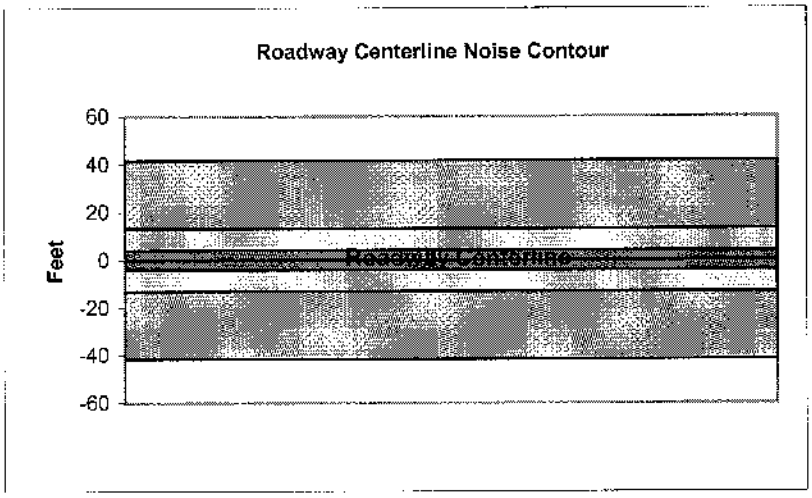
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	43.1	51.9	50.1	44.1	52.7	53.3
Medium Trucks:	53.8	45.7	39.3	37.7	46.2	46.4
Heavy Trucks:	59.4	47.5	38.4	39.6	49.7	49.9
Vehicle Noise:	**61.9**	**54.4**	**50.9**	**46.5**	**55.1**	**55.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	42
65 dBA	13
70 dBA	4
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Amador Plaza Road and Village Parkway		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	42,950
Peak Hour Traffic:	4295
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

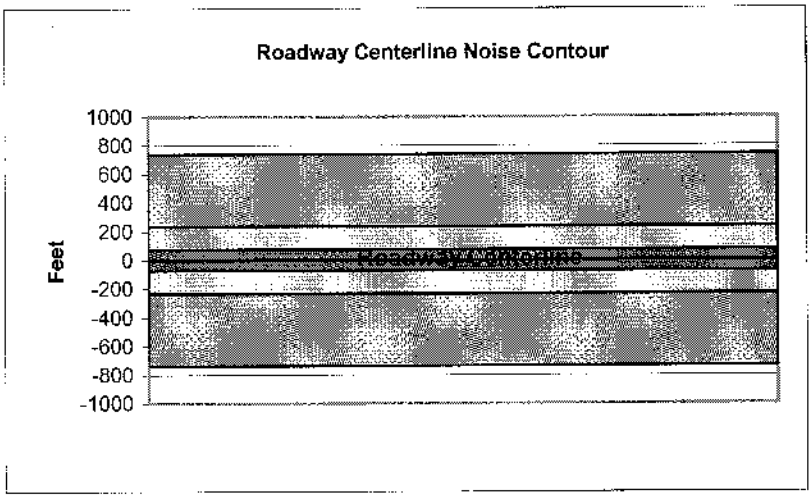
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.1	64.9	63.1	57.0	65.6	66.2
Medium Trucks:	65.8	57.7	51.4	49.8	58.3	58.5
Heavy Trucks:	71.0	59.1	50.0	51.2	61.2	61.3
Vehicle Noise:	**73.5**	**66.8**	**63.6**	**58.9**	**67.5**	**68.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	740
65 dBA	234
70 dBA	74
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	East of Village Parkway		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	38,850
Peak Hour Traffic:	3885
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

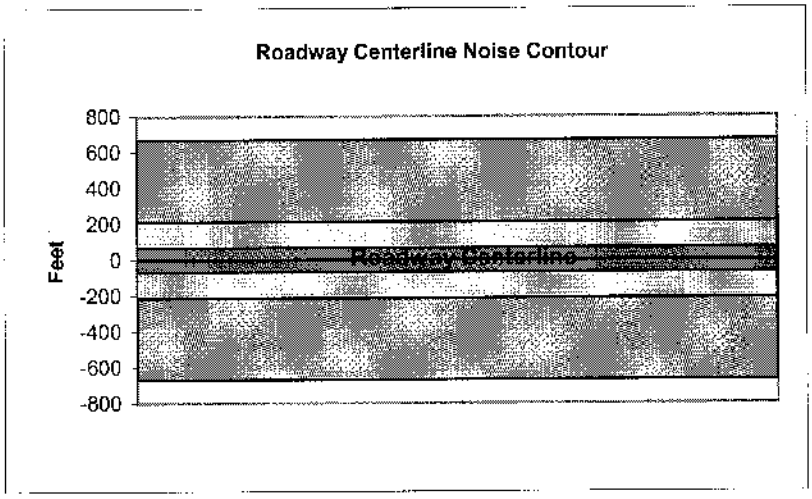
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.6	64.4	62.6	56.6	65.2	65.8
Medium Trucks:	65.4	57.3	50.9	49.3	57.8	58.1
Heavy Trucks:	70.6	58.6	49.6	50.8	60.7	60.8
Vehicle Noise:	**73.0**	**66.4**	**63.2**	**58.5**	**67.1**	**67.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	670
65 dBA	212
70 dBA	67
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Golden Gate Drive and Amador Plaza Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	42,060
Peak Hour Traffic:	4206
Vehicle Speed:	35
Centerline Separation:	40

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

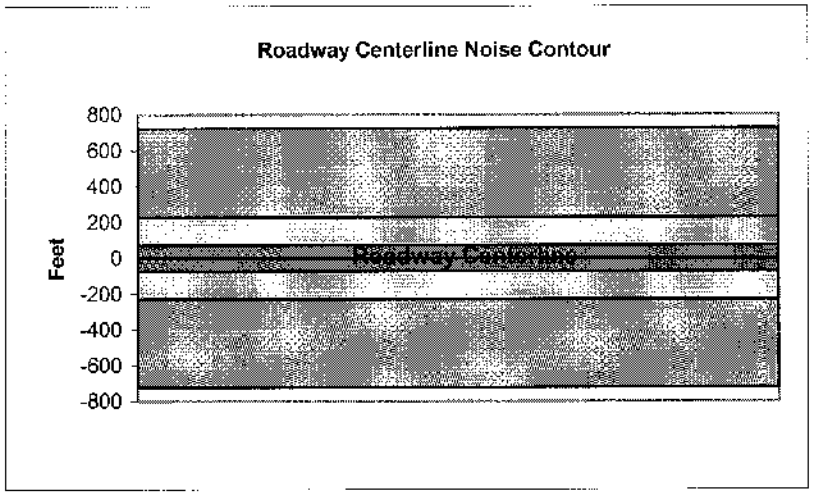
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.0	64.8	63.0	56.9	65.6	66.2
Medium Trucks:	65.7	57.6	51.3	49.7	58.2	58.4
Heavy Trucks:	70.9	59.0	49.9	51.2	61.1	61.2
Vehicle Noise:	**73.4**	**66.7**	**63.5**	**58.9**	**67.4**	**67.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	725
65 dBA	229
70 dBA	72
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between Regional Street and Golden Gate Drive		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	47,330
Receiver Barrier Dist:	0	Peak Hour Traffic:	4733
Centerline Dist. To Observer:	100	Vehicle Speed:	35
Barrier Near Lane CL Dist:	0	Centerline Separation:	40
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

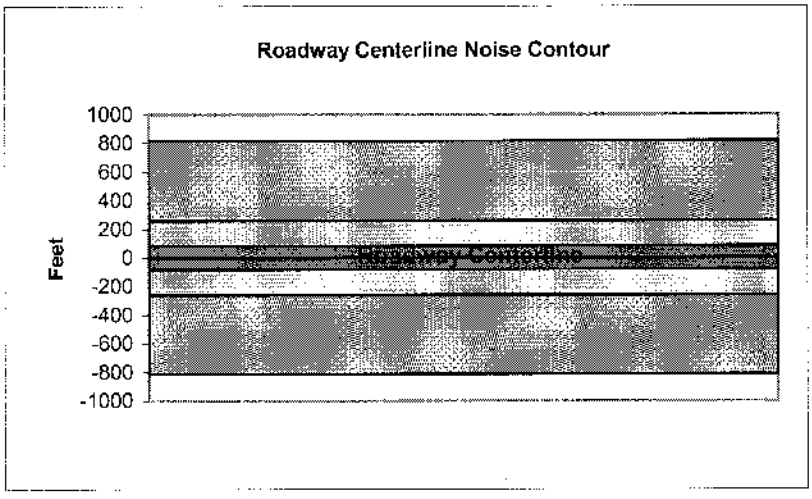
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.5	65.3	63.5	57.4	66.1	66.7
Medium Trucks:	66.2	58.2	51.8	50.2	58.7	58.9
Heavy Trucks:	71.4	59.5	50.4	51.7	61.6	61.7
Vehicle Noise:	**73.9**	**67.2**	**64.1**	**59.4**	**67.9**	**68.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	817
65 dBA	258
70 dBA	82
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	Between San Ramon Road and Regional Street		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	53,860
Peak Hour Traffic:	5386
Vehicle Speed:	35
Centerline Separation:	45

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

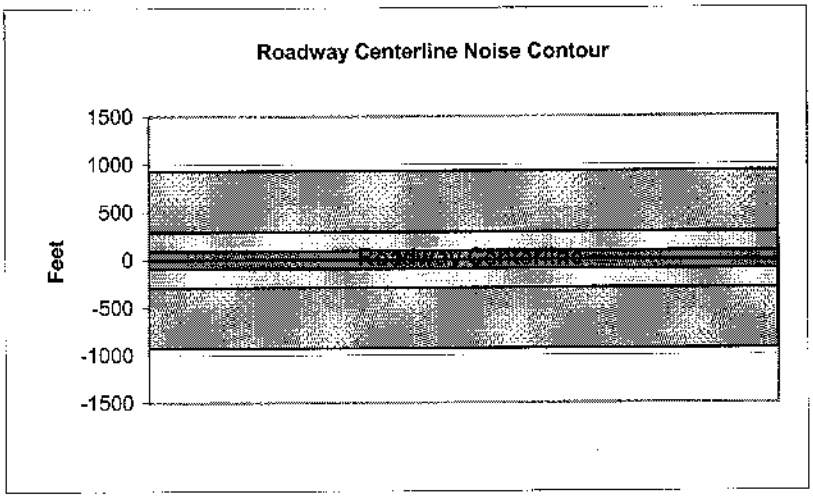
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.0	65.8	64.0	57.9	66.5	67.2
Medium Trucks:	66.7	58.6	52.3	50.7	59.2	59.4
Heavy Trucks:	71.9	60.0	50.9	52.2	62.1	62.2
Vehicle Noise:	**74.4**	**67.7**	**64.5**	**59.9**	**68.4**	**68.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	928
65 dBA	294
70 dBA	93
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Dublin Boulevard		
Road Segment:	West of San Ramon Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	25,000
Peak Hour Traffic:	2500
Vehicle Speed:	35
Centerline Separation:	51

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

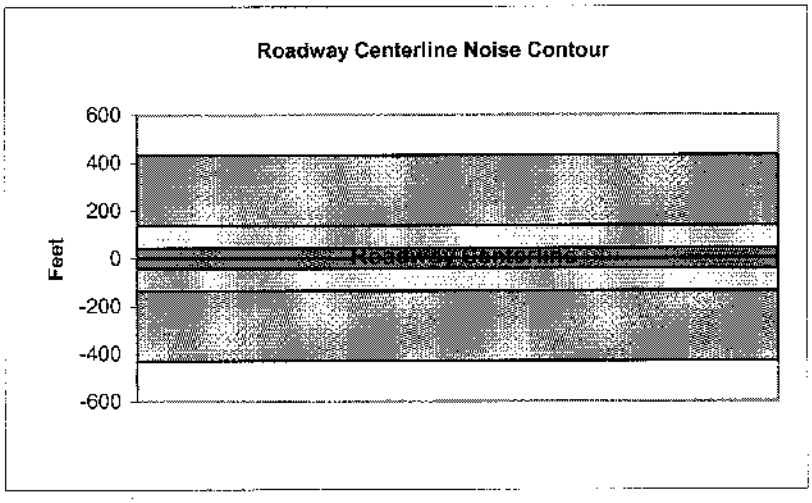
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.6	62.3	60.6	54.5	63.1	63.7
Medium Trucks:	63.3	55.2	48.8	47.3	55.8	56.0
Heavy Trucks:	68.5	56.6	47.5	48.7	58.6	58.8
Vehicle Noise:	**70.9**	**64.3**	**61.1**	**56.4**	**65.0**	**65.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	431
65 dBA	136
70 dBA	43
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Golden Gate Drive		
Road Segment:	Between Dublin Blvd. and St. Patrick Way		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	15,850
Peak Hour Traffic:	1585
Vehicle Speed:	25
Centerline Separation:	24

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

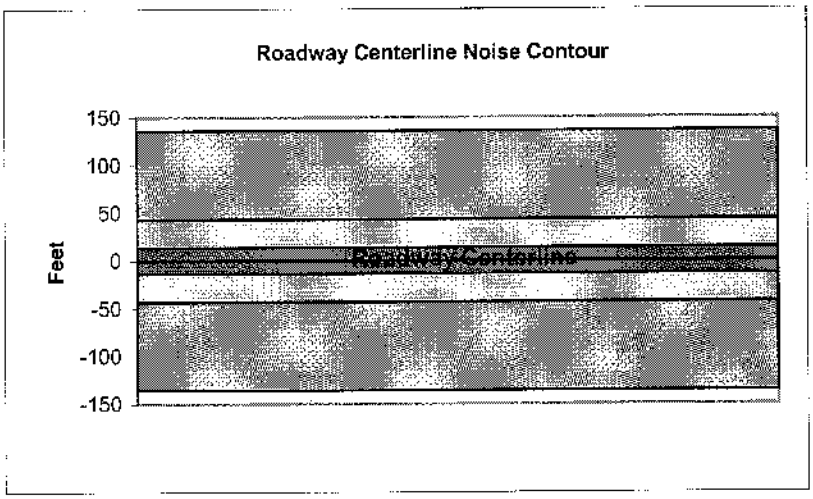
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.8	56.6	54.8	48.7	57.4	58.0
Medium Trucks:	59.5	51.4	45.0	43.4	51.9	52.2
Heavy Trucks:	65.6	53.7	44.6	45.8	56.2	56.4
Vehicle Noise:	**68.3**	**59.8**	**55.8**	**52.0**	**60.5**	**60.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	136
65 dBA	43
70 dBA	14
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Golden Gate Drive		
Road Segment:	South of St. Patrick Way		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	7,810
Peak Hour Traffic:	781
Vehicle Speed:	25
Centerline Separation:	23

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

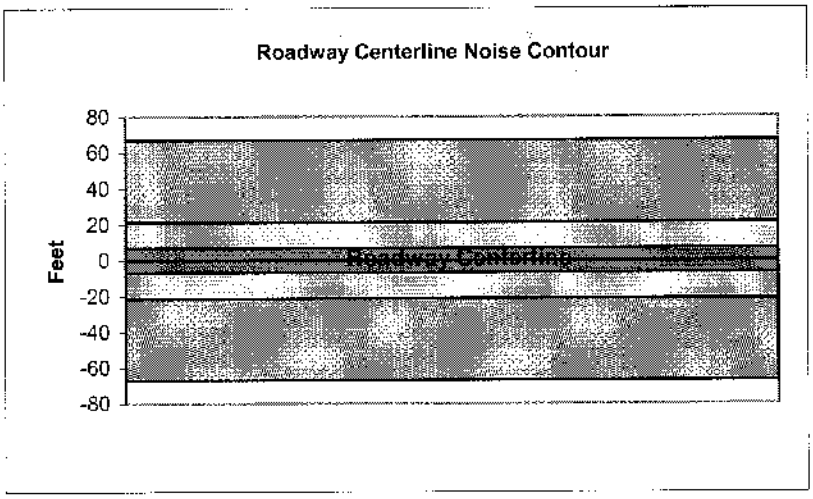
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.8	53.5	51.7	45.7	54.3	54.9
Medium Trucks:	56.4	48.3	42.0	40.4	48.9	49.1
Heavy Trucks:	62.6	50.6	41.6	42.8	53.2	53.3
Vehicle Noise:	**65.2**	**56.8**	**52.7**	**48.9**	**57.4**	**57.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	67
65 dBA	21
70 dBA	7
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Regional Street		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	11,670
Peak Hour Traffic:	1167
Vehicle Speed:	30
Centerline Separation:	26

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

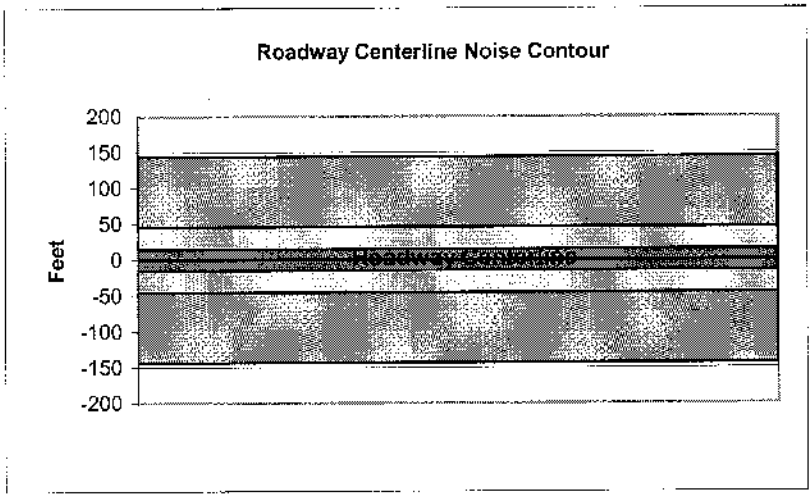
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.7	57.5	55.7	49.6	58.3	58.9
Medium Trucks:	59.3	51.3	44.9	43.3	51.8	52.0
Heavy Trucks:	65.0	53.0	44.0	45.2	55.3	55.5
Vehicle Noise:	**67.5**	**60.0**	**56.4**	**52.1**	**60.7**	**61.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	144
65 dBA	46
70 dBA	14
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Regional Street		
Road Segment:	South of Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	11,590
Peak Hour Traffic:	1159
Vehicle Speed:	30
Centerline Separation:	26

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

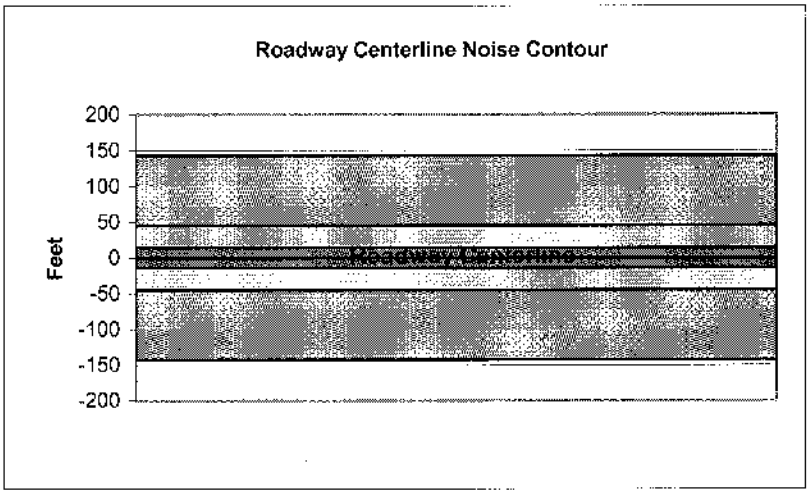
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.7	57.5	55.7	49.6	58.3	58.9
Medium Trucks:	59.3	51.2	44.8	43.3	51.8	52.0
Heavy Trucks:	64.9	53.0	43.9	45.2	55.3	55.4
Vehicle Noise:	**67.5**	**60.0**	**56.4**	**52.1**	**60.6**	**61.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	143
65 dBA	45
70 dBA	14
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	37,240
Peak Hour Traffic:	3724
Vehicle Speed:	40
Centerline Separation:	65

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

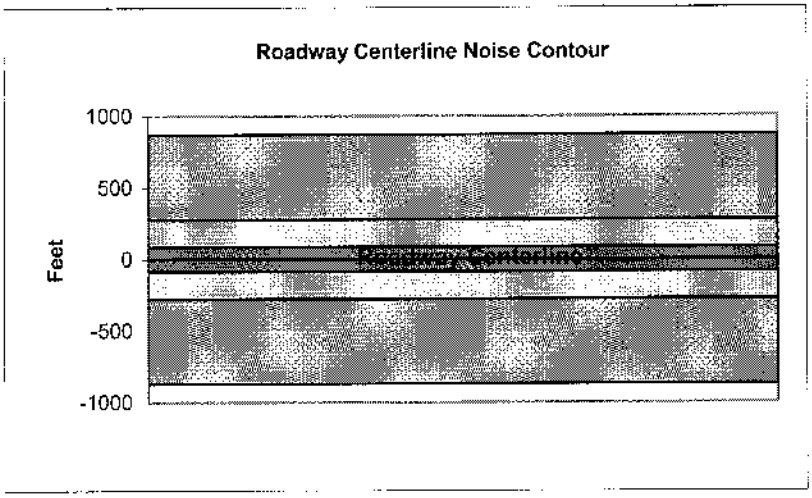
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.8	65.6	63.8	57.7	66.3	66.9
Medium Trucks:	65.7	57.7	51.3	49.7	58.2	58.4
Heavy Trucks:	70.6	58.6	49.6	50.8	60.5	60.6
Vehicle Noise:	**73.0**	**67.1**	**64.2**	**59.3**	**67.8**	**68.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	873
65 dBA	276
70 dBA	87
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	North of Amador Valley Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	32,570
Peak Hour Traffic:	3257
Vehicle Speed:	40
Centerline Separation:	60

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

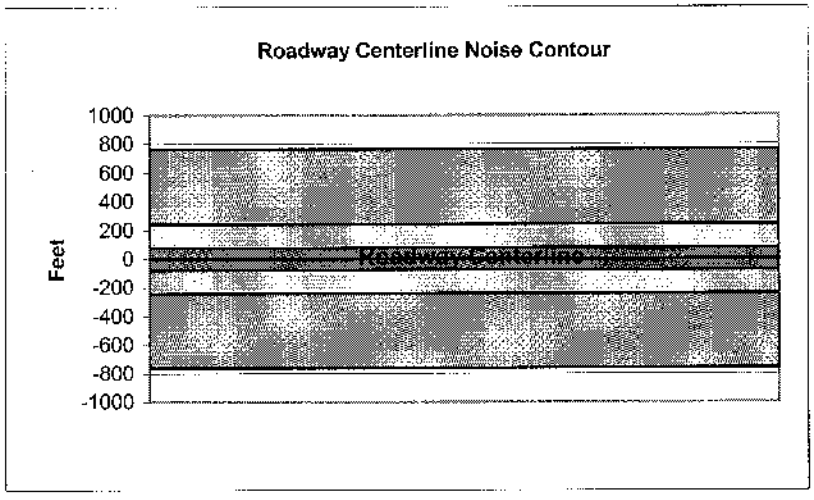
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.3	65.0	63.3	57.2	65.8	66.4
Medium Trucks:	65.2	57.1	50.8	49.2	57.7	57.9
Heavy Trucks:	70.1	58.1	49.1	50.3	60.0	60.1
Vehicle Noise:	**72.4**	**66.6**	**63.7**	**58.7**	**67.3**	**67.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	764
65 dBA	242
70 dBA	76
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	San Ramon Road		
Road Segment:	South of Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	70,220
Peak Hour Traffic:	7022
Vehicle Speed:	40
Centerline Separation:	65

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

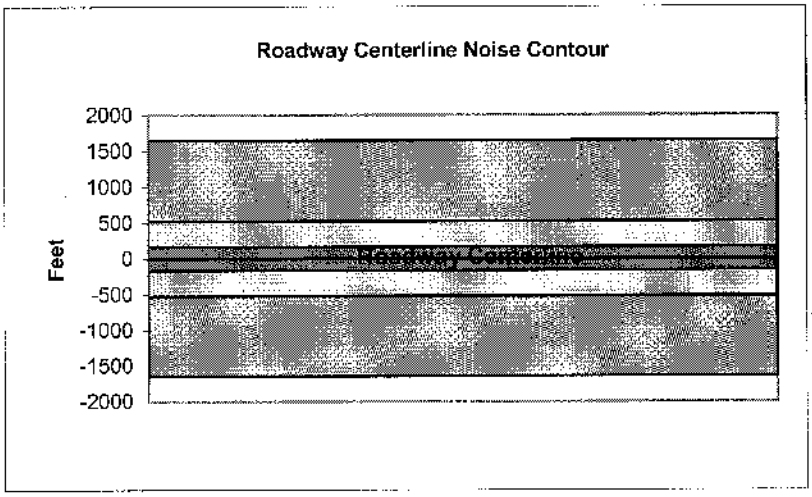
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.5	68.3	66.5	60.4	69.1	69.7
Medium Trucks:	68.5	60.4	54.0	52.5	60.9	61.2
Heavy Trucks:	73.3	61.4	52.3	53.6	63.3	63.4
Vehicle Noise:	**75.7**	**69.9**	**67.0**	**62.0**	**70.6**	**71.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	1647
65 dBA	521
70 dBA	165
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	East of Amador Plaza Road		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
	0
Average Daily Traffic:	19,230
Peak Hour Traffic:	1923
Vehicle Speed:	25
Centerline Separation:	20

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

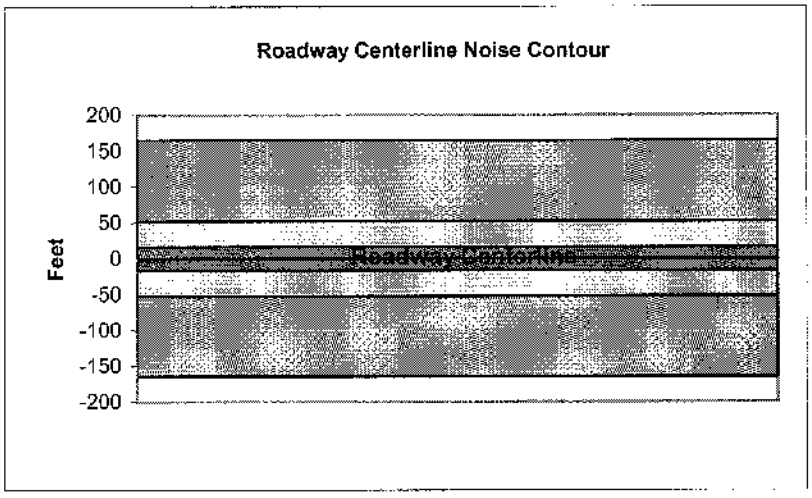
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.7	57.5	55.7	49.6	58.3	58.9
Medium Trucks:	60.4	52.3	45.9	44.3	52.8	53.1
Heavy Trucks:	66.5	54.6	45.5	46.7	57.1	57.3
Vehicle Noise:	**69.2**	**60.7**	**56.7**	**52.9**	**61.4**	**61.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	165
65 dBA	52
70 dBA	17
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	Between Golden Gate Drive and Amador Plaza Road		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	6,800
Receiver Barrier Dist:	0	Peak Hour Traffic:	680
Centerline Dist. To Observer:	100	Vehicle Speed:	25
Barrier Near Lane CL Dist:	0	Centerline Separation:	20
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

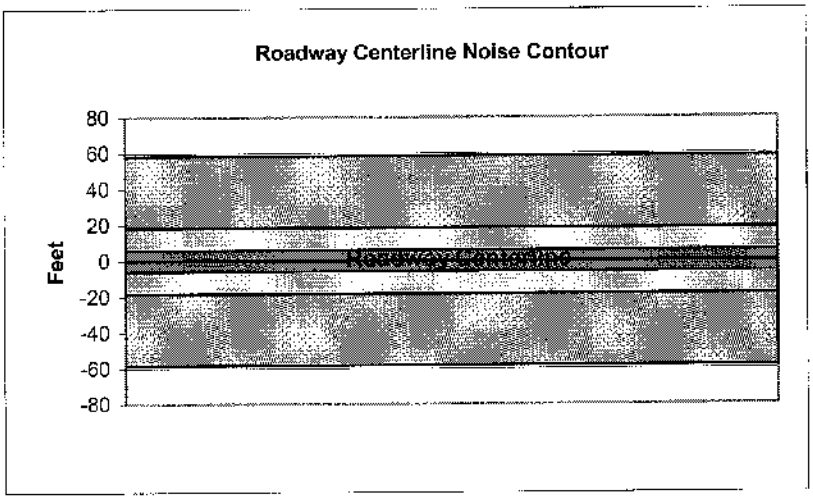
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.2	53.0	51.2	45.1	53.8	54.4
Medium Trucks:	55.9	47.8	41.4	39.8	48.3	48.5
Heavy Trucks:	62.0	50.1	41.0	42.2	52.6	52.7
Vehicle Noise:	**64.7**	**56.2**	**52.2**	**48.4**	**56.9**	**57.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	58
65 dBA	18
70 dBA	6
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	St. Patrick Way		
Road Segment:	West of Golden Gate Drive		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier	0		0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	3,630
Receiver Barrier Dist:	0	Peak Hour Traffic:	363
Centerline Dist. To Observer:	100	Vehicle Speed:	25
Barrier Near Lane CL Dist:	0	Centerline Separation:	20
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions **HARD SITE**	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	0		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

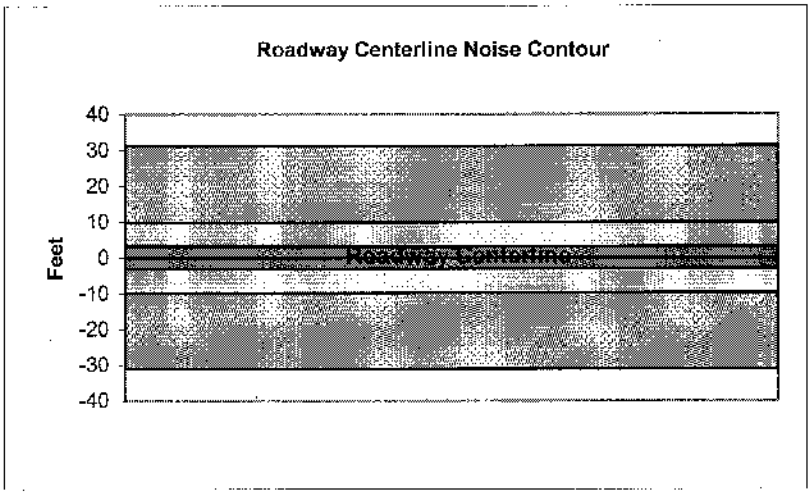
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	41.5	50.3	48.5	42.4	51.0	51.6
Medium Trucks:	53.1	45.1	38.7	37.1	45.6	45.8
Heavy Trucks:	59.3	47.3	38.3	39.5	49.9	50.0
Vehicle Noise:	**61.9**	**53.5**	**49.5**	**45.6**	**54.2**	**54.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	31
65 dBA	10
70 dBA	3
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	Between Amador Valley Blvd. and Dublin Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	19,350
Peak Hour Traffic:	1935
Vehicle Speed:	30
Centerline Separation:	49

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

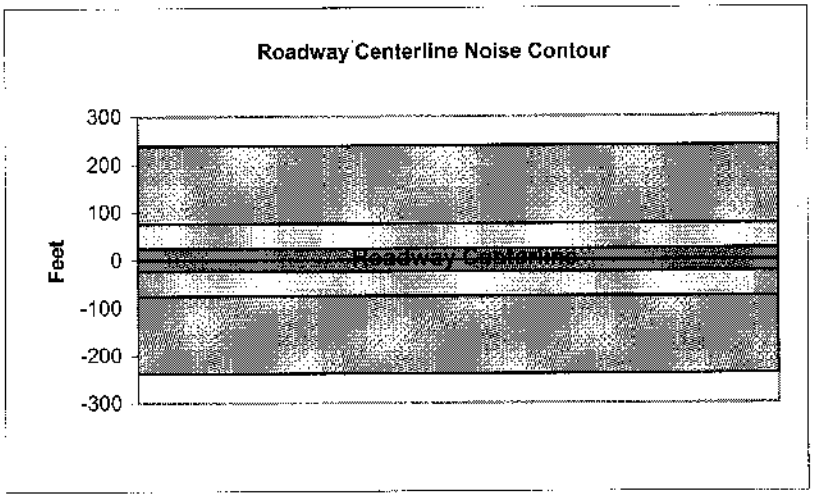
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.6	59.3	57.5	51.5	60.1	60.7
Medium Trucks:	61.2	53.1	46.7	45.1	53.6	53.9
Heavy Trucks:	66.8	54.9	45.8	47.0	57.2	57.3
Vehicle Noise:	**69.3**	**61.8**	**58.3**	**53.9**	**62.5**	**62.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	239
65 dBA	76
70 dBA	24
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	Between Dublin Blvd. and I-680 NB On Ramp		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	8,550
Peak Hour Traffic:	855
Vehicle Speed:	30
Centerline Separation:	25

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

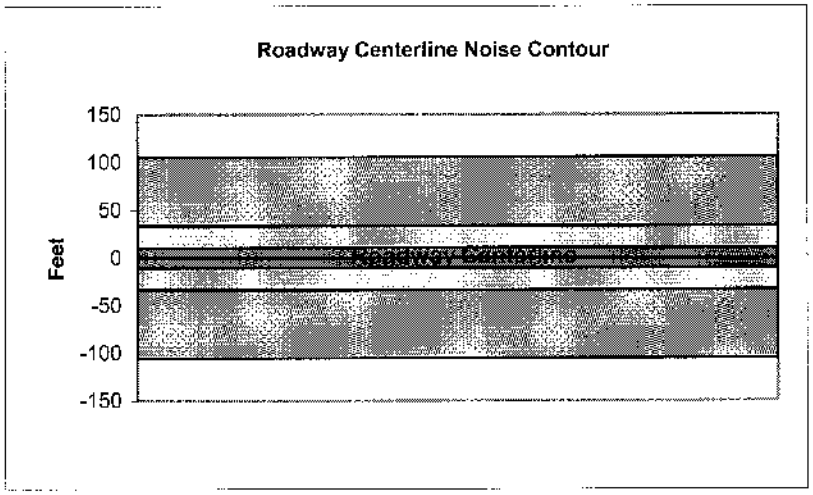
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.4	56.2	54.4	48.3	57.0	57.6
Medium Trucks:	58.0	49.9	43.5	42.0	50.5	50.7
Heavy Trucks:	63.6	51.7	42.6	43.9	54.0	54.1
Vehicle Noise:	**66.2**	**58.7**	**55.1**	**50.8**	**59.3**	**59.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	106
65 dBA	33
70 dBA	11
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	North of Amador Valley Blvd.		

PROJECT DATA	
Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	22,500
Peak Hour Traffic:	2250
Vehicle Speed:	30
Centerline Separation:	42

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

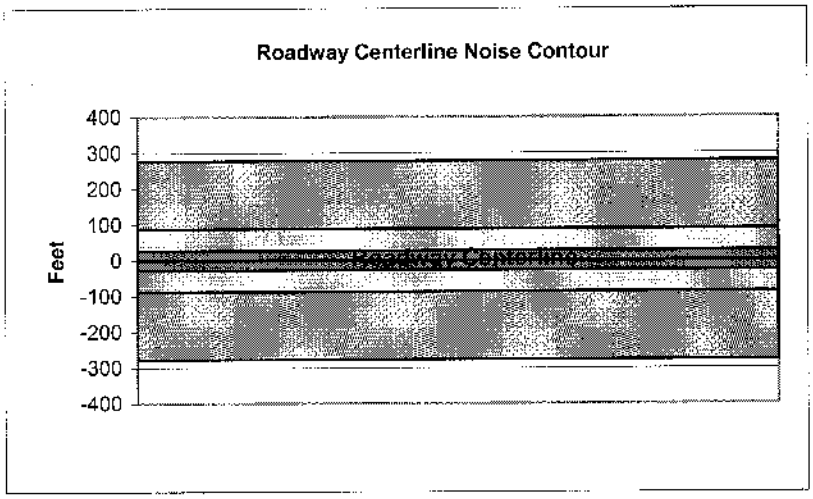
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.3	60.1	58.3	52.2	60.9	61.5
Medium Trucks:	61.9	53.9	47.5	45.9	54.4	54.6
Heavy Trucks:	67.6	55.6	46.6	47.8	57.9	58.0
Vehicle Noise:	**70.1**	**62.6**	**59.0**	**54.7**	**63.3**	**63.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR	
Unmitigated	
60 dBA	278
65 dBA	88
70 dBA	28
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Downtown Dublin Specific Plan Draft EIR	Scenario:	Future Plus Project
Analyst:	Brian Allee	Job #:	70100239
Roadway:	Village Parkway		
Road Segment:	South of I-680 NB On Ramp		

PROJECT DATA

Centerline Dist to Barrier	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	0
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	990
Peak Hour Traffic:	99
Vehicle Speed:	30
Centerline Separation:	25

NOISE INPUTS

Site conditions **HARD SITE**

FLEET MIX

Type	Day	Evening	Night	Daily
Auto	0.775	0.129	0.096	0.9742
Med. Truck	0.848	0.049	0.103	0.0184
Heavy Truck	0.865	0.027	0.108	0.0074

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

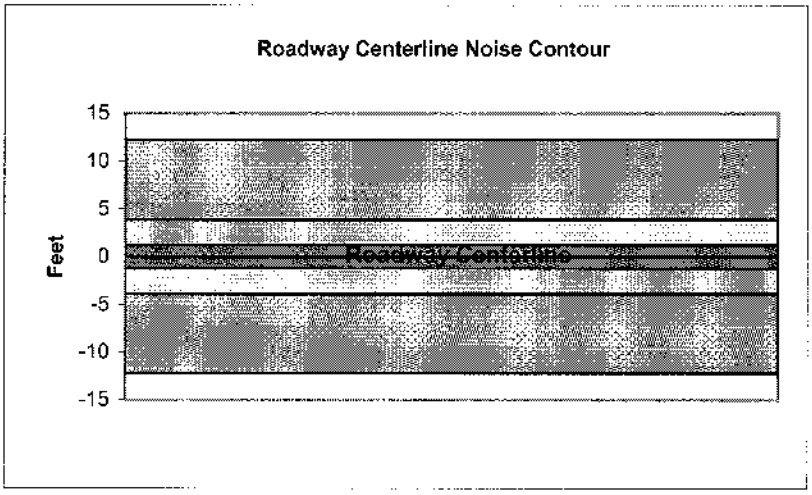
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	38.0	46.8	45.0	38.9	47.6	48.2
Medium Trucks:	48.6	40.6	34.2	32.6	41.1	41.3
Heavy Trucks:	54.3	42.3	33.3	34.5	44.6	44.8
Vehicle Noise:	**56.8**	**49.3**	**45.7**	**41.4**	**50.0**	**50.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR

Unmitigated	
60 dBA	12
65 dBA	4
70 dBA	1
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Trip Generation Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS

Trip Generation Appendix
Downtown Dublin Specific Plan
Approved Project Trip Generation Estimates

Map No.	Description	ITE Land Use Code	Size	Daily	AM Peak Hour			PM Peak Hour		
					Inbound	Outbound	Total	Inbound	Outbound	Total
Dublin										
R02	Schaefer Ranch	210 - Single Family	442 DU							
R52	Schaefer Ranch	210 - Single Family	140 DU							
		210 - Single Family	582 DU	5,570	104	313	417	323	190	513
R49	Windstar Condos	210 - Single Family (Condos)	309 DU	2,940	57	169	226	183	107	290
		25% Transit Reduction		2,205	43	127	170	137	81	218
	AMB Site	210 - Single Family (Condos)	308 DU	2,930	56	169	225	182	107	289
		25% Transit Reduction		2,198	42	127	169	137	80	217
		710 - Office	150000 SF	1,650	205	28	233	38	186	224
		15% Transit Reduction		1,403	174	24	198	32	158	190
R24	Tralee	230 - Residential Condo/Townhouse	233 DU	1,340	18	85	103	81	40	121
		25% Transit Reduction		1,005	13	64	77	61	30	91
R48	Arroyo Vista		DU	2,868	3	80	83	74	36	110
C033	W. Dublin BART	Hotel	150 Room	1,440	28	85	113	96	56	152
	Hotel + Retail	Retail	7,500 SF	320	5	3	8	13	15	28
		25% Transit Reduction		1,760	25	66	91	82	53	135
C103	BART Station		711 Parking Spaces		350	44	394	20	378	398
C104	Custom Fireplace,	Retail	20,270 SF	870	13	8	21	36	40	76
	Patio, & BBQ	Existing	9,370 SF	400	6	4	10	17	18	35
		Net New Trips	10,900 SF	470	7	4	11	19	22	41
		25% Pass-by Reduction		353	5	3	8	15	16	31
C112	Big Lots	Retail	25,655 SF	1,100	16	10	26	46	50	96
		Existing	21,470 SF	920	13	9	22	39	42	81
		Net New Trips	4,185 SF	180	3	1	4	7	8	15
		25% Pass-by Reduction		135	2	1	3	5	6	11
C20	Tralee	820 - Shopping Center	33,500 SF	1,440	21	14	35	60	66	126
		25% Pass-by Reduction		1,080	16	10	26	46	49	95
Pleasanton										
5	Multi-family Homes	251 - Senior Housing	132 DU	490	10	19	29	20	16	36
67	Multi-family Homes	220 - Apartment	350 DU	2,240	35	140	175	140	70	210
		25% Transit Reduction		1,680	26	105	131	100	58	158
San Ramon										
F	Multi-family Homes	251 - Senior Housing	105 DU	390	8	15	23	20	8	28
		Total		11,966	821	998	1,819	1,072	1,159	2,231

Trip Generation Appendix
Downtown Dublin Specific Plan
Base FAR Project Trip Generation Estimates

Map No.	Description	ITE Land Use Code	Size	Daily	AM Peak Hour			PM Peak Hour		
					Inbound	Outbound	Total	Inbound	Outbound	Total
21	Amador Valley Boulevard and San Ramon Road Southwest Corner	Retail	8,640 SF	370	5	4	9	15	17	32
		Retail	7,510 SF	320	5	3	8	13	15	28
		Retail	1,510 SF	60	1	1	2	3	3	6
		Total Retail	*17,660 SF*	*750*	*11*	*8*	*19*	*31*	*35*	*66*
		25% Pass-by Reduction		**560**	**8**	**6**	**14**	**23**	**26**	**49**
22	West of San Ramon Road	Retail	43,530 SF	1,870	27	18	45	78	85	163
		25% Pass-by Reduction		**1,400**	**20**	**14**	**34**	**59**	**64**	**123**
23	Dublin Boulevard and Regional Street Northwest Corner	Retail	88,550 SF	3,800	56	35	91	159	173	332
		25% Pass-by Reduction		**2,850**	**42**	**26**	**68**	**119**	**130**	**249**
24	North of Dublin Boulevard	Retail	111,540 SF	4,790	70	45	115	201	217	418
		25% Pass-by Reduction		**3,590**	**53**	**34**	**87**	**151**	**163**	**314**
25	West of Amador Plaza Road	Retail	82,780 SF	3,550	52	33	85	149	161	310
		25% Pass-by Reduction		**2,660**	**39**	**25**	**64**	**112**	**121**	**233**
26	Amador Valley Boulevard and Amador Plaza Road Southwest Corner	Retail	24,620 SF	1,060	15	10	25	44	48	92
		25% Pass-by Reduction		**800**	**11**	**8**	**19**	**33**	**36**	**69**
36		Apartments	100 DU	670	10	41	51	40	22	62
		Total		**1,470**	**21**	**49**	**70**	**73**	**58**	**131**
27	Village Parkway	Retail	20,730 SF	890	13	8	21	37	41	78
		25% Pass-by Reduction		**670**	**10**	**6**	**16**	**28**	**31**	**59**
38		Apartments	0 DU	0	0	0	0	0	0	0
		Total		**670**	**10**	**6**	**16**	**28**	**31**	**59**
28	South End of Regional Street	Retail	16,740 SF	720	10	7	17	30	33	63
		Retail	15,160 SF	650	10	6	16	27	30	57
		Total Retail	*31,900 SF*	1,370	20	13	33	57	63	120
		25% Pass-by Reduction		1,030	15	10	25	43	47	90
		15% Transit Reduction		*820*	*12*	*8*	*20*	*34*	*38*	*72*
37		Apartments	38 DU	250	4	15	19	16	8	24
		25% Transit Reduction		*190*	*3*	*11*	*14*	*12*	*6*	*18*
		Total		**1,010**	**15**	**19**	**34**	**46**	**44**	**90**
29	South End of Amador Plaza Road	Retail	54,310 SF	2,330	34	22	56	98	106	204
		Retail	12,790 SF	550	8	5	13	23	25	48
		Retail	9,220 SF	400	5	4	9	17	18	35
		Total Retail	*76,320 SF*	3,280	*47*	*31*	*78*	*138*	*149*	*287*
		25% Pass-by Reduction		2,460	35	23	58	104	112	216
		15% Transit Reduction		*1,970*	*28*	*19*	*47*	*83*	*89*	*172*
39		Apartments	27 DU	180	3	11	14	11	6	17
		25% Transit Reduction		*140*	*2*	*8*	*10*	*8*	*5*	*13*
		Total		**2,110**	**30**	**27**	**57**	**91**	**94**	**185**
30	South End of Golden Gate Drive	Retail	24,190 SF	1,040	15	10	25	44	47	91
		25% Pass-by Reduction		780	11	8	19	33	35	68
		15% Transit Reduction		*620*	*9*	*6*	*15*	*26*	*28*	*54*
		Condos	17 DU	100	1	6	7	6	3	9
40		*25% Transit Reduction*		80	1	5	6	5	2	7
		Total		**700**	**10**	**11**	**21**	**31**	**30**	**61**
31	West of Golden Gate Drive	Retail	14,550 SF	620	9	6	15	26	29	55
		25% Pass-by Reduction		470	7	5	12	20	22	42
		15% Transit Reduction		**370**	**5**	**4**	**9**	**16**	**17**	**33**
32	South of Saint Patrick Way	Retail	21,820 SF	940	13	9	22	39	43	82
		25% Pass-by Reduction		710	10	7	17	29	32	61
		15% Transit Reduction		**560**	**8**	**5**	**13**	**23**	**26**	**49**
33	North of Saint Patrick Way	Retail	62,740 SF	2,690	40	25	65	113	122	235
		25% Pass-by Reduction		2,020	30	19	49	85	92	177
		15% Transit Reduction		**1,610**	**24**	**15**	**39**	**68**	**73**	**141**

Trip Generation Appendix

Downtown Dublin Specific Plan

Base FAR Project Trip Generation Estimates

Map No.	Description	ITE Land Use Code	Size	Daily	AM Peak Hour			PM Peak Hour		
					Inbound	Outbound	Total	Inbound	Outbound	Total
		Retail	26,280 SF	1,130	16	11	27	48	51	99
34	West of Amador Plaza Road	Retail	12,620 SF	540	8	5	13	23	24	47
		Total Retail	*38,900 SF*	*1,670*	*24*	*16*	*40*	*71*	*75*	*146*
		25% Pass-by Reduction		1,250	18	12	30	53	56	109
		15% Transit Reduction		**1,000**	**14**	**10**	**24**	**43**	**45**	**88**
		Retail	49,990 SF	2,150	31	20	51	90	97	187
35	South of I-680 Ramps	25% Pass-by Reduction		1,610	23	15	38	68	73	141
		15% Transit Reduction		**1,290**	**19**	**12**	**31**	**54**	**58**	**112**
			709,820 SF							
		Total	182 DU	21,850	318	263	581	937	980	1,917

Trip Generation Appendix
Downtown Dublin Specific Plan
Maximum FAR Project Trip Generation Estimates

Map No.	Description	ITE Land Use Code	Size	Daily	AM Peak Hour			PM Peak Hour		
					Inbound	Outbound	Total	Inbound	Outbound	Total
21	Amador Valley Boulevard and San Ramon Road Southwest Corner	Retail	23,000 SF	990	15	9	24	41	45	86
		Retail	14,040 SF	600	9	5	14	25	28	53
		Retail	5,640 SF	240	4	2	6	10	11	21
		Total Retail	*42,680 SF*	*1,830*	*28*	*16*	*44*	*76*	*84*	*160*
		25% Pass-by Reduction		**1,370**	**21**	**12**	**33**	**57**	**63**	**120**
22	West of San Ramon Road	Retail	77,110 SF	3,310	48	31	79	139	150	289
		25% Pass-by Reduction		**2,480**	**36**	**23**	**59**	**104**	**113**	**217**
23	Dublin Boulevard and Regional Street Northwest Corner	Retail	183,400 SF	7,880	115	74	189	330	358	688
		25% Pass-by Reduction		**5,910**	**86**	**56**	**142**	**248**	**269**	**517**
24	North of Dublin Boulevard	Retail	219,820 SF	9,440	138	88	226	396	428	824
		25% Pass-by Reduction		**7,080**	**104**	**66**	**170**	**297**	**321**	**618**
25	West of Amador Plaza Road	Retail	188,990 SF	8,120	119	76	195	340	369	709
		25% Pass-by Reduction		**6,090**	**89**	**57**	**146**	**255**	**277**	**532**
	Amador Valley Boulevard and Amador Plaza Road Southwest Corner	Retail	25,100 SF	1,080	16	10	26	45	49	94
26		**25% Pass-by Reduction**		**810**	**12**	**8**	**20**	**34**	**37**	**71**
36		Apartments	100 DU	670	10	41	51	40	22	62
		Total		**1,480**	**22**	**49**	**71**	**74**	**59**	**133**
	Village Parkway	Retail	20,730 SF	890	13	8	21	37	41	78
27		**25% Pass-by Reduction**		**670**	**10**	**6**	**16**	**28**	**31**	**59**
38		Apartments	100 DU	670	10	41	51	40	22	62
		Total		**1,340**	**20**	**47**	**67**	**68**	**53**	**121**
	South End of Regional Street	Retail	107,830 SF	4,630	68	43	111	194	210	404
28		Retail	96,640 SF	4,150	61	39	100	174	188	362
		Total Retail	*204,470 SF*	8,780	129	82	211	368	398	766
		25% Pass-by Reduction		6,590	97	62	159	276	299	575
		15% Transit Reduction		*5,270*	*77*	*49*	*126*	*221*	*239*	*460*
37		Apartments	236 DU	1,570	24	96	120	95	51	146
		25% Transit Reduction		*1,180*	*18*	*72*	*90*	*71*	*38*	*109*
		Total		**6,450**	**95**	**121**	**216**	**292**	**277**	**569**
	South End of Amador Plaza Road	Retail	335,960 SF	14,430	211	135	346	605	655	1260
29		Retail	87,730 SF	3,770	55	35	90	158	171	329
		Retail	66,360 SF	2,850	41	27	68	120	129	249
		Total Retail	*490,050 SF*	21,050	*307*	*197*	*504*	*883*	*955*	*1,838*
		25% Pass-by Reduction		15,790	230	148	378	662	716	1,378
		15% Transit Reduction		*12,630*	*184*	*118*	*302*	*530*	*573*	*1,103*
39		Apartments	167 DU	1,110	17	68	85	68	36	104
		25% Transit Reduction		*830*	*13*	*51*	*64*	*51*	*27*	*78*
		Total		**13,460**	**197**	**169**	**366**	**581**	**600**	**1,181**
	South End of Golden Gate Drive	Retail	160,070 SF	6,870	101	64	165	288	312	600
30		25% Pass-by Reduction		5,150	76	48	124	216	234	450
		15% Transit Reduction		*4,120*	*61*	*38*	*99*	*173*	*187*	*360*
		Condos	80 DU	460	6	29	35	28	14	42
40		*25% Transit Reduction*		350	5	22	27	21	11	32
		Total		**4,470**	**66**	**60**	**126**	**194**	**198**	**392**
	West of Golden Gate Drive	Retail	90,100 SF	3,870	57	36	93	162	176	338
31		25% Pass-by Reduction		2,900	43	27	70	122	132	254
		15% Transit Reduction		**2,320**	**34**	**22**	**56**	**97**	**106**	**203**
	South of Saint Patrick Way	Retail	130,850 SF	5,620	82	53	135	236	255	491
32		25% Pass-by Reduction		4,220	62	40	102	177	191	368
		15% Transit Reduction		**3,370**	**49**	**32**	**81**	**142**	**153**	**295**
	North of Saint Patrick Way	Retail	402,490 SF	17,280	253	162	415	724	785	1509
33		25% Pass-by Reduction		12,960	190	122	312	543	589	1,132
		15% Transit Reduction		**10,370**	**152**	**97**	**249**	**434**	**471**	**905**

Trip Generation Appendix
Downtown Dublin Specific Plan
Maximum FAR Project Trip Generation Estimates

Map No.	Description	ITE Land Use Code	Size	Daily	AM Peak Hour			PM Peak Hour		
					Inbound	Outbound	Total	Inbound	Outbound	Total
		Retail	167,320 SF	7,180	105	67	172	301	326	627
34	West of Amador	Retail	78,360 SF	3,360	49	32	81	141	153	294
	Plaza Road	*Total Retail*	*245,680 SF*	*10,540*	*154*	*99*	*253*	*442*	*479*	*921*
		25% Pass-by Reduction		7,910	116	74	190	332	359	691
		15% Transit Reduction		**6,320**	**92**	**59**	**151**	**265**	**287**	**552**
		Retail	321,500 SF	13,810	202	129	331	579	627	1206
35	South of I-680	25% Pass-by Reduction		10,360	152	97	249	434	470	904
	Ramps	**15% Transit Reduction**		**8,290**	**121**	**77**	**198**	**347**	**376**	**723**
			2,803,040 SF							
		Total	683 DU	80,800	1,184	947	2,131	3,455	3,623	7,078

Trip Generation Appendix

Downtown Dublin Specific Plan

No Project (Existing Specific Plans) Trip Generation Estimates

Map No.	Description	ITE Land Use Code	Size	Daily	AM Peak Hour			PM Peak Hour		
					Inbound	Outbound	Total	Inbound	Outbound	Total
21	Amador Valley Boulevard and San Ramon Road Southwest Corner	Retail	6,000 SF	260	4	2	6	11	12	23
		Retail	5,000 SF	210	3	2	5	9	10	19
		Retail	4,085 SF	180	2	2	4	7	8	15
		Total Retail	*15,085 SF*	*650*	*9*	*6*	*15*	*27*	*30*	*57*
		25% Pass-by Reduction		**490**	**7**	**5**	**12**	**20**	**23**	**43**
22	West of San Ramon Road	Retail	94,710 SF	4,070	60	38	98	170	185	355
		25% Pass-by Reduction		**3,050**	**45**	**29**	**74**	**128**	**139**	**267**
23	Dublin Boulevard and Regional Street Northwest Corner	Retail	190,320 SF	8,170	120	76	196	343	371	714
		25% Pass-by Reduction		**6,130**	**90**	**57**	**147**	**257**	**278**	**535**
24	North of Dublin Boulevard	Retail	247,650 SF	10,630	156	99	255	446	483	929
		25% Pass-by Reduction		**7,970**	**117**	**74**	**191**	**335**	**362**	**697**
25	West of Amador Plaza Road	Retail	199,250 SF	8,560	125	80	205	359	388	747
		25% Pass-by Reduction		**6,420**	**94**	**60**	**154**	**269**	**291**	**560**
	Amador Valley Boulevard and Amador Plaza Road Southwest Corner	Retail	28,070 SF	1,210	18	11	29	50	55	105
26		**25% Pass-by Reduction**		**910**	**14**	**8**	**22**	**38**	**41**	**79**
36		Apartments	0 DU	0	0	0	0	0	0	0
		Total		**910**	**14**	**8**	**22**	**38**	**41**	**79**
	Village Parkway	Retail	20,730 SF	890	13	8	21	37	41	78
27		**25% Pass-by Reduction**		**670**	**10**	**6**	**16**	**28**	**31**	**59**
38		Apartments	100 DU	670	10	41	51	40	22	62
		Total		**1,340**	**20**	**47**	**67**	**68**	**53**	**121**
28	South End of Regional Street	Retail	151,230 SF	6,490	95	61	156	272	295	567
		Retail	101,330 SF	4,350	63	41	104	182	198	380
		Total Retail	*252,560 SF*	10,840	158	102	260	454	493	947
		25% Pass-by Reduction		8,130	119	77	196	341	370	711
		15% Transit Reduction		*6,500*	*95*	*61*	*156*	*272*	*296*	*568*
37		Apartments	0 DU	0	0	0	0	0	0	0
		25% Transit Reduction		*0*	*0*	*0*	*0*	*0*	*0*	*0*
		Total		**6,500**	**95**	**61**	**156**	**272**	**296**	**568**
29	South End of Amador Plaza Road	Retail	439,240 SF	18,860	276	176	452	791	856	1647
		Retail	117,250 SF	5,030	74	47	121	211	229	440
		Retail	106,010 SF	4,550	66	43	109	191	207	398
		Total Retail	*662,500 SF*	28,440	*416*	*266*	*682*	*1,193*	*1,292*	*2,485*
		25% Pass-by Reduction		21,330	312	200	512	895	969	1,864
		15% Transit Reduction		*17,060*	*250*	*160*	*410*	*716*	*775*	*1,491*
39		Apartments	0 DU	0	0	0	0	0	0	0
		25% Transit Reduction		*0*	*0*	*0*	*0*	*0*	*0*	*0*
		Total		**17,060**	**250**	**160**	**410**	**716**	**775**	**1,491**
30	South End of Golden Gate Drive	Retail	170,160 SF	7,310	107	68	175	306	332	638
		25% Pass-by Reduction		5,480	80	51	131	230	249	479
		15% Transit Reduction		*4,390*	*64*	*41*	*105*	*184*	*199*	*383*
		Condos	0 DU	0	0	0	0	0	0	0
40		*25% Transit Reduction*		0	0	0	0	0	0	0
		Total		**4,390**	**64**	**41**	**105**	**184**	**199**	**383**
31	West of Golden Gate Drive	Retail	87,910 SF	3,770	56	35	91	158	172	330
		25% Pass-by Reduction		2,830	42	26	68	119	129	248
		15% Transit Reduction		**2,260**	**34**	**21**	**55**	**95**	**103**	**198**
32	South of Saint Patrick Way	Retail	90,510 SF	3,890	57	36	93	163	176	339
		25% Pass-by Reduction		2,920	43	27	70	122	132	254
		15% Transit Reduction		**2,330**	**34**	**22**	**56**	**98**	**106**	**204**

Trip Generation Appendix
Downtown Dublin Specific Plan
No Project (Existing Specific Plans) Trip Generation Estimates

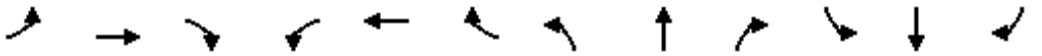
Map No.	Description	ITE Land Use Code	Size	Daily	AM Peak Hour			PM Peak Hour		
					Inbound	Outbound	Total	Inbound	Outbound	Total
		Retail	378,090 SF	16,240	237	152	389	681	737	1418
33	North of Saint Patrick	25% Pass-by Reduction		12,180	178	114	292	511	553	1,064
	Way	**15% Transit Reduction**		**9,740**	**142**	**91**	**233**	**409**	**442**	**851**
		Retail	183,760 SF	7,890	115	74	189	331	358	689
34	West of Amador	Retail	65,740 SF	2,820	41	27	68	119	128	247
	Plaza Road	*Total Retail*	*249,500 SF*	*10,710*	*156*	*101*	*257*	*450*	*486*	*936*
		25% Pass-by Reduction		8,030	117	76	193	338	365	703
		15% Transit Reduction		**6,430**	**94**	**61**	**155**	**270**	**292**	**562**
		Retail	350,060 SF	15,030	220	141	361	630	683	1313
35	South of I-680	25% Pass-by Reduction		11,270	165	106	271	473	512	985
	Ramps	**15% Transit Reduction**		**9,020**	**132**	**85**	**217**	**378**	**410**	**788**
			3,037,105 SF							
		Total	100 DU	84,040	1,232	822	2,054	3,537	3,810	7,347

Synchro Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS

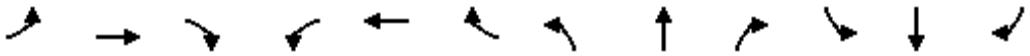
Existing AM and PM Peak Hour Synchro Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS



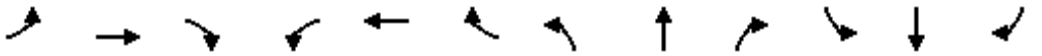
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	29	42	492	41	200	61	957	268	302	552	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1698	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.59	1.00	1.00	0.95	0.44	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1096	1863	1583	1681	783	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	32	33	48	566	47	230	70	1100	308	347	634	33
RTOR Reduction (vph)	0	0	45	0	0	151	0	0	138	0	0	18
Lane Group Flow (vph)	32	33	3	306	307	79	70	1100	170	347	634	15
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	6.8	6.8	6.8	25.2	36.5	36.5	7.4	41.4	41.4	14.9	48.9	48.9
Effective Green, g (s)	6.8	6.8	6.8	25.2	36.5	36.5	7.4	41.4	41.4	14.9	48.9	48.9
Actuated g/C Ratio	0.06	0.06	0.06	0.24	0.34	0.34	0.07	0.39	0.39	0.14	0.46	0.46
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	70	119	101	397	483	541	123	1372	614	479	2328	725
v/s Ratio Prot		0.02		c0.18	0.15		0.04	c0.31		c0.10	0.12	
v/s Ratio Perm	0.03		0.00		c0.07	0.05			0.11			0.01
v/c Ratio	0.46	0.28	0.03	0.77	0.64	0.15	0.57	0.80	0.28	0.72	0.27	0.02
Uniform Delay, d1	48.2	47.7	46.9	38.1	29.6	24.3	48.2	29.1	22.4	44.0	17.9	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.5	0.0	8.2	2.0	0.0	3.6	3.7	0.3	4.6	0.1	0.0
Delay (s)	49.9	48.1	47.0	46.3	31.6	24.4	51.7	32.7	22.8	48.6	18.0	15.9
Level of Service	D	D	D	D	C	C	D	C	C	D	B	B
Approach Delay (s)		48.1			35.0			31.5			28.4	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	106.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	599	31	53	712	4	34	9	23	8	5	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3513		1770	3536		1770	1863	1583	1770	1644	
Flt Permitted	0.95	1.00		0.95	1.00		1.00	1.00	1.00	1.00	1.00	
Satd. Flow (perm)	1770	3513		1770	3536		1863	1863	1583	1863	1644	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	31	644	33	57	766	4	37	10	25	9	5	18
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	23	0	17	0
Lane Group Flow (vph)	31	674	0	57	770	0	37	10	2	9	6	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	2.1	25.5		3.7	27.1		3.6	3.6	3.6	3.6	3.6	
Effective Green, g (s)	2.1	25.5		3.7	27.1		3.6	3.6	3.6	3.6	3.6	
Actuated g/C Ratio	0.04	0.54		0.08	0.58		0.08	0.08	0.08	0.08	0.08	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	79	1914		140	2048		143	143	122	143	126	
v/s Ratio Prot	0.02	0.19		c0.03	c0.22			0.01			0.00	
v/s Ratio Perm							c0.02		0.00	0.00		
v/c Ratio	0.39	0.35		0.41	0.38		0.26	0.07	0.02	0.06	0.05	
Uniform Delay, d1	21.7	6.0		20.5	5.3		20.3	20.0	20.0	20.0	20.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	0.2		0.7	0.2		0.4	0.1	0.0	0.1	0.1	
Delay (s)	22.9	6.2		21.2	5.5		20.7	20.1	20.0	20.1	20.1	
Level of Service	C	A		C	A		C	C	B	C	C	
Approach Delay (s)		6.9			6.5			20.4			20.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	46.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

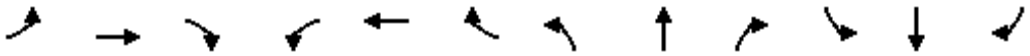


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	499	10	0	575	33	2	0	2	37	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.93			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3529			3510			1695			1770	1583
Flt Permitted	0.95	1.00			1.00			0.92			0.76	1.00
Satd. Flow (perm)	1770	3529			3510			1597			1407	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	33	567	11	0	653	38	2	0	2	42	0	64
RTOR Reduction (vph)	0	1	0	0	3	0	0	2	0	0	0	51
Lane Group Flow (vph)	33	577	0	0	688	0	0	2	0	0	42	13
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	3.5	41.2			33.2			12.9			12.9	12.9
Effective Green, g (s)	3.5	41.2			33.2			12.9			12.9	12.9
Actuated g/C Ratio	0.06	0.65			0.52			0.20			0.20	0.20
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	97	2286			1832			324			285	321
v/s Ratio Prot	0.02	c0.16			c0.20							
v/s Ratio Perm								0.00			c0.03	0.01
v/c Ratio	0.34	0.25			0.38			0.01			0.15	0.04
Uniform Delay, d1	28.9	4.7			9.0			20.2			20.8	20.4
Progression Factor	1.00	1.00			0.41			1.00			1.00	1.00
Incremental Delay, d2	0.8	0.0			0.2			0.0			0.1	0.0
Delay (s)	29.7	4.7			3.8			20.2			20.9	20.4
Level of Service	C	A			A			C			C	C
Approach Delay (s)		6.1			3.8			20.2			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	63.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

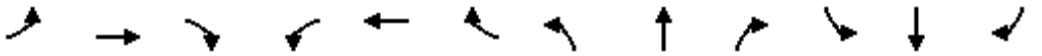
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	512	32	11	548	108	8	3	2	130	7	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	
Satd. Flow (prot)	1770	3508		1770	3452		1770	1751			1743	
Flt Permitted	0.95	1.00		0.95	1.00		0.69	1.00			0.78	
Satd. Flow (perm)	1770	3508		1770	3452		1281	1751			1409	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	22	575	36	12	616	121	9	3	2	146	8	43
RTOR Reduction (vph)	0	4	0	0	12	0	0	2	0	0	12	0
Lane Group Flow (vph)	22	607	0	12	725	0	9	3	0	0	185	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.5	26.5		10.2	33.2		12.9	12.9			12.9	
Effective Green, g (s)	3.5	26.5		10.2	33.2		12.9	12.9			12.9	
Actuated g/C Ratio	0.06	0.42		0.16	0.52		0.20	0.20			0.20	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	97	1462		284	1802		260	355			286	
v/s Ratio Prot	c0.01	0.17		0.01	c0.21			0.00				
v/s Ratio Perm							0.01				c0.13	
v/c Ratio	0.23	0.42		0.04	0.40		0.03	0.01			0.65	
Uniform Delay, d1	28.8	13.1		22.6	9.2		20.4	20.2			23.3	
Progression Factor	1.45	0.76		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	0.3		0.0	0.2		0.0	0.0			3.7	
Delay (s)	42.2	10.2		22.6	9.4		20.4	20.3			27.0	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		11.3			9.6			20.3			27.0	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	63.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



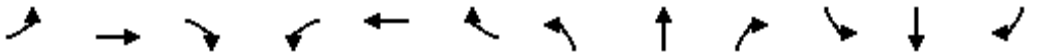
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	586	62	231	747	0	62	0	114	0	4	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3488		1770	3539			1770	1583		1726	
Flt Permitted	0.95	1.00		0.95	1.00			0.75	1.00		1.00	
Satd. Flow (perm)	1770	3488		1770	3539			1398	1583		1726	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	2	681	72	269	869	0	72	0	133	0	5	6
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	119	0	5	0
Lane Group Flow (vph)	2	744	0	269	869	0	0	72	14	0	6	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	0.7	25.9		13.6	38.8			6.3	6.3		6.3	
Effective Green, g (s)	0.7	25.9		13.6	38.8			6.3	6.3		6.3	
Actuated g/C Ratio	0.01	0.43		0.23	0.65			0.11	0.11		0.11	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	21	1511		403	2296			147	167		182	
v/s Ratio Prot	0.00	c0.21		c0.15	0.25						0.00	
v/s Ratio Perm								c0.05	0.01			
v/c Ratio	0.10	0.49		0.67	0.38			0.49	0.08		0.03	
Uniform Delay, d1	29.2	12.2		21.0	4.9			25.2	24.1		24.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	0.3		3.2	0.1			0.9	0.1		0.0	
Delay (s)	30.0	12.6		24.3	5.0			26.2	24.2		24.0	
Level of Service	C	B		C	A			C	C		C	
Approach Delay (s)		12.6			9.6			24.9			24.0	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



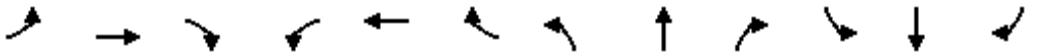
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	258	322	23	265	517	24	133	235	40	144	396	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3360	1583	1770	3539	1583	1610	3311		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3360	1583	1770	3539	1583	1610	3311		1770	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	300	374	27	308	601	28	155	273	47	167	460	374
RTOR Reduction (vph)	0	0	11	0	0	11	0	8	0	0	0	122
Lane Group Flow (vph)	219	455	16	308	601	17	139	328	0	167	460	252
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	27.8	27.8	27.8	32.9	32.9	32.9	21.5	21.5		30.7	30.7	30.7
Effective Green, g (s)	27.8	27.8	27.8	32.9	32.9	32.9	21.5	21.5		30.7	30.7	30.7
Actuated g/C Ratio	0.21	0.21	0.21	0.25	0.25	0.25	0.16	0.16		0.23	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	337	703	331	438	876	392	260	536		409	818	366
v/s Ratio Prot	c0.14	0.14		c0.17	0.17		0.09	c0.10		0.09	0.13	
v/s Ratio Perm			0.01			0.01						c0.16
v/c Ratio	0.65	0.65	0.05	0.70	0.69	0.04	0.53	0.61		0.41	0.56	0.69
Uniform Delay, d1	48.1	48.1	42.0	45.6	45.3	38.0	51.1	51.8		43.4	45.2	46.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.8	2.3	0.1	5.4	2.4	0.1	2.7	2.4		0.9	1.1	5.7
Delay (s)	52.9	50.4	42.1	51.0	47.8	38.1	53.8	54.2		44.3	46.2	52.5
Level of Service	D	D	D	D	D	D	D	D		D	D	D
Approach Delay (s)		50.8			48.5			54.1			48.2	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	49.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	132.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



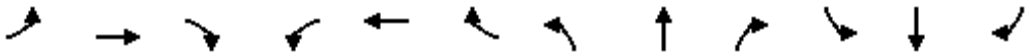
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	133	212	480	316	171	193	470	1230	554	124	873	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	145	230	522	343	186	210	511	1337	602	135	949	177
RTOR Reduction (vph)	0	0	362	0	0	124	0	0	267	0	0	129
Lane Group Flow (vph)	145	230	160	343	186	86	511	1337	335	135	949	48
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	7.9	34.4	34.4	13.6	40.1	40.1	19.7	43.4	57.0	8.6	32.3	32.3
Effective Green, g (s)	7.9	34.4	34.4	13.6	40.1	40.1	19.7	43.4	57.0	8.6	32.3	32.3
Actuated g/C Ratio	0.07	0.29	0.29	0.11	0.33	0.33	0.16	0.36	0.48	0.07	0.27	0.27
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	226	1015	799	566	623	529	564	1839	1440	246	1369	426
v/s Ratio Prot	0.04	0.06		c0.07	c0.10		c0.15	c0.26	0.03	0.04	0.19	
v/s Ratio Perm			0.06			0.05			0.09			0.03
v/c Ratio	0.64	0.23	0.20	0.61	0.30	0.16	0.91	0.73	0.23	0.55	0.69	0.11
Uniform Delay, d1	54.7	32.7	32.4	50.6	29.5	28.1	49.2	33.2	18.6	53.8	39.4	33.0
Progression Factor	1.00	1.00	1.00	0.83	0.99	1.64	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1	0.5	0.6	1.8	1.2	0.7	18.1	1.6	0.1	2.5	1.7	0.2
Delay (s)	60.8	33.2	33.0	43.8	30.5	46.8	67.3	34.7	18.7	56.3	41.1	33.2
Level of Service	E	C	C	D	C	D	E	C	B	E	D	C
Approach Delay (s)		37.5			41.3			37.6			41.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	39.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



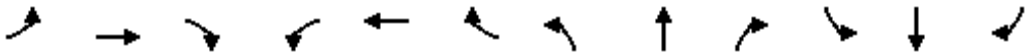
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	709	79	60	371	35	94	23	38	41	22	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5009		1770	6326		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5009		1770	6326		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	94	739	82	62	386	36	98	24	40	43	23	96
RTOR Reduction (vph)	0	7	0	0	8	0	0	0	36	0	0	89
Lane Group Flow (vph)	94	814	0	62	414	0	98	24	4	43	23	7
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	10.2	75.9		6.9	72.6		9.9	12.4	12.4	6.3	8.8	8.8
Effective Green, g (s)	10.2	75.9		6.9	72.6		9.9	12.4	12.4	6.3	8.8	8.8
Actuated g/C Ratio	0.08	0.63		0.06	0.60		0.08	0.10	0.10	0.05	0.07	0.07
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	150	3168		102	3827		146	193	164	93	137	116
v/s Ratio Prot	c0.05	c0.16		0.04	0.07		c0.06	c0.01		0.02	c0.01	
v/s Ratio Perm									0.00			0.00
v/c Ratio	0.63	0.26		0.61	0.11		0.67	0.12	0.03	0.46	0.17	0.06
Uniform Delay, d1	53.1	9.7		55.2	10.0		53.5	48.9	48.4	55.2	52.2	51.8
Progression Factor	1.19	0.57		0.89	0.68		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.2		6.8	0.1		9.2	0.3	0.1	1.3	0.7	0.3
Delay (s)	68.6	5.7		55.7	6.8		62.6	49.2	48.4	56.5	52.9	52.0
Level of Service	E	A		E	A		E	D	D	E	D	D
Approach Delay (s)		12.2			13.1			57.1			53.3	
Approach LOS		B			B			E			D	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



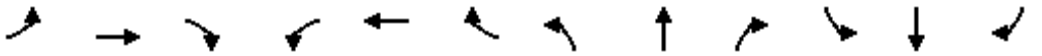
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	561	144	56	435	15	27	2	31	2	7	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4930		1770	5060		1770	1863	1583	1770	1662	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1770	4930		1770	5060		1380	1863	1583	1409	1662	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	46	567	145	57	439	15	27	2	31	2	7	18
RTOR Reduction (vph)	0	20	0	0	2	0	0	0	29	0	17	0
Lane Group Flow (vph)	46	692	0	57	452	0	27	2	2	2	8	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	6.4	93.0		6.8	93.4		6.2	6.2	6.2	6.2	6.2	
Effective Green, g (s)	6.4	93.0		6.8	93.4		6.2	6.2	6.2	6.2	6.2	
Actuated g/C Ratio	0.05	0.78		0.06	0.78		0.05	0.05	0.05	0.05	0.05	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	94	3821		100	3938		71	96	82	73	86	
v/s Ratio Prot	0.03	c0.14		c0.03	0.09			0.00			0.00	
v/s Ratio Perm							c0.02		0.00	0.00		
v/c Ratio	0.49	0.18		0.57	0.11		0.38	0.02	0.02	0.03	0.09	
Uniform Delay, d1	55.2	3.5		55.2	3.2		55.0	54.0	54.0	54.0	54.2	
Progression Factor	1.29	0.12		1.47	0.32		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	0.1		4.3	0.1		1.2	0.0	0.0	0.1	0.2	
Delay (s)	72.4	0.5		85.7	1.1		56.3	54.1	54.0	54.1	54.4	
Level of Service	E	A		F	A		E	D	D	D	D	
Approach Delay (s)		4.9			10.5			55.1			54.4	
Approach LOS		A			B			E			D	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



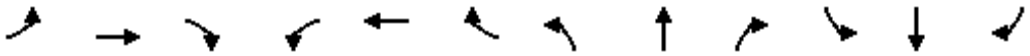
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	434	81	238	436	69	74	100	254	66	213	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4966		1770	5085	1583	1770	1863	1583	3433	1819	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4966		1770	5085	1583	1770	1863	1583	3433	1819	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	119	452	84	248	454	72	77	104	265	69	222	41
RTOR Reduction (vph)	0	18	0	0	0	36	0	0	213	0	6	0
Lane Group Flow (vph)	119	518	0	248	454	36	77	104	52	69	257	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	12.0	51.6		20.5	60.1	60.1	7.3	23.6	23.6	5.8	22.1	
Effective Green, g (s)	12.0	51.6		20.5	60.1	60.1	7.3	23.6	23.6	5.8	22.1	
Actuated g/C Ratio	0.10	0.43		0.17	0.50	0.50	0.06	0.20	0.20	0.05	0.18	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	177	2135		302	2547	793	108	366	311	166	335	
v/s Ratio Prot	0.07	c0.10		c0.14	0.09		c0.04	0.06		0.02	c0.14	
v/s Ratio Perm						0.02			0.03			
v/c Ratio	0.67	0.24		0.82	0.18	0.05	0.71	0.28	0.17	0.42	0.77	
Uniform Delay, d1	52.1	21.8		48.0	16.4	15.3	55.3	41.0	40.0	55.5	46.5	
Progression Factor	0.92	0.93		0.84	0.78	1.19	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.6	0.3		15.2	0.2	0.1	16.8	0.4	0.3	0.6	10.1	
Delay (s)	55.4	20.6		55.7	12.9	18.3	72.2	41.4	40.3	56.1	56.6	
Level of Service	E	C		E	B	B	E	D	D	E	E	
Approach Delay (s)		26.9			27.1			46.1			56.5	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	429	134	107	501	272	14	8	4	426	104	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3413		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3413		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	220	488	152	122	569	309	16	9	5	484	118	203
RTOR Reduction (vph)	0	15	0	0	0	128	0	0	5	0	0	172
Lane Group Flow (vph)	220	625	0	122	569	181	16	9	0	484	118	31
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	9.4	69.7		10.1	70.4	70.4	2.7	2.9	2.9	18.3	18.5	18.3
Effective Green, g (s)	9.4	69.7		10.1	70.4	70.4	2.7	2.9	2.9	18.3	18.5	18.3
Actuated g/C Ratio	0.08	0.58		0.08	0.59	0.59	0.02	0.02	0.02	0.15	0.15	0.15
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	269	1982		149	2983	929	40	86	38	524	287	241
v/s Ratio Prot	0.06	c0.18		c0.07	0.11		0.01	0.00		c0.14	c0.06	
v/s Ratio Perm						0.11			0.00			0.02
v/c Ratio	0.82	0.32		0.82	0.19	0.20	0.40	0.10	0.00	0.92	0.41	0.13
Uniform Delay, d1	54.5	12.9		54.0	11.5	11.6	57.9	57.3	57.1	50.2	45.8	44.0
Progression Factor	1.01	1.39		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.1	0.4		27.0	0.1	0.5	2.4	0.7	0.0	21.8	0.3	0.1
Delay (s)	71.1	18.3		81.0	11.7	12.0	60.2	58.0	57.2	71.9	46.2	44.0
Level of Service	E	B		F	B	B	E	E	E	E	D	D
Approach Delay (s)		31.8			20.3			59.1			61.1	
Approach LOS		C			C			E			E	

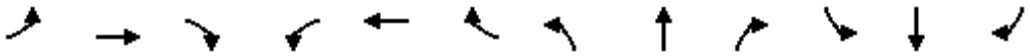
Intersection Summary			
HCM Average Control Delay	36.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	4	1	21	6	25	0	26	5	42	50	1
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	5	5	1	27	8	32	0	34	6	55	65	1

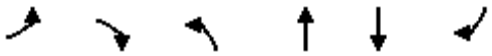
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	12	27	40	40	121
Volume Left (vph)	5	27	0	0	55
Volume Right (vph)	1	0	32	6	1
Hadj (s)	0.06	0.53	-0.53	-0.06	0.12
Departure Headway (s)	4.5	5.4	4.3	4.2	4.2
Degree Utilization, x	0.01	0.04	0.05	0.05	0.14
Capacity (veh/h)	766	637	793	837	829
Control Delay (s)	7.6	7.4	6.4	7.4	8.0
Approach Delay (s)	7.6	6.8		7.4	8.0
Approach LOS	A	A		A	A

Intersection Summary				
Delay	7.5			
HCM Level of Service	A			
Intersection Capacity Utilization	22.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	52	28	34	80	415	15	40	4	474	38	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95			1.00	0.85	1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1765			1836	1583	1770	1838		1770	1773	
Flt Permitted	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1765			1836	1583	1770	1838		1770	1773	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	15	54	29	35	83	432	16	42	4	494	40	19
RTOR Reduction (vph)	0	20	0	0	0	359	0	4	0	0	12	0
Lane Group Flow (vph)	15	63	0	0	118	73	16	42	0	494	47	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	6.4	6.4			11.1	11.1	4.1	4.1		25.7	25.7	
Effective Green, g (s)	6.4	6.4			11.1	11.1	4.1	4.1		25.7	25.7	
Actuated g/C Ratio	0.10	0.10			0.17	0.17	0.06	0.06		0.39	0.39	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	173	173			312	269	111	115		697	698	
v/s Ratio Prot	0.01	c0.04			c0.06		0.01	c0.02		c0.28	0.03	
v/s Ratio Perm						0.05						
v/c Ratio	0.09	0.37			0.38	0.27	0.14	0.37		0.71	0.07	
Uniform Delay, d1	26.8	27.5			24.0	23.6	28.9	29.4		16.7	12.3	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	1.3			0.8	0.6	0.6	2.0		3.3	0.0	
Delay (s)	27.0	28.9			24.8	24.1	29.5	31.3		20.0	12.4	
Level of Service	C	C			C	C	C	C		B	B	
Approach Delay (s)		28.6			24.3			30.9			19.2	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	65.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	19	13	57	276
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	20	14	61	294
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.96	0.96	0.96			
vC, conflicting volume	262	207	354			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	210	153	306			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	735	857	1204			

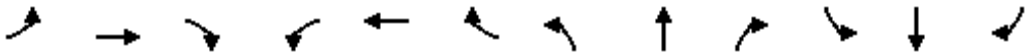
Direction, Lane #	NB 1	SB 1
Volume Total	34	354
Volume Left	20	0
Volume Right	0	294
cSH	1204	1700
Volume to Capacity	0.02	0.21
Queue Length 95th (ft)	1	0
Control Delay (s)	4.8	0.0
Lane LOS	A	
Approach Delay (s)	4.8	0.0
Approach LOS		

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	23.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	49	32	291	46	342	145	594	579	294	417	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1708	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.63	1.00	1.00	0.95	0.51	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1181	1863	1583	1681	905	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	49	54	36	323	51	380	161	660	643	327	463	49
RTOR Reduction (vph)	0	0	33	0	0	247	0	0	423	0	0	32
Lane Group Flow (vph)	49	54	3	187	187	133	161	660	220	327	463	17
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	7.8	7.8	7.8	19.2	31.5	31.5	13.1	30.7	30.7	13.5	31.1	31.1
Effective Green, g (s)	7.8	7.8	7.8	19.2	31.5	31.5	13.1	30.7	30.7	13.5	31.1	31.1
Actuated g/C Ratio	0.09	0.09	0.09	0.21	0.35	0.35	0.15	0.34	0.34	0.15	0.35	0.35
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	103	162	138	360	490	556	258	1211	542	517	1763	549
v/s Ratio Prot		0.03		c0.11	0.08		0.09	c0.19		c0.10	0.09	
v/s Ratio Perm	0.04		0.00		c0.05	0.08			0.14			0.01
v/c Ratio	0.48	0.33	0.02	0.52	0.38	0.24	0.62	0.55	0.41	0.63	0.26	0.03
Uniform Delay, d1	39.0	38.5	37.5	31.2	21.8	20.6	36.0	23.9	22.5	35.8	21.1	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.4	0.0	0.5	0.2	0.1	3.4	0.6	0.7	1.9	0.1	0.0
Delay (s)	40.3	38.9	37.5	31.7	22.0	20.7	39.3	24.5	23.2	37.6	21.2	19.4
Level of Service	D	D	D	C	C	C	D	C	C	D	C	B
Approach Delay (s)		39.0			23.7			25.6			27.5	
Approach LOS		D			C			C			C	

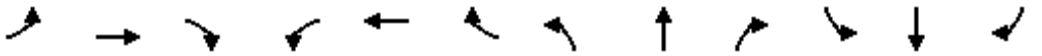
Intersection Summary			
HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



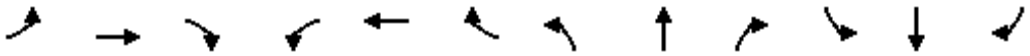
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	706	96	114	496	25	153	34	82	39	24	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3476		1770	3514		1770	1863	1583	1770	1720	
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1770	3476		1770	3514		1351	1863	1583	1369	1720	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	111	713	97	115	501	25	155	34	83	39	24	25
RTOR Reduction (vph)	0	10	0	0	3	0	0	0	66	0	20	0
Lane Group Flow (vph)	111	800	0	115	523	0	155	34	17	39	29	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	7.0	23.8		7.1	23.9		11.9	11.9	11.9	11.9	11.9	
Effective Green, g (s)	7.0	23.8		7.1	23.9		11.9	11.9	11.9	11.9	11.9	
Actuated g/C Ratio	0.12	0.42		0.12	0.42		0.21	0.21	0.21	0.21	0.21	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	218	1456		221	1479		283	390	332	287	360	
v/s Ratio Prot	0.06	c0.23		c0.06	0.15			0.02			0.02	
v/s Ratio Perm							c0.11		0.01	0.03		
v/c Ratio	0.51	0.55		0.52	0.35		0.55	0.09	0.05	0.14	0.08	
Uniform Delay, d1	23.3	12.5		23.3	11.2		20.0	18.1	17.9	18.3	18.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.5		1.0	0.2		1.2	0.0	0.0	0.1	0.0	
Delay (s)	24.0	13.0		24.3	11.4		21.2	18.1	18.0	18.3	18.1	
Level of Service	C	B		C	B		C	B	B	B	B	
Approach Delay (s)		14.3			13.7			19.8			18.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	56.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



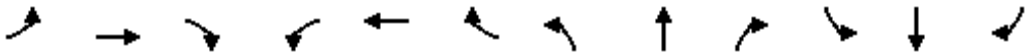
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	800	18	0	619	49	4	0	2	45	0	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.95			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	3527			3500			1722			1770	1583
Flt Permitted	0.95	1.00			1.00			0.87			0.75	1.00
Satd. Flow (perm)	1770	3527			3500			1545			1404	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	76	833	19	0	645	51	4	0	2	47	0	45
RTOR Reduction (vph)	0	1	0	0	4	0	0	2	0	0	0	38
Lane Group Flow (vph)	76	851	0	0	692	0	0	4	0	0	47	7
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	6.3	48.2			37.4			10.8			10.8	10.8
Effective Green, g (s)	6.3	48.2			37.4			10.8			10.8	10.8
Actuated g/C Ratio	0.09	0.70			0.55			0.16			0.16	0.16
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	163	2482			1911			244			221	250
v/s Ratio Prot	c0.04	c0.24			c0.20							
v/s Ratio Perm								0.00			c0.03	0.00
v/c Ratio	0.47	0.34			0.36			0.02			0.21	0.03
Uniform Delay, d1	29.5	4.0			8.8			24.4			25.1	24.4
Progression Factor	1.00	1.00			0.51			1.00			1.00	1.00
Incremental Delay, d2	0.8	0.0			0.2			0.0			0.2	0.0
Delay (s)	30.3	4.0			4.7			24.4			25.3	24.4
Level of Service	C	A			A			C			C	C
Approach Delay (s)		6.1			4.7			24.4			24.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	9.0
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	733	46	17	570	83	60	17	25	92	8	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.91			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3508		1770	3472		1770	1698			1737	
Flt Permitted	0.95	1.00		0.95	1.00		0.70	1.00			0.77	
Satd. Flow (perm)	1770	3508		1770	3472		1297	1698			1382	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	51	772	48	18	600	87	63	18	26	97	8	38
RTOR Reduction (vph)	0	4	0	0	8	0	0	22	0	0	16	0
Lane Group Flow (vph)	51	816	0	18	679	0	63	22	0	0	127	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.3	30.4		13.3	37.4		10.8	10.8			10.8	
Effective Green, g (s)	6.3	30.4		13.3	37.4		10.8	10.8			10.8	
Actuated g/C Ratio	0.09	0.44		0.19	0.55		0.16	0.16			0.16	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	163	1557		344	1896		204	268			218	
v/s Ratio Prot	c0.03	c0.23		0.01	c0.20			0.01				
v/s Ratio Perm							0.05				c0.09	
v/c Ratio	0.31	0.52		0.05	0.36		0.31	0.08			0.58	
Uniform Delay, d1	29.1	13.8		22.5	8.8		25.5	24.6			26.8	
Progression Factor	1.31	0.80		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	0.4		0.0	0.2		0.3	0.0			2.5	
Delay (s)	38.4	11.5		22.5	8.9		25.9	24.7			29.3	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		13.1			9.3			25.4			29.3	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	19.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

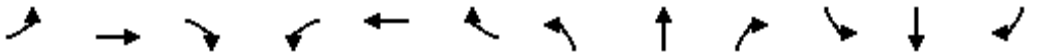


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	691	123	209	479	2	147	5	322	4	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1770	3459		1770	3537			1777	1583		1731	
Flt Permitted	0.95	1.00		0.95	1.00			0.72	1.00		0.93	
Satd. Flow (perm)	1770	3459		1770	3537			1343	1583		1631	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	735	131	222	510	2	156	5	343	4	5	7
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	280	0	6	0
Lane Group Flow (vph)	9	850	0	222	512	0	0	161	63	0	10	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	0.9	29.2		12.9	41.2			12.7	12.7		12.7	
Effective Green, g (s)	0.9	29.2		12.9	41.2			12.7	12.7		12.7	
Actuated g/C Ratio	0.01	0.42		0.19	0.60			0.18	0.18		0.18	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	23	1468		332	2118			248	292		301	
v/s Ratio Prot	0.01	c0.25		c0.13	0.14							
v/s Ratio Perm								c0.12	0.04		0.01	
v/c Ratio	0.39	0.58		0.67	0.24			0.65	0.22		0.03	
Uniform Delay, d1	33.7	15.1		26.0	6.5			26.0	23.8		23.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	4.0	0.7		3.9	0.1			4.3	0.1		0.0	
Delay (s)	37.6	15.8		29.9	6.6			30.3	24.0		23.0	
Level of Service	D	B		C	A			C	C		C	
Approach Delay (s)		16.0			13.6			26.0			23.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	68.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

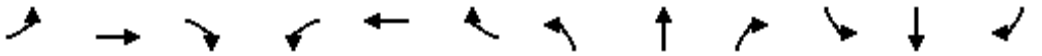
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	392	580	78	142	311	26	148	347	110	75	275	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3370	1583	1770	3539	1583	1610	3267		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3370	1583	1770	3539	1583	1610	3267		1770	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	404	598	80	146	321	27	153	358	113	77	284	249
RTOR Reduction (vph)	0	0	20	0	0	21	0	15	0	0	0	145
Lane Group Flow (vph)	323	679	60	146	321	6	138	471	0	77	284	104
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	35.5	35.5	35.5	19.1	19.1	19.1	25.8	25.8		18.6	18.6	18.6
Effective Green, g (s)	35.5	35.5	35.5	19.1	19.1	19.1	25.8	25.8		18.6	18.6	18.6
Actuated g/C Ratio	0.30	0.30	0.30	0.16	0.16	0.16	0.22	0.22		0.16	0.16	0.16
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	480	1005	472	284	568	254	349	708		277	553	247
v/s Ratio Prot	0.20	c0.20		0.08	c0.09		0.09	c0.14		0.04	c0.08	
v/s Ratio Perm			0.04			0.00						0.07
v/c Ratio	0.67	0.68	0.13	0.51	0.57	0.02	0.40	0.67		0.28	0.51	0.42
Uniform Delay, d1	36.7	36.7	30.5	45.7	46.1	42.1	39.9	42.6		44.3	46.1	45.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.0	2.0	0.2	2.1	1.6	0.1	1.0	2.6		0.7	1.1	1.6
Delay (s)	40.7	38.7	30.6	47.8	47.7	42.1	40.9	45.3		45.0	47.1	46.9
Level of Service	D	D	C	D	D	D	D	D		D	D	D
Approach Delay (s)		38.7			47.4			44.3			46.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	43.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	119.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



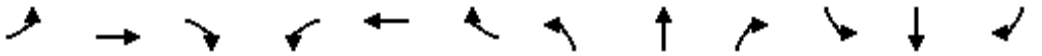
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	253	342	803	243	163	575	1030	882	198	505	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	128	281	380	892	270	181	639	1144	980	220	561	97
RTOR Reduction (vph)	0	0	320	0	0	119	0	0	200	0	0	79
Lane Group Flow (vph)	128	281	60	892	270	62	639	1144	780	220	561	18
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.6	19.0	19.0	30.6	41.0	41.0	28.0	41.4	72.0	9.0	22.4	22.4
Effective Green, g (s)	8.6	19.0	19.0	30.6	41.0	41.0	28.0	41.4	72.0	9.0	22.4	22.4
Actuated g/C Ratio	0.07	0.16	0.16	0.26	0.34	0.34	0.23	0.34	0.60	0.08	0.19	0.19
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	246	560	441	1272	637	541	801	1754	1788	257	949	295
v/s Ratio Prot	0.04	c0.08		c0.18	0.14		c0.19	c0.22	0.11	0.06	0.11	
v/s Ratio Perm			0.02			0.04			0.17			0.01
v/c Ratio	0.52	0.50	0.14	0.70	0.42	0.11	0.80	0.65	0.44	0.86	0.59	0.06
Uniform Delay, d1	53.7	46.2	43.4	40.6	30.4	27.1	43.3	33.2	13.0	54.9	44.6	40.2
Progression Factor	1.00	1.00	1.00	0.70	0.83	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	3.2	0.6	1.6	1.9	0.4	5.6	1.0	0.2	23.3	1.2	0.1
Delay (s)	55.7	49.4	44.1	29.9	27.1	26.5	48.9	34.2	13.2	78.1	45.8	40.3
Level of Service	E	D	D	C	C	C	D	C	B	E	D	D
Approach Delay (s)		47.8			28.8			30.1			53.3	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	879	151	115	815	92	232	59	79	142	60	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4974		1770	6310		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4974		1770	6310		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	255	945	162	124	876	99	249	63	85	153	65	209
RTOR Reduction (vph)	0	14	0	0	12	0	0	0	75	0	0	191
Lane Group Flow (vph)	255	1093	0	124	963	0	249	63	10	153	65	18
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	17.5	63.3		11.2	57.0		16.5	14.5	14.5	12.5	10.5	10.5
Effective Green, g (s)	17.5	63.3		11.2	57.0		16.5	14.5	14.5	12.5	10.5	10.5
Actuated g/C Ratio	0.15	0.53		0.09	0.48		0.14	0.12	0.12	0.10	0.09	0.09
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	258	2624		165	2997		243	225	191	184	163	139
v/s Ratio Prot	c0.14	c0.22		0.07	0.15		c0.14	c0.03		0.09	c0.03	
v/s Ratio Perm									0.01			0.01
v/c Ratio	0.99	0.42		0.75	0.32		1.02	0.28	0.05	0.83	0.40	0.13
Uniform Delay, d1	51.1	17.2		53.0	19.5		51.8	48.0	46.7	52.7	51.8	50.5
Progression Factor	0.78	1.39		1.02	1.04		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	48.6	0.4		15.2	0.3		64.3	0.8	0.1	25.2	1.9	0.5
Delay (s)	88.7	24.3		69.4	20.6		116.0	48.8	46.8	77.9	53.7	51.1
Level of Service	F	C		E	C		F	D	D	E	D	D
Approach Delay (s)		36.3			26.1			90.5			61.1	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM Average Control Delay	42.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

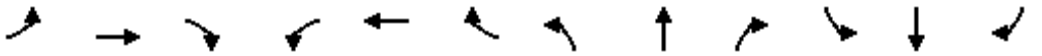


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	988	56	53	844	40	121	16	103	62	5	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5045		1770	5051		1770	1863	1583	1770	1603	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	5045		1770	5051		1324	1863	1583	1390	1603	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	129	1062	60	57	908	43	130	17	111	67	5	66
RTOR Reduction (vph)	0	4	0	0	3	0	0	0	96	0	57	0
Lane Group Flow (vph)	129	1118	0	57	948	0	130	17	15	67	14	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	10.9	83.1		6.8	79.0		16.1	16.1	16.1	16.1	16.1	
Effective Green, g (s)	10.9	83.1		6.8	79.0		16.1	16.1	16.1	16.1	16.1	
Actuated g/C Ratio	0.09	0.69		0.06	0.66		0.13	0.13	0.13	0.13	0.13	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	161	3494		100	3325		178	250	212	186	215	
v/s Ratio Prot	c0.07	c0.22		0.03	0.19			0.01			0.01	
v/s Ratio Perm							c0.10		0.01	0.05		
v/c Ratio	0.80	0.32		0.57	0.28		0.73	0.07	0.07	0.36	0.06	
Uniform Delay, d1	53.5	7.3		55.2	8.6		49.9	45.4	45.4	47.3	45.4	
Progression Factor	0.75	2.54		0.75	2.33		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	21.5	0.2		4.1	0.2		12.4	0.0	0.1	0.4	0.0	
Delay (s)	61.6	18.8		45.7	20.3		62.3	45.4	45.5	47.7	45.4	
Level of Service	E	B		D	C		E	D	D	D	D	
Approach Delay (s)		23.2			21.7			53.9			46.5	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

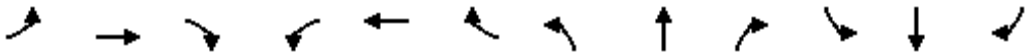
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	857	144	310	747	173	146	188	287	185	117	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4975		1770	5085	1583	1770	1863	1583	3433	1738	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4975		1770	5085	1583	1770	1863	1583	3433	1738	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	178	874	147	316	762	177	149	192	293	189	119	96
RTOR Reduction (vph)	0	16	0	0	0	96	0	0	244	0	26	0
Lane Group Flow (vph)	178	1005	0	316	762	81	149	192	49	189	189	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	15.9	45.9		24.9	54.9	54.9	12.5	19.9	19.9	10.8	18.2	
Effective Green, g (s)	15.9	45.9		24.9	54.9	54.9	12.5	19.9	19.9	10.8	18.2	
Actuated g/C Ratio	0.13	0.38		0.21	0.46	0.46	0.10	0.17	0.17	0.09	0.15	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	235	1903		367	2326	724	184	309	263	309	264	
v/s Ratio Prot	0.10	c0.20		c0.18	0.15		c0.08	0.10		0.06	c0.11	
v/s Ratio Perm						0.05			0.03			
v/c Ratio	0.76	0.53		0.86	0.33	0.11	0.81	0.62	0.18	0.61	0.71	
Uniform Delay, d1	50.2	28.7		45.9	20.8	18.6	52.6	46.5	43.1	52.6	48.4	
Progression Factor	0.70	1.34		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.3	1.0		17.7	0.4	0.3	21.3	3.9	0.3	2.5	8.9	
Delay (s)	46.5	39.4		63.6	21.1	18.9	73.9	50.4	43.4	55.1	57.3	
Level of Service	D	D		E	C	B	E	D	D	E	E	
Approach Delay (s)		40.4			31.5			52.7			56.3	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM Average Control Delay	41.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	336	776	215	201	923	325	66	28	8	296	78	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3424		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3424		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	354	817	226	212	972	342	69	29	8	312	82	235
RTOR Reduction (vph)	0	13	0	0	0	150	0	0	8	0	0	203
Lane Group Flow (vph)	354	1030	0	212	972	192	69	29	0	312	82	32
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	15.8	69.7		18.9	72.8	72.8	7.6	4.9	4.9	17.5	14.8	17.5
Effective Green, g (s)	15.8	69.7		18.9	72.8	72.8	7.6	4.9	4.9	17.5	14.8	17.5
Actuated g/C Ratio	0.12	0.54		0.15	0.56	0.56	0.06	0.04	0.04	0.13	0.11	0.13
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	417	1836		257	2848	886	103	133	60	462	212	213
v/s Ratio Prot	0.10	c0.30		c0.12	c0.19		0.04	0.01		c0.09	c0.04	
v/s Ratio Perm						0.12			0.00			0.02
v/c Ratio	0.85	0.56		0.82	0.34	0.22	0.67	0.22	0.01	0.68	0.39	0.15
Uniform Delay, d1	55.9	20.0		53.9	15.6	14.3	60.0	60.7	60.2	53.5	53.4	49.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.3	1.2		18.1	0.3	0.6	12.1	1.1	0.0	3.1	0.4	0.1
Delay (s)	70.2	21.2		72.1	15.9	14.9	72.0	61.8	60.2	56.6	53.8	49.8
Level of Service	E	C		E	B	B	E	E	E	E	D	D
Approach Delay (s)		33.6			23.5			68.4			53.7	
Approach LOS		C			C			E			D	

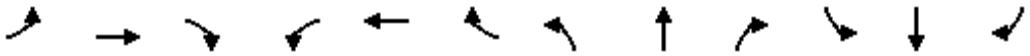
Intersection Summary			
HCM Average Control Delay	33.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	12	1	9	12	35	1	44	28	48	22	6
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	13	14	1	11	14	42	1	52	33	57	26	7

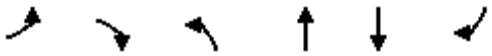
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	29	11	56	87	90
Volume Left (vph)	13	11	0	1	57
Volume Right (vph)	1	0	42	33	7
Hadj (s)	0.10	0.53	-0.49	-0.19	0.11
Departure Headway (s)	4.6	5.5	4.4	4.0	4.3
Degree Utilization, x	0.04	0.02	0.07	0.10	0.11
Capacity (veh/h)	752	629	774	863	811
Control Delay (s)	7.7	7.3	6.6	7.5	7.8
Approach Delay (s)	7.7	6.7		7.5	7.8
Approach LOS	A	A		A	A

Intersection Summary				
Delay	7.4			
HCM Level of Service	A			
Intersection Capacity Utilization	25.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	66	24	43	84	405	22	100	20	422	105	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96			1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1789			1832	1583	1770	1816		1770	1815	
Flt Permitted	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1789			1832	1583	1770	1816		1770	1815	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	46	73	26	47	92	445	24	110	22	464	115	24
RTOR Reduction (vph)	0	13	0	0	0	366	0	7	0	0	6	0
Lane Group Flow (vph)	46	86	0	0	139	79	24	125	0	464	133	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	7.1	7.1			12.5	12.5	8.4	8.4		24.0	24.0	
Effective Green, g (s)	7.1	7.1			12.5	12.5	8.4	8.4		24.0	24.0	
Actuated g/C Ratio	0.10	0.10			0.18	0.18	0.12	0.12		0.34	0.34	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	180	181			327	283	212	218		607	622	
v/s Ratio Prot	0.03	c0.05			c0.08		0.01	c0.07		c0.26	0.07	
v/s Ratio Perm						0.05						
v/c Ratio	0.26	0.47			0.43	0.28	0.11	0.57		0.76	0.21	
Uniform Delay, d1	29.0	29.7			25.6	24.9	27.5	29.1		20.5	16.3	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.9			0.9	0.5	0.2	3.6		5.7	0.2	
Delay (s)	29.8	31.6			26.4	25.4	27.7	32.7		26.2	16.5	
Level of Service	C	C			C	C	C	C		C	B	
Approach Delay (s)		31.0			25.7			31.9			23.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



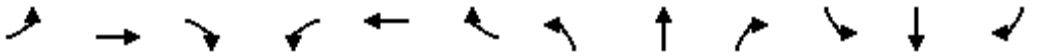
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	32	51	25	454
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	34	54	27	483
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	390	268	510			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	359	234	482			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	97			
cM capacity (veh/h)	602	784	1051			

Direction, Lane #	NB 1	SB 1
Volume Total	88	510
Volume Left	34	0
Volume Right	0	483
cSH	1051	1700
Volume to Capacity	0.03	0.30
Queue Length 95th (ft)	3	0
Control Delay (s)	3.5	0.0
Lane LOS	A	
Approach Delay (s)	3.5	0.0
Approach LOS		

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	34.5%	ICU Level of Service	A	
Analysis Period (min)	15			

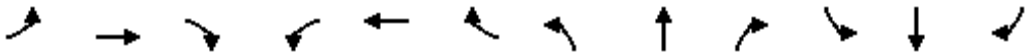
Near-Term
AM and PM Peak Hour
Synchro Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS



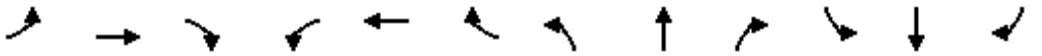
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	30	43	498	41	224	62	1094	276	350	644	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1698	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.59	1.00	1.00	0.95	0.44	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1096	1863	1583	1681	782	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	32	34	49	572	47	257	71	1257	317	402	740	33
RTOR Reduction (vph)	0	0	46	0	0	171	0	0	126	0	0	18
Lane Group Flow (vph)	32	34	3	309	310	86	71	1257	191	402	740	15
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	6.8	6.8	6.8	25.2	36.5	36.5	7.6	41.4	41.4	16.8	50.6	50.6
Effective Green, g (s)	6.8	6.8	6.8	25.2	36.5	36.5	7.6	41.4	41.4	16.8	50.6	50.6
Actuated g/C Ratio	0.06	0.06	0.06	0.23	0.34	0.34	0.07	0.38	0.38	0.15	0.47	0.47
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	69	117	99	390	475	532	124	1348	603	531	2367	737
v/s Ratio Prot		0.02		c0.18	0.15		0.04	c0.36		c0.12	0.15	
v/s Ratio Perm	0.03		0.00		c0.07	0.05			0.12			0.01
v/c Ratio	0.46	0.29	0.03	0.79	0.65	0.16	0.57	0.93	0.32	0.76	0.31	0.02
Uniform Delay, d1	49.2	48.6	47.9	39.3	30.7	25.4	49.0	32.3	23.7	44.0	18.2	15.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.5	0.0	9.9	2.5	0.1	3.9	11.9	0.4	5.4	0.1	0.0
Delay (s)	51.0	49.2	47.9	49.2	33.2	25.4	52.9	44.3	24.1	49.4	18.3	15.7
Level of Service	D	D	D	D	C	C	D	D	C	D	B	B
Approach Delay (s)		49.1			36.5			40.7			28.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	36.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	108.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	609	77	56	726	4	51	9	28	8	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3480		1770	3537		1770	1863	1583	1770	1642	
Flt Permitted	0.95	1.00		0.95	1.00		0.98	1.00	1.00	0.98	1.00	
Satd. Flow (perm)	1770	3480		1770	3537		1817	1863	1583	1817	1642	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	655	83	60	781	4	55	10	30	9	5	19
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	27	0	17	0
Lane Group Flow (vph)	32	731	0	60	785	0	55	10	3	9	7	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	2.2	26.3		3.8	27.9		4.1	4.1	4.1	4.1	4.1	
Effective Green, g (s)	2.2	26.3		3.8	27.9		4.1	4.1	4.1	4.1	4.1	
Actuated g/C Ratio	0.05	0.55		0.08	0.58		0.09	0.09	0.09	0.09	0.09	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	81	1899		140	2047		155	158	135	155	140	
v/s Ratio Prot	0.02	0.21		c0.03	c0.22			0.01			0.00	
v/s Ratio Perm							c0.03		0.00	0.00		
v/c Ratio	0.40	0.39		0.43	0.38		0.35	0.06	0.02	0.06	0.05	
Uniform Delay, d1	22.4	6.3		21.2	5.5		20.8	20.3	20.2	20.3	20.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	0.2		0.8	0.2		0.5	0.1	0.0	0.1	0.1	
Delay (s)	23.5	6.5		21.9	5.7		21.3	20.3	20.2	20.3	20.3	
Level of Service	C	A		C	A		C	C	C	C	C	
Approach Delay (s)		7.2			6.8			20.9			20.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	48.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

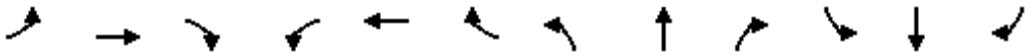


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	513	10	0	590	33	2	0	2	37	0	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.93			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3529			3511			1695			1770	1583
Flt Permitted	0.95	1.00			1.00			0.92			0.76	1.00
Satd. Flow (perm)	1770	3529			3511			1598			1407	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	34	583	11	0	670	38	2	0	2	42	0	66
RTOR Reduction (vph)	0	1	0	0	3	0	0	2	0	0	0	53
Lane Group Flow (vph)	34	593	0	0	705	0	0	2	0	0	42	13
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	3.5	41.7			33.7			13.0			13.0	13.0
Effective Green, g (s)	3.5	41.7			33.7			13.0			13.0	13.0
Actuated g/C Ratio	0.05	0.65			0.52			0.20			0.20	0.20
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	96	2292			1843			324			285	321
v/s Ratio Prot	0.02	c0.17			c0.20							
v/s Ratio Perm								0.00			c0.03	0.01
v/c Ratio	0.35	0.26			0.38			0.01			0.15	0.04
Uniform Delay, d1	29.3	4.7			9.1			20.4			21.0	20.6
Progression Factor	1.00	1.00			0.40			1.00			1.00	1.00
Incremental Delay, d2	0.8	0.0			0.2			0.0			0.1	0.0
Delay (s)	30.1	4.8			3.8			20.5			21.1	20.6
Level of Service	C	A			A			C			C	C
Approach Delay (s)		6.1			3.8			20.5			20.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

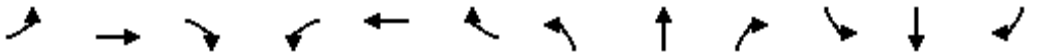
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	525	32	11	563	109	8	3	2	132	7	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	
Satd. Flow (prot)	1770	3509		1770	3453		1770	1751			1744	
Flt Permitted	0.95	1.00		0.95	1.00		0.69	1.00			0.78	
Satd. Flow (perm)	1770	3509		1770	3453		1282	1751			1408	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	24	590	36	12	633	122	9	3	2	148	8	43
RTOR Reduction (vph)	0	4	0	0	12	0	0	2	0	0	12	0
Lane Group Flow (vph)	24	622	0	12	743	0	9	3	0	0	187	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.5	26.9		10.3	33.7		13.0	13.0			13.0	
Effective Green, g (s)	3.5	26.9		10.3	33.7		13.0	13.0			13.0	
Actuated g/C Ratio	0.05	0.42		0.16	0.52		0.20	0.20			0.20	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	96	1470		284	1813		260	355			285	
v/s Ratio Prot	c0.01	0.18		0.01	c0.22			0.00				
v/s Ratio Perm							0.01				c0.13	
v/c Ratio	0.25	0.42		0.04	0.41		0.03	0.01			0.66	
Uniform Delay, d1	29.1	13.2		22.8	9.2		20.6	20.5			23.5	
Progression Factor	1.45	0.76		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.5	0.3		0.0	0.2		0.0	0.0			4.1	
Delay (s)	42.6	10.2		22.8	9.4		20.6	20.5			27.7	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		11.4			9.6			20.5			27.7	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	598	65	257	762	0	63	0	128	0	4	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3487		1770	3539			1770	1583		1726	
Flt Permitted	0.95	1.00		0.95	1.00			0.75	1.00		1.00	
Satd. Flow (perm)	1770	3487		1770	3539			1398	1583		1726	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	2	695	76	299	886	0	73	0	149	0	5	6
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	134	0	5	0
Lane Group Flow (vph)	2	762	0	299	886	0	0	73	15	0	6	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	0.8	26.6		15.0	40.8			6.4	6.4		6.4	
Effective Green, g (s)	0.8	26.6		15.0	40.8			6.4	6.4		6.4	
Actuated g/C Ratio	0.01	0.43		0.24	0.66			0.10	0.10		0.10	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	23	1496		428	2329			144	163		178	
v/s Ratio Prot	0.00	c0.22		c0.17	0.25						0.00	
v/s Ratio Perm								c0.05	0.01			
v/c Ratio	0.09	0.51		0.70	0.38			0.51	0.09		0.03	
Uniform Delay, d1	30.2	12.9		21.4	4.8			26.3	25.2		25.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.6	0.4		4.0	0.1			1.0	0.1		0.0	
Delay (s)	30.8	13.3		25.4	5.0			27.3	25.3		25.0	
Level of Service	C	B		C	A			C	C		C	
Approach Delay (s)		13.4			10.1			25.9			25.0	
Approach LOS		B			B			C			C	

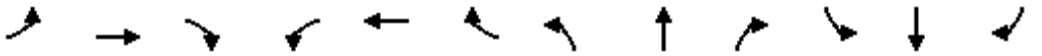
Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	62.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	274	331	25	273	536	25	134	247	45	144	416	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3359	1583	1770	3539	1583	1610	3308		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3359	1583	1770	3539	1583	1610	3308		1770	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	319	385	29	317	623	29	156	287	52	167	484	399
RTOR Reduction (vph)	0	0	11	0	0	11	0	8	0	0	0	123
Lane Group Flow (vph)	230	474	18	317	623	18	140	347	0	167	484	276
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	29.2	29.2	29.2	33.8	33.8	33.8	22.7	22.7		32.8	32.8	32.8
Effective Green, g (s)	29.2	29.2	29.2	33.8	33.8	33.8	22.7	22.7		32.8	32.8	32.8
Actuated g/C Ratio	0.21	0.21	0.21	0.24	0.24	0.24	0.16	0.16		0.24	0.24	0.24
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	339	708	334	432	864	386	264	542		419	838	375
v/s Ratio Prot	c0.14	0.14		c0.18	0.18		0.09	c0.11		0.09	0.14	
v/s Ratio Perm			0.01			0.01						c0.17
v/c Ratio	0.68	0.67	0.05	0.73	0.72	0.05	0.53	0.64		0.40	0.58	0.74
Uniform Delay, d1	50.3	50.2	43.6	48.2	48.0	40.0	53.0	54.1		44.5	46.7	48.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.8	2.7	0.1	6.8	3.2	0.1	2.6	2.9		0.9	1.2	7.8
Delay (s)	56.1	52.9	43.7	55.0	51.2	40.1	55.6	57.0		45.4	47.9	56.7
Level of Service	E	D	D	D	D	D	E	E		D	D	E
Approach Delay (s)		53.5			52.1			56.6			50.8	
Approach LOS		D			D			E			D	

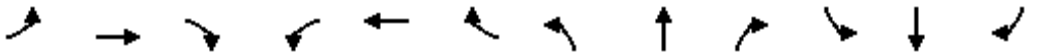
Intersection Summary			
HCM Average Control Delay	52.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	138.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



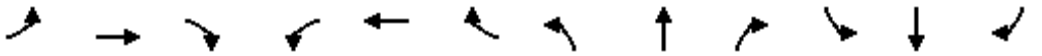
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	189	282	678	482	207	253	531	1261	864	186	891	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	205	307	737	524	225	275	577	1371	939	202	968	198
RTOR Reduction (vph)	0	0	365	0	0	120	0	0	167	0	0	144
Lane Group Flow (vph)	205	307	372	524	225	155	577	1371	772	202	968	54
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.0	32.3	32.3	15.0	39.3	39.3	20.0	43.7	58.7	9.0	32.7	32.7
Effective Green, g (s)	8.0	32.3	32.3	15.0	39.3	39.3	20.0	43.7	58.7	9.0	32.7	32.7
Actuated g/C Ratio	0.07	0.27	0.27	0.12	0.33	0.33	0.17	0.36	0.49	0.08	0.27	0.27
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	229	953	750	624	610	518	572	1852	1479	257	1386	431
v/s Ratio Prot	0.06	0.09		c0.11	0.12		c0.17	c0.27	0.07	0.06	0.19	
v/s Ratio Perm			c0.13			0.10			0.21			0.03
v/c Ratio	0.90	0.32	0.50	0.84	0.37	0.30	1.01	0.74	0.52	0.79	0.70	0.13
Uniform Delay, d1	55.6	35.1	37.0	51.3	30.9	30.1	50.0	33.2	21.0	54.6	39.2	32.9
Progression Factor	1.00	1.00	1.00	0.83	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	32.7	0.9	2.3	8.8	1.5	1.3	39.8	1.7	0.3	14.6	1.7	0.2
Delay (s)	88.3	36.0	39.3	51.3	29.3	31.3	89.8	34.9	21.4	69.1	40.9	33.1
Level of Service	F	D	D	D	C	C	F	C	C	E	D	C
Approach Delay (s)		46.5			41.1			41.5			43.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	42.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



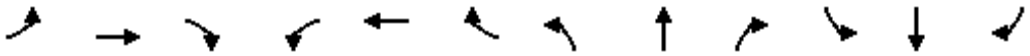
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	1063	166	60	479	46	246	31	39	87	25	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4982		1770	6323		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4982		1770	6323		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	96	1107	173	62	499	48	256	32	41	91	26	97
RTOR Reduction (vph)	0	11	0	0	9	0	0	0	38	0	0	90
Lane Group Flow (vph)	96	1269	0	62	538	0	256	32	3	91	26	7
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	10.2	74.2		6.9	70.9		11.5	8.5	8.5	11.9	8.9	8.9
Effective Green, g (s)	10.2	74.2		6.9	70.9		11.5	8.5	8.5	11.9	8.9	8.9
Actuated g/C Ratio	0.08	0.62		0.06	0.59		0.10	0.07	0.07	0.10	0.07	0.07
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	150	3081		102	3736		170	132	112	176	138	117
v/s Ratio Prot	c0.05	c0.25		0.04	0.09		c0.14	c0.02		0.05	0.01	
v/s Ratio Perm									0.00			0.00
v/c Ratio	0.64	0.41		0.61	0.14		1.51	0.24	0.03	0.52	0.19	0.06
Uniform Delay, d1	53.1	11.7		55.2	11.0		54.2	52.7	51.9	51.3	52.2	51.7
Progression Factor	1.08	0.71		0.94	0.61		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.3		6.8	0.1		255.7	1.1	0.1	1.1	0.8	0.3
Delay (s)	63.2	8.7		58.6	6.8		310.0	53.8	52.0	52.4	52.9	51.9
Level of Service	E	A		E	A		F	D	D	D	D	D
Approach Delay (s)		12.5			12.0			252.9			52.2	
Approach LOS		B			B			F			D	

Intersection Summary			
HCM Average Control Delay	47.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



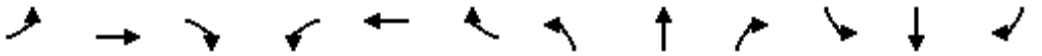
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	735	370	157	504	15	77	2	102	2	7	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	1.00		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4830		1770	5063		1770	1863	1583	1770	1662	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1770	4830		1770	5063		1380	1863	1583	1409	1662	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	46	742	374	159	509	15	78	2	103	2	7	18
RTOR Reduction (vph)	0	51	0	0	2	0	0	0	93	0	16	0
Lane Group Flow (vph)	46	1065	0	159	522	0	78	2	10	2	9	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	6.4	85.3		9.5	88.4		11.2	11.2	11.2	11.2	11.2	
Effective Green, g (s)	6.4	85.3		9.5	88.4		11.2	11.2	11.2	11.2	11.2	
Actuated g/C Ratio	0.05	0.71		0.08	0.74		0.09	0.09	0.09	0.09	0.09	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	94	3433		140	3730		129	174	148	132	155	
v/s Ratio Prot	0.03	c0.22		c0.09	c0.10			0.00			0.01	
v/s Ratio Perm							c0.06		0.01	0.00		
v/c Ratio	0.49	0.31		1.14	0.14		0.60	0.01	0.06	0.02	0.06	
Uniform Delay, d1	55.2	6.4		55.2	4.6		52.3	49.4	49.6	49.4	49.6	
Progression Factor	1.25	0.21		1.07	0.71		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	0.2		115.4	0.1		5.4	0.0	0.1	0.0	0.1	
Delay (s)	70.6	1.6		174.6	3.4		57.7	49.4	49.7	49.4	49.6	
Level of Service	E	A		F	A		E	D	D	D	D	
Approach Delay (s)		4.3			43.2			53.1			49.6	
Approach LOS		A			D			D			D	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



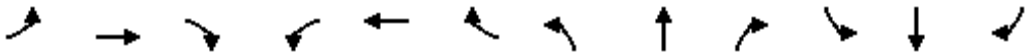
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	123	577	174	282	557	70	104	108	282	67	223	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4909		1770	5085	1583	1770	1863	1583	3433	1805	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4909		1770	5085	1583	1770	1863	1583	3433	1805	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	128	601	181	294	580	73	108	112	294	70	232	60
RTOR Reduction (vph)	0	41	0	0	0	39	0	0	226	0	8	0
Lane Group Flow (vph)	128	741	0	294	580	34	108	112	68	70	284	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	12.4	44.9		22.8	55.3	55.3	9.1	27.9	27.9	5.9	24.7	
Effective Green, g (s)	12.4	44.9		22.8	55.3	55.3	9.1	27.9	27.9	5.9	24.7	
Actuated g/C Ratio	0.10	0.37		0.19	0.46	0.46	0.08	0.23	0.23	0.05	0.21	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	183	1837		336	2343	729	134	433	368	169	372	
v/s Ratio Prot	0.07	c0.15		c0.17	0.11		c0.06	c0.06		0.02	c0.16	
v/s Ratio Perm						0.02			0.04			
v/c Ratio	0.70	0.40		0.88	0.25	0.05	0.81	0.26	0.19	0.41	0.76	
Uniform Delay, d1	52.0	27.7		47.2	19.7	17.8	54.6	37.6	36.9	55.4	44.9	
Progression Factor	0.85	1.17		0.83	0.77	1.20	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.8	0.6		20.4	0.2	0.1	27.2	0.3	0.2	0.6	9.0	
Delay (s)	53.1	32.9		59.5	15.4	21.6	81.8	37.9	37.2	56.0	53.9	
Level of Service	D	C		E	B	C	F	D	D	E	D	
Approach Delay (s)		35.8			29.6			46.7			54.3	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	207	540	182	107	641	277	14	8	4	429	104	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3405		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3405		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	235	614	207	122	728	315	16	9	5	488	118	233
RTOR Reduction (vph)	0	16	0	0	0	130	0	0	5	0	0	197
Lane Group Flow (vph)	235	805	0	122	728	185	16	9	0	488	118	36
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	9.5	69.7		10.1	70.3	70.3	2.7	2.9	2.9	18.3	18.5	18.3
Effective Green, g (s)	9.5	69.7		10.1	70.3	70.3	2.7	2.9	2.9	18.3	18.5	18.3
Actuated g/C Ratio	0.08	0.58		0.08	0.59	0.59	0.02	0.02	0.02	0.15	0.15	0.15
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	272	1978		149	2979	927	40	86	38	524	287	241
v/s Ratio Prot	0.07	c0.24		c0.07	0.14		0.01	0.00		c0.14	c0.06	
v/s Ratio Perm						0.12			0.00			0.02
v/c Ratio	0.86	0.41		0.82	0.24	0.20	0.40	0.10	0.00	0.93	0.41	0.15
Uniform Delay, d1	54.6	13.8		54.0	12.0	11.7	57.9	57.3	57.1	50.2	45.8	44.1
Progression Factor	0.86	1.58		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.8	0.6		27.0	0.2	0.5	2.4	0.7	0.0	23.2	0.3	0.1
Delay (s)	69.0	22.4		81.0	12.2	12.1	60.2	58.0	57.2	73.5	46.2	44.2
Level of Service	E	C		F	B	B	E	E	E	E	D	D
Approach Delay (s)		32.8			19.4			59.1			61.5	
Approach LOS		C			B			E			E	

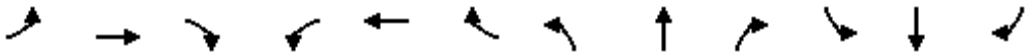
Intersection Summary			
HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	42	60	1	66	23	29	0	106	20	43	365	12
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	55	78	1	86	30	38	0	138	26	56	474	16

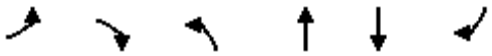
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	134	86	68	164	545
Volume Left (vph)	55	86	0	0	56
Volume Right (vph)	1	0	38	26	16
Hadj (s)	0.11	0.53	-0.36	-0.06	0.04
Departure Headway (s)	6.4	7.2	6.3	5.6	5.1
Degree Utilization, x	0.24	0.17	0.12	0.26	0.78
Capacity (veh/h)	512	456	516	580	687
Control Delay (s)	11.4	10.5	9.0	10.5	23.6
Approach Delay (s)	11.4	9.8		10.5	23.6
Approach LOS	B	A		B	C

Intersection Summary				
Delay	17.7			
HCM Level of Service	C			
Intersection Capacity Utilization	51.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	101	28	53	138	425	15	74	8	475	175	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1802			1837	1583	1770	1836		1770	1827	
Flt Permitted	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1802			1837	1583	1770	1836		1770	1827	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	38	105	29	55	144	443	16	77	8	495	182	27
RTOR Reduction (vph)	0	10	0	0	0	354	0	4	0	0	4	0
Lane Group Flow (vph)	38	124	0	0	199	89	16	81	0	495	205	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	8.6	8.6			15.0	15.0	7.1	7.1		26.0	26.0	
Effective Green, g (s)	8.6	8.6			15.0	15.0	7.1	7.1		26.0	26.0	
Actuated g/C Ratio	0.12	0.12			0.20	0.20	0.10	0.10		0.35	0.35	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	204	207			369	318	168	175		616	636	
v/s Ratio Prot	0.02	c0.07			c0.11		0.01	c0.04		c0.28	0.11	
v/s Ratio Perm						0.06						
v/c Ratio	0.19	0.60			0.54	0.28	0.10	0.47		0.80	0.32	
Uniform Delay, d1	29.9	31.4			26.8	25.3	30.9	32.0		22.0	17.9	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	4.8			1.5	0.5	0.2	2.0		7.5	0.3	
Delay (s)	30.3	36.2			28.3	25.8	31.1	34.0		29.5	18.2	
Level of Service	C	D			C	C	C	C		C	B	
Approach Delay (s)		34.9			26.5			33.5			26.2	
Approach LOS		C			C			C			C	

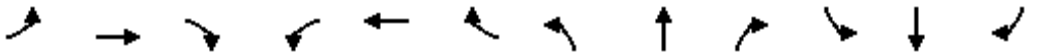
Intersection Summary			
HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	19	13	57	324
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	20	14	61	345
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.96	0.96	0.96			
vC, conflicting volume	287	233	405			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	236	179	359			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	709	828	1151			

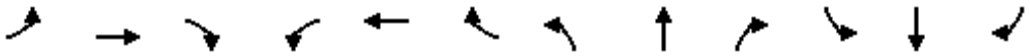
Direction, Lane #	NB 1	SB 1
Volume Total	34	405
Volume Left	20	0
Volume Right	0	345
cSH	1151	1700
Volume to Capacity	0.02	0.24
Queue Length 95th (ft)	1	0
Control Delay (s)	4.9	0.0
Lane LOS	A	
Approach Delay (s)	4.9	0.0
Approach LOS		

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	26.3%	ICU Level of Service	A	
Analysis Period (min)	15			



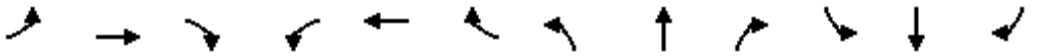
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	50	33	308	48	400	148	742	595	322	582	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1707	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.63	1.00	1.00	0.95	0.47	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1166	1863	1583	1681	835	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	49	56	37	342	53	444	164	824	661	358	647	49
RTOR Reduction (vph)	0	0	34	0	0	291	0	0	405	0	0	30
Lane Group Flow (vph)	49	56	3	195	200	153	164	824	256	358	647	19
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	7.7	7.7	7.7	20.0	32.2	32.2	13.8	35.6	35.6	14.9	36.7	36.7
Effective Green, g (s)	7.7	7.7	7.7	20.0	32.2	32.2	13.8	35.6	35.6	14.9	36.7	36.7
Actuated g/C Ratio	0.08	0.08	0.08	0.21	0.33	0.33	0.14	0.37	0.37	0.15	0.38	0.38
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	93	148	126	348	458	527	253	1303	583	529	1930	601
v/s Ratio Prot		0.03		c0.12	0.09		0.09	c0.23		c0.10	0.13	
v/s Ratio Perm	0.04		0.00		c0.06	0.10			0.16			0.01
v/c Ratio	0.53	0.38	0.02	0.56	0.44	0.29	0.65	0.63	0.44	0.68	0.34	0.03
Uniform Delay, d1	42.8	42.2	41.0	34.4	25.2	23.8	39.2	25.2	23.0	38.6	21.3	18.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	0.6	0.0	1.2	0.2	0.1	4.2	1.1	0.7	2.7	0.1	0.0
Delay (s)	45.2	42.8	41.1	35.6	25.4	23.9	43.4	26.3	23.7	41.3	21.5	18.9
Level of Service	D	D	D	D	C	C	D	C	C	D	C	B
Approach Delay (s)		43.2			27.0			27.0			28.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	96.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	730	113	121	518	26	204	35	86	40	26	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3468		1770	3514		1770	1863	1583	1770	1718	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1770	3468		1770	3514		1345	1863	1583	1368	1718	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	114	737	114	122	523	26	206	35	87	40	26	28
RTOR Reduction (vph)	0	11	0	0	4	0	0	0	66	0	21	0
Lane Group Flow (vph)	114	840	0	122	545	0	206	35	21	40	33	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	7.3	25.3		7.6	25.6		15.3	15.3	15.3	15.3	15.3	
Effective Green, g (s)	7.3	25.3		7.6	25.6		15.3	15.3	15.3	15.3	15.3	
Actuated g/C Ratio	0.12	0.41		0.12	0.41		0.25	0.25	0.25	0.25	0.25	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	208	1411		216	1446		331	458	389	337	423	
v/s Ratio Prot	0.06	c0.24		c0.07	0.16			0.02			0.02	
v/s Ratio Perm							c0.15		0.01	0.03		
v/c Ratio	0.55	0.60		0.56	0.38		0.62	0.08	0.06	0.12	0.08	
Uniform Delay, d1	25.9	14.4		25.7	12.7		20.9	18.0	17.9	18.2	18.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.6	0.8		2.0	0.2		2.6	0.0	0.0	0.1	0.0	
Delay (s)	27.5	15.2		27.8	13.0		23.5	18.0	17.9	18.3	18.1	
Level of Service	C	B		C	B		C	B	B	B	B	
Approach Delay (s)		16.7			15.7			21.4			18.1	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

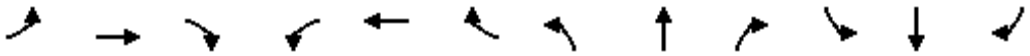


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	828	18	0	648	49	4	0	2	45	0	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.95			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	3528			3502			1722			1770	1583
Flt Permitted	0.95	1.00			1.00			0.87			0.75	1.00
Satd. Flow (perm)	1770	3528			3502			1546			1404	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	77	862	19	0	675	51	4	0	2	47	0	47
RTOR Reduction (vph)	0	1	0	0	4	0	0	2	0	0	0	40
Lane Group Flow (vph)	77	880	0	0	722	0	0	4	0	0	47	7
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	6.4	48.8			37.9			10.9			10.9	10.9
Effective Green, g (s)	6.4	48.8			37.9			10.9			10.9	10.9
Actuated g/C Ratio	0.09	0.71			0.55			0.16			0.16	0.16
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	164	2488			1918			244			221	249
v/s Ratio Prot	c0.04	c0.25			c0.21							
v/s Ratio Perm								0.00			c0.03	0.00
v/c Ratio	0.47	0.35			0.38			0.02			0.21	0.03
Uniform Delay, d1	29.8	4.0			8.9			24.6			25.4	24.7
Progression Factor	1.00	1.00			0.50			1.00			1.00	1.00
Incremental Delay, d2	0.8	0.0			0.2			0.0			0.2	0.0
Delay (s)	30.6	4.0			4.6			24.6			25.6	24.7
Level of Service	C	A			A			C			C	C
Approach Delay (s)		6.2			4.6			24.6			25.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

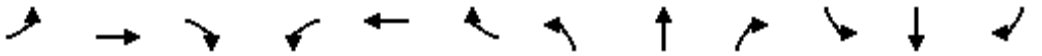
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	761	46	17	598	83	60	17	25	92	8	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.91			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3509		1770	3475		1770	1698			1736	
Flt Permitted	0.95	1.00		0.95	1.00		0.69	1.00			0.77	
Satd. Flow (perm)	1770	3509		1770	3475		1292	1698			1383	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	52	801	48	18	629	87	63	18	26	97	8	39
RTOR Reduction (vph)	0	4	0	0	8	0	0	22	0	0	17	0
Lane Group Flow (vph)	52	845	0	18	708	0	63	22	0	0	127	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.4	30.7		13.6	37.9		10.9	10.9			10.9	
Effective Green, g (s)	6.4	30.7		13.6	37.9		10.9	10.9			10.9	
Actuated g/C Ratio	0.09	0.44		0.20	0.55		0.16	0.16			0.16	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	164	1557		348	1903		204	267			218	
v/s Ratio Prot	c0.03	c0.24		0.01	c0.20			0.01				
v/s Ratio Perm							0.05				c0.09	
v/c Ratio	0.32	0.54		0.05	0.37		0.31	0.08			0.58	
Uniform Delay, d1	29.4	14.1		22.6	8.9		25.8	24.9			27.0	
Progression Factor	1.31	0.80		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	0.5		0.0	0.2		0.3	0.0			2.6	
Delay (s)	38.9	11.8		22.6	9.1		26.1	24.9			29.6	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		13.4			9.4			25.6			29.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	19.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



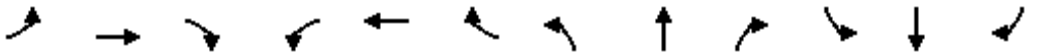
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	716	127	230	504	2	150	5	365	4	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1770	3459		1770	3537			1777	1583		1731	
Flt Permitted	0.95	1.00		0.95	1.00			0.72	1.00		0.93	
Satd. Flow (perm)	1770	3459		1770	3537			1343	1583		1631	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	762	135	245	536	2	160	5	388	4	5	7
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	317	0	6	0
Lane Group Flow (vph)	9	882	0	245	538	0	0	165	71	0	10	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	0.9	30.5		13.9	43.5			13.1	13.1		13.1	
Effective Green, g (s)	0.9	30.5		13.9	43.5			13.1	13.1		13.1	
Actuated g/C Ratio	0.01	0.43		0.19	0.61			0.18	0.18		0.18	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	22	1476		344	2152			246	290		299	
v/s Ratio Prot	0.01	c0.25		c0.14	0.15							
v/s Ratio Perm								c0.12	0.04		0.01	
v/c Ratio	0.41	0.60		0.71	0.25			0.67	0.25		0.03	
Uniform Delay, d1	35.0	15.8		26.9	6.5			27.2	25.0		24.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	4.5	0.8		5.7	0.1			5.5	0.2		0.0	
Delay (s)	39.5	16.5		32.6	6.5			32.7	25.1		24.0	
Level of Service	D	B		C	A			C	C		C	
Approach Delay (s)		16.8			14.7			27.4			24.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	71.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



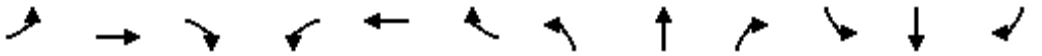
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	430	608	79	150	330	27	150	384	123	77	296	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3368	1583	1770	3539	1583	1610	3266		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3368	1583	1770	3539	1583	1610	3266		1770	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	443	627	81	155	340	28	155	396	127	79	305	276
RTOR Reduction (vph)	0	0	18	0	0	20	0	15	0	0	0	147
Lane Group Flow (vph)	346	724	63	155	340	8	139	524	0	79	305	129
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	38.8	38.8	38.8	20.3	20.3	20.3	28.9	28.9		20.9	20.9	20.9
Effective Green, g (s)	38.8	38.8	38.8	20.3	20.3	20.3	28.9	28.9		20.9	20.9	20.9
Actuated g/C Ratio	0.30	0.30	0.30	0.16	0.16	0.16	0.22	0.22		0.16	0.16	0.16
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	485	1014	476	279	557	249	361	732		287	574	257
v/s Ratio Prot	0.21	c0.21		0.09	c0.10		0.09	c0.16		0.04	c0.09	
v/s Ratio Perm			0.04			0.00						0.08
v/c Ratio	0.71	0.71	0.13	0.56	0.61	0.03	0.39	0.72		0.28	0.53	0.50
Uniform Delay, d1	40.1	40.1	32.8	50.1	50.6	46.0	42.5	46.2		47.4	49.5	49.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.3	2.6	0.2	2.9	2.3	0.1	0.9	3.6		0.7	1.2	2.1
Delay (s)	45.4	42.7	33.0	53.1	52.9	46.0	43.4	49.8		48.1	50.7	51.3
Level of Service	D	D	C	D	D	D	D	D		D	D	D
Approach Delay (s)		42.8			52.6			48.5			50.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	47.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	128.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



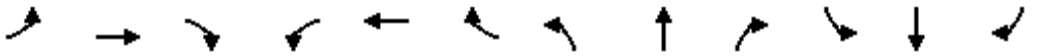
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	156	306	458	1064	345	250	753	1070	1106	271	548	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	173	340	509	1182	383	278	837	1189	1229	301	609	172
RTOR Reduction (vph)	0	0	298	0	0	128	0	0	167	0	0	137
Lane Group Flow (vph)	173	340	211	1182	383	150	837	1189	1062	301	609	35
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.9	22.8	22.8	28.7	42.6	42.6	24.2	39.5	68.2	9.0	24.3	24.3
Effective Green, g (s)	8.9	22.8	22.8	28.7	42.6	42.6	24.2	39.5	68.2	9.0	24.3	24.3
Actuated g/C Ratio	0.07	0.19	0.19	0.24	0.36	0.36	0.20	0.33	0.57	0.08	0.20	0.20
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	255	672	530	1193	661	562	692	1674	1700	257	1030	321
v/s Ratio Prot	0.05	0.10		c0.24	c0.21		c0.24	c0.23	0.15	0.09	0.12	
v/s Ratio Perm			0.08			0.09			0.23			0.02
v/c Ratio	0.68	0.51	0.40	0.99	0.58	0.27	1.21	0.71	0.62	1.17	0.59	0.11
Uniform Delay, d1	54.2	43.6	42.6	45.5	31.4	27.6	47.9	35.2	17.3	55.5	43.4	39.0
Progression Factor	1.00	1.00	1.00	0.79	0.80	0.55	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.0	2.7	2.2	20.1	2.7	0.9	107.5	1.5	0.7	110.5	1.1	0.2
Delay (s)	61.1	46.3	44.8	55.9	27.9	16.1	155.4	36.8	18.1	166.0	44.4	39.2
Level of Service	E	D	D	E	C	B	F	D	B	F	D	D
Approach Delay (s)		48.1			44.0			60.2			77.4	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM Average Control Delay	56.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



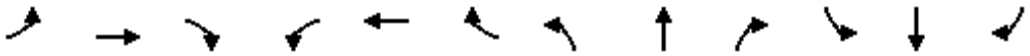
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	239	1071	306	115	1141	140	352	65	86	154	71	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4916		1770	6303		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4916		1770	6303		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	257	1152	329	124	1227	151	378	70	92	166	76	213
RTOR Reduction (vph)	0	30	0	0	13	0	0	0	81	0	0	193
Lane Group Flow (vph)	257	1451	0	124	1365	0	378	70	11	166	76	20
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	17.5	62.8		11.2	56.5		16.5	14.5	14.5	13.0	11.0	11.0
Effective Green, g (s)	17.5	62.8		11.2	56.5		16.5	14.5	14.5	13.0	11.0	11.0
Actuated g/C Ratio	0.15	0.52		0.09	0.47		0.14	0.12	0.12	0.11	0.09	0.09
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	258	2573		165	2968		243	225	191	192	171	145
v/s Ratio Prot	c0.15	c0.30		0.07	0.22		c0.21	c0.04		0.09	c0.04	
v/s Ratio Perm									0.01			0.01
v/c Ratio	1.00	0.56		0.75	0.46		1.56	0.31	0.06	0.86	0.44	0.13
Uniform Delay, d1	51.2	19.3		53.0	21.4		51.8	48.2	46.7	52.6	51.6	50.1
Progression Factor	0.89	1.30		1.39	0.92		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.3	0.7		13.5	0.4		269.3	0.9	0.2	30.0	2.2	0.5
Delay (s)	91.8	25.8		87.2	20.2		321.0	49.1	46.9	82.6	53.8	50.6
Level of Service	F	C		F	C		F	D	D	F	D	D
Approach Delay (s)		35.6			25.8			239.1			62.8	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM Average Control Delay	61.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



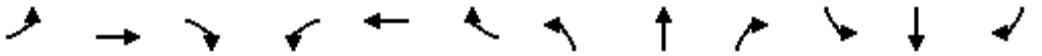
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1106	150	96	1029	40	310	16	285	62	5	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4994		1770	5057		1770	1863	1583	1770	1603	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	4994		1770	5057		1324	1863	1583	1390	1603	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	129	1189	161	103	1106	43	333	17	306	67	5	66
RTOR Reduction (vph)	0	14	0	0	3	0	0	0	151	0	51	0
Lane Group Flow (vph)	129	1336	0	103	1146	0	333	17	155	67	20	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	10.9	69.5		9.0	67.6		27.5	27.5	27.5	27.5	27.5	
Effective Green, g (s)	10.9	69.5		9.0	67.6		27.5	27.5	27.5	27.5	27.5	
Actuated g/C Ratio	0.09	0.58		0.08	0.56		0.23	0.23	0.23	0.23	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	161	2892		133	2849		303	427	363	319	367	
v/s Ratio Prot	c0.07	c0.27		0.06	0.23			0.01			0.01	
v/s Ratio Perm							c0.25		0.10	0.05		
v/c Ratio	0.80	0.46		0.77	0.40		1.10	0.04	0.43	0.21	0.05	
Uniform Delay, d1	53.5	14.5		54.5	14.8		46.2	36.0	39.5	37.5	36.1	
Progression Factor	0.79	2.07		0.88	2.01		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.9	0.5		18.4	0.3		80.9	0.0	0.3	0.1	0.0	
Delay (s)	62.3	30.4		66.3	30.1		127.1	36.0	39.8	37.6	36.1	
Level of Service	E	C		E	C		F	D	D	D	D	
Approach Delay (s)		33.2			33.0			84.0			36.8	
Approach LOS		C			C			F			D	

Intersection Summary			
HCM Average Control Delay	42.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



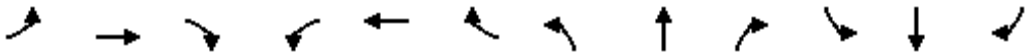
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	1094	172	341	859	177	248	206	353	190	130	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4981		1770	5085	1583	1770	1863	1583	3433	1736	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4981		1770	5085	1583	1770	1863	1583	3433	1736	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	214	1116	176	348	877	181	253	210	360	194	133	111
RTOR Reduction (vph)	0	16	0	0	0	105	0	0	292	0	27	0
Lane Group Flow (vph)	214	1276	0	348	877	76	253	210	68	194	217	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	17.7	41.4		26.5	50.2	50.2	13.5	22.7	22.7	10.9	20.1	
Effective Green, g (s)	17.7	41.4		26.5	50.2	50.2	13.5	22.7	22.7	10.9	20.1	
Actuated g/C Ratio	0.15	0.34		0.22	0.42	0.42	0.11	0.19	0.19	0.09	0.17	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	261	1718		391	2127	662	199	352	299	312	291	
v/s Ratio Prot	0.12	c0.26		c0.20	0.17		c0.14	c0.11		0.06	c0.13	
v/s Ratio Perm						0.05			0.04			
v/c Ratio	0.82	0.74		0.89	0.41	0.11	1.27	0.60	0.23	0.62	0.75	
Uniform Delay, d1	49.6	34.6		45.3	24.5	21.3	53.2	44.5	41.2	52.6	47.5	
Progression Factor	0.58	1.02		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.5	2.6		21.0	0.6	0.4	155.4	2.7	0.4	2.8	10.0	
Delay (s)	44.4	38.0		66.3	25.1	21.7	208.7	47.2	41.6	55.3	57.5	
Level of Service	D	D		E	C	C	F	D	D	E	E	
Approach Delay (s)		38.9			34.9			94.4			56.6	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM Average Control Delay	50.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	377	979	280	201	1051	335	66	28	8	307	78	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3421		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3421		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	397	1031	295	212	1106	353	69	29	8	323	82	255
RTOR Reduction (vph)	0	14	0	0	0	157	0	0	8	0	0	220
Lane Group Flow (vph)	397	1312	0	212	1106	196	69	29	0	323	82	35
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	16.3	69.4		18.9	72.0	72.0	7.6	4.9	4.9	17.8	15.1	17.8
Effective Green, g (s)	16.3	69.4		18.9	72.0	72.0	7.6	4.9	4.9	17.8	15.1	17.8
Actuated g/C Ratio	0.13	0.53		0.15	0.55	0.55	0.06	0.04	0.04	0.14	0.12	0.14
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	430	1826		257	2816	877	103	133	60	470	216	217
v/s Ratio Prot	0.12	c0.38		c0.12	c0.22		0.04	0.01		c0.09	c0.04	
v/s Ratio Perm						0.12			0.00			0.02
v/c Ratio	0.92	0.72		0.82	0.39	0.22	0.67	0.22	0.01	0.69	0.38	0.16
Uniform Delay, d1	56.2	22.9		53.9	16.5	14.8	60.0	60.7	60.2	53.4	53.1	49.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.0	2.5		18.1	0.4	0.6	12.1	1.1	0.0	3.3	0.4	0.1
Delay (s)	81.2	25.4		72.1	16.9	15.3	72.0	61.8	60.2	56.8	53.5	49.6
Level of Service	F	C		E	B	B	E	E	E	E	D	D
Approach Delay (s)		38.2			23.6			68.4			53.6	
Approach LOS		D			C			E			D	

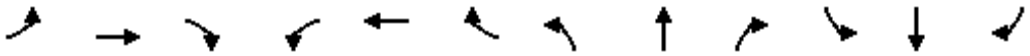
Intersection Summary			
HCM Average Control Delay	35.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	37	43	1	20	67	45	1	380	83	48	121	44
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	44	51	1	24	80	54	1	452	99	57	144	52

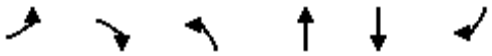
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	96	24	133	552	254
Volume Left (vph)	44	24	0	1	57
Volume Right (vph)	1	0	54	99	52
Hadj (s)	0.12	0.53	-0.25	-0.07	-0.04
Departure Headway (s)	6.6	7.4	6.6	5.1	5.5
Degree Utilization, x	0.18	0.05	0.24	0.78	0.39
Capacity (veh/h)	485	446	498	694	611
Control Delay (s)	11.1	9.5	10.4	23.4	12.0
Approach Delay (s)	11.1	10.3		23.4	12.0
Approach LOS	B	B		C	B

Intersection Summary				
Delay	17.6			
HCM Level of Service	C			
Intersection Capacity Utilization	57.8%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	136	24	53	138	425	22	246	43	425	142	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98			1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1821			1837	1583	1770	1821		1770	1786	
Flt Permitted	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1821			1837	1583	1770	1821		1770	1786	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	64	149	26	58	152	467	24	270	47	467	156	59
RTOR Reduction (vph)	0	6	0	0	0	380	0	5	0	0	11	0
Lane Group Flow (vph)	64	169	0	0	210	87	24	312	0	467	204	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	13.9	13.9			17.0	17.0	19.7	19.7		22.4	22.4	
Effective Green, g (s)	13.9	13.9			17.0	17.0	19.7	19.7		22.4	22.4	
Actuated g/C Ratio	0.15	0.15			0.19	0.19	0.22	0.22		0.25	0.25	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	270	278			343	296	383	394		436	440	
v/s Ratio Prot	0.04	c0.09			c0.11		0.01	c0.17		c0.26	0.11	
v/s Ratio Perm						0.06						
v/c Ratio	0.24	0.61			0.61	0.29	0.06	0.79		1.07	0.46	
Uniform Delay, d1	33.9	36.0			34.0	31.8	28.3	33.7		34.3	29.2	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	3.7			3.2	0.6	0.1	10.4		63.4	0.8	
Delay (s)	34.3	39.7			37.2	32.4	28.4	44.1		97.7	30.0	
Level of Service	C	D			D	C	C	D		F	C	
Approach Delay (s)		38.3			33.9			43.0			76.3	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM Average Control Delay	51.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



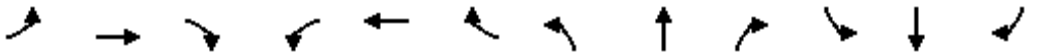
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	32	51	25	519
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	34	54	27	552
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	425	303	579			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	395	269	553			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	97			
cM capacity (veh/h)	573	749	989			

Direction, Lane #	NB 1	SB 1
Volume Total	88	579
Volume Left	34	0
Volume Right	0	552
cSH	989	1700
Volume to Capacity	0.03	0.34
Queue Length 95th (ft)	3	0
Control Delay (s)	3.6	0.0
Lane LOS	A	
Approach Delay (s)	3.6	0.0
Approach LOS		

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	36.7%	ICU Level of Service	A	
Analysis Period (min)	15			

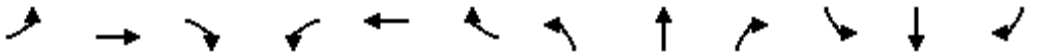
Near-Term Mitigated
AM and PM Peak Hour
Synchro Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	156	306	458	1064	345	250	753	1070	1106	271	548	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	173	340	509	1182	383	278	837	1189	1229	301	609	172
RTOR Reduction (vph)	0	0	381	0	0	170	0	0	140	0	0	137
Lane Group Flow (vph)	173	340	128	1182	383	108	837	1189	1089	301	609	35
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.9	22.8	22.8	28.4	42.3	42.3	24.2	36.0	64.4	12.8	24.6	24.6
Effective Green, g (s)	8.9	22.8	22.8	28.4	42.3	42.3	24.2	36.0	64.4	12.8	24.6	24.6
Actuated g/C Ratio	0.07	0.19	0.19	0.24	0.35	0.35	0.20	0.30	0.54	0.11	0.21	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	255	672	530	1181	657	558	692	1526	1612	366	1042	325
v/s Ratio Prot	0.05	0.10		c0.24	c0.21		c0.24	c0.23	0.16	0.09	0.12	
v/s Ratio Perm			0.05			0.07			0.23			0.02
v/c Ratio	0.68	0.51	0.24	1.00	0.58	0.19	1.21	0.78	0.68	0.82	0.58	0.11
Uniform Delay, d1	54.2	43.6	41.3	45.8	31.7	27.0	47.9	38.4	20.2	52.5	43.1	38.8
Progression Factor	1.00	1.00	1.00	0.91	0.70	0.32	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.0	2.7	1.1	23.5	3.0	0.6	107.5	2.7	1.1	13.8	1.0	0.2
Delay (s)	61.1	46.3	42.3	65.0	25.2	9.2	155.4	41.1	21.3	66.3	44.1	39.0
Level of Service	E	D	D	E	C	A	F	D	C	E	D	D
Approach Delay (s)		46.8			48.3			63.0			49.5	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	54.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

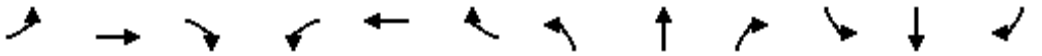


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	239	1071	306	115	1141	140	352	65	86	154	71	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4916		1770	6303		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4916		1770	6303		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	257	1152	329	124	1227	151	378	70	92	166	76	213
RTOR Reduction (vph)	0	33	0	0	14	0	0	0	76	0	0	193
Lane Group Flow (vph)	257	1448	0	124	1364	0	378	70	16	166	76	20
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	17.7	55.9		9.1	47.3		25.5	21.2	21.2	15.3	11.0	11.0
Effective Green, g (s)	17.7	55.9		9.1	47.3		25.5	21.2	21.2	15.3	11.0	11.0
Actuated g/C Ratio	0.15	0.47		0.08	0.39		0.21	0.18	0.18	0.13	0.09	0.09
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	261	2290		134	2484		376	329	280	226	171	145
v/s Ratio Prot	c0.15	c0.29		0.07	0.22		c0.21	0.04		0.09	c0.04	
v/s Ratio Perm									0.01			0.01
v/c Ratio	0.98	0.63		0.93	0.55		1.01	0.21	0.06	0.73	0.44	0.13
Uniform Delay, d1	51.0	24.3		55.1	28.1		47.2	42.3	41.1	50.4	51.6	50.1
Progression Factor	0.95	1.06		1.35	0.90		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	43.7	1.0		49.0	0.7		47.7	0.4	0.1	10.2	2.2	0.5
Delay (s)	91.9	26.9		123.2	26.0		95.0	42.6	41.2	60.5	53.8	50.6
Level of Service	F	C		F	C		F	D	D	E	D	D
Approach Delay (s)		36.5			34.0			79.0			54.8	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM Average Control Delay	43.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Near-Term Plus Project (Base FAR)
AM and PM Peak Hour
Synchro Worksheets

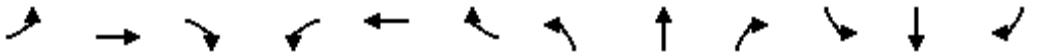
FEHR & PEERS
TRANSPORTATION CONSULTANTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	31	44	506	41	244	63	1115	283	373	689	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1697	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.58	1.00	1.00	0.95	0.44	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1080	1863	1583	1681	785	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	32	36	51	582	47	280	72	1282	325	429	792	33
RTOR Reduction (vph)	0	0	48	0	0	187	0	0	127	0	0	18
Lane Group Flow (vph)	32	36	3	314	315	93	72	1282	198	429	792	15
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	6.9	6.9	6.9	25.2	36.6	36.6	7.6	41.4	41.4	17.7	51.5	51.5
Effective Green, g (s)	6.9	6.9	6.9	25.2	36.6	36.6	7.6	41.4	41.4	17.7	51.5	51.5
Actuated g/C Ratio	0.06	0.06	0.06	0.23	0.33	0.33	0.07	0.38	0.38	0.16	0.47	0.47
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	68	117	100	386	471	528	123	1336	597	554	2387	743
v/s Ratio Prot		0.02		c0.19	0.15		0.04	c0.36		c0.12	0.16	
v/s Ratio Perm	0.03		0.00		c0.07	0.06			0.13			0.01
v/c Ratio	0.47	0.31	0.03	0.81	0.67	0.18	0.59	0.96	0.33	0.77	0.33	0.02
Uniform Delay, d1	49.6	49.1	48.3	40.0	31.4	25.9	49.5	33.3	24.3	44.1	18.3	15.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.5	0.0	11.7	2.8	0.1	4.5	15.9	0.4	6.1	0.1	0.0
Delay (s)	51.5	49.7	48.3	51.8	34.1	25.9	54.0	49.2	24.8	50.2	18.4	15.6
Level of Service	D	D	D	D	C	C	D	D	C	D	B	B
Approach Delay (s)		49.6			37.7			44.7			29.2	
Approach LOS		D			D			D			C	

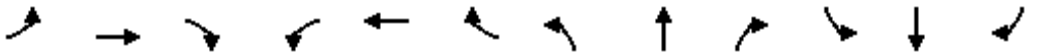
Intersection Summary			
HCM Average Control Delay	38.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



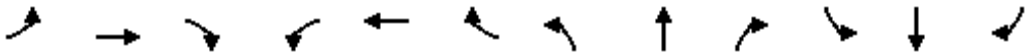
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	626	89	64	747	4	58	9	33	8	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3473		1770	3537		1770	1863	1583	1770	1642	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	3473		1770	3537		1381	1863	1583	1399	1642	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	673	96	69	803	4	62	10	35	9	5	19
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	31	0	17	0
Lane Group Flow (vph)	32	761	0	69	807	0	62	10	4	9	7	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	2.2	25.7		4.1	27.6		5.8	5.8	5.8	5.8	5.8	
Effective Green, g (s)	2.2	25.7		4.1	27.6		5.8	5.8	5.8	5.8	5.8	
Actuated g/C Ratio	0.04	0.52		0.08	0.56		0.12	0.12	0.12	0.12	0.12	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	79	1800		146	1968		161	218	185	164	192	
v/s Ratio Prot	0.02	0.22		c0.04	c0.23			0.01			0.00	
v/s Ratio Perm							c0.04		0.00	0.01		
v/c Ratio	0.41	0.42		0.47	0.41		0.39	0.05	0.02	0.05	0.04	
Uniform Delay, d1	23.1	7.4		21.7	6.3		20.3	19.4	19.4	19.5	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	0.2		0.9	0.2		0.6	0.0	0.0	0.1	0.0	
Delay (s)	24.3	7.6		22.6	6.5		20.8	19.5	19.4	19.5	19.5	
Level of Service	C	A		C	A		C	B	B	B	B	
Approach Delay (s)		8.3			7.8			20.2			19.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	49.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



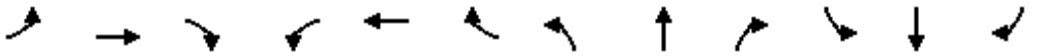
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	536	10	0	619	34	2	0	2	38	0	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.93			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3530			3511			1695			1770	1583
Flt Permitted	0.95	1.00			1.00			0.92			0.76	1.00
Satd. Flow (perm)	1770	3530			3511			1599			1407	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	34	609	11	0	703	39	2	0	2	43	0	66
RTOR Reduction (vph)	0	1	0	0	3	0	0	2	0	0	0	53
Lane Group Flow (vph)	34	619	0	0	739	0	0	2	0	0	43	13
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	3.6	43.2			35.1			13.3			13.3	13.3
Effective Green, g (s)	3.6	43.2			35.1			13.3			13.3	13.3
Actuated g/C Ratio	0.05	0.65			0.53			0.20			0.20	0.20
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	97	2311			1867			322			284	319
v/s Ratio Prot	0.02	c0.18			c0.21							
v/s Ratio Perm								0.00			c0.03	0.01
v/c Ratio	0.35	0.27			0.40			0.01			0.15	0.04
Uniform Delay, d1	30.1	4.8			9.2			21.1			21.7	21.2
Progression Factor	1.00	1.00			0.39			1.00			1.00	1.00
Incremental Delay, d2	0.8	0.0			0.2			0.0			0.1	0.0
Delay (s)	30.9	4.8			3.7			21.1			21.8	21.2
Level of Service	C	A			A			C			C	C
Approach Delay (s)		6.2			3.7			21.1			21.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



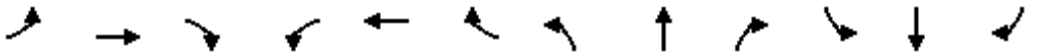
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	547	32	11	592	110	8	3	2	133	7	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	
Satd. Flow (prot)	1770	3510		1770	3456		1770	1751			1744	
Flt Permitted	0.95	1.00		0.95	1.00		0.69	1.00			0.78	
Satd. Flow (perm)	1770	3510		1770	3456		1283	1751			1408	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	24	615	36	12	665	124	9	3	2	149	8	43
RTOR Reduction (vph)	0	4	0	0	12	0	0	2	0	0	11	0
Lane Group Flow (vph)	24	647	0	12	777	0	9	3	0	0	189	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	28.1		10.6	35.1		13.3	13.3			13.3	
Effective Green, g (s)	3.6	28.1		10.6	35.1		13.3	13.3			13.3	
Actuated g/C Ratio	0.05	0.43		0.16	0.53		0.20	0.20			0.20	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	97	1494		284	1838		259	353			284	
v/s Ratio Prot	c0.01	0.18		0.01	c0.22			0.00				
v/s Ratio Perm							0.01				c0.13	
v/c Ratio	0.25	0.43		0.04	0.42		0.03	0.01			0.66	
Uniform Delay, d1	29.9	13.3		23.4	9.3		21.2	21.1			24.3	
Progression Factor	1.45	0.76		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.5	0.3		0.0	0.2		0.0	0.0			4.5	
Delay (s)	43.9	10.4		23.4	9.5		21.2	21.1			28.8	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		11.6			9.8			21.2			28.8	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	612	74	266	778	0	76	0	134	0	4	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3482		1770	3539			1770	1583		1726	
Flt Permitted	0.95	1.00		0.95	1.00			0.75	1.00		1.00	
Satd. Flow (perm)	1770	3482		1770	3539			1398	1583		1726	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	2	712	86	309	905	0	88	0	156	0	5	6
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	135	0	5	0
Lane Group Flow (vph)	2	788	0	309	905	0	0	88	21	0	6	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	0.8	27.0		15.5	41.7			8.7	8.7		8.7	
Effective Green, g (s)	0.8	27.0		15.5	41.7			8.7	8.7		8.7	
Actuated g/C Ratio	0.01	0.41		0.24	0.64			0.13	0.13		0.13	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	22	1442		421	2263			187	211		230	
v/s Ratio Prot	0.00	c0.23		c0.17	0.26						0.00	
v/s Ratio Perm								c0.06	0.01			
v/c Ratio	0.09	0.55		0.73	0.40			0.47	0.10		0.03	
Uniform Delay, d1	31.8	14.5		22.9	5.7			26.1	24.8		24.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	0.5		5.6	0.2			0.7	0.1		0.0	
Delay (s)	32.5	15.0		28.6	5.8			26.8	24.9		24.6	
Level of Service	C	B		C	A			C	C		C	
Approach Delay (s)		15.0			11.6			25.6			24.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

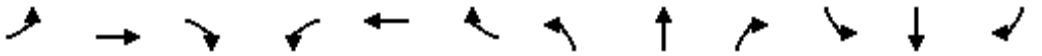


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	282	335	32	277	541	25	136	256	47	144	430	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3357	1583	1770	3539	1583	1610	3307		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3357	1583	1770	3539	1583	1610	3307		1770	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	328	390	37	322	629	29	158	298	55	167	500	412
RTOR Reduction (vph)	0	0	14	0	0	11	0	8	0	0	0	122
Lane Group Flow (vph)	233	485	23	322	629	18	142	361	0	167	500	290
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	29.8	29.8	29.8	34.3	34.3	34.3	23.5	23.5		34.3	34.3	34.3
Effective Green, g (s)	29.8	29.8	29.8	34.3	34.3	34.3	23.5	23.5		34.3	34.3	34.3
Actuated g/C Ratio	0.21	0.21	0.21	0.24	0.24	0.24	0.17	0.17		0.24	0.24	0.24
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	338	705	332	428	855	383	267	548		428	855	383
v/s Ratio Prot	c0.14	0.14		c0.18	0.18		0.09	c0.11		0.09	0.14	
v/s Ratio Perm			0.01			0.01						c0.18
v/c Ratio	0.69	0.69	0.07	0.75	0.74	0.05	0.53	0.66		0.39	0.58	0.76
Uniform Delay, d1	51.8	51.8	44.9	49.9	49.6	41.3	54.2	55.4		45.0	47.5	49.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.2	3.0	0.1	7.8	3.5	0.1	2.6	3.2		0.8	1.2	8.8
Delay (s)	58.0	54.8	45.0	57.6	53.2	41.3	56.8	58.6		45.8	48.7	58.7
Level of Service	E	D	D	E	D	D	E	E		D	D	E
Approach Delay (s)		55.3			54.3			58.1			52.1	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM Average Control Delay	54.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	141.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

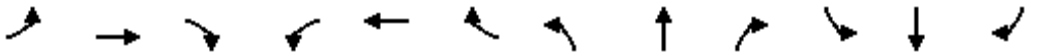
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	290	678	567	214	274	531	1276	978	212	899	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	315	737	616	233	298	577	1387	1063	230	977	198
RTOR Reduction (vph)	0	0	365	0	0	121	0	0	157	0	0	144
Lane Group Flow (vph)	207	315	372	616	233	177	577	1387	906	230	977	54
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.0	32.1	32.1	15.0	39.1	39.1	20.0	43.9	58.9	9.0	32.9	32.9
Effective Green, g (s)	8.0	32.1	32.1	15.0	39.1	39.1	20.0	43.9	58.9	9.0	32.9	32.9
Actuated g/C Ratio	0.07	0.27	0.27	0.12	0.33	0.33	0.17	0.37	0.49	0.08	0.27	0.27
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	229	947	746	624	607	516	572	1860	1484	257	1394	434
v/s Ratio Prot	0.06	0.09		c0.12	0.13		c0.17	c0.27	0.08	0.07	0.19	
v/s Ratio Perm			c0.13			0.11			0.25			0.03
v/c Ratio	0.90	0.33	0.50	0.99	0.38	0.34	1.01	0.75	0.61	0.89	0.70	0.13
Uniform Delay, d1	55.6	35.3	37.2	52.4	31.2	30.7	50.0	33.2	22.2	55.0	39.1	32.7
Progression Factor	1.00	1.00	1.00	0.97	1.02	1.16	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	34.5	0.9	2.4	30.5	1.6	1.6	39.8	1.8	0.7	30.1	1.7	0.2
Delay (s)	90.2	36.3	39.5	81.3	33.3	37.4	89.8	35.0	23.0	85.1	40.9	32.9
Level of Service	F	D	D	F	C	D	F	C	C	F	D	C
Approach Delay (s)		47.0			60.1			41.2			47.0	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM Average Control Delay	46.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	1190	175	63	567	59	256	34	44	107	27	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4988		1770	6318		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4988		1770	6318		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	108	1240	182	66	591	61	267	35	46	111	28	110
RTOR Reduction (vph)	0	10	0	0	10	0	0	0	43	0	0	102
Lane Group Flow (vph)	108	1412	0	66	642	0	267	35	3	111	28	8
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	10.6	73.9		7.0	70.3		11.5	8.6	8.6	12.0	9.1	9.1
Effective Green, g (s)	10.6	73.9		7.0	70.3		11.5	8.6	8.6	12.0	9.1	9.1
Actuated g/C Ratio	0.09	0.62		0.06	0.59		0.10	0.07	0.07	0.10	0.08	0.08
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	156	3072		103	3701		170	134	113	177	141	120
v/s Ratio Prot	c0.06	c0.28		0.04	0.10		c0.15	c0.02		0.06	0.02	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.69	0.46		0.64	0.17		1.57	0.26	0.03	0.63	0.20	0.07
Uniform Delay, d1	53.1	12.3		55.3	11.5		54.2	52.7	51.8	51.9	52.0	51.5
Progression Factor	1.05	0.76		0.93	0.61		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	0.4		9.7	0.1		283.2	1.2	0.1	4.9	0.8	0.3
Delay (s)	63.9	9.8		61.3	7.0		337.4	53.9	51.9	56.8	52.8	51.8
Level of Service	E	A		E	A		F	D	D	E	D	D
Approach Delay (s)		13.6			12.0			271.2			54.1	
Approach LOS		B			B			F			D	

Intersection Summary			
HCM Average Control Delay	48.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	817	397	164	578	37	94	2	109	19	7	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4836		1770	5040		1770	1863	1583	1770	1630	
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1770	4836		1770	5040		1359	1863	1583	1409	1630	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	78	825	401	166	584	37	95	2	110	19	7	35
RTOR Reduction (vph)	0	52	0	0	4	0	0	0	98	0	31	0
Lane Group Flow (vph)	78	1174	0	166	617	0	95	2	12	19	11	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	7.3	83.7		9.5	85.9		12.8	12.8	12.8	12.8	12.8	
Effective Green, g (s)	7.3	83.7		9.5	85.9		12.8	12.8	12.8	12.8	12.8	
Actuated g/C Ratio	0.06	0.70		0.08	0.72		0.11	0.11	0.11	0.11	0.11	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	108	3373		140	3608		145	199	169	150	174	
v/s Ratio Prot	0.04	c0.24		c0.09	0.12			0.00			0.01	
v/s Ratio Perm							c0.07		0.01	0.01		
v/c Ratio	0.72	0.35		1.19	0.17		0.66	0.01	0.07	0.13	0.06	
Uniform Delay, d1	55.4	7.3		55.2	5.5		51.5	47.9	48.2	48.5	48.2	
Progression Factor	1.25	0.28		1.13	0.64		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.6	0.3		131.0	0.1		7.9	0.0	0.1	0.1	0.1	
Delay (s)	85.9	2.3		193.4	3.6		59.3	47.9	48.3	48.7	48.3	
Level of Service	F	A		F	A		E	D	D	D	D	
Approach Delay (s)		7.3			43.6			53.4			48.4	
Approach LOS		A			D			D			D	

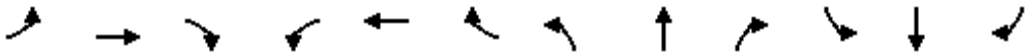
Intersection Summary			
HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	619	215	305	598	80	142	117	307	79	236	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4889		1770	5085	1583	1770	1863	1583	3433	1791	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4889		1770	5085	1583	1770	1863	1583	3433	1791	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	152	645	224	318	623	83	148	122	320	82	246	85
RTOR Reduction (vph)	0	48	0	0	0	47	0	0	241	0	11	0
Lane Group Flow (vph)	152	821	0	318	623	36	148	122	79	82	320	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	13.4	41.7		23.8	52.1	52.1	9.5	29.7	29.7	6.3	26.5	
Effective Green, g (s)	13.4	41.7		23.8	52.1	52.1	9.5	29.7	29.7	6.3	26.5	
Actuated g/C Ratio	0.11	0.35		0.20	0.43	0.43	0.08	0.25	0.25	0.05	0.22	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	198	1699		351	2208	687	140	461	392	180	396	
v/s Ratio Prot	0.09	c0.17		c0.18	0.12		c0.08	c0.07		0.02	c0.18	
v/s Ratio Perm						0.02			0.05			
v/c Ratio	0.77	0.48		0.91	0.28	0.05	1.06	0.26	0.20	0.46	0.81	
Uniform Delay, d1	51.8	30.7		47.0	21.9	19.7	55.2	36.4	35.8	55.2	44.3	
Progression Factor	0.83	1.22		0.83	0.81	1.43	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.3	1.0		24.6	0.3	0.1	92.1	0.3	0.3	0.7	11.5	
Delay (s)	57.3	38.5		63.5	18.1	28.3	147.4	36.7	36.0	55.9	55.8	
Level of Service	E	D		E	B	C	F	D	D	E	E	
Approach Delay (s)		41.3			33.0			64.1			55.8	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	222	578	207	107	696	281	14	8	4	432	108	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3399		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3399		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	252	657	235	122	791	319	16	9	5	491	123	255
RTOR Reduction (vph)	0	18	0	0	0	132	0	0	5	0	0	216
Lane Group Flow (vph)	252	874	0	122	791	187	16	9	0	491	123	39
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	9.5	69.6		10.1	70.2	70.2	2.7	2.9	2.9	18.4	18.6	18.4
Effective Green, g (s)	9.5	69.6		10.1	70.2	70.2	2.7	2.9	2.9	18.4	18.6	18.4
Actuated g/C Ratio	0.08	0.58		0.08	0.59	0.59	0.02	0.02	0.02	0.15	0.16	0.15
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	272	1971		149	2975	926	40	86	38	526	289	243
v/s Ratio Prot	c0.07	c0.26		0.07	0.16		0.01	0.00		c0.14	c0.07	
v/s Ratio Perm						0.12			0.00			0.02
v/c Ratio	0.93	0.44		0.82	0.27	0.20	0.40	0.10	0.00	0.93	0.43	0.16
Uniform Delay, d1	54.9	14.2		54.0	12.2	11.7	57.9	57.3	57.1	50.2	45.9	44.1
Progression Factor	0.81	1.45		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	32.8	0.7		27.0	0.2	0.5	2.4	0.7	0.0	23.5	0.4	0.1
Delay (s)	77.3	21.3		81.0	12.5	12.2	60.2	58.0	57.2	73.7	46.2	44.2
Level of Service	E	C		F	B	B	E	E	E	E	D	D
Approach Delay (s)		33.7			19.2			59.1			61.2	
Approach LOS		C			B			E			E	

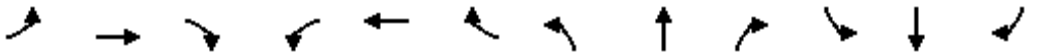
Intersection Summary			
HCM Average Control Delay	35.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	46	63	1	66	26	30	0	113	21	46	374	16
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	60	82	1	86	34	39	0	147	27	60	486	21

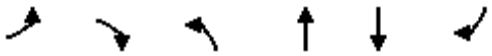
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	143	86	73	174	566
Volume Left (vph)	60	86	0	0	60
Volume Right (vph)	1	0	39	27	21
Hadj (s)	0.11	0.53	-0.34	-0.06	0.03
Departure Headway (s)	6.5	7.4	6.5	5.7	5.2
Degree Utilization, x	0.26	0.18	0.13	0.28	0.82
Capacity (veh/h)	506	450	510	567	566
Control Delay (s)	11.8	10.7	9.2	10.9	27.4
Approach Delay (s)	11.8	10.1		10.9	27.4
Approach LOS	B	B		B	D

Intersection Summary				
Delay	19.9			
HCM Level of Service	C			
Intersection Capacity Utilization	53.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	106	28	57	146	449	15	102	12	491	205	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1804			1837	1583	1770	1834		1770	1827	
Flt Permitted	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1804			1837	1583	1770	1834		1770	1827	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	110	29	59	152	468	16	106	12	511	214	31
RTOR Reduction (vph)	0	9	0	0	0	374	0	4	0	0	4	0
Lane Group Flow (vph)	42	130	0	0	211	94	16	114	0	511	241	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	11.2	11.2			15.7	15.7	8.6	8.6		25.0	25.0	
Effective Green, g (s)	11.2	11.2			15.7	15.7	8.6	8.6		25.0	25.0	
Actuated g/C Ratio	0.14	0.14			0.20	0.20	0.11	0.11		0.32	0.32	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	257			367	317	194	201		564	582	
v/s Ratio Prot	0.02	c0.07			c0.11		0.01	c0.06		c0.29	0.13	
v/s Ratio Perm						0.06						
v/c Ratio	0.17	0.50			0.57	0.30	0.08	0.56		0.91	0.41	
Uniform Delay, d1	29.5	31.1			28.4	26.7	31.4	33.2		25.6	21.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.6			2.2	0.5	0.2	3.6		18.1	0.5	
Delay (s)	29.9	32.6			30.6	27.2	31.6	36.8		43.7	21.5	
Level of Service	C	C			C	C	C	D		D	C	
Approach Delay (s)		32.0			28.3			36.2			36.5	
Approach LOS		C			C			D			D	

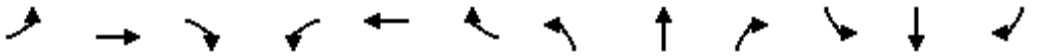
Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	19	13	57	354
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	20	14	61	377
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.96	0.96	0.96			
vC, conflicting volume	303	249	437			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	248	191	388			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	695	813	1119			

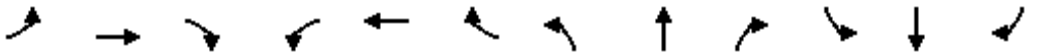
Direction, Lane #	NB 1	SB 1
Volume Total	34	437
Volume Left	20	0
Volume Right	0	377
cSH	1119	1700
Volume to Capacity	0.02	0.26
Queue Length 95th (ft)	1	0
Control Delay (s)	5.0	0.0
Lane LOS	A	
Approach Delay (s)	5.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		



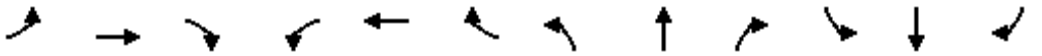
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	54	36	315	52	457	152	824	618	387	651	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1708	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.62	1.00	1.00	0.95	0.47	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1161	1863	1583	1681	837	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	49	60	40	350	58	508	169	916	687	430	723	49
RTOR Reduction (vph)	0	0	37	0	0	291	0	0	382	0	0	30
Lane Group Flow (vph)	49	60	3	203	205	217	169	916	305	430	723	19
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	7.7	7.7	7.7	20.7	32.9	32.9	14.4	37.4	37.4	17.5	40.5	40.5
Effective Green, g (s)	7.7	7.7	7.7	20.7	32.9	32.9	14.4	37.4	37.4	17.5	40.5	40.5
Actuated g/C Ratio	0.08	0.08	0.08	0.20	0.32	0.32	0.14	0.37	0.37	0.17	0.40	0.40
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	88	141	120	342	448	512	250	1300	582	590	2023	630
v/s Ratio Prot		0.03		c0.12	0.09		0.10	c0.26		c0.13	c0.14	
v/s Ratio Perm	0.04		0.00		c0.05	0.14			0.19			0.01
v/c Ratio	0.56	0.43	0.03	0.59	0.46	0.42	0.68	0.70	0.52	0.73	0.36	0.03
Uniform Delay, d1	45.4	44.9	43.6	36.7	27.4	27.0	41.5	27.5	25.2	39.9	21.5	18.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.3	0.8	0.0	1.8	0.3	0.2	5.6	1.9	1.1	3.8	0.1	0.0
Delay (s)	49.7	45.7	43.6	38.6	27.6	27.2	47.1	29.4	26.3	43.7	21.7	18.7
Level of Service	D	D	D	D	C	C	D	C	C	D	C	B
Approach Delay (s)		46.4			29.8			29.9			29.4	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	101.8	Sum of lost time (s)	19.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



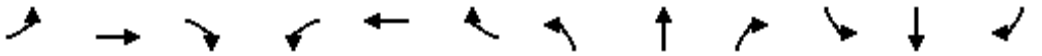
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	785	146	149	558	26	232	35	114	40	26	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3456		1770	3516		1770	1863	1583	1770	1718	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1770	3456		1770	3516		1345	1863	1583	1368	1718	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	1	793	147	151	564	26	234	35	115	40	26	28
RTOR Reduction (vph)	0	14	0	0	2	0	0	0	88	0	22	0
Lane Group Flow (vph)	1	926	0	151	588	0	234	35	27	40	32	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	0.8	32.0		11.0	42.2		17.1	17.1	17.1	17.1	17.1	
Effective Green, g (s)	0.8	32.0		11.0	42.2		17.1	17.1	17.1	17.1	17.1	
Actuated g/C Ratio	0.01	0.43		0.15	0.57		0.23	0.23	0.23	0.23	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	19	1492		263	2002		310	430	365	316	396	
v/s Ratio Prot	0.00	c0.27		c0.09	0.17			0.02			0.02	
v/s Ratio Perm							c0.17		0.02	0.03		
v/c Ratio	0.05	0.62		0.57	0.29		0.75	0.08	0.07	0.13	0.08	
Uniform Delay, d1	36.3	16.3		29.4	8.2		26.5	22.3	22.3	22.6	22.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.9		1.9	0.1		8.9	0.0	0.0	0.1	0.0	
Delay (s)	36.7	17.3		31.3	8.4		35.5	22.4	22.3	22.6	22.4	
Level of Service	D	B		C	A		D	C	C	C	C	
Approach Delay (s)		17.3			13.0			30.3			22.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	74.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



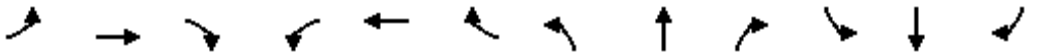
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	911	18	0	916	49	4	0	2	45	0	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.95			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	3529			3512			1722			1770	1583
Flt Permitted	0.95	1.00			1.00			0.87			0.75	1.00
Satd. Flow (perm)	1770	3529			3512			1547			1404	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	77	949	19	0	954	51	4	0	2	47	0	47
RTOR Reduction (vph)	0	1	0	0	3	0	0	2	0	0	0	40
Lane Group Flow (vph)	77	967	0	0	1002	0	0	4	0	0	47	7
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	6.5	51.2			40.2			11.0			11.0	11.0
Effective Green, g (s)	6.5	51.2			40.2			11.0			11.0	11.0
Actuated g/C Ratio	0.09	0.71			0.56			0.15			0.15	0.15
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	160	2520			1969			237			215	243
v/s Ratio Prot	0.04	c0.27			c0.29							
v/s Ratio Perm								0.00			c0.03	0.00
v/c Ratio	0.48	0.38			0.51			0.02			0.22	0.03
Uniform Delay, d1	31.0	4.0			9.7			25.8			26.6	25.8
Progression Factor	1.00	1.00			0.54			1.00			1.00	1.00
Incremental Delay, d2	0.8	0.0			0.3			0.0			0.2	0.0
Delay (s)	31.8	4.1			5.5			25.8			26.8	25.8
Level of Service	C	A			A			C			C	C
Approach Delay (s)		6.1			5.5			25.8			26.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	844	46	17	666	83	60	17	25	92	8	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.91			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3512		1770	3481		1770	1698			1736	
Flt Permitted	0.95	1.00		0.95	1.00		0.69	1.00			0.77	
Satd. Flow (perm)	1770	3512		1770	3481		1287	1698			1383	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	52	888	48	18	701	87	63	18	26	97	8	39
RTOR Reduction (vph)	0	3	0	0	7	0	0	22	0	0	17	0
Lane Group Flow (vph)	52	933	0	18	781	0	63	22	0	0	127	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.5	31.5		15.2	40.2		11.0	11.0			11.0	
Effective Green, g (s)	6.5	31.5		15.2	40.2		11.0	11.0			11.0	
Actuated g/C Ratio	0.09	0.44		0.21	0.56		0.15	0.15			0.15	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	160	1543		375	1952		197	261			212	
v/s Ratio Prot	c0.03	c0.27		0.01	c0.22			0.01				
v/s Ratio Perm							0.05				c0.09	
v/c Ratio	0.33	0.60		0.05	0.40		0.32	0.08			0.60	
Uniform Delay, d1	30.5	15.3		22.5	8.9		27.0	26.0			28.3	
Progression Factor	1.33	0.81		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	0.7		0.0	0.2		0.3	0.1			3.0	
Delay (s)	40.9	13.2		22.5	9.1		27.4	26.1			31.3	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		14.7			9.4			26.8			31.3	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	19.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

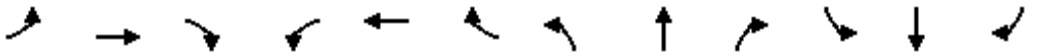


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	775	151	266	542	2	180	5	397	4	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1770	3452		1770	3537			1776	1583		1731	
Flt Permitted	0.95	1.00		0.95	1.00			0.72	1.00		0.93	
Satd. Flow (perm)	1770	3452		1770	3537			1341	1583		1632	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	824	161	283	577	2	191	5	422	4	5	7
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	340	0	6	0
Lane Group Flow (vph)	9	968	0	283	579	0	0	196	82	0	10	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	1.0	32.8		15.7	47.5			15.0	15.0		15.0	
Effective Green, g (s)	1.0	32.8		15.7	47.5			15.0	15.0		15.0	
Actuated g/C Ratio	0.01	0.42		0.20	0.61			0.19	0.19		0.19	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	23	1461		359	2168			260	306		316	
v/s Ratio Prot	0.01	c0.28		c0.16	0.16							
v/s Ratio Perm								c0.15	0.05		0.01	
v/c Ratio	0.39	0.66		0.79	0.27			0.75	0.27		0.03	
Uniform Delay, d1	37.9	17.9		29.3	6.9			29.5	26.6		25.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	4.0	1.3		10.1	0.1			10.5	0.2		0.0	
Delay (s)	41.9	19.2		39.4	7.0			40.0	26.7		25.4	
Level of Service	D	B		D	A			D	C		C	
Approach Delay (s)		19.4			17.7			30.9			25.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	77.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

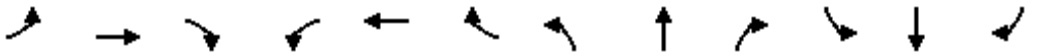
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	475	626	92	162	347	27	157	441	135	77	349	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3363	1583	1770	3539	1583	1610	3270		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3363	1583	1770	3539	1583	1610	3270		1770	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	490	645	95	167	358	28	162	455	139	79	360	320
RTOR Reduction (vph)	0	0	21	0	0	19	0	14	0	0	0	143
Lane Group Flow (vph)	367	768	74	167	358	9	146	596	0	79	360	177
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	40.8	40.8	40.8	22.2	22.2	22.2	32.9	32.9		25.2	25.2	25.2
Effective Green, g (s)	40.8	40.8	40.8	22.2	22.2	22.2	32.9	32.9		25.2	25.2	25.2
Actuated g/C Ratio	0.29	0.29	0.29	0.16	0.16	0.16	0.23	0.23		0.18	0.18	0.18
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	466	972	458	278	557	249	375	762		316	632	283
v/s Ratio Prot	0.23	c0.23		0.09	c0.10		0.09	c0.18		0.04	0.10	
v/s Ratio Perm			0.05			0.01						c0.11
v/c Ratio	0.79	0.79	0.16	0.60	0.64	0.03	0.39	0.78		0.25	0.57	0.63
Uniform Delay, d1	46.2	46.2	37.4	55.3	55.7	50.4	45.6	50.7		49.8	53.0	53.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.1	4.7	0.2	4.2	2.8	0.1	0.9	5.6		0.6	1.4	4.8
Delay (s)	55.2	50.9	37.6	59.5	58.6	50.4	46.5	56.3		50.4	54.4	58.4
Level of Service	E	D	D	E	E	D	D	E		D	D	E
Approach Delay (s)		51.2			58.4			54.4			55.7	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM Average Control Delay	54.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	141.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



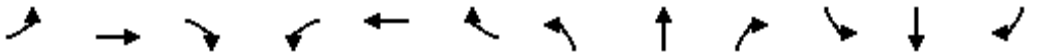
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	342	458	1332	386	329	753	1115	1431	344	555	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	380	509	1480	429	366	837	1239	1590	382	617	173
RTOR Reduction (vph)	0	0	287	0	0	124	0	0	147	0	0	137
Lane Group Flow (vph)	178	380	222	1480	429	242	837	1239	1443	382	617	36
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.9	25.6	25.6	28.1	44.8	44.8	21.4	37.3	65.4	9.0	24.9	24.9
Effective Green, g (s)	8.9	25.6	25.6	28.1	44.8	44.8	21.4	37.3	65.4	9.0	24.9	24.9
Actuated g/C Ratio	0.07	0.21	0.21	0.23	0.37	0.37	0.18	0.31	0.55	0.08	0.21	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	255	755	595	1168	696	591	612	1581	1635	257	1055	328
v/s Ratio Prot	0.05	0.11		c0.30	c0.23		c0.24	0.24	c0.21	0.11	0.12	
v/s Ratio Perm			0.08			0.15			0.31			0.02
v/c Ratio	0.70	0.50	0.37	1.27	0.62	0.41	1.37	0.78	0.88	1.49	0.58	0.11
Uniform Delay, d1	54.2	41.6	40.3	46.0	30.6	27.8	49.3	37.7	23.9	55.5	42.9	38.6
Progression Factor	1.00	1.00	1.00	0.94	0.61	0.38	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	2.4	1.8	124.6	2.6	1.3	175.7	2.8	6.0	238.5	1.0	0.2
Delay (s)	62.3	44.0	42.1	167.9	21.2	11.9	225.0	40.4	29.9	294.0	43.9	38.8
Level of Service	E	D	D	F	C	B	F	D	C	F	D	D
Approach Delay (s)		46.2			115.1			78.0			124.6	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM Average Control Delay	90.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



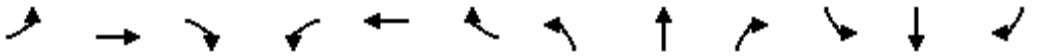
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	274	1440	336	124	1448	180	374	73	99	239	78	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4941		1770	6301		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4941		1770	6301		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	295	1548	361	133	1557	194	402	78	106	257	84	277
RTOR Reduction (vph)	0	23	0	0	14	0	0	0	92	0	0	218
Lane Group Flow (vph)	295	1886	0	133	1737	0	402	78	14	257	84	59
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	17.5	61.0		11.5	55.0		16.5	15.5	15.5	13.5	12.5	12.5
Effective Green, g (s)	17.5	61.0		11.5	55.0		16.5	15.5	15.5	13.5	12.5	12.5
Actuated g/C Ratio	0.15	0.51		0.10	0.46		0.14	0.13	0.13	0.11	0.10	0.10
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	258	2512		170	2888		243	241	204	199	194	165
v/s Ratio Prot	c0.17	c0.38		0.08	0.28		c0.23	c0.04		0.15	c0.05	
v/s Ratio Perm									0.01			0.04
v/c Ratio	1.14	0.75		0.78	0.60		1.65	0.32	0.07	1.29	0.43	0.36
Uniform Delay, d1	51.2	23.5		53.0	24.3		51.8	47.5	45.9	53.2	50.4	50.0
Progression Factor	0.99	1.08		0.98	1.11		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	82.3	0.9		13.2	0.6		312.1	0.9	0.2	163.3	1.8	1.6
Delay (s)	133.0	26.2		65.4	27.6		363.9	48.4	46.1	216.6	52.3	51.6
Level of Service	F	C		E	C		F	D	D	F	D	D
Approach Delay (s)		40.5			30.3			264.4			120.3	
Approach LOS		D			C			F			F	

Intersection Summary			
HCM Average Control Delay	71.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



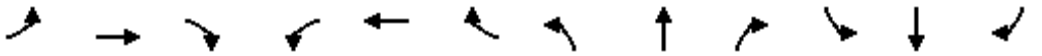
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	207	1377	227	120	1243	104	373	16	315	153	5	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4977		1770	5026		1770	1863	1583	1770	1593	
Flt Permitted	0.95	1.00		0.95	1.00		0.57	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	4977		1770	5026		1065	1863	1583	1390	1593	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	223	1481	244	129	1337	112	401	17	339	165	5	143
RTOR Reduction (vph)	0	19	0	0	8	0	0	0	127	0	110	0
Lane Group Flow (vph)	223	1706	0	129	1441	0	401	17	212	165	38	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Effective Green, g (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Actuated g/C Ratio	0.10	0.58		0.08	0.56		0.23	0.23	0.23	0.23	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	170	2862		140	2806		244	427	363	319	365	
v/s Ratio Prot	c0.13	c0.34		0.07	0.29			0.01			0.02	
v/s Ratio Perm							c0.38		0.13	0.12		
v/c Ratio	1.31	0.60		0.92	0.51		1.64	0.04	0.58	0.52	0.10	
Uniform Delay, d1	54.2	16.5		54.9	16.4		46.2	36.0	41.2	40.4	36.5	
Progression Factor	0.83	1.45		0.81	1.34		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	163.4	0.6		31.4	0.3		307.3	0.0	1.5	0.6	0.0	
Delay (s)	208.4	24.4		75.9	22.4		353.6	36.0	42.7	41.0	36.6	
Level of Service	F	C		E	C		F	D	D	D	D	
Approach Delay (s)		45.5			26.7			207.2			38.9	
Approach LOS		D			C			F			D	

Intersection Summary			
HCM Average Control Delay	65.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



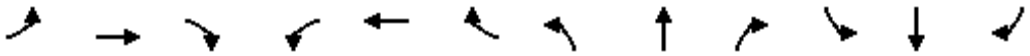
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	288	1271	310	419	991	207	359	237	454	229	169	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4936		1770	5085	1583	1770	1863	1583	3433	1723	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4936		1770	5085	1583	1770	1863	1583	3433	1723	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	294	1297	316	428	1011	211	366	242	463	234	172	171
RTOR Reduction (vph)	0	33	0	0	0	136	0	0	316	0	31	0
Lane Group Flow (vph)	294	1580	0	428	1011	75	366	242	147	234	312	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	20.5	33.5		29.5	42.5	42.5	13.5	26.6	26.6	11.9	25.0	
Effective Green, g (s)	20.5	33.5		29.5	42.5	42.5	13.5	26.6	26.6	11.9	25.0	
Actuated g/C Ratio	0.17	0.28		0.25	0.35	0.35	0.11	0.22	0.22	0.10	0.21	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	302	1378		435	1801	561	199	413	351	340	359	
v/s Ratio Prot	0.17	c0.32		c0.24	0.20		c0.21	0.13		0.07	c0.18	
v/s Ratio Perm						0.05			0.09			
v/c Ratio	0.97	1.15		0.98	0.56	0.13	1.84	0.59	0.42	0.69	0.87	
Uniform Delay, d1	49.5	43.2		45.0	31.2	26.3	53.2	41.8	40.1	52.3	45.9	
Progression Factor	0.88	0.88		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	38.8	73.2		38.6	1.3	0.5	396.5	2.1	0.8	4.6	19.5	
Delay (s)	82.4	111.4		83.6	32.5	26.8	449.8	43.9	40.9	56.8	65.4	
Level of Service	F	F		F	C	C	F	D	D	E	E	
Approach Delay (s)		106.9			45.0			181.3			61.9	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM Average Control Delay	97.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	453	1152	348	201	1216	347	66	28	8	319	83	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3416		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3416		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	477	1213	366	212	1280	365	69	29	8	336	87	333
RTOR Reduction (vph)	0	16	0	0	0	165	0	0	8	0	0	286
Lane Group Flow (vph)	477	1563	0	212	1280	200	69	29	0	336	87	47
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	16.5	68.9		18.9	71.3	71.3	7.6	4.9	4.9	18.3	15.6	18.3
Effective Green, g (s)	16.5	68.9		18.9	71.3	71.3	7.6	4.9	4.9	18.3	15.6	18.3
Actuated g/C Ratio	0.13	0.53		0.15	0.55	0.55	0.06	0.04	0.04	0.14	0.12	0.14
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	436	1810		257	2789	868	103	133	60	483	224	223
v/s Ratio Prot	c0.14	c0.46		0.12	0.25		0.04	0.01		c0.10	c0.05	
v/s Ratio Perm						0.13			0.00			0.03
v/c Ratio	1.09	0.86		0.82	0.46	0.23	0.67	0.22	0.01	0.70	0.39	0.21
Uniform Delay, d1	56.8	26.5		53.9	17.7	15.2	60.0	60.7	60.2	53.2	52.8	49.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	71.0	5.8		18.1	0.5	0.6	12.1	1.1	0.0	3.5	0.4	0.2
Delay (s)	127.7	32.2		72.1	18.3	15.8	72.0	61.8	60.2	56.7	53.2	49.6
Level of Service	F	C		E	B	B	E	E	E	E	D	D
Approach Delay (s)		54.4			23.9			68.4			53.2	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM Average Control Delay	42.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



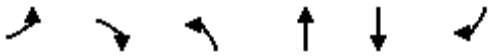
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	52	54	2	20	75	52	2	400	83	56	147	59
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	62	64	2	24	89	62	2	476	99	67	175	70

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	129	24	151	577	312
Volume Left (vph)	62	24	0	2	67
Volume Right (vph)	2	0	62	99	70
Hadj (s)	0.12	0.53	-0.25	-0.07	-0.06
Departure Headway (s)	7.2	7.9	7.1	5.5	5.9
Degree Utilization, x	0.26	0.05	0.30	0.88	0.51
Capacity (veh/h)	466	428	478	647	564
Control Delay (s)	12.6	10.1	11.8	35.3	15.0
Approach Delay (s)	12.6	11.6		35.3	15.0
Approach LOS	B	B		E	B

Intersection Summary				
Delay	24.0			
HCM Level of Service	C			
Intersection Capacity Utilization	66.9%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	159	24	55	142	476	22	340	60	496	237	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98			1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1827			1837	1583	1770	1821		1770	1800	
Flt Permitted	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1827			1837	1583	1770	1821		1770	1800	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	86	175	26	60	156	523	24	374	66	545	260	76
RTOR Reduction (vph)	0	5	0	0	0	427	0	5	0	0	9	0
Lane Group Flow (vph)	86	196	0	0	216	96	24	435	0	545	327	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	15.5	15.5			17.5	17.5	22.2	22.2		22.2	22.2	
Effective Green, g (s)	15.5	15.5			17.5	17.5	22.2	22.2		22.2	22.2	
Actuated g/C Ratio	0.16	0.16			0.18	0.18	0.23	0.23		0.23	0.23	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	288	297			337	290	412	424		412	419	
v/s Ratio Prot	0.05	c0.11			c0.12		0.01	c0.24		c0.31	0.18	
v/s Ratio Perm						0.06						
v/c Ratio	0.30	0.66			0.64	0.33	0.06	1.03		1.32	0.78	
Uniform Delay, d1	35.2	37.5			36.0	33.9	28.5	36.6		36.6	34.3	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	5.2			4.1	0.7	0.1	50.3		161.4	8.9	
Delay (s)	35.7	42.7			40.2	34.5	28.5	86.9		198.0	43.2	
Level of Service	D	D			D	C	C	F		F	D	
Approach Delay (s)		40.6			36.2			83.8			139.0	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM Average Control Delay	84.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	95.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



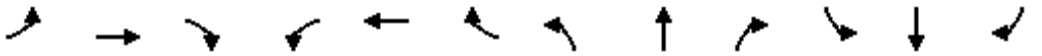
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	32	51	25	592
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	34	54	27	630
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	464	341	656			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	431	305	629			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	96			
cM capacity (veh/h)	543	713	923			

Direction, Lane #	NB 1	SB 1
Volume Total	88	656
Volume Left	34	0
Volume Right	0	630
cSH	923	1700
Volume to Capacity	0.04	0.39
Queue Length 95th (ft)	3	0
Control Delay (s)	3.7	0.0
Lane LOS	A	
Approach Delay (s)	3.7	0.0
Approach LOS		

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Near-Term Plus Project (Base FAR)
Mitigated
AM and PM Peak Hour
Synchro Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS

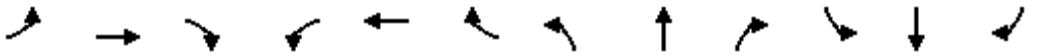


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	619	215	305	598	80	142	117	307	79	236	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4889		3433	4996		1770	1863	1583	3433	1791	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4889		3433	4996		1770	1863	1583	3433	1791	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	152	645	224	318	623	83	148	122	320	82	246	85
RTOR Reduction (vph)	0	43	0	0	13	0	0	0	241	0	11	0
Lane Group Flow (vph)	152	826	0	318	693	0	148	122	79	82	320	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	13.4	50.0		15.5	52.1		9.5	29.7	29.7	6.3	26.5	
Effective Green, g (s)	13.4	50.0		15.5	52.1		9.5	29.7	29.7	6.3	26.5	
Actuated g/C Ratio	0.11	0.42		0.13	0.43		0.08	0.25	0.25	0.05	0.22	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	198	2037		443	2169		140	461	392	180	396	
v/s Ratio Prot	0.09	c0.17		c0.09	0.14		c0.08	c0.07		0.02	c0.18	
v/s Ratio Perm									0.05			
v/c Ratio	0.77	0.41		0.72	0.32		1.06	0.26	0.20	0.46	0.81	
Uniform Delay, d1	51.8	24.6		50.2	22.3		55.2	36.4	35.8	55.2	44.3	
Progression Factor	0.83	1.32		0.83	0.78		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.3	0.6		4.4	0.4		92.1	0.3	0.3	0.7	11.5	
Delay (s)	57.4	33.1		46.0	17.8		147.4	36.7	36.0	55.9	55.8	
Level of Service	E	C		D	B		F	D	D	E	E	
Approach Delay (s)		36.7			26.5			64.1			55.8	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM Average Control Delay	41.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

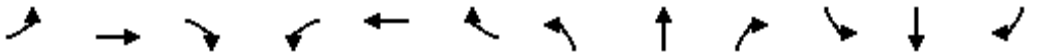
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	106	28	57	146	449	15	102	12	491	205	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1804			1837	1583	1770	1834		1770	1827	
Flt Permitted	0.95	1.00			0.87	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1804			1629	1583	1770	1834		1770	1827	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	110	29	59	152	468	16	106	12	511	214	31
RTOR Reduction (vph)	0	7	0	0	0	360	0	3	0	0	5	0
Lane Group Flow (vph)	42	132	0	0	211	108	16	115	0	511	240	0
Turn Type	Prot			Perm		Perm	Prot			Prot		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8		8						
Actuated Green, G (s)	2.6	25.7			18.6	18.6	1.6	10.8		30.5	39.7	
Effective Green, g (s)	2.6	25.7			18.6	18.6	1.6	10.8		30.5	39.7	
Actuated g/C Ratio	0.03	0.32			0.23	0.23	0.02	0.13		0.38	0.49	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	57	576			376	366	35	246		671	901	
v/s Ratio Prot	c0.02	0.07					0.01	c0.06		c0.29	0.13	
v/s Ratio Perm					c0.13	0.07						
v/c Ratio	0.74	0.23			0.56	0.30	0.46	0.47		0.76	0.27	
Uniform Delay, d1	38.6	20.1			27.3	25.5	39.0	32.2		21.8	11.9	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.8	0.2			1.9	0.5	9.2	1.4		5.1	0.2	
Delay (s)	77.4	20.3			29.3	26.0	48.2	33.6		26.9	12.1	
Level of Service	E	C			C	C	D	C		C	B	
Approach Delay (s)		33.6			27.0			35.3			22.1	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	80.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



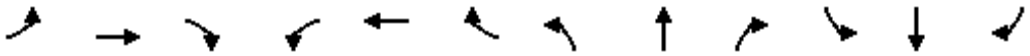
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	342	458	1332	386	329	753	1115	1431	344	555	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	380	509	1480	429	366	837	1239	1590	382	617	173
RTOR Reduction (vph)	0	0	15	0	0	6	0	0	31	0	0	87
Lane Group Flow (vph)	178	380	494	1480	429	360	837	1239	1559	382	617	86
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	10.6	17.0	53.0	43.1	49.5	71.0	36.0	42.4	85.5	21.5	27.9	38.5
Effective Green, g (s)	10.6	17.0	53.0	43.1	49.5	71.0	36.0	42.4	85.5	21.5	27.9	38.5
Actuated g/C Ratio	0.07	0.12	0.37	0.30	0.34	0.49	0.25	0.29	0.59	0.15	0.19	0.27
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
Lane Grp Cap (vph)	253	418	1123	1494	640	835	858	1497	1752	513	985	478
v/s Ratio Prot	0.05	c0.11	0.11	c0.30	0.23	0.06	c0.24	0.24	c0.27	0.11	0.12	0.01
v/s Ratio Perm			0.07			0.16			0.29			0.04
v/c Ratio	0.70	0.91	0.44	0.99	0.67	0.43	0.98	0.83	0.89	0.74	0.63	0.18
Uniform Delay, d1	65.2	62.7	34.3	50.2	40.3	23.5	53.6	47.4	25.2	58.6	53.3	40.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.6	23.5	0.3	21.0	3.0	0.4	24.6	4.1	6.0	5.8	1.4	0.2
Delay (s)	73.7	86.3	34.6	71.2	43.3	23.9	78.2	51.5	31.2	64.4	54.7	40.8
Level of Service	E	F	C	E	D	C	E	D	C	E	D	D
Approach Delay (s)		59.5			58.3			48.8			55.8	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM Average Control Delay	53.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



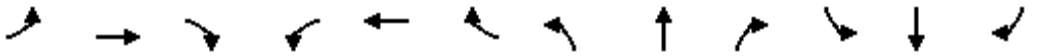
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	274	1440	336	124	1448	180	374	73	99	239	78	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4941		1770	6301		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4941		1770	6301		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	295	1548	361	133	1557	194	402	78	106	257	84	277
RTOR Reduction (vph)	0	24	0	0	14	0	0	0	93	0	0	250
Lane Group Flow (vph)	295	1885	0	133	1737	0	402	78	13	257	84	27
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	19.5	59.6		7.5	47.6		22.5	14.7	14.7	19.7	11.9	11.9
Effective Green, g (s)	19.5	59.6		7.5	47.6		22.5	14.7	14.7	19.7	11.9	11.9
Actuated g/C Ratio	0.16	0.50		0.06	0.40		0.19	0.12	0.12	0.16	0.10	0.10
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	288	2454		111	2499		332	228	194	291	185	157
v/s Ratio Prot	c0.17	c0.38		0.08	0.28		c0.23	c0.04		0.15	c0.05	
v/s Ratio Perm									0.01			0.02
v/c Ratio	1.02	0.77		1.20	0.69		1.21	0.34	0.07	0.88	0.45	0.17
Uniform Delay, d1	50.2	24.6		56.2	30.2		48.8	48.2	46.6	49.0	51.0	49.5
Progression Factor	1.00	1.00		1.00	0.73		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	59.4	2.4		131.7	1.0		119.6	1.1	0.2	24.9	2.1	0.6
Delay (s)	109.7	27.0		187.9	23.0		168.3	49.3	46.8	73.9	53.1	50.2
Level of Service	F	C		F	C		F	D	D	E	D	D
Approach Delay (s)		38.0			34.6			130.5			60.4	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM Average Control Delay	49.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



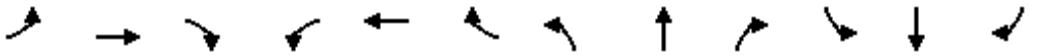
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	207	1377	227	120	1243	104	373	16	315	153	5	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4977		1770	5026		1770	1863	1583	1770	1593	
Flt Permitted	0.95	1.00		0.95	1.00		0.63	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	4977		1770	5026		1169	1863	1583	1390	1593	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	223	1481	244	129	1337	112	401	17	339	165	5	143
RTOR Reduction (vph)	0	17	0	0	8	0	0	0	167	0	91	0
Lane Group Flow (vph)	223	1708	0	129	1441	0	401	17	172	165	57	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	17.9	50.7		11.5	44.3		43.8	43.8	43.8	43.8	43.8	
Effective Green, g (s)	17.9	50.7		11.5	44.3		43.8	43.8	43.8	43.8	43.8	
Actuated g/C Ratio	0.15	0.42		0.10	0.37		0.36	0.36	0.36	0.36	0.36	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	264	2103		170	1855		427	680	578	507	581	
v/s Ratio Prot	c0.13	c0.34		0.07	0.29			0.01			0.04	
v/s Ratio Perm							c0.34		0.11	0.12		
v/c Ratio	0.84	0.81		0.76	0.78		0.94	0.03	0.30	0.33	0.10	
Uniform Delay, d1	49.7	30.5		52.9	33.5		36.8	24.4	27.1	27.5	25.1	
Progression Factor	0.91	1.43		0.71	1.56		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.5	2.4		6.6	1.3		28.1	0.0	0.1	0.1	0.0	
Delay (s)	59.6	46.0		44.4	53.7		64.9	24.4	27.2	27.6	25.1	
Level of Service	E	D		D	D		E	C	C	C	C	
Approach Delay (s)		47.6			52.9			47.1			26.4	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	47.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	288	1271	310	419	991	207	359	237	454	229	169	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4936		3433	4954		1770	1863	1583	3433	1723	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4936		3433	4954		1770	1863	1583	3433	1723	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	294	1297	316	428	1011	211	366	242	463	234	172	171
RTOR Reduction (vph)	0	34	0	0	26	0	0	0	23	0	30	0
Lane Group Flow (vph)	294	1579	0	428	1196	0	366	242	440	234	313	0
Turn Type	Prot			Prot			Prot		pm+ov	Prot		
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases									8			
Actuated Green, G (s)	22.3	40.6		15.5	33.8		21.5	32.9	48.4	12.5	23.9	
Effective Green, g (s)	22.3	40.6		15.5	33.8		21.5	32.9	48.4	12.5	23.9	
Actuated g/C Ratio	0.19	0.34		0.13	0.28		0.18	0.27	0.40	0.10	0.20	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.0	2.0	2.0	3.0	
Lane Grp Cap (vph)	329	1670		443	1395		317	511	698	358	343	
v/s Ratio Prot	c0.17	c0.32		0.12	0.24		c0.21	0.13	0.08	0.07	c0.18	
v/s Ratio Perm									0.20			
v/c Ratio	0.89	0.95		0.97	0.86		1.15	0.47	0.63	0.65	0.91	
Uniform Delay, d1	47.7	38.6		52.0	40.8		49.2	36.3	28.6	51.7	47.0	
Progression Factor	0.95	0.59		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.5	9.4		33.6	7.0		99.3	0.7	1.3	3.3	27.4	
Delay (s)	63.7	32.4		85.6	47.8		148.5	37.0	29.9	54.9	74.4	
Level of Service	E	C		F	D		F	D	C	D	E	
Approach Delay (s)		37.2			57.6			72.1			66.5	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM Average Control Delay	54.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	159	24	55	142	476	22	340	60	496	237	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98			1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1827			1837	1583	1770	1821		1770	1800	
Flt Permitted	0.95	1.00			0.85	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1827			1579	1583	1770	1821		1770	1800	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	86	175	26	60	156	523	24	374	66	545	260	76
RTOR Reduction (vph)	0	5	0	0	0	426	0	5	0	0	6	0
Lane Group Flow (vph)	86	196	0	0	216	97	24	435	0	545	330	0
Turn Type	Prot			Perm		Perm	Prot			Prot		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8		8						
Actuated Green, G (s)	8.7	32.4			19.2	19.2	3.0	28.7		28.9	54.6	
Effective Green, g (s)	8.7	32.4			19.2	19.2	3.0	28.7		28.9	54.6	
Actuated g/C Ratio	0.08	0.31			0.19	0.19	0.03	0.28		0.28	0.53	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	572			293	294	51	505		494	950	
v/s Ratio Prot	c0.05	0.11					0.01	c0.24		c0.31	0.18	
v/s Ratio Perm					c0.14	0.06						
v/c Ratio	0.58	0.34			0.74	0.33	0.47	0.86		1.10	0.35	
Uniform Delay, d1	45.6	27.3			39.8	36.6	49.5	35.5		37.3	14.1	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.3	0.4			9.3	0.7	6.7	14.0		71.7	0.2	
Delay (s)	51.0	27.7			49.1	37.2	56.2	49.5		109.0	14.4	
Level of Service	D	C			D	D	E	D		F	B	
Approach Delay (s)		34.7			40.7			49.9			72.9	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	53.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	103.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

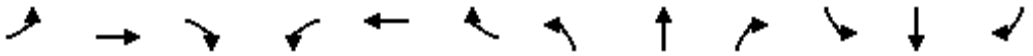
Near-Term Plus Project (Maximum FAR)
AM and PM Peak Hour
Synchro Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	32	46	506	42	269	64	1195	286	401	774	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1698	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.58	1.00	1.00	0.95	0.44	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1080	1863	1583	1681	784	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	32	37	53	582	48	309	74	1374	329	461	890	33
RTOR Reduction (vph)	0	0	50	0	0	207	0	0	121	0	0	17
Lane Group Flow (vph)	32	37	3	314	316	102	74	1374	208	461	890	16
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	6.9	6.9	6.9	25.2	36.6	36.6	7.8	41.4	41.4	18.8	52.4	52.4
Effective Green, g (s)	6.9	6.9	6.9	25.2	36.6	36.6	7.8	41.4	41.4	18.8	52.4	52.4
Actuated g/C Ratio	0.06	0.06	0.06	0.23	0.33	0.33	0.07	0.37	0.37	0.17	0.47	0.47
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	67	116	99	382	467	523	125	1322	591	582	2405	749
v/s Ratio Prot		0.02		c0.19	0.15		0.04	c0.39		c0.13	0.18	
v/s Ratio Perm	0.03		0.00		c0.07	0.06			0.13			0.01
v/c Ratio	0.48	0.32	0.03	0.82	0.68	0.20	0.59	1.04	0.35	0.79	0.37	0.02
Uniform Delay, d1	50.2	49.7	48.8	40.7	32.0	26.6	50.0	34.7	25.0	44.1	18.7	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.6	0.1	12.7	3.0	0.1	4.9	35.6	0.5	6.8	0.1	0.0
Delay (s)	52.2	50.3	48.9	53.4	35.0	26.6	54.9	70.3	25.5	50.9	18.8	15.6
Level of Service	D	D	D	D	D	C	D	E	C	D	B	B
Approach Delay (s)		50.2			38.4			61.4			29.4	
Approach LOS		D			D			E			C	

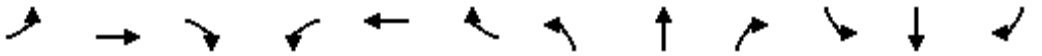
Intersection Summary			
HCM Average Control Delay	45.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	637	105	78	759	4	73	9	42	8	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3464		1770	3537		1770	1863	1583	1770	1642	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	3464		1770	3537		1381	1863	1583	1399	1642	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	685	113	84	816	4	78	10	45	9	5	19
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	40	0	17	0
Lane Group Flow (vph)	32	788	0	84	820	0	78	10	5	9	7	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	2.2	26.6		5.9	30.3		6.4	6.4	6.4	6.4	6.4	
Effective Green, g (s)	2.2	26.6		5.9	30.3		6.4	6.4	6.4	6.4	6.4	
Actuated g/C Ratio	0.04	0.50		0.11	0.57		0.12	0.12	0.12	0.12	0.12	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	74	1742		197	2026		167	225	192	169	199	
v/s Ratio Prot	0.02	c0.23		c0.05	c0.23			0.01			0.00	
v/s Ratio Perm							c0.06		0.00	0.01		
v/c Ratio	0.43	0.45		0.43	0.40		0.47	0.04	0.03	0.05	0.04	
Uniform Delay, d1	24.7	8.5		21.9	6.3		21.7	20.5	20.5	20.6	20.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.3		0.5	0.2		0.8	0.0	0.0	0.0	0.0	
Delay (s)	26.2	8.7		22.5	6.5		22.4	20.6	20.5	20.6	20.6	
Level of Service	C	A		C	A		C	C	C	C	C	
Approach Delay (s)		9.4			8.0			21.6			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	19.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

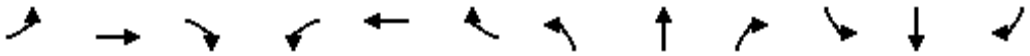


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	555	10	0	644	35	2	0	2	40	0	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.93			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3530			3512			1695			1770	1583
Flt Permitted	0.95	1.00			1.00			0.92			0.76	1.00
Satd. Flow (perm)	1770	3530			3512			1600			1407	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	35	631	11	0	732	40	2	0	2	45	0	67
RTOR Reduction (vph)	0	1	0	0	3	0	0	2	0	0	0	53
Lane Group Flow (vph)	35	641	0	0	769	0	0	2	0	0	45	14
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	3.6	44.2			36.1			13.6			13.6	13.6
Effective Green, g (s)	3.6	44.2			36.1			13.6			13.6	13.6
Actuated g/C Ratio	0.05	0.66			0.54			0.20			0.20	0.20
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	95	2318			1884			323			284	320
v/s Ratio Prot	0.02	c0.18			c0.22							
v/s Ratio Perm								0.00			c0.03	0.01
v/c Ratio	0.37	0.28			0.41			0.01			0.16	0.04
Uniform Delay, d1	30.8	4.8			9.3			21.5			22.1	21.6
Progression Factor	1.00	1.00			0.38			1.00			1.00	1.00
Incremental Delay, d2	0.9	0.0			0.2			0.0			0.1	0.0
Delay (s)	31.6	4.9			3.7			21.5			22.2	21.6
Level of Service	C	A			A			C			C	C
Approach Delay (s)		6.3			3.7			21.5			21.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	569	32	11	618	111	8	3	2	135	7	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	
Satd. Flow (prot)	1770	3511		1770	3458		1770	1751			1744	
Flt Permitted	0.95	1.00		0.95	1.00		0.69	1.00			0.78	
Satd. Flow (perm)	1770	3511		1770	3458		1281	1751			1407	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	25	639	36	12	694	125	9	3	2	152	8	44
RTOR Reduction (vph)	0	4	0	0	11	0	0	2	0	0	12	0
Lane Group Flow (vph)	25	671	0	12	808	0	9	3	0	0	192	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	28.8		10.9	36.1		13.6	13.6			13.6	
Effective Green, g (s)	3.6	28.8		10.9	36.1		13.6	13.6			13.6	
Actuated g/C Ratio	0.05	0.43		0.16	0.54		0.20	0.20			0.20	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	95	1502		287	1855		259	354			284	
v/s Ratio Prot	c0.01	0.19		0.01	c0.23			0.00				
v/s Ratio Perm							0.01				c0.14	
v/c Ratio	0.26	0.45		0.04	0.44		0.03	0.01			0.68	
Uniform Delay, d1	30.6	13.6		23.8	9.4		21.6	21.5			24.8	
Progression Factor	1.46	0.76		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.5	0.3		0.0	0.2		0.0	0.0			4.9	
Delay (s)	45.2	10.6		23.8	9.7		21.6	21.5			29.8	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		11.9			9.9			21.6			29.8	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

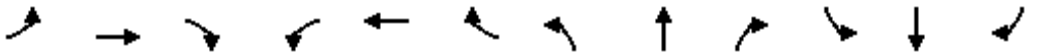


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	623	88	288	797	0	85	0	148	0	4	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3474		1770	3539			1770	1583		1726	
Flt Permitted	0.95	1.00		0.95	1.00			0.75	1.00		1.00	
Satd. Flow (perm)	1770	3474		1770	3539			1398	1583		1726	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	2	724	102	335	927	0	99	0	172	0	5	6
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	149	0	5	0
Lane Group Flow (vph)	2	814	0	335	927	0	0	99	23	0	6	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	0.8	28.0		16.8	44.0			9.3	9.3		9.3	
Effective Green, g (s)	0.8	28.0		16.8	44.0			9.3	9.3		9.3	
Actuated g/C Ratio	0.01	0.41		0.25	0.65			0.14	0.14		0.14	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	21	1428		437	2287			191	216		236	
v/s Ratio Prot	0.00	c0.23		c0.19	0.26						0.00	
v/s Ratio Perm								c0.07	0.01			
v/c Ratio	0.10	0.57		0.77	0.41			0.52	0.11		0.02	
Uniform Delay, d1	33.3	15.4		23.8	5.8			27.3	25.8		25.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	0.7		7.1	0.2			1.0	0.1		0.0	
Delay (s)	34.0	16.1		30.9	5.9			28.3	25.8		25.5	
Level of Service	C	B		C	A			C	C		C	
Approach Delay (s)		16.1			12.6			26.7			25.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	298	342	34	291	551	25	144	286	58	144	474	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3355	1583	1770	3539	1583	1610	3302		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3355	1583	1770	3539	1583	1610	3302		1770	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	347	398	40	338	641	29	167	333	67	167	551	438
RTOR Reduction (vph)	0	0	15	0	0	10	0	9	0	0	0	117
Lane Group Flow (vph)	243	502	25	338	641	19	150	408	0	167	551	321
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	31.5	31.5	31.5	35.9	35.9	35.9	26.5	26.5		37.5	37.5	37.5
Effective Green, g (s)	31.5	31.5	31.5	35.9	35.9	35.9	26.5	26.5		37.5	37.5	37.5
Actuated g/C Ratio	0.21	0.21	0.21	0.24	0.24	0.24	0.18	0.18		0.25	0.25	0.25
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	335	698	329	420	839	375	282	578		438	877	392
v/s Ratio Prot	c0.15	0.15		c0.19	0.18		0.09	c0.12		0.09	0.16	
v/s Ratio Perm			0.02			0.01						c0.20
v/c Ratio	0.73	0.72	0.08	0.80	0.76	0.05	0.53	0.71		0.38	0.63	0.82
Uniform Delay, d1	55.9	55.8	48.2	54.4	53.8	44.6	56.8	58.8		47.3	50.7	53.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.1	3.8	0.1	11.3	4.4	0.1	2.5	4.2		0.8	1.6	13.2
Delay (s)	64.0	59.6	48.4	65.7	58.2	44.7	59.3	63.0		48.1	52.3	67.0
Level of Service	E	E	D	E	E	D	E	E		D	D	E
Approach Delay (s)		60.4			60.4			62.0			57.3	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM Average Control Delay	59.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	151.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	191	314	678	791	233	354	531	1285	1319	319	899	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	208	341	737	860	253	385	577	1397	1434	347	977	198
RTOR Reduction (vph)	0	0	365	0	0	121	0	0	135	0	0	144
Lane Group Flow (vph)	208	341	372	860	253	264	577	1397	1299	347	977	54
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.0	32.1	32.1	15.0	39.1	39.1	20.0	43.9	58.9	9.0	32.9	32.9
Effective Green, g (s)	8.0	32.1	32.1	15.0	39.1	39.1	20.0	43.9	58.9	9.0	32.9	32.9
Actuated g/C Ratio	0.07	0.27	0.27	0.12	0.33	0.33	0.17	0.37	0.49	0.08	0.27	0.27
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	229	947	746	624	607	516	572	1860	1484	257	1394	434
v/s Ratio Prot	0.06	0.10		c0.17	0.14		c0.17	0.27	c0.11	c0.10	0.19	
v/s Ratio Perm			0.13			c0.17			0.36			0.03
v/c Ratio	0.91	0.36	0.50	1.38	0.42	0.51	1.01	0.75	0.88	1.35	0.70	0.13
Uniform Delay, d1	55.6	35.6	37.2	52.5	31.6	32.7	50.0	33.3	27.3	55.5	39.1	32.7
Progression Factor	1.00	1.00	1.00	1.06	1.10	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	35.3	1.1	2.4	178.4	1.7	3.0	39.8	1.9	6.1	181.1	1.7	0.2
Delay (s)	90.9	36.7	39.5	234.0	36.5	46.6	89.8	35.1	33.4	236.6	40.9	32.9
Level of Service	F	D	D	F	D	D	F	D	C	F	D	C
Approach Delay (s)		47.1			152.5			43.6			84.5	
Approach LOS		D			F			D			F	

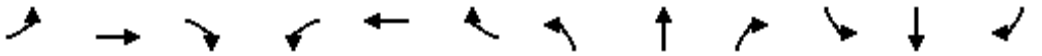
Intersection Summary			
HCM Average Control Delay	73.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	1600	224	78	825	73	311	46	68	129	38	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4992		1770	6330		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4992		1770	6330		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	123	1667	233	81	859	76	324	48	71	134	40	123
RTOR Reduction (vph)	0	10	0	0	8	0	0	0	66	0	0	113
Lane Group Flow (vph)	123	1890	0	81	927	0	324	48	5	134	40	10
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	11.2	73.1		7.3	69.2		11.5	9.1	9.1	12.0	9.6	9.6
Effective Green, g (s)	11.2	73.1		7.3	69.2		11.5	9.1	9.1	12.0	9.6	9.6
Actuated g/C Ratio	0.09	0.61		0.06	0.58		0.10	0.08	0.08	0.10	0.08	0.08
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	165	3041		108	3650		170	141	120	177	149	127
v/s Ratio Prot	c0.07	c0.38		0.05	0.15		c0.18	c0.03		0.08	0.02	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.75	0.62		0.75	0.25		1.91	0.34	0.04	0.76	0.27	0.08
Uniform Delay, d1	53.0	14.8		55.5	12.6		54.2	52.6	51.4	52.6	51.9	51.1
Progression Factor	0.92	0.90		0.66	1.44		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.0	0.4		21.9	0.2		428.8	1.7	0.2	15.0	1.1	0.3
Delay (s)	55.8	13.8		58.4	18.3		483.1	54.3	51.6	67.6	53.0	51.4
Level of Service	E	B		E	B		F	D	D	E	D	D
Approach Delay (s)		16.3			21.5			367.5			58.9	
Approach LOS		B			C			F			E	

Intersection Summary			
HCM Average Control Delay	62.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

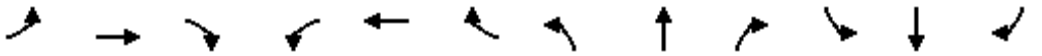
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	1084	544	203	768	58	178	2	145	35	7	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4831		1770	5031		1770	1863	1583	1770	1616	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1770	4831		1770	5031		1338	1863	1583	1409	1616	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	108	1095	549	205	776	59	180	2	146	35	7	52
RTOR Reduction (vph)	0	64	0	0	6	0	0	0	121	0	43	0
Lane Group Flow (vph)	108	1580	0	205	829	0	180	2	25	35	16	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	9.1	76.3		9.5	76.7		20.2	20.2	20.2	20.2	20.2	
Effective Green, g (s)	9.1	76.3		9.5	76.7		20.2	20.2	20.2	20.2	20.2	
Actuated g/C Ratio	0.08	0.64		0.08	0.64		0.17	0.17	0.17	0.17	0.17	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	134	3072		140	3216		225	314	266	237	272	
v/s Ratio Prot	0.06	c0.33		c0.12	0.16			0.00			0.01	
v/s Ratio Perm							c0.13		0.02	0.02		
v/c Ratio	0.81	0.51		1.46	0.26		0.80	0.01	0.09	0.15	0.06	
Uniform Delay, d1	54.6	11.8		55.2	9.4		48.0	41.5	42.2	42.6	41.9	
Progression Factor	1.20	0.65		0.80	1.46		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	22.7	0.5		227.7	0.1		17.2	0.0	0.1	0.1	0.0	
Delay (s)	88.5	8.2		272.1	13.8		65.2	41.5	42.2	42.7	41.9	
Level of Service	F	A		F	B		E	D	D	D	D	
Approach Delay (s)		13.1			64.7			54.8			42.2	
Approach LOS		B			E			D			D	

Intersection Summary			
HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



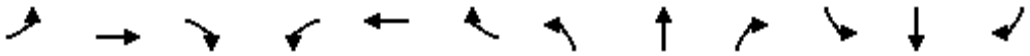
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	709	421	433	694	89	283	136	432	88	259	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4801		1770	5085	1583	1770	1863	1583	3433	1788	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4801		1770	5085	1583	1770	1863	1583	3433	1788	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	176	739	439	451	723	93	295	142	450	92	270	98
RTOR Reduction (vph)	0	86	0	0	0	54	0	0	302	0	12	0
Lane Group Flow (vph)	176	1092	0	451	723	39	295	142	148	92	356	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	14.3	39.1		25.5	50.3	50.3	9.5	29.4	29.4	7.5	27.4	
Effective Green, g (s)	14.3	39.1		25.5	50.3	50.3	9.5	29.4	29.4	7.5	27.4	
Actuated g/C Ratio	0.12	0.33		0.21	0.42	0.42	0.08	0.24	0.24	0.06	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	211	1564		376	2131	664	140	456	388	215	408	
v/s Ratio Prot	0.10	c0.23		c0.25	0.14		c0.17	0.08		0.03	c0.20	
v/s Ratio Perm						0.02			0.09			
v/c Ratio	0.83	0.70		1.20	0.34	0.06	2.11	0.31	0.38	0.43	0.87	
Uniform Delay, d1	51.7	35.3		47.2	23.6	20.8	55.2	37.0	37.7	54.2	44.6	
Progression Factor	0.75	1.34		0.83	0.79	1.52	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	21.0	2.4		111.4	0.4	0.2	521.6	0.4	0.6	0.5	18.3	
Delay (s)	59.5	49.8		150.7	19.0	31.7	576.8	37.4	38.4	54.7	62.9	
Level of Service	E	D		F	B	C	F	D	D	D	E	
Approach Delay (s)		51.0			66.8			217.3			61.3	
Approach LOS		D			E			F			E	

Intersection Summary			
HCM Average Control Delay	94.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	687	280	107	851	285	14	8	4	440	113	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3386		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3386		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	301	781	318	122	967	324	16	9	5	500	128	344
RTOR Reduction (vph)	0	22	0	0	0	135	0	0	5	0	0	291
Lane Group Flow (vph)	301	1077	0	122	967	189	16	9	0	500	128	53
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	9.5	69.5		10.1	70.1	70.1	2.7	2.9	2.9	18.5	18.7	18.5
Effective Green, g (s)	9.5	69.5		10.1	70.1	70.1	2.7	2.9	2.9	18.5	18.7	18.5
Actuated g/C Ratio	0.08	0.58		0.08	0.58	0.58	0.02	0.02	0.02	0.15	0.16	0.15
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	272	1961		149	2970	925	40	86	38	529	290	244
v/s Ratio Prot	c0.09	c0.32		0.07	0.19		0.01	0.00		c0.15	c0.07	
v/s Ratio Perm						0.12			0.00			0.03
v/c Ratio	1.11	0.55		0.82	0.33	0.20	0.40	0.10	0.00	0.95	0.44	0.22
Uniform Delay, d1	55.2	15.6		54.0	12.8	11.8	57.9	57.3	57.1	50.2	45.9	44.4
Progression Factor	0.92	1.31		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	80.6	0.9		27.0	0.3	0.5	2.4	0.7	0.0	25.7	0.4	0.2
Delay (s)	131.3	21.3		81.0	13.1	12.3	60.2	58.0	57.2	75.9	46.3	44.6
Level of Service	F	C		F	B	B	E	E	E	E	D	D
Approach Delay (s)		45.0			18.8			59.1			60.9	
Approach LOS		D			B			E			E	

Intersection Summary			
HCM Average Control Delay	39.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



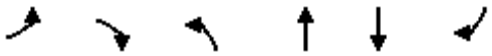
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	62	81	1	66	41	38	0	147	22	60	420	42
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	81	105	1	86	53	49	0	191	29	78	545	55

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	187	86	103	219	678
Volume Left (vph)	81	86	0	0	78
Volume Right (vph)	1	0	49	29	55
Hadj (s)	0.12	0.53	-0.30	-0.04	0.01
Departure Headway (s)	7.0	7.9	7.1	6.3	5.7
Degree Utilization, x	0.37	0.19	0.20	0.38	1.07
Capacity (veh/h)	490	433	484	546	621
Control Delay (s)	14.0	11.6	10.7	13.2	78.0
Approach Delay (s)	14.0	11.1		13.2	78.0
Approach LOS	B	B		B	F

Intersection Summary				
Delay	47.5			
HCM Level of Service	E			
Intersection Capacity Utilization	61.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	134	28	82	185	482	15	245	32	515	370	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1815			1835	1583	1770	1831		1770	1828	
Flt Permitted	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1815			1835	1583	1770	1831		1770	1828	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	65	140	29	85	193	502	16	255	33	536	385	55
RTOR Reduction (vph)	0	7	0	0	0	399	0	4	0	0	4	0
Lane Group Flow (vph)	65	162	0	0	278	103	16	284	0	536	436	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	13.9	13.9			19.5	19.5	19.2	19.2		24.4	24.4	
Effective Green, g (s)	13.9	13.9			19.5	19.5	19.2	19.2		24.4	24.4	
Actuated g/C Ratio	0.15	0.15			0.21	0.21	0.20	0.20		0.26	0.26	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	259	266			377	325	358	370		455	470	
v/s Ratio Prot	0.04	c0.09			c0.15		0.01	c0.16		c0.30	0.24	
v/s Ratio Perm						0.07						
v/c Ratio	0.25	0.61			0.74	0.32	0.04	0.77		1.18	0.93	
Uniform Delay, d1	35.9	38.0			35.4	32.1	30.5	35.8		35.3	34.4	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	3.9			7.3	0.6	0.1	9.2		100.9	24.3	
Delay (s)	36.4	41.9			42.7	32.7	30.6	45.0		136.2	58.7	
Level of Service	D	D			D	C	C	D		F	E	
Approach Delay (s)		40.4			36.2			44.2			101.3	
Approach LOS		D			D			D			F	

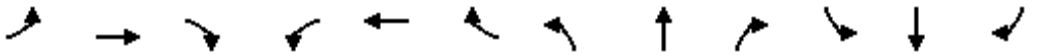
Intersection Summary			
HCM Average Control Delay	65.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	19	13	57	431
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	20	14	61	459
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	344	290	519			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	287	230	470			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	657	771	1040			

Direction, Lane #	NB 1	SB 1
Volume Total	34	519
Volume Left	20	0
Volume Right	0	459
cSH	1040	1700
Volume to Capacity	0.02	0.31
Queue Length 95th (ft)	1	0
Control Delay (s)	5.1	0.0
Lane LOS	A	
Approach Delay (s)	5.1	0.0
Approach LOS		

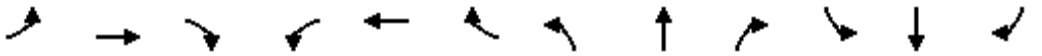
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	63	49	315	61	527	167	1127	626	465	933	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1711	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.62	1.00	1.00	0.95	0.48	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1153	1863	1583	1681	853	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	49	70	54	350	68	586	186	1252	696	517	1037	49
RTOR Reduction (vph)	0	0	50	0	0	292	0	0	279	0	0	29
Lane Group Flow (vph)	49	70	4	206	212	294	186	1252	417	517	1037	20
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	8.0	8.0	8.0	20.7	33.2	33.2	15.8	40.5	40.5	20.2	44.9	44.9
Effective Green, g (s)	8.0	8.0	8.0	20.7	33.2	33.2	15.8	40.5	40.5	20.2	44.9	44.9
Actuated g/C Ratio	0.07	0.07	0.07	0.19	0.31	0.31	0.15	0.38	0.38	0.19	0.42	0.42
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	85	138	117	322	427	487	259	1328	594	643	2116	659
v/s Ratio Prot		0.04		0.12	0.10		0.11	c0.35		c0.15	c0.20	
v/s Ratio Perm	0.04		0.00		0.06	c0.19			0.26			0.01
v/c Ratio	0.58	0.51	0.03	0.64	0.50	0.60	0.72	0.94	0.70	0.80	0.49	0.03
Uniform Delay, d1	48.3	48.1	46.4	40.2	30.5	31.8	43.9	32.6	28.6	42.0	23.1	18.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	1.1	0.0	3.1	0.3	1.5	7.7	13.4	4.0	6.8	0.2	0.0
Delay (s)	54.1	49.1	46.4	43.2	30.9	33.2	51.6	46.0	32.6	48.8	23.3	18.7
Level of Service	D	D	D	D	C	C	D	D	C	D	C	B
Approach Delay (s)		49.7			34.8			42.1			31.4	
Approach LOS		D			C			D			C	

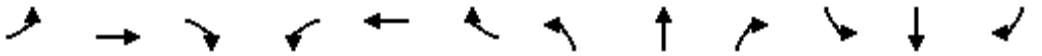
Intersection Summary			
HCM Average Control Delay	37.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	107.9	Sum of lost time (s)	19.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	822	195	194	589	26	280	35	158	40	26	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3437		1770	3517		1770	1863	1583	1770	1718	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1770	3437		1770	3517		1345	1863	1583	1368	1718	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	114	830	197	196	595	26	283	35	160	40	26	28
RTOR Reduction (vph)	0	19	0	0	3	0	0	0	118	0	21	0
Lane Group Flow (vph)	114	1008	0	196	618	0	283	35	42	40	33	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	8.3	32.6		13.6	37.9		21.1	21.1	21.1	21.1	21.1	
Effective Green, g (s)	8.3	32.6		13.6	37.9		21.1	21.1	21.1	21.1	21.1	
Actuated g/C Ratio	0.10	0.40		0.17	0.47		0.26	0.26	0.26	0.26	0.26	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	181	1378		296	1640		349	484	411	355	446	
v/s Ratio Prot	0.06	c0.29		c0.11	0.18			0.02			0.02	
v/s Ratio Perm							c0.21		0.03	0.03		
v/c Ratio	0.63	0.73		0.66	0.38		0.81	0.07	0.10	0.11	0.07	
Uniform Delay, d1	35.0	20.6		31.7	14.1		28.2	22.7	22.9	23.0	22.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.9	2.2		4.3	0.2		12.7	0.0	0.0	0.1	0.0	
Delay (s)	39.9	22.8		36.0	14.3		40.9	22.7	22.9	23.0	22.8	
Level of Service	D	C		D	B		D	C	C	C	C	
Approach Delay (s)		24.5			19.5			33.6			22.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	81.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

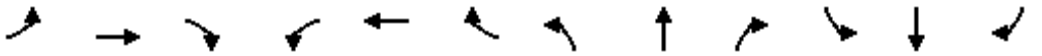


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	972	18	0	813	49	4	0	2	45	0	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.95			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	3529			3509			1722			1770	1583
Flt Permitted	0.95	1.00			1.00			0.87			0.75	1.00
Satd. Flow (perm)	1770	3529			3509			1548			1404	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	77	1012	19	0	847	51	4	0	2	47	0	47
RTOR Reduction (vph)	0	1	0	0	3	0	0	2	0	0	0	40
Lane Group Flow (vph)	77	1030	0	0	895	0	0	4	0	0	47	7
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	6.6	52.0			40.9			11.1			11.1	11.1
Effective Green, g (s)	6.6	52.0			40.9			11.1			11.1	11.1
Actuated g/C Ratio	0.09	0.72			0.56			0.15			0.15	0.15
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	161	2528			1977			237			215	242
v/s Ratio Prot	0.04	c0.29			c0.26							
v/s Ratio Perm								0.00			c0.03	0.00
v/c Ratio	0.48	0.41			0.45			0.02			0.22	0.03
Uniform Delay, d1	31.4	4.1			9.3			26.1			26.9	26.2
Progression Factor	1.00	1.00			0.43			1.00			1.00	1.00
Incremental Delay, d2	0.8	0.0			0.2			0.0			0.2	0.0
Delay (s)	32.2	4.2			4.2			26.1			27.1	26.2
Level of Service	C	A			A			C			C	C
Approach Delay (s)		6.1			4.2			26.1			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

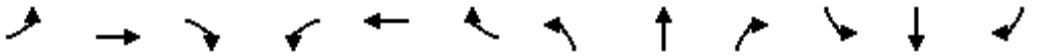
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	905	46	17	763	83	60	17	25	92	8	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.91			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3514		1770	3487		1770	1698			1736	
Flt Permitted	0.95	1.00		0.95	1.00		0.69	1.00			0.77	
Satd. Flow (perm)	1770	3514		1770	3487		1285	1698			1383	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	52	953	48	18	803	87	63	18	26	97	8	39
RTOR Reduction (vph)	0	3	0	0	6	0	0	22	0	0	17	0
Lane Group Flow (vph)	52	998	0	18	884	0	63	22	0	0	127	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.6	31.6		15.9	40.9		11.1	11.1			11.1	
Effective Green, g (s)	6.6	31.6		15.9	40.9		11.1	11.1			11.1	
Actuated g/C Ratio	0.09	0.44		0.22	0.56		0.15	0.15			0.15	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	161	1530		388	1964		196	260			211	
v/s Ratio Prot	c0.03	c0.28		0.01	c0.25			0.01				
v/s Ratio Perm							0.05				c0.09	
v/c Ratio	0.32	0.65		0.05	0.45		0.32	0.08			0.60	
Uniform Delay, d1	30.9	16.2		22.4	9.3		27.4	26.4			28.7	
Progression Factor	1.33	0.82		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	1.0		0.0	0.2		0.3	0.1			3.3	
Delay (s)	41.7	14.2		22.4	9.5		27.7	26.4			32.0	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		15.6			9.8			27.2			32.0	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	19.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



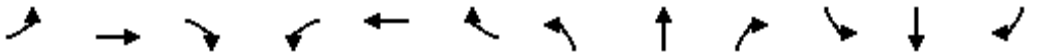
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	830	178	344	591	2	207	5	481	4	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.97		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1770	3446		1770	3538			1776	1583		1731	
Flt Permitted	0.95	1.00		0.95	1.00			0.72	1.00		0.93	
Satd. Flow (perm)	1770	3446		1770	3538			1340	1583		1632	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	883	189	366	629	2	220	5	512	4	5	7
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	345	0	6	0
Lane Group Flow (vph)	9	1052	0	366	631	0	0	225	167	0	10	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	1.1	35.5		19.1	53.5			17.1	17.1		17.1	
Effective Green, g (s)	1.1	35.5		19.1	53.5			17.1	17.1		17.1	
Actuated g/C Ratio	0.01	0.41		0.22	0.62			0.20	0.20		0.20	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	23	1427		394	2209			267	316		326	
v/s Ratio Prot	0.01	c0.31		c0.21	0.18							
v/s Ratio Perm								c0.17	0.11		0.01	
v/c Ratio	0.39	0.74		0.93	0.29			0.84	0.53		0.03	
Uniform Delay, d1	42.0	21.2		32.6	7.4			33.0	30.7		27.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	4.0	2.2		27.5	0.1			20.0	0.7		0.0	
Delay (s)	45.9	23.3		60.1	7.5			53.0	31.4		27.6	
Level of Service	D	C		E	A			D	C		C	
Approach Delay (s)		23.5			26.8			38.0			27.6	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	85.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



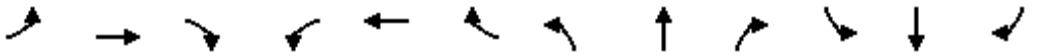
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	569	661	103	208	380	27	164	623	185	77	518	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3356	1583	1770	3539	1583	1610	3273		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3356	1583	1770	3539	1583	1610	3273		1770	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	587	681	106	214	392	28	169	642	191	79	534	410
RTOR Reduction (vph)	0	0	22	0	0	17	0	14	0	0	0	117
Lane Group Flow (vph)	411	857	84	214	392	11	152	836	0	79	534	293
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	40.2	40.2	40.2	27.6	27.6	27.6	40.2	40.2		35.5	35.5	35.5
Effective Green, g (s)	40.2	40.2	40.2	27.6	27.6	27.6	40.2	40.2		35.5	35.5	35.5
Actuated g/C Ratio	0.25	0.25	0.25	0.17	0.17	0.17	0.25	0.25		0.22	0.22	0.22
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	396	825	389	299	597	267	396	805		384	768	344
v/s Ratio Prot	0.26	c0.26		c0.12	0.11		0.09	c0.26		0.04	0.15	
v/s Ratio Perm			0.05			0.01						c0.18
v/c Ratio	1.04	1.04	0.22	0.72	0.66	0.04	0.38	1.04		0.21	0.70	0.85
Uniform Delay, d1	61.6	61.6	49.1	64.2	63.5	56.9	51.3	61.6		52.4	59.0	61.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	55.4	41.8	0.4	8.4	2.9	0.1	0.8	42.3		0.4	3.0	18.5
Delay (s)	117.0	103.5	49.5	72.7	66.4	56.9	52.2	103.9		52.8	62.0	79.9
Level of Service	F	F	D	E	E	E	D	F		D	E	E
Approach Delay (s)		103.4			68.1			96.1			68.5	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM Average Control Delay	87.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	163.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



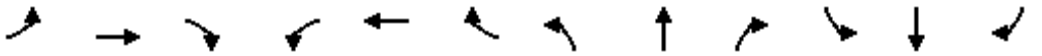
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	446	458	2027	499	641	753	1139	2389	638	555	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	181	496	509	2252	554	712	837	1266	2654	709	617	173
RTOR Reduction (vph)	0	0	252	0	0	118	0	0	109	0	0	125
Lane Group Flow (vph)	181	496	257	2252	554	594	837	1266	2545	709	617	48
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.9	37.2	37.2	19.8	48.1	48.1	9.8	34.0	53.8	9.0	33.2	33.2
Effective Green, g (s)	8.9	37.2	37.2	19.8	48.1	48.1	9.8	34.0	53.8	9.0	33.2	33.2
Actuated g/C Ratio	0.07	0.31	0.31	0.17	0.40	0.40	0.08	0.28	0.45	0.08	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	255	1097	864	823	747	635	280	1441	1366	257	1407	438
v/s Ratio Prot	0.05	0.14		c0.45	0.30		c0.24	0.25	c0.31	0.21	0.12	
v/s Ratio Perm			0.09			c0.38			0.61			0.03
v/c Ratio	0.71	0.45	0.30	2.74	0.74	0.94	2.99	0.88	1.86	2.76	0.44	0.11
Uniform Delay, d1	54.3	33.2	31.5	50.1	30.7	34.5	55.1	41.0	33.1	55.5	35.7	32.4
Progression Factor	1.00	1.00	1.00	1.27	0.58	0.46	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.7	1.3	0.9	781.7	0.6	3.3	904.7	6.6	391.3	802.3	0.3	0.2
Delay (s)	63.0	34.6	32.3	845.3	18.4	19.2	959.8	47.6	424.4	857.8	36.0	32.5
Level of Service	E	C	C	F	B	B	F	D	F	F	D	C
Approach Delay (s)		38.0			547.9			418.4			424.3	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM Average Control Delay	419.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	126.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



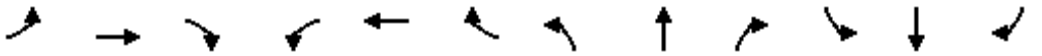
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	313	2600	494	174	2392	224	490	110	169	331	114	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4964		1770	6325		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4964		1770	6325		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	337	2796	531	187	2572	241	527	118	182	356	123	342
RTOR Reduction (vph)	0	18	0	0	10	0	0	0	152	0	0	206
Lane Group Flow (vph)	337	3309	0	187	2803	0	527	118	30	356	123	136
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	17.5	55.5		12.5	50.5		16.5	20.0	20.0	13.5	17.0	17.0
Effective Green, g (s)	17.5	55.5		12.5	50.5		16.5	20.0	20.0	13.5	17.0	17.0
Actuated g/C Ratio	0.15	0.46		0.10	0.42		0.14	0.17	0.17	0.11	0.14	0.14
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	258	2296		184	2662		243	311	264	199	264	224
v/s Ratio Prot	c0.19	c0.67		0.11	0.44		c0.30	c0.06		0.20	0.07	
v/s Ratio Perm									0.02			c0.09
v/c Ratio	1.31	1.44		1.02	1.05		2.17	0.38	0.11	1.79	0.47	0.61
Uniform Delay, d1	51.2	32.2		53.8	34.8		51.8	44.5	42.5	53.2	47.3	48.4
Progression Factor	1.08	0.80		0.89	0.98		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	140.4	198.7		24.1	25.0		539.3	0.9	0.2	374.5	1.5	4.8
Delay (s)	195.7	224.4		72.1	58.9		591.1	45.4	42.7	427.7	48.9	53.2
Level of Service	F	F		E	E		F	D	D	F	D	D
Approach Delay (s)		221.8			59.7			392.5			214.9	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	179.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	116.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



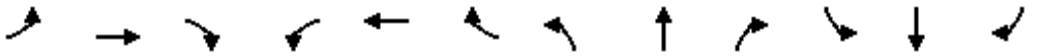
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	292	2169	637	245	1868	165	708	16	478	241	5	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4912		1770	5024		1770	1863	1583	1770	1590	
Flt Permitted	0.95	1.00		0.95	1.00		0.43	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	4912		1770	5024		793	1863	1583	1390	1590	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	314	2332	685	263	2009	177	761	17	514	259	5	218
RTOR Reduction (vph)	0	44	0	0	8	0	0	0	107	0	109	0
Lane Group Flow (vph)	314	2973	0	263	2178	0	761	17	407	259	114	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Effective Green, g (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Actuated g/C Ratio	0.10	0.58		0.08	0.56		0.23	0.23	0.23	0.23	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	170	2824		140	2805		182	427	363	319	364	
v/s Ratio Prot	c0.18	c0.61		0.15	0.43			0.01			0.07	
v/s Ratio Perm							c0.96		0.26	0.19		
v/c Ratio	1.85	1.05		1.88	0.78		4.18	0.04	1.12	0.81	0.31	
Uniform Delay, d1	54.2	25.5		55.2	20.7		46.2	36.0	46.2	43.8	38.4	
Progression Factor	0.80	1.18		0.75	1.07		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	383.2	24.8		397.8	0.2		1444.5	0.0	84.1	13.8	0.2	
Delay (s)	426.5	54.9		439.4	22.2		1490.7	36.0	130.4	57.6	38.6	
Level of Service	F	D		F	C		F	D	F	E	D	
Approach Delay (s)		89.9			67.0			930.4			48.8	
Approach LOS		F			E			F			D	

Intersection Summary			
HCM Average Control Delay	223.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	137.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



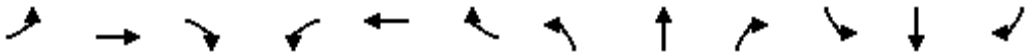
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	363	1637	913	817	1256	234	845	334	990	271	271	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4812		1770	5085	1583	1770	1863	1583	3433	1735	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4812		1770	5085	1583	1770	1863	1583	3433	1735	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	370	1670	932	834	1282	239	862	341	1010	277	277	232
RTOR Reduction (vph)	0	84	0	0	0	159	0	0	305	0	25	0
Lane Group Flow (vph)	370	2518	0	834	1282	80	862	341	705	277	484	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	20.5	31.0		29.5	40.0	40.0	13.5	28.4	28.4	12.6	27.5	
Effective Green, g (s)	20.5	31.0		29.5	40.0	40.0	13.5	28.4	28.4	12.6	27.5	
Actuated g/C Ratio	0.17	0.26		0.25	0.33	0.33	0.11	0.24	0.24	0.10	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	302	1243		435	1695	528	199	441	375	360	398	
v/s Ratio Prot	0.21	c0.52		c0.47	0.25		c0.49	0.18		0.08	0.28	
v/s Ratio Perm						0.05			c0.45			
v/c Ratio	1.23	2.03		1.92	0.76	0.15	4.33	0.77	1.88	0.77	1.21	
Uniform Delay, d1	49.8	44.5		45.2	35.7	28.1	53.2	42.8	45.8	52.3	46.2	
Progression Factor	1.22	0.89		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	104.2	461.9		421.2	3.2	0.6	1510.9	8.2	405.6	8.6	117.7	
Delay (s)	164.7	501.6		466.5	38.9	28.7	1564.2	51.0	451.4	60.9	164.0	
Level of Service	F	F		F	D	C	F	D	F	E	F	
Approach Delay (s)		459.6			189.3			823.1			127.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	448.4	HCM Level of Service	F
HCM Volume to Capacity ratio	2.18		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	187.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	701	1651	545	201	1684	363	66	28	8	327	85	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3407		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3407		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	738	1738	574	212	1773	382	69	29	8	344	89	568
RTOR Reduction (vph)	0	18	0	0	0	174	0	0	8	0	0	434
Lane Group Flow (vph)	738	2294	0	212	1773	208	69	29	0	344	89	134
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	16.5	68.3		18.9	70.7	70.7	7.6	4.9	4.9	18.9	16.2	18.9
Effective Green, g (s)	16.5	68.3		18.9	70.7	70.7	7.6	4.9	4.9	18.9	16.2	18.9
Actuated g/C Ratio	0.13	0.53		0.15	0.54	0.54	0.06	0.04	0.04	0.15	0.12	0.15
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	436	1790		257	2765	861	103	133	60	499	232	230
v/s Ratio Prot	c0.21	c0.67		0.12	0.35		0.04	0.01		c0.10	c0.05	
v/s Ratio Perm						0.13			0.00			0.08
v/c Ratio	1.69	1.28		0.82	0.64	0.24	0.67	0.22	0.01	0.69	0.38	0.58
Uniform Delay, d1	56.8	30.9		53.9	20.8	15.6	60.0	60.7	60.2	52.8	52.3	51.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	321.5	131.2		18.1	1.2	0.7	12.1	1.1	0.0	3.2	0.4	2.4
Delay (s)	378.2	162.1		72.1	21.9	16.2	72.0	61.8	60.2	55.9	52.7	54.3
Level of Service	F	F		E	C	B	E	E	E	E	D	D
Approach Delay (s)		214.4			25.5			68.4			54.7	
Approach LOS		F			C			E			D	

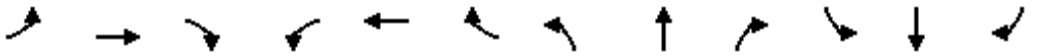
Intersection Summary			
HCM Average Control Delay	119.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	128	110	4	21	117	88	4	510	84	97	280	133
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	152	131	5	25	139	105	5	607	100	115	333	158

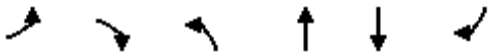
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	288	25	244	712	607
Volume Left (vph)	152	25	0	5	115
Volume Right (vph)	5	0	105	100	158
Hadj (s)	0.13	0.53	-0.27	-0.05	-0.08
Departure Headway (s)	8.8	9.6	8.8	7.8	7.8
Degree Utilization, x	0.70	0.07	0.60	1.54	1.31
Capacity (veh/h)	400	364	394	467	474
Control Delay (s)	30.0	12.1	22.7	274.1	176.5
Approach Delay (s)	30.0	21.7		274.1	176.5
Approach LOS	D	C		F	F

Intersection Summary				
Delay	168.8			
HCM Level of Service	F			
Intersection Capacity Utilization	98.3%	ICU Level of Service	F	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	280	24	104	220	541	22	847	150	618	745	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99			1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1841			1833	1583	1770	1821		1770	1816	
Flt Permitted	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1841			1833	1583	1770	1821		1770	1816	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	202	308	26	114	242	595	24	931	165	679	819	166
RTOR Reduction (vph)	0	3	0	0	0	367	0	6	0	0	6	0
Lane Group Flow (vph)	202	331	0	0	356	228	24	1090	0	679	979	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	22.1	22.1			23.4	23.4	22.0	22.0		22.0	22.0	
Effective Green, g (s)	22.1	22.1			23.4	23.4	22.0	22.0		22.0	22.0	
Actuated g/C Ratio	0.21	0.21			0.22	0.22	0.20	0.20		0.20	0.20	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	364	378			399	345	362	373		362	372	
v/s Ratio Prot	0.11	c0.18			c0.19		0.01	c0.60		0.38	c0.54	
v/s Ratio Perm						0.14						
v/c Ratio	0.55	0.88			0.89	0.66	0.07	2.92		1.88	2.63	
Uniform Delay, d1	38.3	41.4			40.8	38.4	34.5	42.8		42.8	42.8	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	19.6			21.4	4.7	0.1	872.8		404.4	741.6	
Delay (s)	40.1	61.0			62.2	43.1	34.5	915.6		447.2	784.3	
Level of Service	D	E			E	D	C	F		F	F	
Approach Delay (s)		53.1			50.3			896.7			646.7	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM Average Control Delay	505.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.82		
Actuated Cycle Length (s)	107.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	136.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	32	51	25	791
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	34	54	27	841
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	570	447	868			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	539	412	847			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	96			
cM capacity (veh/h)	466	619	765			

Direction, Lane #	NB 1	SB 1
Volume Total	88	868
Volume Left	34	0
Volume Right	0	841
cSH	765	1700
Volume to Capacity	0.04	0.51
Queue Length 95th (ft)	3	0
Control Delay (s)	4.1	0.0
Lane LOS	A	
Approach Delay (s)	4.1	0.0
Approach LOS		

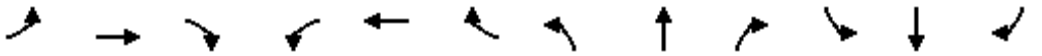
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

Near-Term Plus Project (Maximum FAR)
Mitigated
AM and PM Peak Hour
Synchro Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS

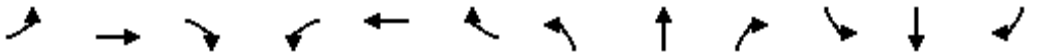
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	298	342	34	291	551	25	144	286	58	144	474	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3450		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3450		1770	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	347	398	40	338	641	29	167	333	67	167	551	438
RTOR Reduction (vph)	0	0	32	0	0	19	0	17	0	0	0	218
Lane Group Flow (vph)	347	398	8	338	641	10	167	383	0	167	551	220
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	19.1	20.4	20.4	21.5	22.8	22.8	12.4	21.9		12.4	21.9	21.9
Effective Green, g (s)	19.1	20.4	20.4	21.5	22.8	22.8	12.4	21.9		12.4	21.9	21.9
Actuated g/C Ratio	0.20	0.21	0.21	0.22	0.24	0.24	0.13	0.23		0.13	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	351	750	336	396	839	375	228	785		228	806	360
v/s Ratio Prot	c0.20	0.11		0.19	c0.18		c0.09	0.11		0.09	c0.16	
v/s Ratio Perm			0.01			0.01						0.14
v/c Ratio	0.99	0.53	0.03	0.85	0.76	0.03	0.73	0.49		0.73	0.68	0.61
Uniform Delay, d1	38.4	33.6	30.0	35.8	34.2	28.2	40.3	32.3		40.3	34.0	33.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	44.6	0.9	0.0	16.7	4.4	0.0	12.2	0.7		12.2	2.6	3.5
Delay (s)	83.0	34.6	30.1	52.5	38.6	28.2	52.5	32.9		52.5	36.6	36.8
Level of Service	F	C	C	D	D	C	D	C		D	D	D
Approach Delay (s)		55.8			43.0			38.7			39.0	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM Average Control Delay	43.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	96.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



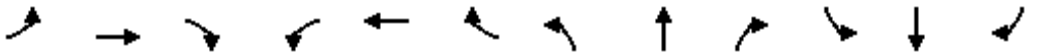
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	191	314	678	791	233	354	531	1285	1319	319	899	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.94	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	208	341	737	860	253	385	577	1397	1434	347	977	198
RTOR Reduction (vph)	0	0	298	0	0	168	0	0	66	0	0	142
Lane Group Flow (vph)	208	341	439	860	253	217	577	1397	1368	347	977	56
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	9.9	24.2	24.2	26.8	41.1	41.1	15.0	36.0	62.8	13.0	34.0	34.0
Effective Green, g (s)	9.9	24.2	24.2	26.8	41.1	41.1	15.0	36.0	62.8	13.0	34.0	34.0
Actuated g/C Ratio	0.08	0.20	0.20	0.22	0.34	0.34	0.12	0.30	0.52	0.11	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	283	714	562	1114	638	542	624	1526	1575	372	1441	449
v/s Ratio Prot	0.06	0.10		0.17	0.14		c0.12	0.27	c0.19	0.10	0.19	
v/s Ratio Perm			c0.16			0.14			0.30			0.04
v/c Ratio	0.73	0.48	0.78	0.77	0.40	0.40	0.92	0.92	0.87	0.93	0.68	0.12
Uniform Delay, d1	53.8	42.3	45.4	43.7	30.0	30.1	51.9	40.5	25.0	53.1	38.1	31.9
Progression Factor	1.00	1.00	1.00	0.98	1.22	2.14	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.5	2.3	10.4	3.1	1.7	2.0	19.6	9.0	5.4	30.0	1.4	0.2
Delay (s)	63.3	44.6	55.8	46.1	38.4	66.4	71.5	49.6	30.4	83.0	39.5	32.1
Level of Service	E	D	E	D	D	E	E	D	C	F	D	C
Approach Delay (s)		54.0			50.1			45.2			48.5	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	48.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



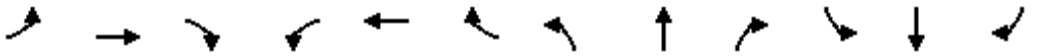
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	1600	224	78	825	73	311	46	68	129	38	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4992		1770	6330		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4992		1770	6330		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	123	1667	233	81	859	76	324	48	71	134	40	123
RTOR Reduction (vph)	0	11	0	0	8	0	0	0	63	0	0	113
Lane Group Flow (vph)	123	1889	0	81	927	0	324	48	8	134	40	10
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	12.3	64.1		6.2	58.0		21.5	13.4	13.4	17.8	9.7	9.7
Effective Green, g (s)	12.3	64.1		6.2	58.0		21.5	13.4	13.4	17.8	9.7	9.7
Actuated g/C Ratio	0.10	0.53		0.05	0.48		0.18	0.11	0.11	0.15	0.08	0.08
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	181	2667		91	3060		317	208	177	263	151	128
v/s Ratio Prot	c0.07	c0.38		0.05	0.15		c0.18	c0.03		0.08	0.02	
v/s Ratio Perm									0.01			0.01
v/c Ratio	0.68	0.71		0.89	0.30		1.02	0.23	0.04	0.51	0.26	0.08
Uniform Delay, d1	51.9	20.9		56.6	18.8		49.2	48.6	47.6	47.1	51.8	51.0
Progression Factor	0.98	1.08		1.19	0.60		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.3	0.9		57.5	0.2		56.3	0.7	0.1	0.6	1.1	0.3
Delay (s)	55.3	23.4		124.9	11.5		105.6	49.3	47.7	47.6	52.9	51.3
Level of Service	E	C		F	B		F	D	D	D	D	D
Approach Delay (s)		25.3			20.5			90.2			49.9	
Approach LOS		C			C			F			D	

Intersection Summary			
HCM Average Control Delay	33.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



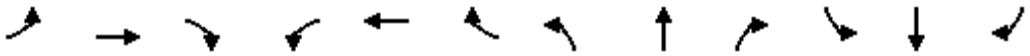
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	709	421	433	694	89	283	136	432	88	259	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	4998		1770	1863	2787	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	4998		1770	1863	2787	3433	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	176	739	439	451	723	93	295	142	450	92	270	98
RTOR Reduction (vph)	0	0	303	0	12	0	0	0	305	0	0	80
Lane Group Flow (vph)	176	739	136	451	804	0	295	142	145	92	270	18
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	19.2	37.3	37.3	18.8	36.9		23.4	38.7	38.7	6.7	22.0	22.0
Effective Green, g (s)	19.2	37.3	37.3	18.8	36.9		23.4	38.7	38.7	6.7	22.0	22.0
Actuated g/C Ratio	0.16	0.31	0.31	0.16	0.31		0.19	0.32	0.32	0.06	0.18	0.18
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0		2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	283	1581	492	538	1537		345	601	899	192	342	290
v/s Ratio Prot	0.10	0.15		c0.13	c0.16		c0.17	0.08		0.03	c0.14	
v/s Ratio Perm			0.09						0.05			0.01
v/c Ratio	0.62	0.47	0.28	0.84	0.52		0.86	0.24	0.16	0.48	0.79	0.06
Uniform Delay, d1	47.0	33.3	31.2	49.1	34.3		46.7	29.8	29.1	55.0	46.8	40.5
Progression Factor	0.91	0.67	1.41	0.80	0.71		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.9	1.3	9.9	1.2		17.7	0.2	0.1	0.7	11.5	0.1
Delay (s)	45.3	23.1	45.1	49.3	25.7		64.3	30.0	29.1	55.6	58.3	40.6
Level of Service	D	C	D	D	C		E	C	C	E	E	D
Approach Delay (s)		33.1			34.1			41.0			54.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	37.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	687	280	107	851	285	14	8	4	440	113	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	301	781	318	122	967	324	16	9	5	500	128	344
RTOR Reduction (vph)	0	0	137	0	0	142	0	0	5	0	0	289
Lane Group Flow (vph)	301	781	181	122	967	182	16	9	0	500	128	55
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	11.5	68.2	68.2	10.8	67.5	67.5	4.4	2.9	2.9	19.1	17.6	19.1
Effective Green, g (s)	11.5	68.2	68.2	10.8	67.5	67.5	4.4	2.9	2.9	19.1	17.6	19.1
Actuated g/C Ratio	0.10	0.57	0.57	0.09	0.56	0.56	0.04	0.02	0.02	0.16	0.15	0.16
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	329	2011	900	159	2860	890	65	86	38	546	273	252
v/s Ratio Prot	c0.09	c0.22		c0.07	0.19		0.01	0.00		c0.15	c0.07	
v/s Ratio Perm			0.11			0.12			0.00			0.03
v/c Ratio	0.91	0.39	0.20	0.77	0.34	0.20	0.25	0.10	0.00	0.92	0.47	0.22
Uniform Delay, d1	53.8	14.3	12.6	53.4	14.2	13.0	56.2	57.3	57.1	49.7	46.9	43.9
Progression Factor	0.68	0.49	0.34	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.1	0.5	0.5	17.9	0.3	0.5	0.7	0.7	0.0	19.7	0.5	0.2
Delay (s)	63.6	7.5	4.8	71.2	14.5	13.5	56.9	58.0	57.2	69.4	47.4	44.1
Level of Service	E	A	A	E	B	B	E	E	E	E	D	D
Approach Delay (s)		19.0			19.2			57.3			57.5	
Approach LOS		B			B			E			E	

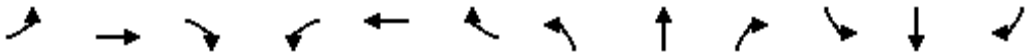
Intersection Summary			
HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	62	81	1	66	41	38	0	147	22	60	420	42
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	81	105	1	86	53	49	0	191	29	78	545	55

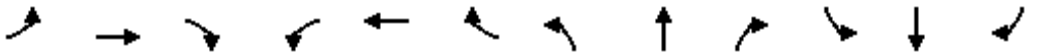
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	133	54	86	103	95	124	351	327
Volume Left (vph)	81	0	86	0	0	0	78	0
Volume Right (vph)	0	1	0	49	0	29	0	55
Hadj (s)	0.34	0.02	0.53	-0.30	0.03	-0.13	0.15	-0.08
Departure Headway (s)	7.4	7.1	7.6	6.7	6.7	6.5	6.2	6.0
Degree Utilization, x	0.27	0.11	0.18	0.19	0.18	0.22	0.60	0.54
Capacity (veh/h)	460	477	445	499	511	523	567	590
Control Delay (s)	11.9	9.7	11.0	10.1	9.9	10.2	17.0	14.6
Approach Delay (s)	11.3		10.5		10.1		15.8	
Approach LOS	B		B		B		C	

Intersection Summary				
Delay	13.4			
HCM Level of Service	B			
Intersection Capacity Utilization	39.8%	ICU Level of Service	A	
Analysis Period (min)	15			



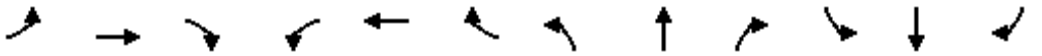
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	134	28	82	185	482	15	245	32	515	370	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1815			1835	1583	1770	1831		1770	1828	
Flt Permitted	0.95	1.00			0.84	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1815			1563	1583	1770	1831		1770	1828	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	65	140	29	85	193	502	16	255	33	536	385	55
RTOR Reduction (vph)	0	7	0	0	0	393	0	5	0	0	5	0
Lane Group Flow (vph)	65	162	0	0	278	109	16	283	0	536	435	0
Turn Type	Prot			Perm		Perm	Prot			Prot		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8		8						
Actuated Green, G (s)	4.0	30.2			21.7	21.7	1.4	23.1		33.1	54.8	
Effective Green, g (s)	4.0	30.2			21.7	21.7	1.4	23.1		33.1	54.8	
Actuated g/C Ratio	0.04	0.30			0.22	0.22	0.01	0.23		0.33	0.55	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	71	549			340	344	25	423		586	1003	
v/s Ratio Prot	c0.04	0.09					0.01	c0.15		c0.30	0.24	
v/s Ratio Perm					c0.18	0.07						
v/c Ratio	0.92	0.30			0.82	0.32	0.64	0.67		0.91	0.43	
Uniform Delay, d1	47.8	26.7			37.2	32.9	49.0	34.9		32.0	13.4	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	77.4	0.3			14.1	0.5	44.6	4.0		18.9	0.3	
Delay (s)	125.2	27.0			51.3	33.4	93.6	38.9		50.9	13.7	
Level of Service	F	C			D	C	F	D		D	B	
Approach Delay (s)		54.3			39.8			41.8			34.1	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	39.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	99.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



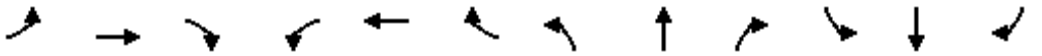
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	569	661	103	208	380	27	164	623	185	77	518	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3417		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3417		1770	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	587	681	106	214	392	28	169	642	191	79	534	410
RTOR Reduction (vph)	0	0	43	0	0	23	0	23	0	0	0	173
Lane Group Flow (vph)	587	681	63	214	392	5	169	810	0	79	534	237
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	40.0	40.1	40.1	19.2	19.3	19.3	12.0	29.0		6.0	23.0	23.0
Effective Green, g (s)	40.0	40.1	40.1	19.2	19.3	19.3	12.0	29.0		6.0	23.0	23.0
Actuated g/C Ratio	0.35	0.35	0.35	0.17	0.17	0.17	0.10	0.25		0.05	0.20	0.20
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	619	1242	555	297	598	267	186	867		93	712	319
v/s Ratio Prot	c0.33	0.19		0.12	c0.11		c0.10	c0.24		0.04	0.15	
v/s Ratio Perm			0.04			0.00						0.15
v/c Ratio	0.95	0.55	0.11	0.72	0.66	0.02	0.91	0.93		0.85	0.75	0.74
Uniform Delay, d1	36.1	29.8	25.1	45.0	44.4	39.6	50.6	41.7		53.7	42.9	42.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	24.0	0.6	0.1	8.9	2.9	0.0	41.3	16.9		49.1	4.7	9.5
Delay (s)	60.2	30.4	25.2	53.9	47.3	39.6	91.9	58.6		102.8	47.7	52.4
Level of Service	E	C	C	D	D	D	F	E		F	D	D
Approach Delay (s)		42.7			49.2			64.2			53.8	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	51.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	114.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



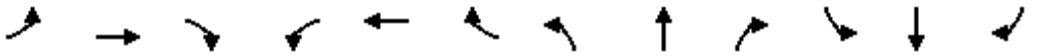
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	446	458	2027	499	641	753	1139	2389	638	555	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.94	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	181	496	509	2252	554	712	837	1266	2654	709	617	173
RTOR Reduction (vph)	0	0	28	0	0	9	0	0	3	0	0	73
Lane Group Flow (vph)	181	496	481	2252	554	703	837	1266	2651	709	617	100
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	20.0	20.0	39.0	51.0	51.0	74.0	19.0	36.0	87.0	23.0	40.0	60.0
Effective Green, g (s)	20.0	20.0	39.0	51.0	51.0	74.0	19.0	36.0	87.0	23.0	40.0	60.0
Actuated g/C Ratio	0.13	0.13	0.26	0.34	0.34	0.49	0.13	0.24	0.58	0.15	0.27	0.40
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
Lane Grp Cap (vph)	458	472	725	1697	633	781	632	1220	1616	526	1356	633
v/s Ratio Prot	0.05	c0.14	0.08	0.45	0.30	0.14	0.17	0.25	c0.56	c0.21	c0.12	0.02
v/s Ratio Perm			0.09			0.31			0.39			0.04
v/c Ratio	0.40	1.05	0.66	1.33	0.88	0.90	1.32	1.04	1.64	1.35	0.46	0.16
Uniform Delay, d1	59.5	65.0	49.6	49.5	46.5	34.6	65.5	57.0	31.5	63.5	45.9	28.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	55.4	2.3	151.4	15.6	13.2	156.8	36.1	291.1	168.9	0.3	0.1
Delay (s)	60.0	120.4	51.9	200.9	62.1	47.8	222.3	93.1	322.6	232.4	46.2	28.9
Level of Service	E	F	D	F	E	D	F	F	F	F	D	C
Approach Delay (s)		81.8			148.0			243.8			132.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	180.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	126.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



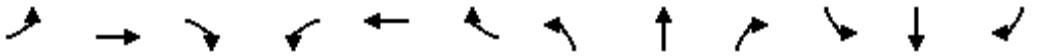
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	313	2600	494	174	2392	224	490	110	169	331	114	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4964		1770	6325		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4964		1770	6325		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	337	2796	531	187	2572	241	527	118	182	356	123	342
RTOR Reduction (vph)	0	20	0	0	11	0	0	0	105	0	0	108
Lane Group Flow (vph)	337	3307	0	187	2802	0	527	118	77	356	123	234
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	11.5	54.6		7.5	50.6		16.5	26.9	26.9	12.5	22.9	22.9
Effective Green, g (s)	11.5	54.6		7.5	50.6		16.5	26.9	26.9	12.5	22.9	22.9
Actuated g/C Ratio	0.10	0.46		0.06	0.42		0.14	0.22	0.22	0.10	0.19	0.19
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	170	2259		111	2667		243	418	355	184	356	302
v/s Ratio Prot	c0.19	c0.67		0.11	0.44		c0.30	c0.06		0.20	0.07	
v/s Ratio Perm									0.05			c0.15
v/c Ratio	1.98	1.46		1.68	1.05		2.17	0.28	0.22	1.93	0.35	0.77
Uniform Delay, d1	54.2	32.7		56.2	34.7		51.8	38.6	38.0	53.8	42.1	46.1
Progression Factor	1.00	1.00		0.99	0.79		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	462.5	211.2		311.7	24.0		539.3	0.4	0.4	440.0	0.7	12.0
Delay (s)	516.7	243.9		367.2	51.3		591.1	39.0	38.3	493.8	42.8	58.1
Level of Service	F	F		F	D		F	D	D	F	D	E
Approach Delay (s)		269.0			71.0			390.7			244.7	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	207.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	116.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	292	2169	637	245	1868	165	708	16	478	241	5	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4912		1770	5024		1770	1863	1583	1770	1590	
Flt Permitted	0.95	1.00		0.95	1.00		0.43	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	4912		1770	5024		793	1863	1583	1390	1590	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	314	2332	685	263	2009	177	761	17	514	259	5	218
RTOR Reduction (vph)	0	44	0	0	8	0	0	0	107	0	109	0
Lane Group Flow (vph)	314	2973	0	263	2178	0	761	17	407	259	114	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Effective Green, g (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Actuated g/C Ratio	0.10	0.58		0.08	0.56		0.23	0.23	0.23	0.23	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	170	2824		140	2805		182	427	363	319	364	
v/s Ratio Prot	c0.18	c0.61		0.15	0.43			0.01			0.07	
v/s Ratio Perm							c0.96		0.26	0.19		
v/c Ratio	1.85	1.05		1.88	0.78		4.18	0.04	1.12	0.81	0.31	
Uniform Delay, d1	54.2	25.5		55.2	20.7		46.2	36.0	46.2	43.8	38.4	
Progression Factor	0.67	1.47		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	383.2	24.8		421.2	2.2		1444.5	0.0	84.1	13.8	0.2	
Delay (s)	419.8	62.4		476.4	22.8		1490.7	36.0	130.4	57.6	38.6	
Level of Service	F	E		F	C		F	D	F	E	D	
Approach Delay (s)		96.1			71.5			930.4			48.8	
Approach LOS		F			E			F			D	

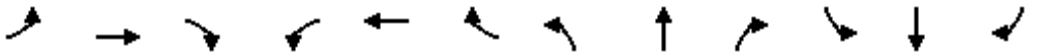
Intersection Summary			
HCM Average Control Delay	227.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	137.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	363	1637	913	817	1256	234	845	334	990	271	271	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	4965		1770	1863	2787	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	4965		1770	1863	2787	3433	1863	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	370	1670	932	834	1282	239	862	341	1010	277	277	232
RTOR Reduction (vph)	0	0	396	0	18	0	0	0	393	0	0	189
Lane Group Flow (vph)	370	1670	536	834	1503	0	862	341	617	277	277	43
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	20.5	41.3	41.3	22.5	43.3		42.5	53.0	53.0	14.7	25.2	25.2
Effective Green, g (s)	20.5	41.3	41.3	22.5	43.3		42.5	53.0	53.0	14.7	25.2	25.2
Actuated g/C Ratio	0.14	0.28	0.28	0.15	0.29		0.28	0.35	0.35	0.10	0.17	0.17
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0		2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	242	1400	436	515	1433		502	658	985	336	313	266
v/s Ratio Prot	c0.21	0.33		c0.24	0.30		c0.49	0.18		0.08	c0.15	
v/s Ratio Perm			c0.34						0.22			0.03
v/c Ratio	1.53	1.19	1.23	1.62	1.05		1.72	0.52	0.63	0.82	0.88	0.16
Uniform Delay, d1	64.8	54.4	54.4	63.8	53.4		53.8	38.4	40.3	66.4	61.0	53.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	257.9	94.1	122.2	287.6	37.8		331.1	0.7	1.3	14.4	24.3	0.3
Delay (s)	322.6	148.5	176.6	351.3	91.1		384.8	39.1	41.5	80.8	85.3	53.7
Level of Service	F	F	F	F	F		F	D	D	F	F	D
Approach Delay (s)		179.0			183.3			174.9			74.4	
Approach LOS		F			F			F			E	

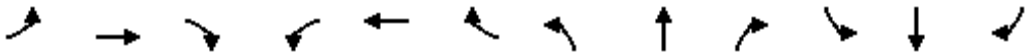
Intersection Summary			
HCM Average Control Delay	169.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	131.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	701	1651	545	201	1684	363	66	28	8	327	85	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	738	1738	574	212	1773	382	69	29	8	344	89	568
RTOR Reduction (vph)	0	0	154	0	0	216	0	0	8	0	0	499
Lane Group Flow (vph)	738	1738	420	212	1773	166	69	29	0	344	89	69
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	20.6	53.3	53.3	11.5	44.2	44.2	6.9	5.8	5.8	12.4	11.3	12.4
Effective Green, g (s)	20.6	53.3	53.3	11.5	44.2	44.2	6.9	5.8	5.8	12.4	11.3	12.4
Actuated g/C Ratio	0.20	0.52	0.52	0.11	0.43	0.43	0.07	0.06	0.06	0.12	0.11	0.12
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	693	1849	827	200	2204	686	120	201	90	417	206	192
v/s Ratio Prot	c0.21	c0.49		0.12	0.35		0.04	0.01		c0.10	c0.05	
v/s Ratio Perm			0.27			0.10			0.00			0.04
v/c Ratio	1.06	0.94	0.51	1.06	0.80	0.24	0.57	0.14	0.01	0.82	0.43	0.36
Uniform Delay, d1	40.7	22.8	15.8	45.2	25.1	18.3	46.1	45.7	45.4	43.7	42.4	41.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	52.8	10.0	0.7	80.4	2.4	0.3	4.1	0.5	0.0	11.9	0.5	0.4
Delay (s)	93.5	32.9	16.5	125.6	27.5	18.5	50.2	46.2	45.4	55.7	42.9	41.6
Level of Service	F	C	B	F	C	B	D	D	D	E	D	D
Approach Delay (s)		44.5			34.8			48.8			46.5	
Approach LOS		D			C			D			D	

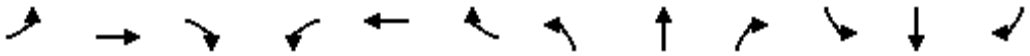
Intersection Summary			
HCM Average Control Delay	41.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	128	110	4	21	117	88	4	510	84	97	280	133
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	152	131	5	25	139	105	5	607	100	115	333	158

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	218	70	25	244	308	404	282	325
Volume Left (vph)	152	0	25	0	5	0	115	0
Volume Right (vph)	0	5	0	105	0	100	0	158
Hadj (s)	0.38	-0.01	0.53	-0.27	0.04	-0.14	0.24	-0.31
Departure Headway (s)	8.9	8.5	9.1	8.3	7.8	7.6	8.1	7.5
Degree Utilization, x	0.54	0.17	0.06	0.56	0.67	0.85	0.63	0.68
Capacity (veh/h)	383	401	372	409	451	468	430	463
Control Delay (s)	20.6	12.0	11.5	20.3	23.7	39.2	22.9	24.0
Approach Delay (s)	18.5		19.5		32.5		23.5	
Approach LOS	C		C		D		C	

Intersection Summary				
Delay	25.6			
HCM Level of Service	D			
Intersection Capacity Utilization	63.7%	ICU Level of Service	B	
Analysis Period (min)	15			

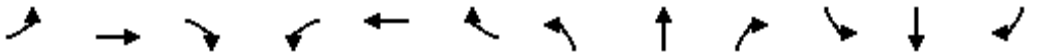


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	280	24	104	220	541	22	847	150	618	745	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99			1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1841			1833	1583	1770	1821		1770	1816	
Flt Permitted	0.95	1.00			0.72	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1841			1346	1583	1770	1821		1770	1816	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	202	308	26	114	242	595	24	931	165	679	819	166
RTOR Reduction (vph)	0	3	0	0	0	238	0	6	0	0	6	0
Lane Group Flow (vph)	202	331	0	0	356	357	24	1090	0	679	979	0
Turn Type	Prot			Perm		Perm	Prot			Prot		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8		8						
Actuated Green, G (s)	8.5	38.5			25.5	25.5	2.5	47.3		22.5	67.3	
Effective Green, g (s)	8.5	38.5			25.5	25.5	2.5	47.3		22.5	67.3	
Actuated g/C Ratio	0.07	0.32			0.21	0.21	0.02	0.39		0.18	0.55	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	124	582			282	331	36	707		327	1003	
v/s Ratio Prot	c0.11	0.18					0.01	c0.60		c0.38	0.54	
v/s Ratio Perm					c0.26	0.23						
v/c Ratio	1.63	0.57			1.26	1.08	0.67	1.54		2.08	0.98	
Uniform Delay, d1	56.6	34.7			48.1	48.1	59.2	37.2		49.6	26.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	316.7	1.3			143.4	72.0	38.0	251.1		494.8	22.6	
Delay (s)	373.3	36.0			191.5	120.2	97.2	288.4		544.4	49.0	
Level of Service	F	D			F	F	F	F		F	D	
Approach Delay (s)		163.1			146.9			284.3			251.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	225.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.60		
Actuated Cycle Length (s)	121.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	136.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

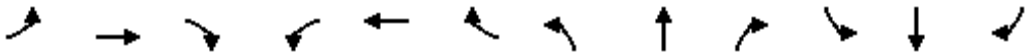
Cumulative No Project
AM and PM Peak Hour
Synchro Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS



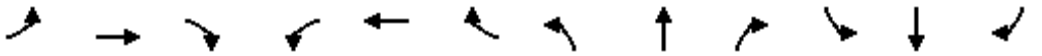
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	33	46	549	43	307	64	1411	331	450	881	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1697	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.57	1.00	1.00	0.95	0.44	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1064	1863	1583	1681	786	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	32	38	53	631	49	353	74	1622	380	517	1013	33
RTOR Reduction (vph)	0	0	50	0	0	238	0	0	119	0	0	17
Lane Group Flow (vph)	32	38	3	341	339	115	74	1622	261	517	1013	16
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	7.0	7.0	7.0	25.2	36.7	36.7	7.8	41.4	41.4	20.6	54.2	54.2
Effective Green, g (s)	7.0	7.0	7.0	25.2	36.7	36.7	7.8	41.4	41.4	20.6	54.2	54.2
Actuated g/C Ratio	0.06	0.06	0.06	0.22	0.33	0.33	0.07	0.37	0.37	0.18	0.48	0.48
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	66	116	98	376	460	515	123	1300	582	628	2445	761
v/s Ratio Prot		0.02		c0.20	0.16		0.04	c0.46		c0.15	0.20	
v/s Ratio Perm	0.03		0.00		c0.08	0.07			0.16			0.01
v/c Ratio	0.48	0.33	0.03	0.91	0.74	0.22	0.60	1.25	0.45	0.82	0.41	0.02
Uniform Delay, d1	51.1	50.6	49.7	42.6	33.7	27.6	50.9	35.7	27.0	44.3	19.0	15.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.6	0.1	24.2	5.2	0.1	5.6	118.0	0.8	8.2	0.2	0.0
Delay (s)	53.1	51.2	49.7	66.8	39.0	27.7	56.5	153.7	27.8	52.5	19.1	15.4
Level of Service	D	D	D	E	D	C	E	F	C	D	B	B
Approach Delay (s)		51.1			44.3			127.2			30.1	
Approach LOS		D			D			F			C	

Intersection Summary			
HCM Average Control Delay	75.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	112.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



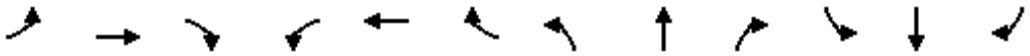
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	684	158	128	796	4	117	9	92	8	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3439		1770	3537		1770	1863	1583	1770	1642	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	3439		1770	3537		1381	1863	1583	1399	1642	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	735	170	138	856	4	126	10	99	9	5	19
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	82	0	16	0
Lane Group Flow (vph)	32	889	0	138	860	0	126	10	17	9	8	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	2.3	29.3		8.0	35.0		10.6	10.6	10.6	10.6	10.6	
Effective Green, g (s)	2.3	29.3		8.0	35.0		10.6	10.6	10.6	10.6	10.6	
Actuated g/C Ratio	0.04	0.47		0.13	0.57		0.17	0.17	0.17	0.17	0.17	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	66	1628		229	2000		236	319	271	240	281	
v/s Ratio Prot	0.02	c0.26		c0.08	0.24			0.01			0.01	
v/s Ratio Perm							c0.09		0.01	0.01		
v/c Ratio	0.48	0.55		0.60	0.43		0.53	0.03	0.06	0.04	0.03	
Uniform Delay, d1	29.2	11.6		25.4	7.7		23.4	21.4	21.5	21.4	21.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.0	0.5		3.0	0.2		1.2	0.0	0.0	0.0	0.0	
Delay (s)	31.3	12.0		28.5	7.9		24.6	21.4	21.5	21.4	21.4	
Level of Service	C	B		C	A		C	C	C	C	C	
Approach Delay (s)		12.7			10.8			23.1			21.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	61.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



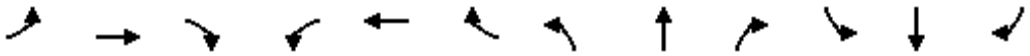
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	625	10	0	706	60	2	0	2	66	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.93			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3531			3498			1695			1770	1583
Flt Permitted	0.95	1.00			1.00			0.93			0.76	1.00
Satd. Flow (perm)	1770	3531			3498			1607			1407	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	64	710	11	0	802	68	2	0	2	75	0	95
RTOR Reduction (vph)	0	1	0	0	5	0	0	2	0	0	0	73
Lane Group Flow (vph)	64	720	0	0	865	0	0	2	0	0	75	22
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	6.0	47.2			36.7			16.6			16.6	16.6
Effective Green, g (s)	6.0	47.2			36.7			16.6			16.6	16.6
Actuated g/C Ratio	0.08	0.64			0.50			0.23			0.23	0.23
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	145	2274			1751			364			319	358
v/s Ratio Prot	c0.04	0.20			c0.25							
v/s Ratio Perm								0.00			c0.05	0.01
v/c Ratio	0.44	0.32			0.49			0.01			0.24	0.06
Uniform Delay, d1	32.1	5.8			12.1			22.0			23.2	22.2
Progression Factor	1.00	1.00			0.37			1.00			1.00	1.00
Incremental Delay, d2	0.8	0.0			0.3			0.0			0.1	0.0
Delay (s)	32.8	5.9			4.7			22.0			23.3	22.3
Level of Service	C	A			A			C			C	C
Approach Delay (s)		8.1			4.7			22.0			22.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	73.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



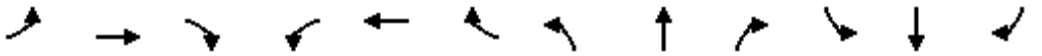
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	640	32	11	680	136	8	3	2	161	7	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.94			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3514		1770	3451		1770	1751			1733	
Flt Permitted	0.95	1.00		0.95	1.00		0.65	1.00			0.79	
Satd. Flow (perm)	1770	3514		1770	3451		1213	1751			1417	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	53	719	36	12	764	153	9	3	2	181	8	72
RTOR Reduction (vph)	0	4	0	0	13	0	0	2	0	0	15	0
Lane Group Flow (vph)	53	751	0	12	904	0	9	3	0	0	246	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.0	29.7		13.0	36.7		16.6	16.6			16.6	
Effective Green, g (s)	6.0	29.7		13.0	36.7		16.6	16.6			16.6	
Actuated g/C Ratio	0.08	0.41		0.18	0.50		0.23	0.23			0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	145	1424		314	1728		275	397			321	
v/s Ratio Prot	c0.03	0.21		0.01	c0.26			0.00				
v/s Ratio Perm							0.01				c0.17	
v/c Ratio	0.37	0.53		0.04	0.52		0.03	0.01			0.76	
Uniform Delay, d1	31.8	16.5		25.0	12.4		22.1	22.0			26.5	
Progression Factor	1.34	0.80		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.6	0.4		0.0	0.4		0.0	0.0			9.4	
Delay (s)	43.1	13.6		25.0	12.8		22.1	22.0			35.9	
Level of Service	D	B		C	B		C	C			D	
Approach Delay (s)		15.6			12.9			22.1			35.9	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	73.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	668	139	343	890	0	79	0	200	0	4	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.97		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3448		1770	3539			1770	1583		1726	
Flt Permitted	0.95	1.00		0.95	1.00			0.75	1.00		1.00	
Satd. Flow (perm)	1770	3448		1770	3539			1398	1583		1726	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	2	777	162	399	1035	0	92	0	233	0	5	6
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	204	0	5	0
Lane Group Flow (vph)	2	920	0	399	1035	0	0	92	29	0	6	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	0.9	30.8		20.3	50.2			9.2	9.2		9.2	
Effective Green, g (s)	0.9	30.8		20.3	50.2			9.2	9.2		9.2	
Actuated g/C Ratio	0.01	0.41		0.27	0.68			0.12	0.12		0.12	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	21	1429		484	2391			173	196		214	
v/s Ratio Prot	0.00	c0.27		c0.23	0.29						0.00	
v/s Ratio Perm								c0.07	0.02			
v/c Ratio	0.10	0.64		0.82	0.43			0.53	0.15		0.03	
Uniform Delay, d1	36.3	17.4		25.3	5.5			30.5	29.0		28.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	1.1		10.4	0.2			1.6	0.1		0.0	
Delay (s)	37.0	18.5		35.8	5.7			32.1	29.2		28.6	
Level of Service	D	B		D	A			C	C		C	
Approach Delay (s)		18.5			14.1			30.0			28.6	
Approach LOS		B			B			C			C	

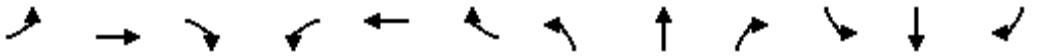
Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	74.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	298	442	30	341	703	25	142	387	57	144	677	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3370	1583	1770	3539	1583	1610	3322		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3370	1583	1770	3539	1583	1610	3322		1770	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	347	514	35	397	817	29	165	450	66	167	787	442
RTOR Reduction (vph)	0	0	11	0	0	8	0	6	0	0	0	84
Lane Group Flow (vph)	278	583	24	397	817	21	148	527	0	167	787	358
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	36.0	36.0	36.0	40.2	40.2	40.2	33.7	33.7		40.2	40.2	40.2
Effective Green, g (s)	36.0	36.0	36.0	40.2	40.2	40.2	33.7	33.7		40.2	40.2	40.2
Actuated g/C Ratio	0.21	0.21	0.21	0.24	0.24	0.24	0.20	0.20		0.24	0.24	0.24
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	341	713	335	418	836	374	319	658		418	836	374
v/s Ratio Prot	0.17	c0.17		0.22	c0.23		0.09	c0.16		0.09	0.22	
v/s Ratio Perm			0.02			0.01						c0.23
v/c Ratio	0.82	0.82	0.07	0.95	0.98	0.06	0.46	0.80		0.40	0.94	0.96
Uniform Delay, d1	63.9	63.9	53.7	64.0	64.5	50.3	60.2	65.0		54.8	63.8	64.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.6	7.6	0.1	31.3	25.4	0.1	1.5	7.3		0.9	18.6	35.3
Delay (s)	78.4	71.5	53.8	95.2	89.9	50.4	61.7	72.4		55.6	82.4	99.4
Level of Service	E	E	D	F	F	D	E	E		E	F	F
Approach Delay (s)		73.0			90.7			70.0			84.6	
Approach LOS		E			F			E			F	

Intersection Summary			
HCM Average Control Delay	81.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	170.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

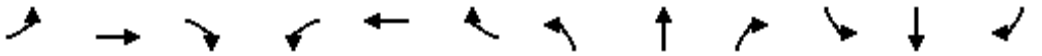


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	191	366	728	789	255	371	581	1533	1457	352	992	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	208	398	791	858	277	403	632	1666	1584	383	1078	225
RTOR Reduction (vph)	0	0	366	0	0	120	0	0	98	0	0	161
Lane Group Flow (vph)	208	398	425	858	277	283	632	1666	1486	383	1078	64
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.0	31.0	31.0	15.0	38.0	38.0	20.0	45.0	60.0	9.0	34.0	34.0
Effective Green, g (s)	8.0	31.0	31.0	15.0	38.0	38.0	20.0	45.0	60.0	9.0	34.0	34.0
Actuated g/C Ratio	0.07	0.26	0.26	0.12	0.32	0.32	0.17	0.38	0.50	0.08	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	229	914	720	624	590	501	572	1907	1510	257	1441	449
v/s Ratio Prot	0.06	0.11		c0.17	0.15		c0.18	0.33	c0.12	c0.11	0.21	
v/s Ratio Perm			0.15			c0.18			0.41			0.04
v/c Ratio	0.91	0.44	0.59	1.38	0.47	0.56	1.10	0.87	0.98	1.49	0.75	0.14
Uniform Delay, d1	55.6	37.2	38.9	52.5	32.9	34.1	50.0	34.9	29.5	55.5	39.1	32.1
Progression Factor	1.00	1.00	1.00	1.08	1.18	1.42	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	35.3	1.5	3.5	177.5	2.3	4.0	69.7	4.9	19.3	240.2	2.3	0.2
Delay (s)	90.9	38.7	42.5	234.3	41.0	52.4	119.7	39.8	48.8	295.7	41.4	32.3
Level of Service	F	D	D	F	D	D	F	D	D	F	D	C
Approach Delay (s)		48.6			151.9			56.5			98.0	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM Average Control Delay	80.7	HCM Level of Service	F
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	1778	220	81	848	122	275	41	59	180	39	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5001		1770	6287		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5001		1770	6287		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	173	1852	229	84	883	127	286	43	61	188	41	175
RTOR Reduction (vph)	0	9	0	0	15	0	0	0	56	0	0	160
Lane Group Flow (vph)	173	2072	0	84	995	0	286	43	5	188	41	15
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	12.5	71.4		8.6	67.5		11.5	9.5	9.5	12.0	10.0	10.0
Effective Green, g (s)	12.5	71.4		8.6	67.5		11.5	9.5	9.5	12.0	10.0	10.0
Actuated g/C Ratio	0.10	0.60		0.07	0.56		0.10	0.08	0.08	0.10	0.08	0.08
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	184	2976		127	3536		170	147	125	177	155	132
v/s Ratio Prot	c0.10	c0.41		0.05	0.16		c0.16	c0.02		0.11	0.02	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.94	0.70		0.66	0.28		1.68	0.29	0.04	1.06	0.26	0.11
Uniform Delay, d1	53.4	16.8		54.3	13.6		54.2	52.1	51.0	54.0	51.6	50.9
Progression Factor	0.92	0.98		0.58	1.60		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	20.8	0.4		9.3	0.2		331.3	1.3	0.2	85.1	1.1	0.4
Delay (s)	70.0	16.8		40.6	22.0		385.5	53.4	51.2	139.1	52.6	51.3
Level of Service	E	B		D	C		F	D	D	F	D	D
Approach Delay (s)		20.8			23.4			296.6			92.3	
Approach LOS		C			C			F			F	

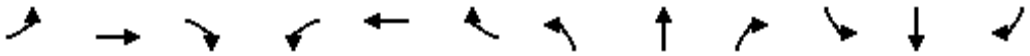
Intersection Summary			
HCM Average Control Delay	54.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	1311	529	199	855	63	162	2	138	39	7	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4866		1770	5033		1770	1863	1583	1770	1614	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1770	4866		1770	5033		1334	1863	1583	1409	1614	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	116	1324	534	201	864	64	164	2	139	39	7	56
RTOR Reduction (vph)	0	51	0	0	6	0	0	0	117	0	47	0
Lane Group Flow (vph)	116	1807	0	201	922	0	164	2	22	39	16	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	9.3	77.4		9.5	77.6		19.1	19.1	19.1	19.1	19.1	
Effective Green, g (s)	9.3	77.4		9.5	77.6		19.1	19.1	19.1	19.1	19.1	
Actuated g/C Ratio	0.08	0.65		0.08	0.65		0.16	0.16	0.16	0.16	0.16	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	137	3139		140	3255		212	297	252	224	257	
v/s Ratio Prot	0.07	c0.37		c0.11	0.18			0.00			0.01	
v/s Ratio Perm							c0.12		0.01	0.03		
v/c Ratio	0.85	0.58		1.44	0.28		0.77	0.01	0.09	0.17	0.06	
Uniform Delay, d1	54.6	12.0		55.2	9.2		48.4	42.5	43.0	43.6	42.8	
Progression Factor	1.15	0.91		0.82	1.98		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	26.1	0.5		215.8	0.1		14.7	0.0	0.1	0.1	0.0	
Delay (s)	88.8	11.5		260.8	18.3		63.1	42.5	43.1	43.8	42.9	
Level of Service	F	B		F	B		E	D	D	D	D	
Approach Delay (s)		16.0			61.5			53.8			43.2	
Approach LOS		B			E			D			D	

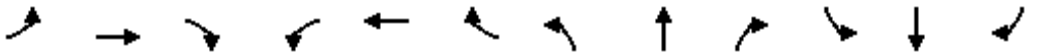
Intersection Summary			
HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



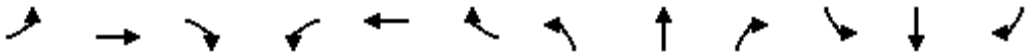
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	168	847	508	446	798	140	280	138	480	136	307	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4799		1770	5085	1583	1770	1863	1583	3433	1804	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4799		1770	5085	1583	1770	1863	1583	3433	1804	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	175	882	529	465	831	146	292	144	500	142	320	85
RTOR Reduction (vph)	0	89	0	0	0	87	0	0	278	0	8	0
Lane Group Flow (vph)	175	1322	0	465	831	59	292	144	222	142	397	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	14.3	37.6		25.5	48.8	48.8	9.5	29.8	29.8	8.6	28.9	
Effective Green, g (s)	14.3	37.6		25.5	48.8	48.8	9.5	29.8	29.8	8.6	28.9	
Actuated g/C Ratio	0.12	0.31		0.21	0.41	0.41	0.08	0.25	0.25	0.07	0.24	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	211	1504		376	2068	644	140	463	393	246	434	
v/s Ratio Prot	0.10	c0.28		c0.26	0.16		c0.17	0.08		0.04	c0.22	
v/s Ratio Perm						0.04			0.14			
v/c Ratio	0.83	0.88		1.24	0.40	0.09	2.09	0.31	0.56	0.58	0.91	
Uniform Delay, d1	51.7	39.0		47.2	25.2	21.9	55.2	36.7	39.4	53.9	44.3	
Progression Factor	0.75	1.26		0.80	0.79	1.52	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.4	6.7		125.6	0.5	0.3	512.1	0.4	1.9	2.0	23.5	
Delay (s)	58.3	56.0		163.5	20.4	33.5	567.4	37.1	41.3	56.0	67.8	
Level of Service	E	E		F	C	C	F	D	D	E	E	
Approach Delay (s)		56.2			67.9			204.8			64.7	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM Average Control Delay	91.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	104.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	266	933	268	157	965	384	14	8	4	538	210	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3421		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3421		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	302	1060	305	178	1097	436	16	9	5	611	239	405
RTOR Reduction (vph)	0	14	0	0	0	192	0	0	5	0	0	304
Lane Group Flow (vph)	302	1351	0	178	1097	244	16	9	0	611	239	101
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	9.5	66.2		10.5	67.2	67.2	2.7	5.4	5.4	18.9	21.6	18.9
Effective Green, g (s)	9.5	66.2		10.5	67.2	67.2	2.7	5.4	5.4	18.9	21.6	18.9
Actuated g/C Ratio	0.08	0.55		0.09	0.56	0.56	0.02	0.05	0.05	0.16	0.18	0.16
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	272	1887		155	2848	886	40	159	71	541	335	249
v/s Ratio Prot	0.09	c0.39		c0.10	0.22		0.01	0.00		c0.18	c0.13	
v/s Ratio Perm						0.15			0.00			0.06
v/c Ratio	1.11	0.72		1.15	0.39	0.28	0.40	0.06	0.00	1.13	0.71	0.41
Uniform Delay, d1	55.2	19.9		54.8	14.8	13.7	57.9	54.9	54.7	50.6	46.3	45.5
Progression Factor	0.98	1.13		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	77.8	1.6		117.7	0.4	0.8	2.4	0.2	0.0	79.5	5.9	0.4
Delay (s)	132.1	24.0		172.5	15.2	14.5	60.2	55.1	54.8	130.0	52.2	45.9
Level of Service	F	C		F	B	B	E	E	D	F	D	D
Approach Delay (s)		43.6			31.4			57.8			88.1	
Approach LOS		D			C			E			F	

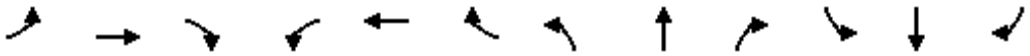
Intersection Summary			
HCM Average Control Delay	51.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	61	71	2	66	40	36	0	132	20	55	414	42
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	79	92	3	86	52	47	0	171	26	71	538	55

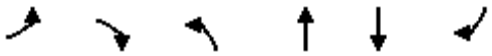
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	174	86	99	197	664
Volume Left (vph)	79	86	0	0	71
Volume Right (vph)	3	0	47	26	55
Hadj (s)	0.12	0.53	-0.30	-0.04	0.01
Departure Headway (s)	7.0	7.8	7.0	6.2	5.5
Degree Utilization, x	0.34	0.19	0.19	0.34	1.02
Capacity (veh/h)	497	440	493	554	645
Control Delay (s)	13.4	11.4	10.4	12.4	64.4
Approach Delay (s)	13.4	10.9		12.4	64.4
Approach LOS	B	B		B	F

Intersection Summary				
Delay	40.6			
HCM Level of Service	E			
Intersection Capacity Utilization	59.4%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	121	28	88	181	535	15	236	27	610	416	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1810			1833	1583	1770	1834		1770	1833	
Flt Permitted	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1810			1833	1583	1770	1834		1770	1833	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	59	126	29	92	189	557	16	246	28	635	433	51
RTOR Reduction (vph)	0	8	0	0	0	441	0	4	0	0	4	0
Lane Group Flow (vph)	59	147	0	0	281	116	16	270	0	635	480	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	13.0	13.0			19.5	19.5	18.4	18.4		24.4	24.4	
Effective Green, g (s)	13.0	13.0			19.5	19.5	18.4	18.4		24.4	24.4	
Actuated g/C Ratio	0.14	0.14			0.21	0.21	0.20	0.20		0.26	0.26	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	247	252			383	331	349	362		463	479	
v/s Ratio Prot	0.03	c0.08			c0.15		0.01	c0.15		c0.36	0.26	
v/s Ratio Perm						0.07						
v/c Ratio	0.24	0.58			0.73	0.35	0.05	0.75		1.37	1.00	
Uniform Delay, d1	35.7	37.6			34.5	31.5	30.3	35.2		34.5	34.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	3.4			7.1	0.6	0.1	8.1		180.5	41.8	
Delay (s)	36.2	41.1			41.6	32.2	30.4	43.4		214.9	76.2	
Level of Service	D	D			D	C	C	D		F	E	
Approach Delay (s)		39.7			35.3			42.7			154.9	
Approach LOS		D			D			D			F	

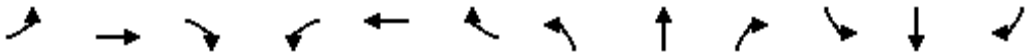
Intersection Summary			
HCM Average Control Delay	91.0	HCM Level of Service	F
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	19	13	57	566
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	20	14	61	602
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.89	0.89	0.89			
vC, conflicting volume	416	362	663			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	279	218	557			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	617	730	900			

Direction, Lane #	NB 1	SB 1
Volume Total	34	663
Volume Left	20	0
Volume Right	0	602
cSH	900	1700
Volume to Capacity	0.02	0.39
Queue Length 95th (ft)	2	0
Control Delay (s)	5.5	0.0
Lane LOS	A	
Approach Delay (s)	5.5	0.0
Approach LOS		

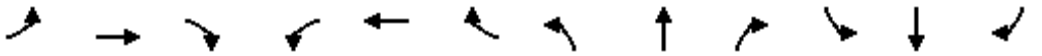
Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	20	10	40	10	20	20	50	30	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
Hourly flow rate (vph)	11	11	11	22	11	43	11	22	22	54	33	11

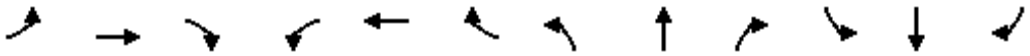
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	76	54	98
Volume Left (vph)	11	22	11	54
Volume Right (vph)	11	43	22	11
Hadj (s)	-0.10	-0.25	-0.17	0.08
Departure Headway (s)	4.2	4.0	4.1	4.3
Degree Utilization, x	0.04	0.08	0.06	0.12
Capacity (veh/h)	816	859	849	819
Control Delay (s)	7.4	7.4	7.3	7.8
Approach Delay (s)	7.4	7.4	7.3	7.8
Approach LOS	A	A	A	A

Intersection Summary				
Delay		7.5		
HCM Level of Service		A		
Intersection Capacity Utilization		23.3%	ICU Level of Service	A
Analysis Period (min)		15		



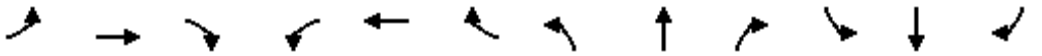
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	64	50	364	62	572	168	1254	807	506	995	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1709	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.60	1.00	1.00	0.95	0.48	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1124	1863	1583	1681	850	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	49	71	56	404	69	636	187	1393	897	562	1106	49
RTOR Reduction (vph)	0	0	52	0	0	288	0	0	330	0	0	29
Lane Group Flow (vph)	49	71	4	234	239	348	187	1393	567	562	1106	20
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	8.2	8.2	8.2	22.4	35.1	35.1	16.1	40.4	40.4	21.9	46.2	46.2
Effective Green, g (s)	8.2	8.2	8.2	22.4	35.1	35.1	16.1	40.4	40.4	21.9	46.2	46.2
Actuated g/C Ratio	0.07	0.07	0.07	0.20	0.32	0.32	0.14	0.36	0.36	0.20	0.41	0.41
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	83	137	117	338	441	499	256	1283	574	675	2109	657
v/s Ratio Prot		0.04		0.14	0.11		0.11	c0.39		c0.16	0.22	
v/s Ratio Perm	0.04		0.00		0.06	c0.22			0.36			0.01
v/c Ratio	0.59	0.52	0.04	0.69	0.54	0.70	0.73	1.09	0.99	0.83	0.52	0.03
Uniform Delay, d1	50.0	49.7	47.9	41.3	31.5	33.5	45.6	35.5	35.3	43.0	24.4	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.3	1.4	0.0	4.9	0.7	3.4	8.9	51.8	34.1	8.3	0.3	0.0
Delay (s)	57.2	51.1	48.0	46.2	32.2	36.9	54.5	87.3	69.4	51.3	24.7	19.4
Level of Service	E	D	D	D	C	D	D	F	E	D	C	B
Approach Delay (s)		51.8			37.8			78.3			33.2	
Approach LOS		D			D			E			C	

Intersection Summary			
HCM Average Control Delay	55.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	111.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



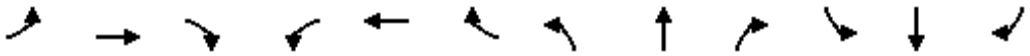
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	1003	248	242	637	26	327	35	212	40	26	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3434		1770	3519		1770	1863	1583	1770	1718	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1770	3434		1770	3519		1345	1863	1583	1368	1718	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	114	1013	251	244	643	26	330	35	214	40	26	28
RTOR Reduction (vph)	0	21	0	0	2	0	0	0	156	0	20	0
Lane Group Flow (vph)	114	1243	0	244	667	0	330	35	58	40	34	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	8.9	36.1		16.7	43.9		24.7	24.7	24.7	24.7	24.7	
Effective Green, g (s)	8.9	36.1		16.7	43.9		24.7	24.7	24.7	24.7	24.7	
Actuated g/C Ratio	0.10	0.39		0.18	0.48		0.27	0.27	0.27	0.27	0.27	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	172	1355		323	1688		363	503	427	369	464	
v/s Ratio Prot	0.06	c0.36		c0.14	0.19			0.02			0.02	
v/s Ratio Perm							c0.25		0.04	0.03		
v/c Ratio	0.66	0.92		0.76	0.40		0.91	0.07	0.14	0.11	0.07	
Uniform Delay, d1	39.9	26.3		35.5	15.3		32.3	24.9	25.3	25.1	24.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.2	10.2		8.6	0.2		25.2	0.0	0.1	0.0	0.0	
Delay (s)	47.1	36.4		44.1	15.5		57.5	24.9	25.4	25.2	24.9	
Level of Service	D	D		D	B		E	C	C	C	C	
Approach Delay (s)		37.3			23.1			43.6			25.0	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM Average Control Delay	33.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	91.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



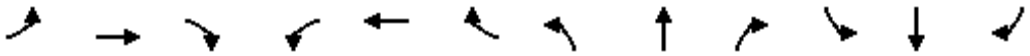
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	1167	18	0	887	99	4	0	2	55	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.98			0.95			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	3531			3486			1722			1770	1583
Flt Permitted	0.95	1.00			1.00			0.88			0.75	1.00
Satd. Flow (perm)	1770	3531			3486			1557			1404	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	129	1216	19	0	924	103	4	0	2	57	0	57
RTOR Reduction (vph)	0	1	0	0	7	0	0	2	0	0	0	48
Lane Group Flow (vph)	129	1234	0	0	1020	0	0	4	0	0	57	9
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	10.1	54.3			39.7			12.4			12.4	12.4
Effective Green, g (s)	10.1	54.3			39.7			12.4			12.4	12.4
Actuated g/C Ratio	0.13	0.71			0.52			0.16			0.16	0.16
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	235	2516			1816			253			228	258
v/s Ratio Prot	0.07	c0.35			c0.29							
v/s Ratio Perm								0.00			c0.04	0.01
v/c Ratio	0.55	0.49			0.56			0.02			0.25	0.04
Uniform Delay, d1	30.9	4.8			12.4			26.8			27.8	26.9
Progression Factor	1.00	1.00			0.38			1.00			1.00	1.00
Incremental Delay, d2	1.4	0.1			0.4			0.0			0.2	0.0
Delay (s)	32.3	4.9			5.0			26.8			28.1	26.9
Level of Service	C	A			A			C			C	C
Approach Delay (s)		7.5			5.0			26.8			27.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



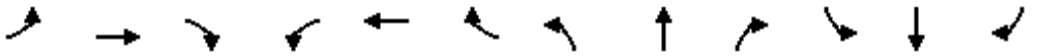
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1060	46	17	877	133	60	17	25	102	8	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.91			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3517		1770	3469		1770	1698			1731	
Flt Permitted	0.95	1.00		0.95	1.00		0.67	1.00			0.78	
Satd. Flow (perm)	1770	3517		1770	3469		1241	1698			1388	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	104	1116	48	18	923	140	63	18	26	107	8	49
RTOR Reduction (vph)	0	3	0	0	9	0	0	22	0	0	19	0
Lane Group Flow (vph)	104	1161	0	18	1054	0	63	22	0	0	145	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	10.1	30.4		19.4	39.7		12.4	12.4			12.4	
Effective Green, g (s)	10.1	30.4		19.4	39.7		12.4	12.4			12.4	
Actuated g/C Ratio	0.13	0.40		0.25	0.52		0.16	0.16			0.16	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	235	1403		451	1807		202	276			226	
v/s Ratio Prot	c0.06	c0.33		0.01	c0.30			0.01				
v/s Ratio Perm							0.05				c0.10	
v/c Ratio	0.44	0.83		0.04	0.58		0.31	0.08			0.64	
Uniform Delay, d1	30.5	20.5		21.4	12.6		28.1	27.1			29.8	
Progression Factor	1.26	0.82		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	3.9		0.0	0.6		0.3	0.0			4.6	
Delay (s)	38.8	20.8		21.4	13.1		28.5	27.1			34.4	
Level of Service	D	C		C	B		C	C			C	
Approach Delay (s)		22.2			13.3			27.9			34.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	19.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



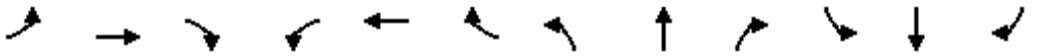
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	834	227	458	717	2	256	5	549	4	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.97		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1770	3426		1770	3538			1776	1583		1731	
Flt Permitted	0.95	1.00		0.95	1.00			0.72	1.00		0.93	
Satd. Flow (perm)	1770	3426		1770	3538			1338	1583		1626	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	887	241	487	763	2	272	5	584	4	5	7
RTOR Reduction (vph)	0	27	0	0	0	0	0	0	338	0	6	0
Lane Group Flow (vph)	9	1101	0	487	765	0	0	277	246	0	10	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	1.2	36.7		20.1	55.6			19.3	19.3		19.3	
Effective Green, g (s)	1.2	36.7		20.1	55.6			19.3	19.3		19.3	
Actuated g/C Ratio	0.01	0.41		0.22	0.62			0.21	0.21		0.21	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	24	1395		395	2183			287	339		348	
v/s Ratio Prot	0.01	c0.32		c0.28	0.22							
v/s Ratio Perm								c0.21	0.16		0.01	
v/c Ratio	0.38	0.79		1.23	0.35			0.97	0.73		0.03	
Uniform Delay, d1	44.1	23.3		35.0	8.4			35.1	32.9		28.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	3.6	3.2		125.0	0.1			43.0	6.4		0.0	
Delay (s)	47.6	26.5		160.0	8.6			78.1	39.4		28.0	
Level of Service	D	C		F	A			E	D		C	
Approach Delay (s)		26.7			67.5			51.8			28.0	
Approach LOS		C			E			D			C	

Intersection Summary			
HCM Average Control Delay	49.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	90.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



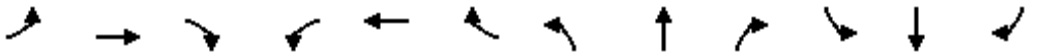
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	583	836	98	209	484	27	211	737	186	77	730	489
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3369	1583	1770	3539	1583	1610	3286		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3369	1583	1770	3539	1583	1610	3286		1770	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	601	862	101	215	499	28	218	760	192	79	753	504
RTOR Reduction (vph)	0	0	18	0	0	13	0	11	0	0	0	101
Lane Group Flow (vph)	475	988	83	215	499	15	196	963	0	79	753	403
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	40.0	40.0	40.0	32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Effective Green, g (s)	40.0	40.0	40.0	32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Actuated g/C Ratio	0.23	0.23	0.23	0.19	0.19	0.19	0.23	0.23		0.23	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	374	783	368	329	658	295	374	764		412	823	368
v/s Ratio Prot	c0.29	0.29		0.12	c0.14		0.12	c0.29		0.04	0.21	
v/s Ratio Perm			0.05			0.01						c0.25
v/c Ratio	1.27	1.26	0.22	0.65	0.76	0.05	0.52	1.26		0.19	0.91	1.10
Uniform Delay, d1	66.0	66.0	53.4	64.9	66.3	57.5	57.7	66.0		53.0	64.3	66.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	141.0	128.0	0.4	5.1	5.3	0.1	1.7	127.8		0.3	14.8	75.4
Delay (s)	207.0	194.0	53.9	70.0	71.7	57.6	59.4	193.8		53.3	79.2	141.4
Level of Service	F	F	D	E	E	E	E	F		D	E	F
Approach Delay (s)		188.9			70.6			171.3			101.1	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	142.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	172.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



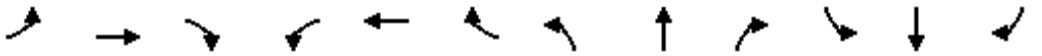
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	162	551	458	2105	558	766	803	1331	2551	701	703	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	180	612	509	2339	620	851	892	1479	2834	779	781	173
RTOR Reduction (vph)	0	0	226	0	0	118	0	0	66	0	0	124
Lane Group Flow (vph)	180	612	284	2339	620	733	892	1479	2768	779	781	49
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.9	38.0	38.0	19.0	48.1	48.1	9.0	34.0	53.0	9.0	34.0	34.0
Effective Green, g (s)	8.9	38.0	38.0	19.0	48.1	48.1	9.0	34.0	53.0	9.0	34.0	34.0
Actuated g/C Ratio	0.07	0.32	0.32	0.16	0.40	0.40	0.08	0.28	0.44	0.08	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	255	1121	883	790	747	635	257	1441	1347	257	1441	449
v/s Ratio Prot	0.05	0.17		c0.47	0.33		c0.26	0.29	c0.33	0.23	0.15	
v/s Ratio Perm			0.10			c0.46			0.67			0.03
v/c Ratio	0.71	0.55	0.32	2.96	0.83	1.15	3.47	1.03	2.05	3.03	0.54	0.11
Uniform Delay, d1	54.3	33.9	31.2	50.5	32.3	36.0	55.5	43.0	33.5	55.5	36.4	31.8
Progression Factor	1.00	1.00	1.00	1.34	0.54	0.50	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.6	1.9	1.0	882.7	1.0	71.3	1121.6	30.7	477.2	924.3	0.5	0.1
Delay (s)	62.9	35.8	32.1	950.5	18.4	89.2	1177.1	73.7	510.7	979.8	36.9	31.9
Level of Service	E	D	C	F	B	F	F	E	F	F	D	C
Approach Delay (s)		38.1			606.5			500.7			460.3	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM Average Control Delay	478.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	137.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



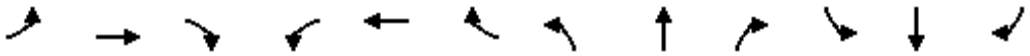
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	357	2913	466	183	2613	277	485	113	182	386	115	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4980		1770	6316		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4980		1770	6316		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	384	3132	501	197	2810	298	522	122	196	415	124	389
RTOR Reduction (vph)	0	15	0	0	12	0	0	0	158	0	0	199
Lane Group Flow (vph)	384	3618	0	197	3096	0	522	122	38	415	124	190
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	17.5	52.1		12.5	47.1		16.5	23.4	23.4	13.5	20.4	20.4
Effective Green, g (s)	17.5	52.1		12.5	47.1		16.5	23.4	23.4	13.5	20.4	20.4
Actuated g/C Ratio	0.15	0.43		0.10	0.39		0.14	0.19	0.19	0.11	0.17	0.17
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	258	2162		184	2479		243	363	309	199	317	269
v/s Ratio Prot	c0.22	c0.73		0.11	0.49		c0.29	c0.07		0.23	0.07	
v/s Ratio Perm									0.02			c0.12
v/c Ratio	1.49	1.67		1.07	1.25		2.15	0.34	0.12	2.09	0.39	0.71
Uniform Delay, d1	51.2	34.0		53.8	36.5		51.8	41.6	39.8	53.2	44.3	47.0
Progression Factor	1.07	0.80		0.91	0.99		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	221.7	303.2		41.9	112.3		530.2	0.7	0.2	505.2	0.9	8.4
Delay (s)	276.4	330.3		91.1	148.5		581.9	42.3	40.1	558.5	45.2	55.4
Level of Service	F	F		F	F		F	D	D	F	D	E
Approach Delay (s)		325.1			145.0			377.1			279.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	259.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	122.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



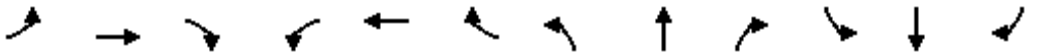
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	314	2569	595	233	2165	181	675	16	464	264	5	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4942		1770	5026		1770	1863	1583	1770	1589	
Flt Permitted	0.95	1.00		0.95	1.00		0.39	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	4942		1770	5026		723	1863	1583	1390	1589	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	338	2762	640	251	2328	195	726	17	499	284	5	238
RTOR Reduction (vph)	0	32	0	0	8	0	0	0	106	0	106	0
Lane Group Flow (vph)	338	3370	0	251	2515	0	726	17	393	284	137	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Effective Green, g (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Actuated g/C Ratio	0.10	0.58		0.08	0.56		0.23	0.23	0.23	0.23	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	170	2842		140	2806		166	427	363	319	364	
v/s Ratio Prot	c0.19	c0.68		0.14	0.50			0.01			0.09	
v/s Ratio Perm							c1.00		0.25	0.20		
v/c Ratio	1.99	1.19		1.79	0.90		4.37	0.04	1.08	0.89	0.38	
Uniform Delay, d1	54.2	25.5		55.2	23.4		46.2	36.0	46.2	44.8	39.0	
Progression Factor	0.77	1.32		0.74	1.11		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	446.6	84.0		359.4	0.5		1532.0	0.0	71.5	24.5	0.2	
Delay (s)	488.3	117.6		400.2	26.5		1578.3	36.0	117.8	69.3	39.2	
Level of Service	F	F		F	C		F	D	F	E	D	
Approach Delay (s)		151.1			60.4			970.4			55.5	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM Average Control Delay	237.5	HCM Level of Service	F
HCM Volume to Capacity ratio	2.03		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	142.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



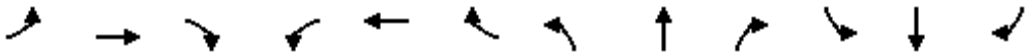
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	357	1904	1059	902	1469	236	937	451	1098	324	388	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4813		1770	5085	1583	1770	1863	1583	3433	1760	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4813		1770	5085	1583	1770	1863	1583	3433	1760	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	364	1943	1081	920	1499	241	956	460	1120	331	396	229
RTOR Reduction (vph)	0	84	0	0	0	161	0	0	304	0	18	0
Lane Group Flow (vph)	364	2940	0	920	1499	80	956	460	816	331	607	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	20.5	31.0		29.5	40.0	40.0	13.5	27.8	27.8	13.2	27.5	
Effective Green, g (s)	20.5	31.0		29.5	40.0	40.0	13.5	27.8	27.8	13.2	27.5	
Actuated g/C Ratio	0.17	0.26		0.25	0.33	0.33	0.11	0.23	0.23	0.11	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	302	1243		435	1695	528	199	432	367	378	403	
v/s Ratio Prot	0.21	c0.61		c0.52	0.29		c0.54	0.25		0.10	0.34	
v/s Ratio Perm						0.05			c0.52			
v/c Ratio	1.21	2.37		2.11	0.88	0.15	4.80	1.06	2.22	0.88	1.51	
Uniform Delay, d1	49.8	44.5		45.2	37.8	28.1	53.2	46.1	46.1	52.6	46.2	
Progression Factor	1.24	0.87		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	95.4	614.7		509.5	7.1	0.6	1723.2	61.6	559.0	19.1	240.7	
Delay (s)	157.0	653.3		554.7	45.0	28.7	1776.4	107.7	605.1	71.7	286.9	
Level of Service	F	F		F	D	C	F	F	F	E	F	
Approach Delay (s)		599.9			219.8			956.4			212.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	549.9	HCM Level of Service	F
HCM Volume to Capacity ratio	2.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	211.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	765	1952	608	251	1971	459	66	28	8	523	84	552
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3413		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3413		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	805	2055	640	264	2075	483	69	29	8	551	88	581
RTOR Reduction (vph)	0	17	0	0	0	230	0	0	8	0	0	423
Lane Group Flow (vph)	805	2678	0	264	2075	253	69	29	0	551	88	158
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	16.5	63.2		21.4	68.1	68.1	7.6	4.9	4.9	21.5	18.8	21.5
Effective Green, g (s)	16.5	63.2		21.4	68.1	68.1	7.6	4.9	4.9	21.5	18.8	21.5
Actuated g/C Ratio	0.13	0.49		0.16	0.52	0.52	0.06	0.04	0.04	0.17	0.14	0.17
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	436	1659		291	2664	829	103	133	60	568	269	262
v/s Ratio Prot	c0.23	c0.78		c0.15	0.41		0.04	0.01		c0.16	c0.05	
v/s Ratio Perm						0.16			0.00			0.10
v/c Ratio	1.85	1.61		0.91	0.78	0.31	0.67	0.22	0.01	0.97	0.33	0.60
Uniform Delay, d1	56.8	33.4		53.3	24.9	17.5	60.0	60.7	60.2	53.9	49.9	50.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	389.7	279.1		29.2	2.3	1.0	12.1	1.1	0.0	30.1	0.3	2.7
Delay (s)	446.4	312.5		82.5	27.2	18.5	72.0	61.8	60.2	84.0	50.2	53.0
Level of Service	F	F		F	C	B	E	E	E	F	D	D
Approach Delay (s)		343.3			30.9			68.4			66.8	
Approach LOS		F			C			E			E	

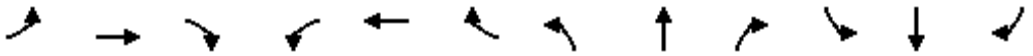
Intersection Summary			
HCM Average Control Delay	180.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	121.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	125	114	3	20	113	78	3	496	83	85	260	131
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	149	136	4	24	135	93	4	590	99	101	310	156

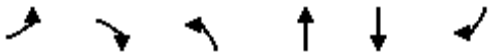
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	288	24	227	693	567
Volume Left (vph)	149	24	0	4	101
Volume Right (vph)	4	0	93	99	156
Hadj (s)	0.13	0.53	-0.25	-0.05	-0.10
Departure Headway (s)	8.7	9.6	8.8	7.7	7.6
Degree Utilization, x	0.69	0.06	0.55	1.48	1.20
Capacity (veh/h)	404	364	393	484	479
Control Delay (s)	29.1	12.0	21.0	246.2	133.8
Approach Delay (s)	29.1	20.1		246.2	133.8
Approach LOS	D	C		F	F

Intersection Summary				
Delay	144.5			
HCM Level of Service	F			
Intersection Capacity Utilization	94.8%	ICU Level of Service	F	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	164	273	24	114	210	695	22	1000	175	830	868	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1840			1831	1583	1770	1821		1770	1825	
Flt Permitted	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1840			1831	1583	1770	1821		1770	1825	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	180	300	26	125	231	764	24	1099	192	912	954	148
RTOR Reduction (vph)	0	3	0	0	0	378	0	6	0	0	5	0
Lane Group Flow (vph)	180	323	0	0	356	386	24	1285	0	912	1097	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	22.0	22.0			24.0	24.0	22.0	22.0		22.0	22.0	
Effective Green, g (s)	22.0	22.0			24.0	24.0	22.0	22.0		22.0	22.0	
Actuated g/C Ratio	0.20	0.20			0.22	0.22	0.20	0.20		0.20	0.20	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	361	375			407	352	361	371		361	372	
v/s Ratio Prot	0.10	c0.18			0.19		0.01	c0.71		0.52	c0.60	
v/s Ratio Perm						c0.24						
v/c Ratio	0.50	0.86			0.87	1.10	0.07	3.46		2.53	2.95	
Uniform Delay, d1	38.1	41.5			40.5	42.0	34.7	43.0		43.0	43.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	17.9			18.4	76.5	0.1	1115.9		695.0	884.5	
Delay (s)	39.2	59.4			59.0	118.5	34.8	1158.9		738.0	927.5	
Level of Service	D	E			E	F	C	F		F	F	
Approach Delay (s)		52.2			99.6			1138.4			841.7	
Approach LOS		D			F			F			F	

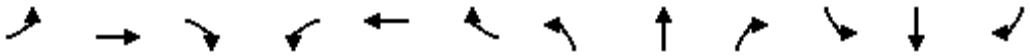
Intersection Summary			
HCM Average Control Delay	672.1	HCM Level of Service	F
HCM Volume to Capacity ratio	2.07		
Actuated Cycle Length (s)	108.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	157.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	32	51	25	903
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	34	54	27	961
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	629	507	987			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	602	476	971			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	95			
cM capacity (veh/h)	426	571	688			

Direction, Lane #	NB 1	SB 1
Volume Total	88	987
Volume Left	34	0
Volume Right	0	961
cSH	688	1700
Volume to Capacity	0.05	0.58
Queue Length 95th (ft)	4	0
Control Delay (s)	4.4	0.0
Lane LOS	A	
Approach Delay (s)	4.4	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		



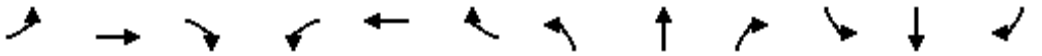
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	30	10	60	10	40	40	100	30	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	11	11	33	11	65	11	43	43	109	33	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	109	98	152
Volume Left (vph)	11	33	11	109
Volume Right (vph)	11	65	43	11
Hadj (s)	-0.10	-0.27	-0.21	0.13
Departure Headway (s)	4.5	4.2	4.2	4.5
Degree Utilization, x	0.04	0.13	0.11	0.19
Capacity (veh/h)	739	792	820	770
Control Delay (s)	7.7	7.9	7.7	8.5
Approach Delay (s)	7.7	7.9	7.7	8.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay		8.1		
HCM Level of Service		A		
Intersection Capacity Utilization		28.5%	ICU Level of Service	A
Analysis Period (min)		15		

Cumulative Plus Project (Base FAR)
AM and PM Peak Hour
Synchro Worksheets

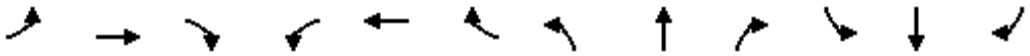
FEHR & PEERS
TRANSPORTATION CONSULTANTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	31	44	556	41	294	63	1340	333	423	769	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1696	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.57	1.00	1.00	0.95	0.44	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1064	1863	1583	1681	786	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	32	36	51	639	47	338	72	1540	383	486	884	33
RTOR Reduction (vph)	0	0	48	0	0	227	0	0	126	0	0	17
Lane Group Flow (vph)	32	36	3	345	341	111	72	1540	257	486	884	16
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	7.0	7.0	7.0	25.2	36.7	36.7	7.7	41.4	41.4	19.5	53.2	53.2
Effective Green, g (s)	7.0	7.0	7.0	25.2	36.7	36.7	7.7	41.4	41.4	19.5	53.2	53.2
Actuated g/C Ratio	0.06	0.06	0.06	0.23	0.33	0.33	0.07	0.37	0.37	0.17	0.48	0.48
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	67	117	99	380	464	521	122	1313	587	600	2424	755
v/s Ratio Prot		0.02		c0.21	0.17		0.04	c0.44		c0.14	0.17	
v/s Ratio Perm	0.03		0.00		c0.08	0.07			0.16			0.01
v/c Ratio	0.48	0.31	0.03	0.91	0.73	0.21	0.59	1.17	0.44	0.81	0.36	0.02
Uniform Delay, d1	50.5	50.0	49.1	42.1	33.1	27.0	50.4	35.1	26.4	44.3	18.5	15.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.5	0.0	24.2	5.2	0.1	5.0	86.2	0.7	7.7	0.1	0.0
Delay (s)	52.5	50.5	49.2	66.3	38.3	27.1	55.4	121.3	27.1	52.0	18.6	15.4
Level of Service	D	D	D	E	D	C	E	F	C	D	B	B
Approach Delay (s)		50.5			44.0			100.8			30.1	
Approach LOS		D			D			F			C	

Intersection Summary			
HCM Average Control Delay	64.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	111.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

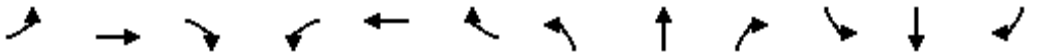
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	676	139	114	797	4	108	9	83	8	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3449		1770	3537		1770	1863	1583	1770	1642	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	3449		1770	3537		1381	1863	1583	1399	1642	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	727	149	123	857	4	116	10	89	9	5	19
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	75	0	16	0
Lane Group Flow (vph)	32	862	0	123	861	0	116	10	14	9	8	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	2.4	29.6		7.6	34.8		9.9	9.9	9.9	9.9	9.9	
Effective Green, g (s)	2.4	29.6		7.6	34.8		9.9	9.9	9.9	9.9	9.9	
Actuated g/C Ratio	0.04	0.48		0.12	0.57		0.16	0.16	0.16	0.16	0.16	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	70	1671		220	2015		224	302	256	227	266	
v/s Ratio Prot	0.02	c0.25		c0.07	0.24			0.01			0.00	
v/s Ratio Perm							c0.08		0.01	0.01		
v/c Ratio	0.46	0.52		0.56	0.43		0.52	0.03	0.06	0.04	0.03	
Uniform Delay, d1	28.7	10.8		25.2	7.5		23.4	21.6	21.6	21.6	21.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.7	0.4		1.7	0.2		0.8	0.0	0.0	0.0	0.0	
Delay (s)	30.4	11.2		26.9	7.7		24.3	21.6	21.7	21.6	21.6	
Level of Service	C	B		C	A		C	C	C	C	C	
Approach Delay (s)		11.9			10.1			23.1			21.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	61.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

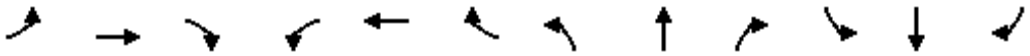


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	611	10	0	694	59	2	0	2	63	0	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.93			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3531			3498			1695			1770	1583
Flt Permitted	0.95	1.00			1.00			0.92			0.76	1.00
Satd. Flow (perm)	1770	3531			3498			1606			1407	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	62	694	11	0	789	67	2	0	2	72	0	94
RTOR Reduction (vph)	0	1	0	0	5	0	0	2	0	0	0	73
Lane Group Flow (vph)	62	704	0	0	851	0	0	2	0	0	72	21
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	5.9	46.2			35.8			16.2			16.2	16.2
Effective Green, g (s)	5.9	46.2			35.8			16.2			16.2	16.2
Actuated g/C Ratio	0.08	0.64			0.50			0.23			0.23	0.23
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	145	2269			1742			362			317	357
v/s Ratio Prot	c0.04	c0.20			c0.24							
v/s Ratio Perm								0.00			c0.05	0.01
v/c Ratio	0.43	0.31			0.49			0.01			0.23	0.06
Uniform Delay, d1	31.4	5.7			12.0			21.6			22.7	21.9
Progression Factor	1.00	1.00			0.37			1.00			1.00	1.00
Incremental Delay, d2	0.7	0.0			0.3			0.0			0.1	0.0
Delay (s)	32.1	5.8			4.7			21.6			22.9	21.9
Level of Service	C	A			A			C			C	C
Approach Delay (s)		7.9			4.7			21.6			22.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

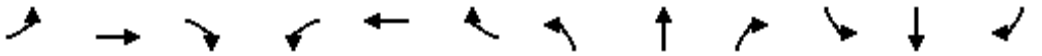
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	622	32	11	667	135	8	3	2	158	7	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.94			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3513		1770	3450		1770	1751			1733	
Flt Permitted	0.95	1.00		0.95	1.00		0.65	1.00			0.79	
Satd. Flow (perm)	1770	3513		1770	3450		1214	1751			1418	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	52	699	36	12	749	152	9	3	2	178	8	71
RTOR Reduction (vph)	0	4	0	0	14	0	0	2	0	0	15	0
Lane Group Flow (vph)	52	731	0	12	887	0	9	3	0	0	242	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	5.9	29.1		12.6	35.8		16.2	16.2			16.2	
Effective Green, g (s)	5.9	29.1		12.6	35.8		16.2	16.2			16.2	
Actuated g/C Ratio	0.08	0.40		0.18	0.50		0.23	0.23			0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	145	1422		310	1718		274	395			319	
v/s Ratio Prot	c0.03	0.21		0.01	c0.26			0.00				
v/s Ratio Perm							0.01				c0.17	
v/c Ratio	0.36	0.51		0.04	0.52		0.03	0.01			0.76	
Uniform Delay, d1	31.2	16.1		24.6	12.2		21.7	21.6			26.0	
Progression Factor	1.35	0.79		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.5	0.4		0.0	0.4		0.0	0.0			8.8	
Delay (s)	42.5	13.1		24.6	12.6		21.8	21.6			34.8	
Level of Service	D	B		C	B		C	C			C	
Approach Delay (s)		15.1			12.7			21.7			34.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	662	124	316	878	0	76	0	184	0	4	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3456		1770	3539			1770	1583		1726	
Flt Permitted	0.95	1.00		0.95	1.00			0.75	1.00		1.00	
Satd. Flow (perm)	1770	3456		1770	3539			1398	1583		1726	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	2	770	144	367	1021	0	88	0	214	0	5	6
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	188	0	5	0
Lane Group Flow (vph)	2	898	0	367	1021	0	0	88	26	0	6	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	0.8	30.4		18.7	48.3			8.9	8.9		8.9	
Effective Green, g (s)	0.8	30.4		18.7	48.3			8.9	8.9		8.9	
Actuated g/C Ratio	0.01	0.42		0.26	0.67			0.12	0.12		0.12	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	20	1459		460	2374			173	196		213	
v/s Ratio Prot	0.00	c0.26		c0.21	0.29						0.00	
v/s Ratio Perm								c0.06	0.02			
v/c Ratio	0.10	0.62		0.80	0.43			0.51	0.13		0.03	
Uniform Delay, d1	35.2	16.2		24.9	5.5			29.5	28.1		27.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.8	0.9		8.7	0.2			0.9	0.1		0.0	
Delay (s)	36.0	17.1		33.6	5.7			30.4	28.2		27.8	
Level of Service	D	B		C	A			C	C		C	
Approach Delay (s)		17.2			13.0			28.9			27.8	
Approach LOS		B			B			C			C	

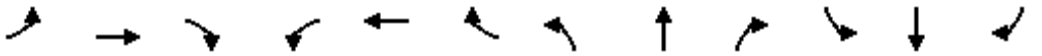
Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	282	435	32	327	691	25	136	356	47	144	630	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3373	1583	1770	3539	1583	1610	3327		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3373	1583	1770	3539	1583	1610	3327		1770	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	328	506	37	380	803	29	158	414	55	167	733	412
RTOR Reduction (vph)	0	0	12	0	0	8	0	6	0	0	0	84
Lane Group Flow (vph)	269	565	25	380	803	21	142	479	0	167	733	328
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	34.6	34.6	34.6	40.3	40.3	40.3	30.9	30.9		39.1	39.1	39.1
Effective Green, g (s)	34.6	34.6	34.6	40.3	40.3	40.3	30.9	30.9		39.1	39.1	39.1
Actuated g/C Ratio	0.21	0.21	0.21	0.24	0.24	0.24	0.19	0.19		0.24	0.24	0.24
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	338	708	332	433	865	387	302	623		420	839	375
v/s Ratio Prot	0.17	c0.17		0.21	c0.23		0.09	c0.14		0.09	0.21	
v/s Ratio Perm			0.02			0.01						c0.21
v/c Ratio	0.80	0.80	0.08	0.88	0.93	0.05	0.47	0.77		0.40	0.87	0.87
Uniform Delay, d1	61.8	61.8	52.3	59.9	60.9	47.7	59.7	63.6		53.0	60.5	60.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.9	6.6	0.1	18.3	16.0	0.1	1.6	6.0		0.8	10.3	20.2
Delay (s)	74.7	68.4	52.4	78.2	76.9	47.8	61.3	69.7		53.8	70.8	80.8
Level of Service	E	E	D	E	E	D	E	E		D	E	F
Approach Delay (s)		69.7			76.6			67.8			71.8	
Approach LOS		E			E			E			E	

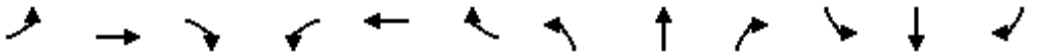
Intersection Summary			
HCM Average Control Delay	72.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	164.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



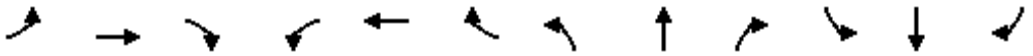
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	340	728	617	239	429	581	1526	1103	237	999	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	370	791	671	260	466	632	1659	1199	258	1086	225
RTOR Reduction (vph)	0	0	366	0	0	120	0	0	115	0	0	161
Lane Group Flow (vph)	207	370	425	671	260	346	632	1659	1084	258	1086	64
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.0	31.0	31.0	15.0	38.0	38.0	20.0	45.0	60.0	9.0	34.0	34.0
Effective Green, g (s)	8.0	31.0	31.0	15.0	38.0	38.0	20.0	45.0	60.0	9.0	34.0	34.0
Actuated g/C Ratio	0.07	0.26	0.26	0.12	0.32	0.32	0.17	0.38	0.50	0.08	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	229	914	720	624	590	501	572	1907	1510	257	1441	449
v/s Ratio Prot	0.06	0.10		c0.13	0.14		c0.18	c0.33	0.09	0.08	0.21	
v/s Ratio Perm			0.15			c0.22			0.30			0.04
v/c Ratio	0.90	0.40	0.59	1.08	0.44	0.69	1.10	0.87	0.72	1.00	0.75	0.14
Uniform Delay, d1	55.6	36.9	38.9	52.5	32.6	35.9	50.0	34.8	23.4	55.5	39.2	32.1
Progression Factor	1.00	1.00	1.00	1.01	1.02	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	34.5	1.3	3.5	56.6	2.2	7.0	69.7	4.7	1.7	57.1	2.4	0.2
Delay (s)	90.2	38.2	42.5	109.8	35.4	45.4	119.7	39.5	25.1	112.6	41.6	32.3
Level of Service	F	D	D	F	D	D	F	D	C	F	D	C
Approach Delay (s)		48.5			74.5			49.0			52.0	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM Average Control Delay	54.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



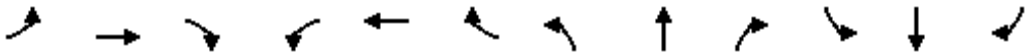
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	154	1340	175	63	617	109	256	34	44	157	27	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4997		1770	6263		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4997		1770	6263		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	160	1396	182	66	643	114	267	35	46	164	28	162
RTOR Reduction (vph)	0	9	0	0	19	0	0	0	43	0	0	149
Lane Group Flow (vph)	160	1569	0	66	738	0	267	35	3	164	28	13
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	12.2	73.5		7.0	68.3		11.5	9.0	9.0	12.0	9.5	9.5
Effective Green, g (s)	12.2	73.5		7.0	68.3		11.5	9.0	9.0	12.0	9.5	9.5
Actuated g/C Ratio	0.10	0.61		0.06	0.57		0.10	0.08	0.08	0.10	0.08	0.08
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	180	3061		103	3565		170	140	119	177	147	125
v/s Ratio Prot	c0.09	c0.31		0.04	0.12		c0.15	c0.02		0.09	0.02	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.89	0.51		0.64	0.21		1.57	0.25	0.03	0.93	0.19	0.10
Uniform Delay, d1	53.2	13.1		55.3	12.6		54.2	52.3	51.4	53.6	51.7	51.3
Progression Factor	1.04	0.89		0.87	0.93		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.8	0.4		9.7	0.1		283.2	1.1	0.1	45.9	0.7	0.4
Delay (s)	82.9	12.1		57.9	11.9		337.4	53.4	51.6	99.5	52.4	51.7
Level of Service	F	B		E	B		F	D	D	F	D	D
Approach Delay (s)		18.6			15.6			271.1			73.9	
Approach LOS		B			B			F			E	

Intersection Summary			
HCM Average Control Delay	50.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



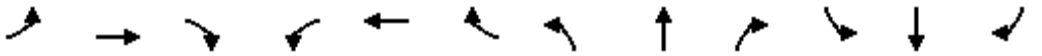
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	1017	397	164	678	37	94	2	109	19	7	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4871		1770	5046		1770	1863	1583	1770	1630	
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1770	4871		1770	5046		1359	1863	1583	1409	1630	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	78	1027	401	166	685	37	95	2	110	19	7	35
RTOR Reduction (vph)	0	42	0	0	3	0	0	0	98	0	31	0
Lane Group Flow (vph)	78	1386	0	166	719	0	95	2	12	19	11	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	7.3	83.7		9.5	85.9		12.8	12.8	12.8	12.8	12.8	
Effective Green, g (s)	7.3	83.7		9.5	85.9		12.8	12.8	12.8	12.8	12.8	
Actuated g/C Ratio	0.06	0.70		0.08	0.72		0.11	0.11	0.11	0.11	0.11	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	108	3398		140	3612		145	199	169	150	174	
v/s Ratio Prot	0.04	c0.28		c0.09	0.14			0.00			0.01	
v/s Ratio Perm							c0.07		0.01	0.01		
v/c Ratio	0.72	0.41		1.19	0.20		0.66	0.01	0.07	0.13	0.06	
Uniform Delay, d1	55.4	7.7		55.2	5.6		51.5	47.9	48.2	48.5	48.2	
Progression Factor	1.29	0.30		1.23	0.63		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.8	0.3		130.1	0.1		7.9	0.0	0.1	0.1	0.1	
Delay (s)	87.1	2.6		198.2	3.7		59.3	47.9	48.3	48.7	48.3	
Level of Service	F	A		F	A		E	D	D	D	D	
Approach Delay (s)		7.0			40.0			53.4			48.4	
Approach LOS		A			D			D			D	

Intersection Summary			
HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



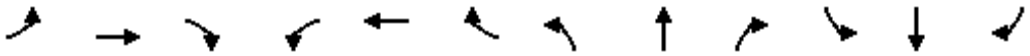
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	769	265	305	698	130	142	117	357	129	286	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4890		1770	5085	1583	1770	1863	1583	3433	1801	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4890		1770	5085	1583	1770	1863	1583	3433	1801	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	152	801	276	318	727	135	148	122	372	134	298	85
RTOR Reduction (vph)	0	49	0	0	0	78	0	0	281	0	8	0
Lane Group Flow (vph)	152	1028	0	318	727	57	148	122	91	134	375	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	13.4	40.0		23.8	50.4	50.4	9.5	29.2	29.2	8.5	28.2	
Effective Green, g (s)	13.4	40.0		23.8	50.4	50.4	9.5	29.2	29.2	8.5	28.2	
Actuated g/C Ratio	0.11	0.33		0.20	0.42	0.42	0.08	0.24	0.24	0.07	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	198	1630		351	2136	665	140	453	385	243	423	
v/s Ratio Prot	0.09	c0.21		c0.18	0.14		c0.08	0.07		0.04	c0.21	
v/s Ratio Perm						0.04			0.06			
v/c Ratio	0.77	0.63		0.91	0.34	0.09	1.06	0.27	0.24	0.55	0.89	
Uniform Delay, d1	51.8	33.8		47.0	23.6	20.9	55.2	36.8	36.4	53.9	44.3	
Progression Factor	0.86	1.23		0.80	0.74	1.54	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.0	1.8		24.2	0.4	0.2	92.1	0.3	0.3	1.5	19.3	
Delay (s)	58.8	43.2		61.7	17.9	32.4	147.4	37.1	36.8	55.4	63.7	
Level of Service	E	D		E	B	C	F	D	D	E	E	
Approach Delay (s)		45.1			31.4			62.3			61.5	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM Average Control Delay	46.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	222	828	207	157	796	381	14	8	4	532	208	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3433		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3433		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	252	941	235	178	905	433	16	9	5	605	236	311
RTOR Reduction (vph)	0	12	0	0	0	190	0	0	5	0	0	236
Lane Group Flow (vph)	252	1164	0	178	905	243	16	9	0	605	236	75
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	9.5	66.4		10.5	67.4	67.4	2.7	5.3	5.3	18.8	21.4	18.8
Effective Green, g (s)	9.5	66.4		10.5	67.4	67.4	2.7	5.3	5.3	18.8	21.4	18.8
Actuated g/C Ratio	0.08	0.55		0.09	0.56	0.56	0.02	0.04	0.04	0.16	0.18	0.16
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	272	1900		155	2856	889	40	156	70	538	332	248
v/s Ratio Prot	0.07	c0.34		c0.10	0.18		0.01	0.00		c0.18	c0.13	
v/s Ratio Perm						0.15			0.00			0.05
v/c Ratio	0.93	0.61		1.15	0.32	0.27	0.40	0.06	0.00	1.12	0.71	0.30
Uniform Delay, d1	54.9	18.1		54.8	14.0	13.6	57.9	55.0	54.8	50.6	46.4	44.8
Progression Factor	0.84	1.41		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	31.1	1.3		117.7	0.3	0.8	2.4	0.2	0.0	77.8	5.9	0.3
Delay (s)	77.4	26.9		172.5	14.3	14.4	60.2	55.2	54.8	128.4	52.3	45.0
Level of Service	E	C		F	B	B	E	E	D	F	D	D
Approach Delay (s)		35.8			32.9			57.8			90.3	
Approach LOS		D			C			E			F	

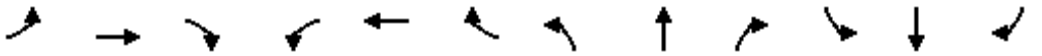
Intersection Summary			
HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	46	63	1	66	26	30	0	113	21	46	374	16
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	60	82	1	86	34	39	0	147	27	60	486	21

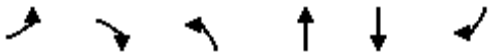
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	143	86	73	174	566
Volume Left (vph)	60	86	0	0	60
Volume Right (vph)	1	0	39	27	21
Hadj (s)	0.11	0.53	-0.34	-0.06	0.03
Departure Headway (s)	6.5	7.4	6.5	5.7	5.2
Degree Utilization, x	0.26	0.18	0.13	0.28	0.82
Capacity (veh/h)	506	450	510	567	566
Control Delay (s)	11.8	10.7	9.2	10.9	27.4
Approach Delay (s)	11.8	10.1		10.9	27.4
Approach LOS	B	B		B	D

Intersection Summary				
Delay	19.9			
HCM Level of Service	C			
Intersection Capacity Utilization	53.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	106	28	57	146	499	15	102	12	591	205	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1804			1837	1583	1770	1834		1770	1827	
Flt Permitted	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1804			1837	1583	1770	1834		1770	1827	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	110	29	59	152	520	16	106	12	616	214	31
RTOR Reduction (vph)	0	9	0	0	0	416	0	4	0	0	4	0
Lane Group Flow (vph)	42	130	0	0	211	104	16	114	0	616	241	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	11.2	11.2			15.7	15.7	8.6	8.6		25.0	25.0	
Effective Green, g (s)	11.2	11.2			15.7	15.7	8.6	8.6		25.0	25.0	
Actuated g/C Ratio	0.14	0.14			0.20	0.20	0.11	0.11		0.32	0.32	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	257			367	317	194	201		564	582	
v/s Ratio Prot	0.02	c0.07			c0.11		0.01	c0.06		c0.35	0.13	
v/s Ratio Perm						0.07						
v/c Ratio	0.17	0.50			0.57	0.33	0.08	0.56		1.09	0.41	
Uniform Delay, d1	29.5	31.1			28.4	26.9	31.4	33.2		26.8	21.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.6			2.2	0.6	0.2	3.6		65.5	0.5	
Delay (s)	29.9	32.6			30.6	27.5	31.6	36.8		92.2	21.5	
Level of Service	C	C			C	C	C	D		F	C	
Approach Delay (s)		32.0			28.4			36.2			72.1	
Approach LOS		C			C			D			E	

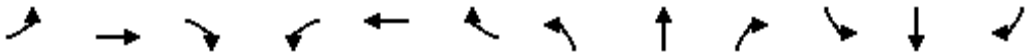
Intersection Summary			
HCM Average Control Delay	49.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	19	13	57	504
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	20	14	61	536
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.89	0.89	0.89			
vC, conflicting volume	383	329	597			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	244	183	484			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	648	765	959			

Direction, Lane #	NB 1	SB 1
Volume Total	34	597
Volume Left	20	0
Volume Right	0	536
cSH	959	1700
Volume to Capacity	0.02	0.35
Queue Length 95th (ft)	2	0
Control Delay (s)	5.3	0.0
Lane LOS	A	
Approach Delay (s)	5.3	0.0
Approach LOS		

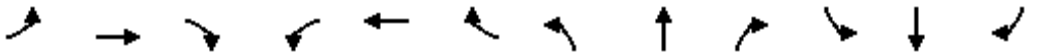
Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	37.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	22	10	41	10	37	22	51	43	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
Hourly flow rate (vph)	11	11	11	24	11	45	11	40	24	55	47	11

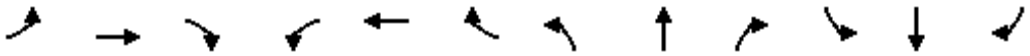
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	79	75	113
Volume Left (vph)	11	24	11	55
Volume Right (vph)	11	45	24	11
Hadj (s)	-0.10	-0.24	-0.13	0.07
Departure Headway (s)	4.3	4.1	4.1	4.3
Degree Utilization, x	0.04	0.09	0.09	0.13
Capacity (veh/h)	793	834	834	813
Control Delay (s)	7.5	7.5	7.5	8.0
Approach Delay (s)	7.5	7.5	7.5	8.0
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.7			
HCM Level of Service	A			
Intersection Capacity Utilization	24.4%	ICU Level of Service	A	
Analysis Period (min)	15			



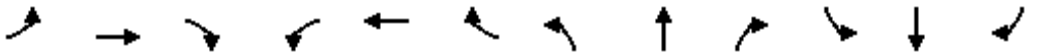
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	54	36	365	52	507	152	924	818	437	701	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1706	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.61	1.00	1.00	0.95	0.48	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1130	1863	1583	1681	843	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	49	60	40	406	58	563	169	1027	909	486	779	49
RTOR Reduction (vph)	0	0	37	0	0	290	0	0	386	0	0	29
Lane Group Flow (vph)	49	60	3	231	233	273	169	1027	523	486	779	20
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	8.1	8.1	8.1	22.0	34.6	34.6	14.8	40.4	40.4	19.4	45.0	45.0
Effective Green, g (s)	8.1	8.1	8.1	22.0	34.6	34.6	14.8	40.4	40.4	19.4	45.0	45.0
Actuated g/C Ratio	0.07	0.07	0.07	0.20	0.32	0.32	0.14	0.37	0.37	0.18	0.42	0.42
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	84	139	118	341	444	505	242	1319	590	614	2111	657
v/s Ratio Prot		0.03		c0.14	0.11		0.10	0.29		c0.14	0.15	
v/s Ratio Perm	0.04		0.00		0.06	c0.17			c0.33			0.01
v/c Ratio	0.58	0.43	0.03	0.68	0.52	0.54	0.70	0.78	0.89	0.79	0.37	0.03
Uniform Delay, d1	48.5	47.9	46.5	39.9	30.2	30.4	44.7	30.0	31.8	42.6	21.9	18.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.5	0.8	0.0	4.2	0.5	0.6	6.9	3.2	15.2	6.5	0.1	0.0
Delay (s)	55.0	48.7	46.5	44.1	30.7	31.0	51.6	33.2	47.0	49.0	22.0	18.8
Level of Service	E	D	D	D	C	C	D	C	D	D	C	B
Approach Delay (s)		50.2			33.9			40.6			31.9	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM Average Control Delay	36.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	108.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	985	196	199	608	26	282	35	164	40	26	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3451		1770	3518		1770	1863	1583	1770	1718	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1770	3451		1770	3518		1345	1863	1583	1368	1718	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	114	995	198	201	614	26	285	35	166	40	26	28
RTOR Reduction (vph)	0	15	0	0	3	0	0	0	124	0	21	0
Lane Group Flow (vph)	114	1178	0	201	637	0	285	35	42	40	33	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	8.5	35.5		14.0	41.0		21.5	21.5	21.5	21.5	21.5	
Effective Green, g (s)	8.5	35.5		14.0	41.0		21.5	21.5	21.5	21.5	21.5	
Actuated g/C Ratio	0.10	0.42		0.16	0.48		0.25	0.25	0.25	0.25	0.25	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	177	1441		292	1697		340	471	400	346	435	
v/s Ratio Prot	0.06	c0.34		c0.11	0.18			0.02			0.02	
v/s Ratio Perm							c0.21		0.03	0.03		
v/c Ratio	0.64	0.82		0.69	0.38		0.84	0.07	0.10	0.12	0.08	
Uniform Delay, d1	36.8	21.9		33.4	13.9		30.1	24.2	24.4	24.4	24.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.9	3.9		5.3	0.2		15.7	0.0	0.0	0.1	0.0	
Delay (s)	42.7	25.8		38.7	14.1		45.8	24.2	24.4	24.5	24.2	
Level of Service	D	C		D	B		D	C	C	C	C	
Approach Delay (s)		27.3			20.0			36.9			24.3	
Approach LOS		C			B			D			C	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

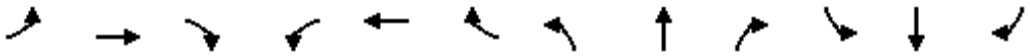


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	1111	18	0	806	99	4	0	2	55	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.98			0.95			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	3531			3481			1722			1770	1583
Flt Permitted	0.95	1.00			1.00			0.88			0.75	1.00
Satd. Flow (perm)	1770	3531			3481			1557			1404	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	129	1157	19	0	840	103	4	0	2	57	0	57
RTOR Reduction (vph)	0	1	0	0	7	0	0	2	0	0	0	48
Lane Group Flow (vph)	129	1175	0	0	936	0	0	4	0	0	57	9
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	10.1	53.5			38.9			12.3			12.3	12.3
Effective Green, g (s)	10.1	53.5			38.9			12.3			12.3	12.3
Actuated g/C Ratio	0.13	0.71			0.52			0.16			0.16	0.16
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	237	2509			1798			254			229	259
v/s Ratio Prot	0.07	c0.33			c0.27							
v/s Ratio Perm								0.00			c0.04	0.01
v/c Ratio	0.54	0.47			0.52			0.02			0.25	0.04
Uniform Delay, d1	30.5	4.7			12.0			26.4			27.5	26.5
Progression Factor	1.00	1.00			0.40			1.00			1.00	1.00
Incremental Delay, d2	1.4	0.1			0.3			0.0			0.2	0.0
Delay (s)	31.8	4.8			5.2			26.4			27.7	26.5
Level of Service	C	A			A			C			C	C
Approach Delay (s)		7.5			5.2			26.4			27.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	75.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

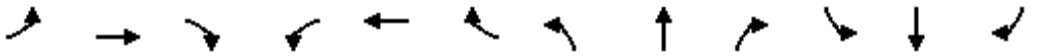
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1004	46	17	796	133	60	17	25	102	8	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.91			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3516		1770	3463		1770	1698			1731	
Flt Permitted	0.95	1.00		0.95	1.00		0.67	1.00			0.78	
Satd. Flow (perm)	1770	3516		1770	3463		1242	1698			1388	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	104	1057	48	18	838	140	63	18	26	107	8	49
RTOR Reduction (vph)	0	3	0	0	11	0	0	22	0	0	19	0
Lane Group Flow (vph)	104	1102	0	18	967	0	63	22	0	0	145	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	10.1	30.5		18.5	38.9		12.3	12.3			12.3	
Effective Green, g (s)	10.1	30.5		18.5	38.9		12.3	12.3			12.3	
Actuated g/C Ratio	0.13	0.41		0.25	0.52		0.16	0.16			0.16	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	237	1424		435	1789		203	277			227	
v/s Ratio Prot	c0.06	c0.31		0.01	c0.28			0.01				
v/s Ratio Perm							0.05				c0.10	
v/c Ratio	0.44	0.77		0.04	0.54		0.31	0.08			0.64	
Uniform Delay, d1	30.0	19.4		21.6	12.2		27.8	26.7			29.4	
Progression Factor	1.24	0.82		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	2.6		0.0	0.4		0.3	0.0			4.3	
Delay (s)	37.7	18.4		21.7	12.6		28.1	26.8			33.7	
Level of Service	D	B		C	B		C	C			C	
Approach Delay (s)		20.1			12.8			27.5			33.7	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	75.3	Sum of lost time (s)	19.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



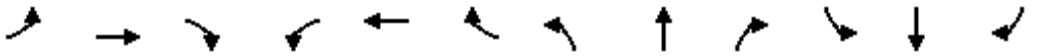
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	895	201	366	672	2	230	5	447	4	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.97		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1770	3442		1770	3538			1776	1583		1731	
Flt Permitted	0.95	1.00		0.95	1.00			0.72	1.00		0.93	
Satd. Flow (perm)	1770	3442		1770	3538			1339	1583		1630	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	952	214	389	715	2	245	5	476	4	5	7
RTOR Reduction (vph)	0	21	0	0	0	0	0	0	336	0	6	0
Lane Group Flow (vph)	9	1145	0	389	717	0	0	250	140	0	10	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	1.2	37.0		20.1	55.9			18.4	18.4		18.4	
Effective Green, g (s)	1.2	37.0		20.1	55.9			18.4	18.4		18.4	
Actuated g/C Ratio	0.01	0.41		0.22	0.62			0.21	0.21		0.21	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	24	1423		398	2210			275	325		335	
v/s Ratio Prot	0.01	c0.33		c0.22	0.20							
v/s Ratio Perm								c0.19	0.09		0.01	
v/c Ratio	0.38	0.80		0.98	0.32			0.91	0.43		0.03	
Uniform Delay, d1	43.8	23.1		34.5	7.9			34.7	31.0		28.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	3.6	3.6		38.6	0.1			30.7	0.3		0.0	
Delay (s)	47.3	26.7		73.1	8.0			65.4	31.3		28.4	
Level of Service	D	C		E	A			E	C		C	
Approach Delay (s)		26.8			30.9			43.1			28.4	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



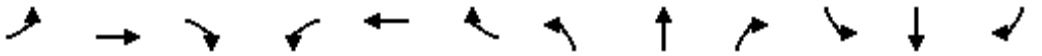
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	475	796	92	162	447	27	207	541	135	77	549	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3378	1583	1770	3539	1583	1610	3287		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3378	1583	1770	3539	1583	1610	3287		1770	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	490	821	95	167	461	28	213	558	139	79	566	402
RTOR Reduction (vph)	0	0	19	0	0	15	0	11	0	0	0	109
Lane Group Flow (vph)	426	885	76	167	461	13	192	707	0	79	566	293
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	40.3	40.3	40.3	28.9	28.9	28.9	39.3	39.3		36.0	36.0	36.0
Effective Green, g (s)	40.3	40.3	40.3	28.9	28.9	28.9	39.3	39.3		36.0	36.0	36.0
Actuated g/C Ratio	0.24	0.24	0.24	0.18	0.18	0.18	0.24	0.24		0.22	0.22	0.22
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	394	828	388	311	622	278	385	785		387	774	346
v/s Ratio Prot	c0.26	0.26		0.09	c0.13		0.12	c0.22		0.04	0.16	
v/s Ratio Perm			0.05			0.01						c0.19
v/c Ratio	1.08	1.07	0.20	0.54	0.74	0.05	0.50	0.90		0.20	0.73	0.85
Uniform Delay, d1	62.1	62.1	49.3	61.7	64.3	56.4	54.1	60.7		52.5	59.8	61.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	68.8	51.3	0.3	2.3	5.1	0.1	1.4	13.7		0.4	3.8	17.9
Delay (s)	130.9	113.4	49.6	64.0	69.3	56.5	55.5	74.4		52.9	63.6	79.5
Level of Service	F	F	D	E	E	E	E	E		D	E	E
Approach Delay (s)		114.4			67.4			70.4			68.9	
Approach LOS		F			E			E			E	

Intersection Summary			
HCM Average Control Delay	84.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	164.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



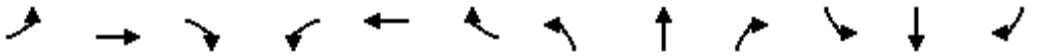
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	442	458	1382	436	429	803	1315	1581	394	705	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	491	509	1536	484	477	892	1461	1757	438	783	173
RTOR Reduction (vph)	0	0	248	0	0	123	0	0	99	0	0	131
Lane Group Flow (vph)	178	491	261	1536	484	354	892	1461	1658	438	783	42
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.9	29.9	29.9	23.8	44.8	44.8	17.1	37.3	61.1	9.0	29.2	29.2
Effective Green, g (s)	8.9	29.9	29.9	23.8	44.8	44.8	17.1	37.3	61.1	9.0	29.2	29.2
Actuated g/C Ratio	0.07	0.25	0.25	0.20	0.37	0.37	0.14	0.31	0.51	0.08	0.24	0.24
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	255	882	694	990	696	591	489	1581	1535	257	1237	385
v/s Ratio Prot	0.05	0.14		c0.31	c0.26		c0.26	0.29	c0.21	0.13	0.15	
v/s Ratio Perm			0.09			0.22			0.38			0.03
v/c Ratio	0.70	0.56	0.38	1.55	0.70	0.60	1.82	0.92	1.08	1.70	0.63	0.11
Uniform Delay, d1	54.2	39.3	37.3	48.1	31.8	30.3	51.5	40.0	29.4	55.5	40.6	35.3
Progression Factor	1.00	1.00	1.00	1.08	0.61	0.40	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	2.5	1.6	250.9	3.1	2.4	378.8	9.6	47.9	333.1	1.2	0.2
Delay (s)	62.3	41.8	38.9	302.7	22.6	14.5	430.3	49.6	77.4	388.6	41.8	35.5
Level of Service	E	D	D	F	C	B	F	D	E	F	D	D
Approach Delay (s)		43.6			193.3			144.1			150.0	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM Average Control Delay	145.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



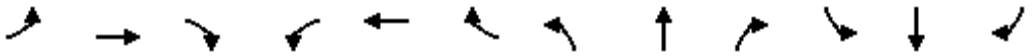
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	324	1690	336	124	1598	230	374	73	99	289	78	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4959		1770	6287		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4959		1770	6287		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	348	1817	361	133	1718	247	402	78	106	311	84	331
RTOR Reduction (vph)	0	19	0	0	17	0	0	0	90	0	0	212
Lane Group Flow (vph)	348	2159	0	133	1948	0	402	78	16	311	84	119
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	17.5	58.2		11.5	52.2		16.5	18.3	18.3	13.5	15.3	15.3
Effective Green, g (s)	17.5	58.2		11.5	52.2		16.5	18.3	18.3	13.5	15.3	15.3
Actuated g/C Ratio	0.15	0.49		0.10	0.44		0.14	0.15	0.15	0.11	0.13	0.13
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	258	2405		170	2735		243	284	241	199	238	202
v/s Ratio Prot	c0.20	c0.44		0.08	0.31		c0.23	c0.04		0.18	0.05	
v/s Ratio Perm									0.01			c0.08
v/c Ratio	1.35	0.90		0.78	0.71		1.65	0.27	0.07	1.56	0.35	0.59
Uniform Delay, d1	51.2	28.2		53.0	27.8		51.8	45.0	43.5	53.2	47.8	49.4
Progression Factor	1.03	1.00		0.89	1.18		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	159.4	0.6		12.4	1.0		312.1	0.6	0.1	276.3	1.1	4.6
Delay (s)	211.9	28.7		59.8	33.6		363.9	45.6	43.7	329.5	48.9	54.0
Level of Service	F	C		E	C		F	D	D	F	D	D
Approach Delay (s)		53.9			35.3			263.6			171.5	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM Average Control Delay	82.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	207	1677	227	120	1443	104	373	16	315	153	5	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4994		1770	5034		1770	1863	1583	1770	1593	
Flt Permitted	0.95	1.00		0.95	1.00		0.57	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	4994		1770	5034		1065	1863	1583	1390	1593	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	223	1803	244	129	1552	112	401	17	339	165	5	143
RTOR Reduction (vph)	0	14	0	0	7	0	0	0	115	0	110	0
Lane Group Flow (vph)	223	2033	0	129	1657	0	401	17	224	165	38	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Effective Green, g (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Actuated g/C Ratio	0.10	0.58		0.08	0.56		0.23	0.23	0.23	0.23	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	170	2872		140	2811		244	427	363	319	365	
v/s Ratio Prot	c0.13	c0.41		0.07	0.33			0.01			0.02	
v/s Ratio Perm							c0.38		0.14	0.12		
v/c Ratio	1.31	0.71		0.92	0.59		1.64	0.04	0.62	0.52	0.10	
Uniform Delay, d1	54.2	18.3		54.9	17.4		46.2	36.0	41.5	40.4	36.5	
Progression Factor	0.81	1.14		0.83	0.93		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	154.0	0.5		23.3	0.3		307.3	0.0	2.2	0.6	0.0	
Delay (s)	198.1	21.3		68.8	16.6		353.6	36.0	43.7	41.0	36.6	
Level of Service	F	C		E	B		F	D	D	D	D	
Approach Delay (s)		38.6			20.3			207.7			38.9	
Approach LOS		D			C			F			D	

Intersection Summary			
HCM Average Control Delay	57.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

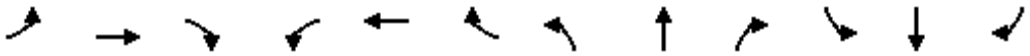


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	288	1521	360	469	1191	207	359	337	504	279	269	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4939		1770	5085	1583	1770	1863	1583	3433	1755	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4939		1770	5085	1583	1770	1863	1583	3433	1755	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	294	1552	367	479	1215	211	366	344	514	285	274	171
RTOR Reduction (vph)	0	33	0	0	0	141	0	0	305	0	19	0
Lane Group Flow (vph)	294	1886	0	479	1215	70	366	344	209	285	427	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	20.5	31.0		29.5	40.0	40.0	13.5	28.3	28.3	12.7	27.5	
Effective Green, g (s)	20.5	31.0		29.5	40.0	40.0	13.5	28.3	28.3	12.7	27.5	
Actuated g/C Ratio	0.17	0.26		0.25	0.33	0.33	0.11	0.24	0.24	0.11	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	302	1276		435	1695	528	199	439	373	363	402	
v/s Ratio Prot	0.17	c0.38		c0.27	0.24		c0.21	0.18		0.08	c0.24	
v/s Ratio Perm						0.04			0.13			
v/c Ratio	0.97	1.48		1.10	0.72	0.13	1.84	0.78	0.56	0.79	1.06	
Uniform Delay, d1	49.5	44.5		45.2	35.0	27.9	53.2	43.0	40.4	52.3	46.2	
Progression Factor	1.14	0.89		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	36.2	218.3		73.4	2.6	0.5	396.5	8.9	1.9	9.9	61.9	
Delay (s)	92.9	258.0		118.7	37.7	28.4	449.8	51.9	42.3	62.2	108.2	
Level of Service	F	F		F	D	C	F	D	D	E	F	
Approach Delay (s)		236.0			57.0			166.8			90.2	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	148.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	123.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	503	1402	398	251	1466	447	66	28	8	519	83	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3422		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3422		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	529	1476	419	264	1543	471	69	29	8	546	87	333
RTOR Reduction (vph)	0	15	0	0	0	224	0	0	8	0	0	278
Lane Group Flow (vph)	529	1880	0	264	1543	247	69	29	0	546	87	55
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	16.5	63.2		21.4	68.1	68.1	7.6	4.9	4.9	21.5	18.8	21.5
Effective Green, g (s)	16.5	63.2		21.4	68.1	68.1	7.6	4.9	4.9	21.5	18.8	21.5
Actuated g/C Ratio	0.13	0.49		0.16	0.52	0.52	0.06	0.04	0.04	0.17	0.14	0.17
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	436	1664		291	2664	829	103	133	60	568	269	262
v/s Ratio Prot	c0.15	c0.55		c0.15	0.30		0.04	0.01		c0.16	c0.05	
v/s Ratio Perm						0.16			0.00			0.03
v/c Ratio	1.21	1.13		0.91	0.58	0.30	0.67	0.22	0.01	0.96	0.32	0.21
Uniform Delay, d1	56.8	33.4		53.3	21.2	17.5	60.0	60.7	60.2	53.8	49.9	46.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	115.5	66.6		29.2	0.9	0.9	12.1	1.1	0.0	28.0	0.3	0.1
Delay (s)	172.3	100.0		82.5	22.1	18.4	72.0	61.8	60.2	81.8	50.1	47.1
Level of Service	F	F		F	C	B	E	E	E	F	D	D
Approach Delay (s)		115.7			28.3			68.4			67.0	
Approach LOS		F			C			E			E	

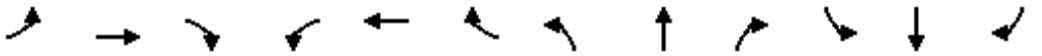
Intersection Summary			
HCM Average Control Delay	72.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	52	54	2	20	75	52	2	400	83	56	147	59
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	62	64	2	24	89	62	2	476	99	67	175	70

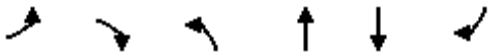
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	129	24	151	577	312
Volume Left (vph)	62	24	0	2	67
Volume Right (vph)	2	0	62	99	70
Hadj (s)	0.12	0.53	-0.25	-0.07	-0.06
Departure Headway (s)	7.2	7.9	7.1	5.5	5.9
Degree Utilization, x	0.26	0.05	0.30	0.88	0.51
Capacity (veh/h)	466	428	478	647	564
Control Delay (s)	12.6	10.1	11.8	35.3	15.0
Approach Delay (s)	12.6	11.6		35.3	15.0
Approach LOS	B	B		E	B

Intersection Summary				
Delay	24.0			
HCM Level of Service	C			
Intersection Capacity Utilization	66.9%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	159	24	55	142	626	22	340	60	696	237	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98			1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1827			1837	1583	1770	1821		1770	1800	
Flt Permitted	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1827			1837	1583	1770	1821		1770	1800	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	86	175	26	60	156	688	24	374	66	765	260	76
RTOR Reduction (vph)	0	5	0	0	0	495	0	5	0	0	9	0
Lane Group Flow (vph)	86	196	0	0	216	193	24	435	0	765	327	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	15.6	15.6			18.9	18.9	22.2	22.2		22.2	22.2	
Effective Green, g (s)	15.6	15.6			18.9	18.9	22.2	22.2		22.2	22.2	
Actuated g/C Ratio	0.16	0.16			0.20	0.20	0.23	0.23		0.23	0.23	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	285	294			358	309	406	417		406	412	
v/s Ratio Prot	0.05	c0.11			0.12		0.01	c0.24		c0.43	0.18	
v/s Ratio Perm						c0.12						
v/c Ratio	0.30	0.67			0.60	0.62	0.06	1.04		1.88	0.79	
Uniform Delay, d1	35.8	38.2			35.6	35.7	29.2	37.4		37.4	35.2	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	5.6			2.9	3.9	0.1	55.5		407.1	10.1	
Delay (s)	36.4	43.8			38.4	39.6	29.2	92.8		444.5	45.3	
Level of Service	D	D			D	D	C	F		F	D	
Approach Delay (s)		41.6			39.4			89.5			322.7	
Approach LOS		D			D			F			F	

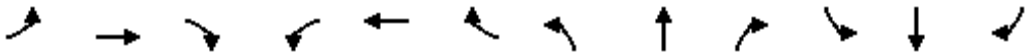
Intersection Summary			
HCM Average Control Delay	161.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	32	51	25	692
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	34	54	27	736
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	517	395	763			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	487	361	740			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	96			
cM capacity (veh/h)	502	663	841			

Direction, Lane #	NB 1	SB 1
Volume Total	88	763
Volume Left	34	0
Volume Right	0	736
cSH	841	1700
Volume to Capacity	0.04	0.45
Queue Length 95th (ft)	3	0
Control Delay (s)	3.9	0.0
Lane LOS	A	
Approach Delay (s)	3.9	0.0
Approach LOS		

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	47.5%	ICU Level of Service	A	
Analysis Period (min)	15			



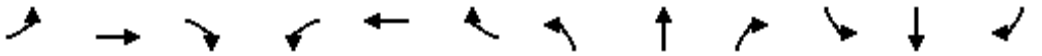
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	34	10	64	10	78	46	103	72	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	11	11	37	11	70	11	85	50	112	78	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	117	146	201
Volume Left (vph)	11	37	11	112
Volume Right (vph)	11	70	50	11
Hadj (s)	-0.10	-0.26	-0.16	0.11
Departure Headway (s)	4.8	4.5	4.3	4.5
Degree Utilization, x	0.04	0.15	0.18	0.25
Capacity (veh/h)	688	740	791	758
Control Delay (s)	8.0	8.2	8.3	9.1
Approach Delay (s)	8.0	8.2	8.3	9.1
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.6			
HCM Level of Service	A			
Intersection Capacity Utilization	35.7%	ICU Level of Service	A	
Analysis Period (min)	15			

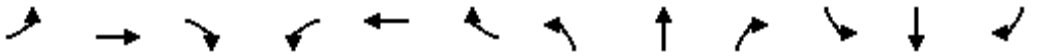
Cumulative Plus Project (Base FAR)
Mitigated
AM and PM Peak Hour
Synchro Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	31	44	556	41	294	63	1340	333	423	769	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	4.5	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1696	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.55	1.00	1.00	0.95	0.47	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1018	1863	1583	1681	823	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	32	36	51	639	47	338	72	1540	383	486	884	33
RTOR Reduction (vph)	0	0	48	0	0	243	0	0	108	0	0	15
Lane Group Flow (vph)	32	36	3	345	341	95	72	1540	275	486	884	18
Turn Type	Perm		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases		4		3	8		5	2	3	1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	7.9	7.9	7.9	25.0	37.4	37.4	8.7	59.8	84.8	22.3	73.4	73.4
Effective Green, g (s)	7.9	7.9	7.9	25.0	37.4	37.4	8.7	59.8	84.8	22.3	73.4	73.4
Actuated g/C Ratio	0.06	0.06	0.06	0.19	0.28	0.28	0.07	0.45	0.64	0.17	0.55	0.55
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	4.5	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	2.0	2.0	4.0	4.0
Lane Grp Cap (vph)	60	110	94	315	394	443	115	1585	1006	573	2796	870
v/s Ratio Prot		0.02		c0.21	0.16		0.04	c0.44	0.05	c0.14	0.17	
v/s Ratio Perm	0.03		0.00		c0.08	0.06			0.12			0.01
v/c Ratio	0.53	0.33	0.03	1.10	0.87	0.21	0.63	0.97	0.27	0.85	0.32	0.02
Uniform Delay, d1	61.0	60.3	59.2	54.2	45.7	36.8	60.8	36.0	10.8	54.0	16.4	13.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	0.6	0.1	78.7	17.1	0.1	7.4	16.8	0.1	10.8	0.3	0.0
Delay (s)	65.5	60.9	59.2	132.9	62.8	36.9	68.2	52.8	10.8	64.7	16.7	13.7
Level of Service	E	E	E	F	E	D	E	D	B	E	B	B
Approach Delay (s)		61.4			77.9			45.3			33.3	
Approach LOS		E			E			D			C	

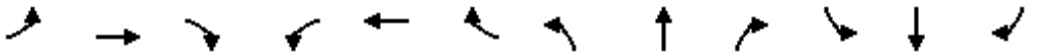
Intersection Summary			
HCM Average Control Delay	49.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	133.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	282	435	32	327	691	25	136	356	47	144	630	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3477		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3477		1770	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	328	506	37	380	803	29	158	414	55	167	733	412
RTOR Reduction (vph)	0	0	20	0	0	12	0	8	0	0	0	126
Lane Group Flow (vph)	328	506	17	380	803	17	158	461	0	167	733	286
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	23.0	22.9	22.9	28.2	28.1	28.1	16.2	26.0		16.3	26.1	26.1
Effective Green, g (s)	23.0	22.9	22.9	28.2	28.1	28.1	16.2	26.0		16.3	26.1	26.1
Actuated g/C Ratio	0.20	0.20	0.20	0.25	0.25	0.25	0.14	0.23		0.14	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	359	715	320	440	877	392	253	797		254	815	364
v/s Ratio Prot	0.19	0.14		c0.21	c0.23		0.09	0.13		c0.09	c0.21	
v/s Ratio Perm			0.01			0.01						0.18
v/c Ratio	0.91	0.71	0.05	0.86	0.92	0.04	0.62	0.58		0.66	0.90	0.79
Uniform Delay, d1	44.2	42.1	36.5	40.8	41.5	32.4	45.7	38.8		45.9	42.4	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	27.3	3.4	0.1	16.4	14.2	0.1	5.4	1.2		6.7	13.0	11.2
Delay (s)	71.5	45.6	36.6	57.2	55.7	32.5	51.1	40.0		52.6	55.4	52.2
Level of Service	E	D	D	E	E	C	D	D		D	E	D
Approach Delay (s)		55.0			55.6			42.8			54.0	
Approach LOS		D			E			D			D	

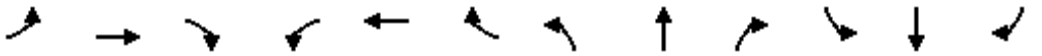
Intersection Summary			
HCM Average Control Delay	52.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	113.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



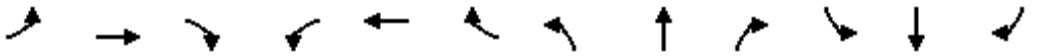
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	340	728	617	239	429	581	1526	1103	237	999	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.94	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	370	791	671	260	466	632	1659	1199	258	1086	225
RTOR Reduction (vph)	0	0	381	0	0	135	0	0	102	0	0	162
Lane Group Flow (vph)	207	370	410	671	260	331	632	1659	1097	258	1086	63
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.0	30.0	30.0	19.0	41.0	41.0	17.4	41.0	60.0	10.0	33.6	33.6
Effective Green, g (s)	8.0	30.0	30.0	19.0	41.0	41.0	17.4	41.0	60.0	10.0	33.6	33.6
Actuated g/C Ratio	0.07	0.25	0.25	0.16	0.34	0.34	0.14	0.34	0.50	0.08	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	229	885	697	790	637	541	724	1737	1394	286	1424	443
v/s Ratio Prot	c0.06	0.10		c0.13	0.14		0.13	c0.33	0.12	0.08	c0.21	
v/s Ratio Perm			0.15			c0.21			0.27			0.04
v/c Ratio	0.90	0.42	0.59	0.85	0.41	0.61	0.87	0.96	0.79	0.90	0.76	0.14
Uniform Delay, d1	55.6	37.7	39.6	49.1	30.2	32.9	50.2	38.6	24.7	54.5	39.5	32.4
Progression Factor	1.00	1.00	1.00	0.86	0.83	0.75	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	34.5	1.5	3.6	7.9	1.8	4.7	11.3	12.6	3.0	29.3	2.6	0.2
Delay (s)	90.2	39.1	43.2	50.0	26.7	29.5	61.5	51.2	27.7	83.8	42.2	32.6
Level of Service	F	D	D	D	C	C	E	D	C	F	D	C
Approach Delay (s)		49.2			38.8			45.0			47.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	45.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



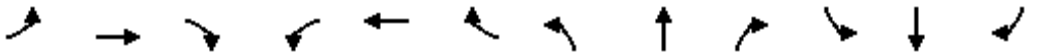
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	769	265	305	698	130	142	117	357	129	286	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	4966		1770	1863	2787	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	4966		1770	1863	2787	3433	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	152	801	276	318	727	135	148	122	372	134	298	85
RTOR Reduction (vph)	0	0	172	0	18	0	0	0	329	0	0	68
Lane Group Flow (vph)	152	801	104	318	844	0	148	122	43	134	298	17
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	14.4	45.2	45.2	17.7	48.5		14.3	14.0	14.0	24.6	24.3	24.3
Effective Green, g (s)	14.4	45.2	45.2	17.7	48.5		14.3	14.0	14.0	24.6	24.3	24.3
Actuated g/C Ratio	0.12	0.38	0.38	0.15	0.40		0.12	0.12	0.12	0.21	0.20	0.20
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0		2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	212	1915	596	506	2007		211	217	325	704	377	321
v/s Ratio Prot	c0.09	0.16		c0.09	c0.17		c0.08	0.07		0.04	c0.16	
v/s Ratio Perm			0.07						0.02			0.01
v/c Ratio	0.72	0.42	0.17	0.63	0.42		0.70	0.56	0.13	0.19	0.79	0.05
Uniform Delay, d1	50.8	27.7	25.0	48.1	25.7		50.8	50.1	47.6	39.5	45.4	38.6
Progression Factor	0.78	0.75	0.82	0.77	0.63		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.8	0.6	0.6	1.6	0.6		8.3	3.3	0.2	0.0	10.8	0.1
Delay (s)	48.5	21.4	21.1	38.7	16.6		59.1	53.4	47.7	39.5	56.2	38.6
Level of Service	D	C	C	D	B		E	D	D	D	E	D
Approach Delay (s)		24.7			22.6			51.4			49.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	32.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



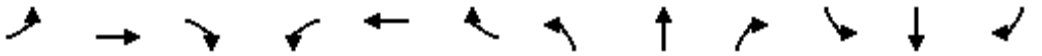
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	222	828	207	157	796	381	14	8	4	532	208	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	252	941	235	178	905	433	16	9	5	605	236	311
RTOR Reduction (vph)	0	0	100	0	0	210	0	0	5	0	0	237
Lane Group Flow (vph)	252	941	135	178	905	223	16	9	0	605	236	74
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	14.4	63.6	63.6	12.5	61.7	61.7	2.4	3.8	3.8	21.1	22.5	21.1
Effective Green, g (s)	14.4	63.6	63.6	12.5	61.7	61.7	2.4	3.8	3.8	21.1	22.5	21.1
Actuated g/C Ratio	0.12	0.53	0.53	0.10	0.51	0.51	0.02	0.03	0.03	0.18	0.19	0.18
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	412	1876	839	184	2615	814	35	112	50	604	349	278
v/s Ratio Prot	c0.07	c0.27		c0.10	0.18		c0.01	0.00		c0.18	0.13	
v/s Ratio Perm			0.09			0.14			0.00			0.05
v/c Ratio	0.61	0.50	0.16	0.97	0.35	0.27	0.46	0.08	0.00	1.00	0.68	0.26
Uniform Delay, d1	50.1	18.1	14.5	53.5	17.2	16.5	58.2	56.4	56.3	49.5	45.4	42.7
Progression Factor	0.71	0.39	0.12	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.9	0.4	56.0	0.4	0.8	3.4	0.4	0.0	37.0	4.0	0.2
Delay (s)	37.5	7.9	2.2	109.5	17.6	17.3	61.6	56.8	56.3	86.5	49.4	42.9
Level of Service	D	A	A	F	B	B	E	E	E	F	D	D
Approach Delay (s)		12.2			28.3			59.3			67.1	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM Average Control Delay	33.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



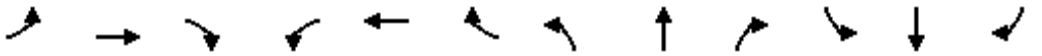
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	106	28	57	146	499	15	102	12	591	205	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1804			1837	1583	1770	1834		1770	1827	
Flt Permitted	0.95	1.00			0.87	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1804			1620	1583	1770	1834		1770	1827	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	110	29	59	152	520	16	106	12	616	214	31
RTOR Reduction (vph)	0	8	0	0	0	415	0	3	0	0	4	0
Lane Group Flow (vph)	42	131	0	0	211	105	16	115	0	616	241	0
Turn Type	Prot			Perm		Perm	Prot			Prot		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8		8						
Actuated Green, G (s)	2.6	25.5			18.4	18.4	1.7	15.1		36.8	50.2	
Effective Green, g (s)	2.6	25.5			18.4	18.4	1.7	15.1		36.8	50.2	
Actuated g/C Ratio	0.03	0.28			0.20	0.20	0.02	0.17		0.40	0.55	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	51	506			328	320	33	305		717	1009	
v/s Ratio Prot	c0.02	0.07					0.01	c0.06		c0.35	0.13	
v/s Ratio Perm					c0.13	0.07						
v/c Ratio	0.82	0.26			0.64	0.33	0.48	0.38		0.86	0.24	
Uniform Delay, d1	43.9	25.4			33.2	31.0	44.2	33.7		24.7	10.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	64.6	0.3			4.3	0.6	10.8	0.8		10.0	0.1	
Delay (s)	108.6	25.6			37.5	31.6	55.0	34.5		34.7	10.6	
Level of Service	F	C			D	C	D	C		C	B	
Approach Delay (s)		44.9			33.3			36.9			27.9	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



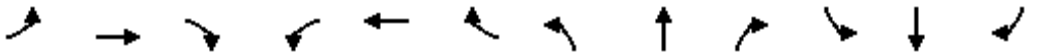
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	475	796	92	162	447	27	207	541	135	77	549	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3433		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3433		1770	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	490	821	95	167	461	28	213	558	139	79	566	402
RTOR Reduction (vph)	0	0	34	0	0	21	0	18	0	0	0	161
Lane Group Flow (vph)	490	821	61	167	461	7	213	679	0	79	566	241
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	33.9	42.2	42.2	13.9	21.2	21.2	15.9	33.9		6.0	24.0	24.0
Effective Green, g (s)	33.9	42.2	42.2	13.9	21.2	21.2	15.9	33.9		6.0	24.0	24.0
Actuated g/C Ratio	0.29	0.37	0.37	0.12	0.18	0.18	0.14	0.29		0.05	0.21	0.21
Clearance Time (s)	5.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	522	1299	581	214	652	292	245	1012		92	739	330
v/s Ratio Prot	c0.28	c0.23		0.09	0.13		c0.12	0.20		0.04	c0.16	
v/s Ratio Perm			0.04			0.00						0.15
v/c Ratio	0.94	0.63	0.11	0.78	0.71	0.02	0.87	0.67		0.86	0.77	0.73
Uniform Delay, d1	39.5	30.0	24.0	49.1	44.0	38.4	48.5	35.6		54.1	42.9	42.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	25.0	1.1	0.1	16.7	3.8	0.0	27.0	1.9		51.8	5.0	8.3
Delay (s)	64.5	31.1	24.1	65.7	47.7	38.5	75.5	37.6		105.9	47.9	50.8
Level of Service	E	C	C	E	D	D	E	D		F	D	D
Approach Delay (s)		42.3			51.9			46.4			53.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	47.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



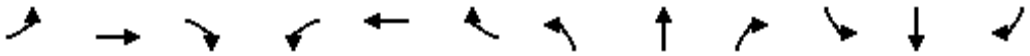
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	442	458	1382	436	429	803	1315	1581	394	705	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.94	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	491	509	1536	484	477	892	1461	1757	438	783	173
RTOR Reduction (vph)	0	0	423	0	0	199	0	0	7	0	0	135
Lane Group Flow (vph)	178	491	86	1536	484	278	892	1461	1750	438	783	38
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	9.0	20.0	20.0	42.0	53.0	53.0	26.9	40.0	82.0	18.0	31.1	31.1
Effective Green, g (s)	9.0	20.0	20.0	42.0	53.0	53.0	26.9	40.0	82.0	18.0	31.1	31.1
Actuated g/C Ratio	0.06	0.14	0.14	0.30	0.38	0.38	0.19	0.29	0.59	0.13	0.22	0.22
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	221	506	398	1497	705	599	959	1453	1632	441	1130	352
v/s Ratio Prot	0.05	c0.14		0.31	0.26		0.18	0.29	c0.32	c0.13	0.15	
v/s Ratio Perm			0.03			0.18			0.31			0.02
v/c Ratio	0.81	0.97	0.22	1.03	0.69	0.46	0.93	1.01	1.07	0.99	0.69	0.11
Uniform Delay, d1	64.6	59.7	53.1	49.0	36.5	32.8	55.6	50.0	29.0	60.9	50.1	43.4
Progression Factor	1.00	1.00	1.00	0.62	0.50	0.20	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.9	33.3	1.3	25.1	3.3	1.6	15.0	24.9	44.5	40.9	2.0	0.2
Delay (s)	83.5	93.0	54.3	55.6	21.6	8.1	70.6	74.9	73.5	101.8	52.1	43.6
Level of Service	F	F	D	E	C	A	E	E	E	F	D	D
Approach Delay (s)		74.9			39.9			73.4			66.6	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM Average Control Delay	63.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



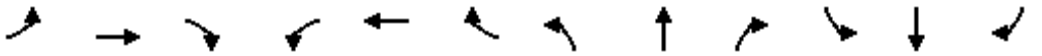
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	324	1690	336	124	1598	230	374	73	99	289	78	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4959		1770	6287		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4959		1770	6287		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	348	1817	361	133	1718	247	402	78	106	311	84	331
RTOR Reduction (vph)	0	16	0	0	15	0	0	0	97	0	0	296
Lane Group Flow (vph)	348	2162	0	133	1950	0	402	78	9	311	84	35
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	23.5	72.2		9.5	58.2		26.5	11.7	11.7	28.1	13.3	13.3
Effective Green, g (s)	23.5	72.2		9.5	58.2		26.5	11.7	11.7	28.1	13.3	13.3
Actuated g/C Ratio	0.17	0.52		0.07	0.42		0.19	0.08	0.08	0.20	0.10	0.10
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	297	2557		120	2614		335	156	132	355	177	150
v/s Ratio Prot	c0.20	c0.44		c0.08	0.31		c0.23	0.04		0.18	c0.05	
v/s Ratio Perm									0.01			0.02
v/c Ratio	1.17	0.85		1.11	0.75		1.20	0.50	0.07	0.88	0.47	0.23
Uniform Delay, d1	58.2	29.1		65.2	34.6		56.8	61.4	59.1	54.3	60.0	58.6
Progression Factor	1.01	0.94		0.58	0.28		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	80.8	0.3		91.2	1.0		115.2	3.0	0.3	20.2	2.4	0.9
Delay (s)	139.9	27.8		129.3	10.7		171.9	64.3	59.4	74.4	62.4	59.6
Level of Service	F	C		F	B		F	E	E	E	E	E
Approach Delay (s)		43.2			18.3			137.3			66.3	
Approach LOS		D			B			F			E	

Intersection Summary			
HCM Average Control Delay	46.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



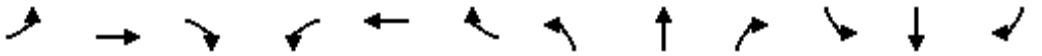
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	207	1677	227	120	1443	104	373	16	315	153	5	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4994		1770	5034		1770	1863	1583	1770	1593	
Flt Permitted	0.95	1.00		0.95	1.00		0.62	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	4994		1770	5034		1149	1863	1583	1390	1593	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	223	1803	244	129	1552	112	401	17	339	165	5	143
RTOR Reduction (vph)	0	12	0	0	6	0	0	0	129	0	91	0
Lane Group Flow (vph)	223	2035	0	129	1658	0	401	17	210	165	57	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	22.6	63.5		12.0	52.9		50.5	50.5	50.5	50.5	50.5	
Effective Green, g (s)	22.6	63.5		12.0	52.9		50.5	50.5	50.5	50.5	50.5	
Actuated g/C Ratio	0.16	0.45		0.09	0.38		0.36	0.36	0.36	0.36	0.36	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	286	2265		152	1902		414	672	571	501	575	
v/s Ratio Prot	0.13	c0.41		0.07	c0.33			0.01			0.04	
v/s Ratio Perm							c0.35		0.13	0.12		
v/c Ratio	0.78	0.90		0.85	0.87		0.97	0.03	0.37	0.33	0.10	
Uniform Delay, d1	56.3	35.3		63.1	40.4		44.0	28.9	33.0	32.5	29.7	
Progression Factor	0.72	0.57		1.42	0.42		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.8	3.7		18.7	3.1		35.5	0.0	0.1	0.1	0.0	
Delay (s)	47.6	23.7		108.6	20.1		79.4	28.9	33.1	32.6	29.7	
Level of Service	D	C		F	C		E	C	C	C	C	
Approach Delay (s)		26.1			26.5			57.6			31.2	
Approach LOS		C			C			E			C	

Intersection Summary			
HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



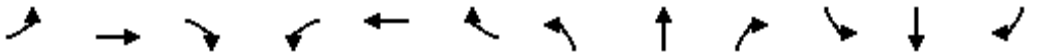
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	288	1521	360	469	1191	207	359	337	504	279	269	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	4.5	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	4972		1770	1863	2787	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	4972		1770	1863	2787	3433	1863	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	294	1552	367	479	1215	211	366	344	514	285	274	171
RTOR Reduction (vph)	0	0	46	0	17	0	0	0	373	0	0	141
Lane Group Flow (vph)	294	1552	321	479	1409	0	366	344	141	285	274	30
Turn Type	Prot		pm+ov	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	23.5	47.8	77.3	19.9	44.2		29.5	38.3	38.3	15.5	24.3	24.3
Effective Green, g (s)	23.5	47.8	77.3	19.9	44.2		29.5	38.3	38.3	15.5	24.3	24.3
Actuated g/C Ratio	0.17	0.34	0.55	0.14	0.32		0.21	0.27	0.27	0.11	0.17	0.17
Clearance Time (s)	4.5	5.0	4.5	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0	2.0	2.0	4.0		2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	297	1736	874	488	1570		373	510	762	380	323	275
v/s Ratio Prot	c0.17	0.31	0.08	0.14	c0.28		c0.21	0.18		0.08	c0.15	
v/s Ratio Perm			0.13						0.05			0.02
v/c Ratio	0.99	0.89	0.37	0.98	0.90		0.98	0.67	0.19	0.75	0.85	0.11
Uniform Delay, d1	58.1	43.7	17.6	59.9	45.7		55.0	45.3	38.9	60.4	56.1	48.7
Progression Factor	0.86	0.83	0.17	0.77	0.79		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	36.7	4.6	0.1	32.2	7.2		41.3	3.5	0.1	7.2	18.3	0.2
Delay (s)	86.8	41.0	3.1	78.6	43.3		96.3	48.8	39.0	67.6	74.3	48.9
Level of Service	F	D	A	E	D		F	D	D	E	E	D
Approach Delay (s)		40.8			52.2			58.9			65.7	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM Average Control Delay	51.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	503	1402	398	251	1466	447	66	28	8	519	83	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0	4.5	4.5	5.0	4.5	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	529	1476	419	264	1543	471	69	29	8	546	87	333
RTOR Reduction (vph)	0	0	101	0	0	153	0	0	3	0	0	66
Lane Group Flow (vph)	529	1476	318	264	1543	318	69	29	5	546	87	267
Turn Type	Prot		Perm	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6	7	3	8	1	7	4	5
Permitted Phases			2			6			8			4
Actuated Green, G (s)	21.4	80.9	80.9	16.5	76.0	94.4	10.5	5.2	21.7	18.4	13.1	34.5
Effective Green, g (s)	21.4	80.9	80.9	16.5	76.0	94.4	10.5	5.2	21.7	18.4	13.1	34.5
Actuated g/C Ratio	0.15	0.58	0.58	0.12	0.54	0.67	0.08	0.04	0.15	0.13	0.09	0.25
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0	4.5	4.5	5.0	4.5	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	525	2045	915	209	2760	1067	133	131	245	451	174	390
v/s Ratio Prot	c0.15	c0.42		c0.15	0.30	0.04	c0.04	0.01	0.00	c0.16	0.05	0.10
v/s Ratio Perm			0.20			0.16			0.00			0.06
v/c Ratio	1.01	0.72	0.35	1.26	0.56	0.30	0.52	0.22	0.02	1.21	0.50	0.69
Uniform Delay, d1	59.3	21.4	15.6	61.8	21.0	9.3	62.3	65.4	50.2	60.8	60.3	47.8
Progression Factor	1.02	0.39	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.6	1.5	0.7	150.9	0.8	0.1	1.4	1.2	0.0	113.9	0.8	4.0
Delay (s)	93.8	9.8	1.1	212.6	21.8	9.3	63.7	66.6	50.2	174.7	61.2	51.8
Level of Service	F	A	A	F	C	A	E	E	D	F	E	D
Approach Delay (s)		26.6			41.4			63.5			122.1	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM Average Control Delay	49.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

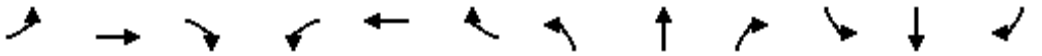


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	159	24	55	142	626	22	340	60	696	237	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98			1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1827			1837	1583	1770	1821		1770	1800	
Flt Permitted	0.95	1.00			0.85	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1827			1576	1583	1770	1821		1770	1800	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	86	175	26	60	156	688	24	374	66	765	260	76
RTOR Reduction (vph)	0	4	0	0	0	535	0	5	0	0	8	0
Lane Group Flow (vph)	86	197	0	0	216	153	24	435	0	765	328	0
Turn Type	Prot			Perm		Perm	Prot			Prot		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8		8						
Actuated Green, G (s)	5.5	31.3			21.3	21.3	3.5	30.0		44.5	71.0	
Effective Green, g (s)	5.5	31.3			21.3	21.3	3.5	30.0		44.5	71.0	
Actuated g/C Ratio	0.05	0.26			0.18	0.18	0.03	0.25		0.37	0.60	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	82	479			281	283	52	458		660	1071	
v/s Ratio Prot	c0.05	0.11					0.01	c0.24		c0.43	0.18	
v/s Ratio Perm					c0.14	0.10						
v/c Ratio	1.05	0.41			0.77	0.54	0.46	0.95		1.16	0.31	
Uniform Delay, d1	56.9	36.4			46.7	44.6	57.0	43.9		37.4	12.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	113.3	0.6			11.9	2.1	6.4	29.2		87.8	0.2	
Delay (s)	170.2	36.9			58.6	46.7	63.3	73.1		125.2	12.1	
Level of Service	F	D			E	D	E	E		F	B	
Approach Delay (s)		76.9			49.5			72.6			90.7	
Approach LOS		E			D			E			F	

Intersection Summary			
HCM Average Control Delay	72.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	119.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Cumulative Plus Project (Maximum FAR)
AM and PM Peak Hour
Synchro Worksheets

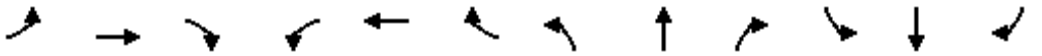
FEHR & PEERS
TRANSPORTATION CONSULTANTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	32	46	556	42	319	64	1420	336	451	874	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1697	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.57	1.00	1.00	0.95	0.44	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1064	1863	1583	1681	786	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	32	37	53	639	48	367	74	1632	386	518	1005	33
RTOR Reduction (vph)	0	0	50	0	0	247	0	0	120	0	0	17
Lane Group Flow (vph)	32	37	3	345	342	120	74	1632	266	518	1005	16
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	7.0	7.0	7.0	25.2	36.7	36.7	7.8	41.4	41.4	20.6	54.2	54.2
Effective Green, g (s)	7.0	7.0	7.0	25.2	36.7	36.7	7.8	41.4	41.4	20.6	54.2	54.2
Actuated g/C Ratio	0.06	0.06	0.06	0.22	0.33	0.33	0.07	0.37	0.37	0.18	0.48	0.48
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	66	116	98	376	460	515	123	1300	582	628	2445	761
v/s Ratio Prot		0.02		c0.21	0.17		0.04	c0.46		c0.15	0.20	
v/s Ratio Perm	0.03		0.00		c0.08	0.08			0.17			0.01
v/c Ratio	0.48	0.32	0.03	0.92	0.74	0.23	0.60	1.26	0.46	0.82	0.41	0.02
Uniform Delay, d1	51.1	50.6	49.7	42.7	33.8	27.7	50.9	35.7	27.1	44.3	18.9	15.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.6	0.1	26.2	5.6	0.1	5.6	121.4	0.8	8.3	0.2	0.0
Delay (s)	53.1	51.1	49.7	68.9	39.4	27.8	56.5	157.0	27.9	52.6	19.1	15.4
Level of Service	D	D	D	E	D	C	E	F	C	D	B	B
Approach Delay (s)		51.1			45.0			129.6			30.1	
Approach LOS		D			D			F			C	

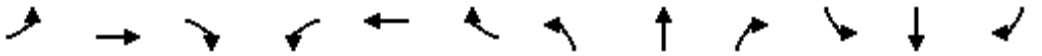
Intersection Summary			
HCM Average Control Delay	77.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	112.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



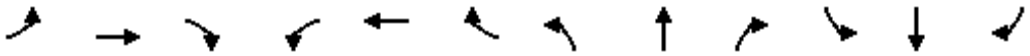
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	687	155	128	809	4	123	9	92	8	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3441		1770	3537		1770	1863	1583	1770	1642	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	3441		1770	3537		1381	1863	1583	1399	1642	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	739	167	138	870	4	132	10	99	9	5	19
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	82	0	16	0
Lane Group Flow (vph)	32	890	0	138	874	0	132	10	17	9	8	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	2.3	29.2		8.0	34.9		10.9	10.9	10.9	10.9	10.9	
Effective Green, g (s)	2.3	29.2		8.0	34.9		10.9	10.9	10.9	10.9	10.9	
Actuated g/C Ratio	0.04	0.47		0.13	0.56		0.18	0.18	0.18	0.18	0.18	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	66	1618		228	1988		242	327	278	246	288	
v/s Ratio Prot	0.02	c0.26		c0.08	0.25			0.01			0.01	
v/s Ratio Perm							c0.10		0.01	0.01		
v/c Ratio	0.48	0.55		0.61	0.44		0.55	0.03	0.06	0.04	0.03	
Uniform Delay, d1	29.3	11.8		25.6	7.9		23.3	21.2	21.3	21.2	21.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.0	0.5		3.1	0.2		1.3	0.0	0.0	0.0	0.0	
Delay (s)	31.4	12.3		28.7	8.1		24.7	21.2	21.4	21.3	21.2	
Level of Service	C	B		C	A		C	C	C	C	C	
Approach Delay (s)		12.9			10.9			23.2			21.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



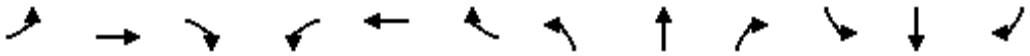
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	630	10	0	719	60	2	0	2	65	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.93			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3531			3498			1695			1770	1583
Flt Permitted	0.95	1.00			1.00			0.93			0.76	1.00
Satd. Flow (perm)	1770	3531			3498			1607			1407	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	64	716	11	0	817	68	2	0	2	74	0	95
RTOR Reduction (vph)	0	1	0	0	5	0	0	2	0	0	0	74
Lane Group Flow (vph)	64	726	0	0	880	0	0	2	0	0	74	21
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	6.0	47.3			36.8			16.5			16.5	16.5
Effective Green, g (s)	6.0	47.3			36.8			16.5			16.5	16.5
Actuated g/C Ratio	0.08	0.65			0.50			0.23			0.23	0.23
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	145	2279			1756			362			317	356
v/s Ratio Prot	c0.04	0.21			c0.25							
v/s Ratio Perm								0.00			c0.05	0.01
v/c Ratio	0.44	0.32			0.50			0.01			0.23	0.06
Uniform Delay, d1	32.1	5.8			12.1			22.0			23.2	22.3
Progression Factor	1.00	1.00			0.36			1.00			1.00	1.00
Incremental Delay, d2	0.8	0.0			0.3			0.0			0.1	0.0
Delay (s)	32.8	5.8			4.7			22.0			23.4	22.3
Level of Service	C	A			A			C			C	C
Approach Delay (s)		8.0			4.7			22.0			22.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	73.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



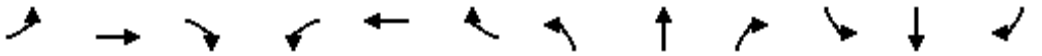
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	644	32	11	693	136	8	3	2	160	7	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3514		1770	3452		1770	1751			1733	
Flt Permitted	0.95	1.00		0.95	1.00		0.65	1.00			0.79	
Satd. Flow (perm)	1770	3514		1770	3452		1213	1751			1418	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	53	724	36	12	779	153	9	3	2	180	8	72
RTOR Reduction (vph)	0	4	0	0	13	0	0	2	0	0	15	0
Lane Group Flow (vph)	53	756	0	12	919	0	9	3	0	0	245	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.0	29.8		13.0	36.8		16.5	16.5			16.5	
Effective Green, g (s)	6.0	29.8		13.0	36.8		16.5	16.5			16.5	
Actuated g/C Ratio	0.08	0.41		0.18	0.50		0.23	0.23			0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	145	1429		314	1733		273	394			319	
v/s Ratio Prot	c0.03	0.22		0.01	c0.27			0.00				
v/s Ratio Perm							0.01				c0.17	
v/c Ratio	0.37	0.53		0.04	0.53		0.03	0.01			0.77	
Uniform Delay, d1	31.8	16.4		25.0	12.4		22.2	22.1			26.6	
Progression Factor	1.34	0.80		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.6	0.5		0.0	0.4		0.0	0.0			9.5	
Delay (s)	43.2	13.6		25.0	12.8		22.2	22.1			36.1	
Level of Service	D	B		C	B		C	C			D	
Approach Delay (s)		15.5			12.9			22.1			36.1	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	73.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	673	138	338	897	0	85	0	198	0	4	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.97		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3449		1770	3539			1770	1583		1726	
Flt Permitted	0.95	1.00		0.95	1.00			0.75	1.00		1.00	
Satd. Flow (perm)	1770	3449		1770	3539			1398	1583		1726	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	2	783	160	393	1043	0	99	0	230	0	5	6
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	200	0	5	0
Lane Group Flow (vph)	2	924	0	393	1043	0	0	99	30	0	6	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	0.9	30.9		20.2	50.2			9.6	9.6		9.6	
Effective Green, g (s)	0.9	30.9		20.2	50.2			9.6	9.6		9.6	
Actuated g/C Ratio	0.01	0.41		0.27	0.67			0.13	0.13		0.13	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	21	1427		479	2378			180	203		222	
v/s Ratio Prot	0.00	c0.27		c0.22	0.29						0.00	
v/s Ratio Perm								c0.07	0.02			
v/c Ratio	0.10	0.65		0.82	0.44			0.55	0.15		0.03	
Uniform Delay, d1	36.5	17.5		25.5	5.7			30.5	28.9		28.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	1.1		10.3	0.2			2.1	0.1		0.0	
Delay (s)	37.2	18.7		35.8	5.9			32.6	29.0		28.5	
Level of Service	D	B		D	A			C	C		C	
Approach Delay (s)		18.7			14.1			30.1			28.5	
Approach LOS		B			B			C			C	

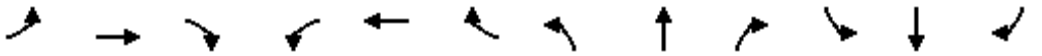
Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	298	442	34	341	701	25	144	386	58	144	674	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3370	1583	1770	3539	1583	1610	3321		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3370	1583	1770	3539	1583	1610	3321		1770	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	347	514	40	397	815	29	167	449	67	167	784	438
RTOR Reduction (vph)	0	0	13	0	0	8	0	6	0	0	0	83
Lane Group Flow (vph)	278	583	27	397	815	21	150	527	0	167	784	355
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	36.0	36.0	36.0	40.2	40.2	40.2	33.7	33.7		40.2	40.2	40.2
Effective Green, g (s)	36.0	36.0	36.0	40.2	40.2	40.2	33.7	33.7		40.2	40.2	40.2
Actuated g/C Ratio	0.21	0.21	0.21	0.24	0.24	0.24	0.20	0.20		0.24	0.24	0.24
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	341	713	335	418	836	374	319	658		418	836	374
v/s Ratio Prot	0.17	c0.17		0.22	c0.23		0.09	c0.16		0.09	0.22	
v/s Ratio Perm			0.02			0.01						c0.22
v/c Ratio	0.82	0.82	0.08	0.95	0.97	0.06	0.47	0.80		0.40	0.94	0.95
Uniform Delay, d1	63.9	63.9	53.8	64.0	64.4	50.3	60.3	65.0		54.8	63.7	63.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.6	7.6	0.1	31.3	25.0	0.1	1.5	7.3		0.9	17.9	33.3
Delay (s)	78.4	71.5	53.9	95.2	89.4	50.4	61.8	72.3		55.6	81.6	97.3
Level of Service	E	E	D	F	F	D	E	E		E	F	F
Approach Delay (s)		72.9			90.4			70.0			83.4	
Approach LOS		E			F			E			F	

Intersection Summary			
HCM Average Control Delay	81.0	HCM Level of Service	F
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	170.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	191	364	728	841	258	379	581	1535	1444	344	999	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	208	396	791	914	280	412	632	1668	1570	374	1086	225
RTOR Reduction (vph)	0	0	366	0	0	120	0	0	99	0	0	161
Lane Group Flow (vph)	208	396	425	914	280	292	632	1668	1471	374	1086	64
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.0	31.0	31.0	15.0	38.0	38.0	20.0	45.0	60.0	9.0	34.0	34.0
Effective Green, g (s)	8.0	31.0	31.0	15.0	38.0	38.0	20.0	45.0	60.0	9.0	34.0	34.0
Actuated g/C Ratio	0.07	0.26	0.26	0.12	0.32	0.32	0.17	0.38	0.50	0.08	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	229	914	720	624	590	501	572	1907	1510	257	1441	449
v/s Ratio Prot	0.06	0.11		c0.18	0.15		c0.18	0.33	c0.12	c0.11	0.21	
v/s Ratio Perm			0.15			c0.18			0.41			0.04
v/c Ratio	0.91	0.43	0.59	1.46	0.47	0.58	1.10	0.87	0.97	1.46	0.75	0.14
Uniform Delay, d1	55.6	37.2	38.9	52.5	33.0	34.4	50.0	34.9	29.2	55.5	39.2	32.1
Progression Factor	1.00	1.00	1.00	1.10	1.16	1.39	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	35.3	1.5	3.5	216.3	2.2	4.0	69.7	5.0	17.2	225.2	2.4	0.2
Delay (s)	90.9	38.7	42.5	274.1	40.5	51.7	119.7	39.8	46.5	280.7	41.6	32.3
Level of Service	F	D	D	F	D	D	F	D	D	F	D	C
Approach Delay (s)		48.6			176.4			55.6			93.4	
Approach LOS		D			F			E			F	

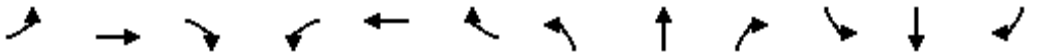
Intersection Summary			
HCM Average Control Delay	84.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	168	1750	224	78	875	123	311	46	68	179	38	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4999		1770	6289		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4999		1770	6289		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	175	1823	233	81	911	128	324	48	71	186	40	175
RTOR Reduction (vph)	0	9	0	0	15	0	0	0	65	0	0	161
Lane Group Flow (vph)	175	2047	0	81	1024	0	324	48	6	186	40	14
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	12.5	72.8		7.3	67.6		11.5	9.4	9.4	12.0	9.9	9.9
Effective Green, g (s)	12.5	72.8		7.3	67.6		11.5	9.4	9.4	12.0	9.9	9.9
Actuated g/C Ratio	0.10	0.61		0.06	0.56		0.10	0.08	0.08	0.10	0.08	0.08
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	184	3033		108	3543		170	146	124	177	154	131
v/s Ratio Prot	c0.10	c0.41		0.05	0.16		c0.18	c0.03		0.11	0.02	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.95	0.68		0.75	0.29		1.91	0.33	0.04	1.05	0.26	0.11
Uniform Delay, d1	53.4	15.7		55.5	13.7		54.2	52.3	51.1	54.0	51.6	51.0
Progression Factor	0.92	1.00		0.58	1.59		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.3	0.4		21.7	0.2		428.8	1.6	0.2	81.7	1.1	0.4
Delay (s)	73.6	16.0		53.9	21.9		483.1	53.9	51.3	135.7	52.7	51.4
Level of Service	E	B		D	C		F	D	D	F	D	D
Approach Delay (s)		20.5			24.2			367.4			90.6	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM Average Control Delay	64.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

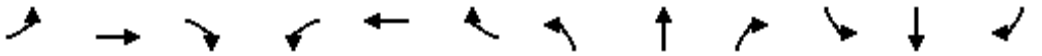
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	1284	544	203	868	58	178	2	145	35	7	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4858		1770	5037		1770	1863	1583	1770	1616	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1770	4858		1770	5037		1338	1863	1583	1409	1616	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	108	1297	549	205	877	59	180	2	146	35	7	52
RTOR Reduction (vph)	0	55	0	0	5	0	0	0	121	0	43	0
Lane Group Flow (vph)	108	1791	0	205	931	0	180	2	25	35	16	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	9.1	76.3		9.5	76.7		20.2	20.2	20.2	20.2	20.2	
Effective Green, g (s)	9.1	76.3		9.5	76.7		20.2	20.2	20.2	20.2	20.2	
Actuated g/C Ratio	0.08	0.64		0.08	0.64		0.17	0.17	0.17	0.17	0.17	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	134	3089		140	3219		225	314	266	237	272	
v/s Ratio Prot	0.06	c0.37		c0.12	0.18			0.00			0.01	
v/s Ratio Perm							c0.13		0.02	0.02		
v/c Ratio	0.81	0.58		1.46	0.29		0.80	0.01	0.09	0.15	0.06	
Uniform Delay, d1	54.6	12.6		55.2	9.6		48.0	41.5	42.2	42.6	41.9	
Progression Factor	1.12	0.95		0.83	1.92		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	20.9	0.6		227.1	0.1		17.2	0.0	0.1	0.1	0.0	
Delay (s)	82.0	12.6		272.9	18.5		65.2	41.5	42.2	42.7	41.9	
Level of Service	F	B		F	B		E	D	D	D	D	
Approach Delay (s)		16.4			64.2			54.8			42.2	
Approach LOS		B			E			D			D	

Intersection Summary			
HCM Average Control Delay	36.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



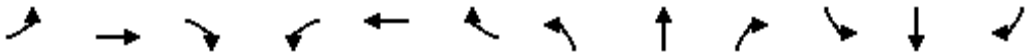
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	859	471	433	794	139	283	136	482	138	309	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4815		1770	5085	1583	1770	1863	1583	3433	1798	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4815		1770	5085	1583	1770	1863	1583	3433	1798	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	176	895	491	451	827	145	295	142	502	144	322	98
RTOR Reduction (vph)	0	82	0	0	0	87	0	0	276	0	9	0
Lane Group Flow (vph)	176	1304	0	451	827	58	295	142	226	144	411	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	14.3	37.0		25.5	48.2	48.2	9.5	30.4	30.4	8.6	29.5	
Effective Green, g (s)	14.3	37.0		25.5	48.2	48.2	9.5	30.4	30.4	8.6	29.5	
Actuated g/C Ratio	0.12	0.31		0.21	0.40	0.40	0.08	0.25	0.25	0.07	0.25	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	211	1485		376	2042	636	140	472	401	246	442	
v/s Ratio Prot	0.10	c0.27		c0.25	0.16		c0.17	0.08		0.04	c0.23	
v/s Ratio Perm						0.04			0.14			
v/c Ratio	0.83	0.88		1.20	0.40	0.09	2.11	0.30	0.56	0.59	0.93	
Uniform Delay, d1	51.7	39.4		47.2	25.7	22.3	55.2	36.2	39.0	54.0	44.2	
Progression Factor	0.75	1.23		0.80	0.79	1.51	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	20.3	6.7		110.8	0.5	0.3	521.6	0.4	1.8	2.3	25.9	
Delay (s)	59.0	55.4		148.7	20.8	33.8	576.8	36.6	40.9	56.3	70.1	
Level of Service	E	E		F	C	C	F	D	D	E	E	
Approach Delay (s)		55.8			62.7			208.6			66.6	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM Average Control Delay	91.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	937	280	157	951	385	14	8	4	540	213	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3417		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3417		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	301	1065	318	178	1081	438	16	9	5	614	242	401
RTOR Reduction (vph)	0	15	0	0	0	193	0	0	5	0	0	297
Lane Group Flow (vph)	301	1368	0	178	1081	245	16	9	0	614	242	104
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	9.5	66.1		10.5	67.1	67.1	2.7	5.5	5.5	18.9	21.7	18.9
Effective Green, g (s)	9.5	66.1		10.5	67.1	67.1	2.7	5.5	5.5	18.9	21.7	18.9
Actuated g/C Ratio	0.08	0.55		0.09	0.56	0.56	0.02	0.05	0.05	0.16	0.18	0.16
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	272	1882		155	2843	885	40	162	73	541	337	249
v/s Ratio Prot	0.09	c0.40		c0.10	0.21		0.01	0.00		c0.18	c0.13	
v/s Ratio Perm						0.15			0.00			0.07
v/c Ratio	1.11	0.73		1.15	0.38	0.28	0.40	0.06	0.00	1.13	0.72	0.42
Uniform Delay, d1	55.2	20.2		54.8	14.8	13.8	57.9	54.8	54.6	50.6	46.3	45.6
Progression Factor	0.99	1.13		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	76.4	1.7		117.7	0.4	0.8	2.4	0.2	0.0	81.6	6.0	0.4
Delay (s)	130.9	24.4		172.5	15.2	14.6	60.2	55.0	54.7	132.1	52.2	46.0
Level of Service	F	C		F	B	B	E	D	D	F	D	D
Approach Delay (s)		43.5			31.5			57.7			89.3	
Approach LOS		D			C			E			F	

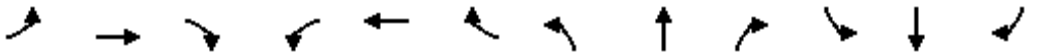
Intersection Summary			
HCM Average Control Delay	51.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	62	81	2	66	41	38	0	147	22	60	420	42
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	81	105	3	86	53	49	0	191	29	78	545	55

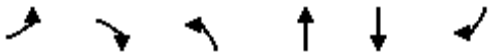
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	188	86	103	219	678
Volume Left (vph)	81	86	0	0	78
Volume Right (vph)	3	0	49	29	55
Hadj (s)	0.11	0.53	-0.30	-0.04	0.01
Departure Headway (s)	7.0	7.9	7.1	6.3	5.7
Degree Utilization, x	0.37	0.19	0.20	0.39	1.07
Capacity (veh/h)	491	433	483	545	621
Control Delay (s)	14.1	11.6	10.7	13.2	78.3
Approach Delay (s)	14.1	11.1		13.2	78.3
Approach LOS	B	B		B	F

Intersection Summary				
Delay	47.7			
HCM Level of Service	E			
Intersection Capacity Utilization	61.5%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	134	28	82	185	532	15	245	32	615	370	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1815			1835	1583	1770	1831		1770	1828	
Flt Permitted	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1815			1835	1583	1770	1831		1770	1828	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	65	140	29	85	193	554	16	255	33	641	385	55
RTOR Reduction (vph)	0	7	0	0	0	440	0	4	0	0	4	0
Lane Group Flow (vph)	65	162	0	0	278	114	16	284	0	641	436	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	13.9	13.9			19.5	19.5	19.2	19.2		24.4	24.4	
Effective Green, g (s)	13.9	13.9			19.5	19.5	19.2	19.2		24.4	24.4	
Actuated g/C Ratio	0.15	0.15			0.21	0.21	0.20	0.20		0.26	0.26	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	259	266			377	325	358	370		455	470	
v/s Ratio Prot	0.04	c0.09			c0.15		0.01	c0.16		c0.36	0.24	
v/s Ratio Perm						0.07						
v/c Ratio	0.25	0.61			0.74	0.35	0.04	0.77		1.41	0.93	
Uniform Delay, d1	35.9	38.0			35.4	32.3	30.5	35.8		35.3	34.4	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	3.9			7.3	0.7	0.1	9.2		196.7	24.3	
Delay (s)	36.4	41.9			42.7	33.0	30.6	45.0		232.0	58.7	
Level of Service	D	D			D	C	C	D		F	E	
Approach Delay (s)		40.4			36.2			44.2			161.5	
Approach LOS		D			D			D			F	

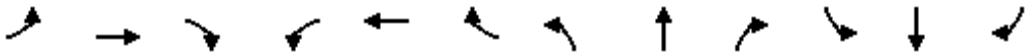
Intersection Summary			
HCM Average Control Delay	92.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	19	13	57	581
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	20	14	61	618
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.89	0.89	0.89			
vC, conflicting volume	424	370	679			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	285	224	573			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	610	722	886			

Direction, Lane #	NB 1	SB 1
Volume Total	34	679
Volume Left	20	0
Volume Right	0	618
cSH	886	1700
Volume to Capacity	0.02	0.40
Queue Length 95th (ft)	2	0
Control Delay (s)	5.5	0.0
Lane LOS	A	
Approach Delay (s)	5.5	0.0
Approach LOS		

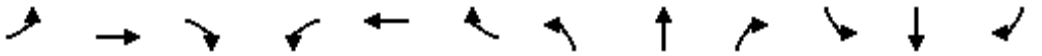
Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	42.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	31	10	44	10	125	36	55	114	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
Hourly flow rate (vph)	11	11	11	34	11	48	11	136	39	60	124	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	92	186	195
Volume Left (vph)	11	34	11	60
Volume Right (vph)	11	48	39	11
Hadj (s)	-0.10	-0.20	-0.08	0.06
Departure Headway (s)	4.8	4.6	4.3	4.5
Degree Utilization, x	0.04	0.12	0.22	0.24
Capacity (veh/h)	680	715	796	770
Control Delay (s)	8.0	8.2	8.6	8.9
Approach Delay (s)	8.0	8.2	8.6	8.9
Approach LOS	A	A	A	A

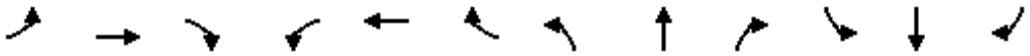
Intersection Summary				
Delay	8.6			
HCM Level of Service	A			
Intersection Capacity Utilization	35.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	63	49	365	61	577	167	1227	826	515	983	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1708	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.60	1.00	1.00	0.95	0.48	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1124	1863	1583	1681	850	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	49	70	54	406	68	641	186	1363	918	572	1092	49
RTOR Reduction (vph)	0	0	50	0	0	289	0	0	346	0	0	29
Lane Group Flow (vph)	49	70	4	235	239	352	186	1363	572	572	1092	20
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
Actuated Green, G (s)	8.2	8.2	8.2	22.5	35.2	35.2	16.1	40.4	40.4	22.3	46.6	46.6
Effective Green, g (s)	8.2	8.2	8.2	22.5	35.2	35.2	16.1	40.4	40.4	22.3	46.6	46.6
Actuated g/C Ratio	0.07	0.07	0.07	0.20	0.31	0.31	0.14	0.36	0.36	0.20	0.42	0.42
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	82	137	116	338	440	498	255	1278	572	684	2118	659
v/s Ratio Prot		0.04		0.14	0.11		0.11	c0.39		c0.17	0.21	
v/s Ratio Perm	0.04		0.00		0.06	c0.22			0.36			0.01
v/c Ratio	0.60	0.51	0.03	0.70	0.54	0.71	0.73	1.07	1.00	0.84	0.52	0.03
Uniform Delay, d1	50.3	49.9	48.2	41.5	31.7	33.8	45.8	35.8	35.7	43.0	24.3	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.6	1.3	0.0	4.9	0.7	3.7	8.5	45.0	37.2	8.4	0.3	0.0
Delay (s)	57.8	51.3	48.2	46.5	32.4	37.6	54.4	80.7	73.0	51.4	24.5	19.3
Level of Service	E	D	D	D	C	D	D	F	E	D	C	B
Approach Delay (s)		52.2			38.3			75.8			33.4	
Approach LOS		D			D			E			C	

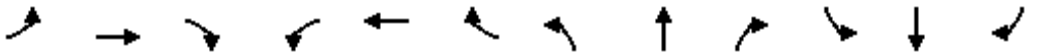
Intersection Summary			
HCM Average Control Delay	54.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	111.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



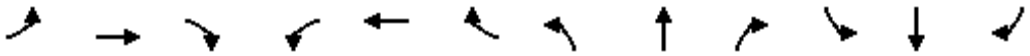
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	1022	245	244	639	26	330	35	208	40	26	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3437		1770	3519		1770	1863	1583	1770	1718	
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1770	3437		1770	3519		1345	1863	1583	1368	1718	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	114	1032	247	246	645	26	333	35	210	40	26	28
RTOR Reduction (vph)	0	20	0	0	2	0	0	0	153	0	20	0
Lane Group Flow (vph)	114	1259	0	246	669	0	333	35	57	40	34	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	9.0	36.1		16.9	44.0		24.9	24.9	24.9	24.9	24.9	
Effective Green, g (s)	9.0	36.1		16.9	44.0		24.9	24.9	24.9	24.9	24.9	
Actuated g/C Ratio	0.10	0.39		0.18	0.48		0.27	0.27	0.27	0.27	0.27	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	173	1350		325	1685		364	505	429	371	465	
v/s Ratio Prot	0.06	c0.37		c0.14	0.19			0.02			0.02	
v/s Ratio Perm							c0.25		0.04	0.03		
v/c Ratio	0.66	0.93		0.76	0.40		0.91	0.07	0.13	0.11	0.07	
Uniform Delay, d1	40.0	26.7		35.6	15.4		32.5	24.9	25.3	25.2	24.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.7	11.9		8.6	0.2		26.4	0.0	0.1	0.0	0.0	
Delay (s)	46.7	38.7		44.2	15.6		58.8	24.9	25.4	25.2	24.9	
Level of Service	D	D		D	B		E	C	C	C	C	
Approach Delay (s)		39.3			23.3			44.6			25.0	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM Average Control Delay	35.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



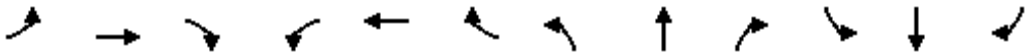
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	1172	18	0	903	99	4	0	2	55	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			5.0			4.5			4.5	4.5
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.99			0.95			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	3531			3487			1722			1770	1583
Flt Permitted	0.95	1.00			1.00			0.88			0.75	1.00
Satd. Flow (perm)	1770	3531			3487			1557			1404	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	129	1221	19	0	941	103	4	0	2	57	0	57
RTOR Reduction (vph)	0	1	0	0	6	0	0	2	0	0	0	48
Lane Group Flow (vph)	129	1239	0	0	1038	0	0	4	0	0	57	9
Turn Type	Prot						Perm			Perm		Perm
Protected Phases	5	1 2			6			8			4	
Permitted Phases							8			4		4
Actuated Green, G (s)	8.7	55.5			42.3			12.4			12.4	12.4
Effective Green, g (s)	8.7	55.5			42.3			12.4			12.4	12.4
Actuated g/C Ratio	0.11	0.72			0.55			0.16			0.16	0.16
Clearance Time (s)	4.5				5.0			4.5			4.5	4.5
Vehicle Extension (s)	2.0				4.0			2.0			2.0	2.0
Lane Grp Cap (vph)	199	2532			1906			249			225	254
v/s Ratio Prot	c0.07	c0.35			c0.30							
v/s Ratio Perm								0.00			c0.04	0.01
v/c Ratio	0.65	0.49			0.54			0.02			0.25	0.04
Uniform Delay, d1	32.9	4.8			11.3			27.4			28.4	27.5
Progression Factor	1.00	1.00			0.37			1.00			1.00	1.00
Incremental Delay, d2	5.4	0.1			0.3			0.0			0.2	0.0
Delay (s)	38.2	4.8			4.6			27.4			28.7	27.5
Level of Service	D	A			A			C			C	C
Approach Delay (s)		8.0			4.6			27.4			28.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	77.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



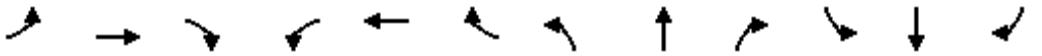
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	1065	96	17	893	133	60	17	25	102	8	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.91			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3495		1770	3470		1770	1698			1731	
Flt Permitted	0.95	1.00		0.95	1.00		0.67	1.00			0.78	
Satd. Flow (perm)	1770	3495		1770	3470		1240	1698			1388	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	52	1121	101	18	940	140	63	18	26	107	8	49
RTOR Reduction (vph)	0	7	0	0	9	0	0	22	0	0	19	0
Lane Group Flow (vph)	52	1215	0	18	1071	0	63	22	0	0	145	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	8.7	31.6		19.4	42.3		12.4	12.4			12.4	
Effective Green, g (s)	8.7	31.6		19.4	42.3		12.4	12.4			12.4	
Actuated g/C Ratio	0.11	0.41		0.25	0.55		0.16	0.16			0.16	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	199	1427		444	1896		199	272			222	
v/s Ratio Prot	c0.03	c0.35		0.01	c0.31			0.01				
v/s Ratio Perm							0.05				c0.10	
v/c Ratio	0.26	0.85		0.04	0.57		0.32	0.08			0.65	
Uniform Delay, d1	31.4	20.8		22.0	11.5		28.8	27.7			30.5	
Progression Factor	1.28	0.82		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.2	4.8		0.0	0.5		0.3	0.0			5.1	
Delay (s)	40.4	21.8		22.0	12.0		29.1	27.7			35.6	
Level of Service	D	C		C	B		C	C			D	
Approach Delay (s)		22.6			12.2			28.5			35.6	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	77.4	Sum of lost time (s)	19.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



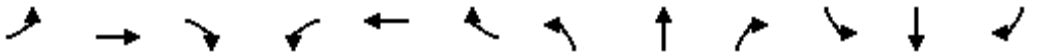
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	950	228	444	721	2	257	5	531	4	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.97		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1770	3436		1770	3538			1776	1583		1731	
Flt Permitted	0.95	1.00		0.95	1.00			0.72	1.00		0.93	
Satd. Flow (perm)	1770	3436		1770	3538			1338	1583		1626	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	1011	243	472	767	2	273	5	565	4	5	7
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	329	0	6	0
Lane Group Flow (vph)	9	1231	0	472	769	0	0	278	236	0	10	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	1.2	38.2		20.0	57.0			19.4	19.4		19.4	
Effective Green, g (s)	1.2	38.2		20.0	57.0			19.4	19.4		19.4	
Actuated g/C Ratio	0.01	0.42		0.22	0.62			0.21	0.21		0.21	
Clearance Time (s)	4.5	5.0		4.5	5.0			4.5	4.5		4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	23	1433		386	2202			283	335		344	
v/s Ratio Prot	0.01	c0.36		c0.27	0.22							
v/s Ratio Perm								c0.21	0.15		0.01	
v/c Ratio	0.39	0.86		1.22	0.35			0.98	0.70		0.03	
Uniform Delay, d1	44.8	24.3		35.8	8.3			35.9	33.4		28.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	4.0	5.6		121.4	0.1			48.2	5.4		0.0	
Delay (s)	48.8	29.8		157.2	8.5			84.2	38.8		28.7	
Level of Service	D	C		F	A			F	D		C	
Approach Delay (s)		30.0			65.0			53.8			28.7	
Approach LOS		C			E			D			C	

Intersection Summary			
HCM Average Control Delay	48.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	569	831	103	208	480	27	214	723	185	77	718	478
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1610	3370	1583	1770	3539	1583	1610	3285		1770	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1610	3370	1583	1770	3539	1583	1610	3285		1770	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	587	857	106	214	495	28	221	745	191	79	740	493
RTOR Reduction (vph)	0	0	19	0	0	14	0	12	0	0	0	100
Lane Group Flow (vph)	470	974	87	214	495	14	199	946	0	79	740	393
Turn Type	Split		Perm	Split		Perm	Split			Split		Perm
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	40.0	40.0	40.0	31.8	31.8	31.8	40.0	40.0		40.0	40.0	40.0
Effective Green, g (s)	40.0	40.0	40.0	31.8	31.8	31.8	40.0	40.0		40.0	40.0	40.0
Actuated g/C Ratio	0.23	0.23	0.23	0.19	0.19	0.19	0.23	0.23		0.23	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	375	785	369	328	655	293	375	765		412	824	369
v/s Ratio Prot	c0.29	0.29		0.12	c0.14		0.12	c0.29		0.04	0.21	
v/s Ratio Perm			0.05			0.01						c0.25
v/c Ratio	1.25	1.24	0.24	0.65	0.76	0.05	0.53	1.24		0.19	0.90	1.07
Uniform Delay, d1	65.9	65.9	53.5	64.9	66.3	57.6	57.7	65.9		52.9	63.9	65.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	134.2	119.1	0.4	5.1	5.3	0.1	1.8	117.9		0.3	12.7	65.4
Delay (s)	200.1	185.0	53.9	70.0	71.6	57.7	59.5	183.8		53.2	76.7	131.3
Level of Service	F	F	D	E	E	E	E	F		D	E	F
Approach Delay (s)		180.6			70.6			162.4			95.8	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	135.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	171.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

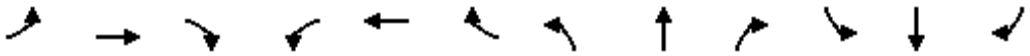


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	546	458	2077	549	741	803	1339	2539	688	705	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	181	607	509	2308	610	823	892	1488	2821	764	783	173
RTOR Reduction (vph)	0	0	226	0	0	118	0	0	68	0	0	124
Lane Group Flow (vph)	181	607	284	2308	610	705	892	1488	2753	764	783	49
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.9	38.0	38.0	19.0	48.1	48.1	9.0	34.0	53.0	9.0	34.0	34.0
Effective Green, g (s)	8.9	38.0	38.0	19.0	48.1	48.1	9.0	34.0	53.0	9.0	34.0	34.0
Actuated g/C Ratio	0.07	0.32	0.32	0.16	0.40	0.40	0.08	0.28	0.44	0.08	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	255	1121	883	790	747	635	257	1441	1347	257	1441	449
v/s Ratio Prot	0.05	0.17		c0.46	0.33		c0.26	0.29	c0.32	0.22	0.15	
v/s Ratio Perm			0.10			c0.45			0.66			0.03
v/c Ratio	0.71	0.54	0.32	2.92	0.82	1.11	3.47	1.03	2.04	2.97	0.54	0.11
Uniform Delay, d1	54.3	33.8	31.2	50.5	32.0	36.0	55.5	43.0	33.5	55.5	36.4	31.8
Progression Factor	1.00	1.00	1.00	1.35	0.55	0.51	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.7	1.9	1.0	865.0	1.0	52.0	1121.6	32.5	472.3	898.2	0.5	0.1
Delay (s)	63.0	35.7	32.1	933.2	18.4	70.4	1177.1	75.5	505.8	953.7	37.0	31.9
Level of Service	E	D	C	F	B	E	F	E	F	F	D	C
Approach Delay (s)		38.1			594.2			497.8			443.6	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM Average Control Delay	470.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	136.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

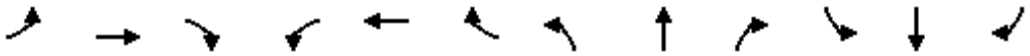
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	363	2850	494	174	2542	274	490	110	169	381	114	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4973		1770	6314		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4973		1770	6314		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	390	3065	531	187	2733	295	527	118	182	410	123	396
RTOR Reduction (vph)	0	17	0	0	13	0	0	0	145	0	0	198
Lane Group Flow (vph)	390	3579	0	187	3015	0	527	118	37	410	123	198
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	17.5	51.4		12.5	46.4		16.5	24.1	24.1	13.5	21.1	21.1
Effective Green, g (s)	17.5	51.4		12.5	46.4		16.5	24.1	24.1	13.5	21.1	21.1
Actuated g/C Ratio	0.15	0.43		0.10	0.39		0.14	0.20	0.20	0.11	0.18	0.18
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	258	2130		184	2441		243	374	318	199	328	278
v/s Ratio Prot	c0.22	c0.72		0.11	0.48		c0.30	c0.06		0.23	0.07	
v/s Ratio Perm									0.02			c0.13
v/c Ratio	1.51	1.68		1.02	1.24		2.17	0.32	0.11	2.06	0.38	0.71
Uniform Delay, d1	51.2	34.3		53.8	36.8		51.8	40.9	39.2	53.2	43.6	46.6
Progression Factor	1.07	0.80		0.92	0.99		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	232.1	306.3		24.1	106.2		539.3	0.6	0.2	494.1	0.9	8.7
Delay (s)	286.7	333.7		73.3	142.5		591.1	41.5	39.4	547.4	44.5	55.2
Level of Service	F	F		E	F		F	D	D	F	D	E
Approach Delay (s)		329.1			138.5			391.3			271.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	260.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	121.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



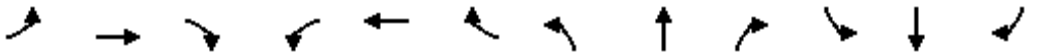
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	292	2469	637	245	2068	165	708	16	478	241	5	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4929		1770	5029		1770	1863	1583	1770	1590	
Flt Permitted	0.95	1.00		0.95	1.00		0.43	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	4929		1770	5029		793	1863	1583	1390	1590	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	314	2655	685	263	2224	177	761	17	514	259	5	218
RTOR Reduction (vph)	0	38	0	0	8	0	0	0	106	0	107	0
Lane Group Flow (vph)	314	3302	0	263	2393	0	761	17	408	259	116	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Effective Green, g (s)	11.5	69.0		9.5	67.0		27.5	27.5	27.5	27.5	27.5	
Actuated g/C Ratio	0.10	0.58		0.08	0.56		0.23	0.23	0.23	0.23	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	170	2834		140	2808		182	427	363	319	364	
v/s Ratio Prot	c0.18	c0.67		0.15	0.48			0.01			0.07	
v/s Ratio Perm							c0.96		0.26	0.19		
v/c Ratio	1.85	1.17		1.88	0.85		4.18	0.04	1.13	0.81	0.32	
Uniform Delay, d1	54.2	25.5		55.2	22.3		46.2	36.0	46.2	43.8	38.5	
Progression Factor	0.76	1.36		0.75	1.09		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	383.2	74.7		397.8	0.3		1444.5	0.0	85.6	13.8	0.2	
Delay (s)	424.5	109.3		439.5	24.8		1490.7	36.0	131.9	57.6	38.6	
Level of Service	F	F		F	C		F	D	F	E	D	
Approach Delay (s)		136.4			65.7			931.0			48.8	
Approach LOS		F			E			F			D	

Intersection Summary			
HCM Average Control Delay	234.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	143.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



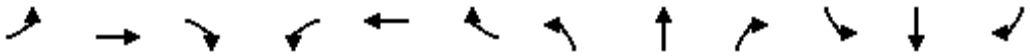
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	363	1887	963	867	1456	234	845	434	1040	321	371	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4828		1770	5085	1583	1770	1863	1583	3433	1757	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4828		1770	5085	1583	1770	1863	1583	3433	1757	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	370	1926	983	885	1486	239	862	443	1061	328	379	232
RTOR Reduction (vph)	0	76	0	0	0	159	0	0	304	0	19	0
Lane Group Flow (vph)	370	2833	0	885	1486	80	862	443	757	328	593	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	20.5	31.0		29.5	40.0	40.0	13.5	27.8	27.8	13.2	27.5	
Effective Green, g (s)	20.5	31.0		29.5	40.0	40.0	13.5	27.8	27.8	13.2	27.5	
Actuated g/C Ratio	0.17	0.26		0.25	0.33	0.33	0.11	0.23	0.23	0.11	0.23	
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	302	1247		435	1695	528	199	432	367	378	403	
v/s Ratio Prot	0.21	c0.59		c0.50	0.29		c0.49	0.24		0.10	0.34	
v/s Ratio Perm						0.05			c0.48			
v/c Ratio	1.23	2.27		2.03	0.88	0.15	4.33	1.03	2.06	0.87	1.47	
Uniform Delay, d1	49.8	44.5		45.2	37.7	28.1	53.2	46.1	46.1	52.5	46.2	
Progression Factor	1.23	0.87		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	104.2	572.4		473.5	6.7	0.6	1510.9	50.0	487.2	18.0	224.7	
Delay (s)	165.6	611.3		518.8	44.4	28.7	1564.2	96.1	533.3	70.5	271.0	
Level of Service	F	F		F	D	C	F	F	F	E	F	
Approach Delay (s)		561.0			203.8			827.0			201.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	491.3	HCM Level of Service	F
HCM Volume to Capacity ratio	2.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	201.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	751	1901	595	251	1934	463	66	28	8	527	85	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3413		1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3413		1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	791	2001	626	264	2036	487	69	29	8	555	89	568
RTOR Reduction (vph)	0	18	0	0	0	232	0	0	8	0	0	423
Lane Group Flow (vph)	791	2609	0	264	2036	255	69	29	0	555	89	145
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			7
Actuated Green, G (s)	16.5	63.2		21.4	68.1	68.1	7.6	4.9	4.9	21.5	18.8	21.5
Effective Green, g (s)	16.5	63.2		21.4	68.1	68.1	7.6	4.9	4.9	21.5	18.8	21.5
Actuated g/C Ratio	0.13	0.49		0.16	0.52	0.52	0.06	0.04	0.04	0.17	0.14	0.17
Clearance Time (s)	4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	436	1659		291	2664	829	103	133	60	568	269	262
v/s Ratio Prot	c0.23	c0.76		c0.15	0.40		0.04	0.01		c0.16	c0.05	
v/s Ratio Perm						0.16			0.00			0.09
v/c Ratio	1.81	1.57		0.91	0.76	0.31	0.67	0.22	0.01	0.98	0.33	0.55
Uniform Delay, d1	56.8	33.4		53.3	24.6	17.6	60.0	60.7	60.2	54.0	49.9	49.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	375.4	260.6		29.2	2.1	1.0	12.1	1.1	0.0	31.5	0.3	1.4
Delay (s)	432.1	294.0		82.5	26.7	18.5	72.0	61.8	60.2	85.5	50.2	51.3
Level of Service	F	F		F	C	B	E	E	E	F	D	D
Approach Delay (s)		326.0			30.6			68.4			66.9	
Approach LOS		F			C			E			E	

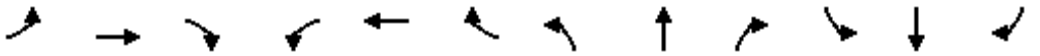
Intersection Summary			
HCM Average Control Delay	171.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	119.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	128	110	4	21	117	88	4	510	84	97	280	133
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	152	131	5	25	139	105	5	607	100	115	333	158

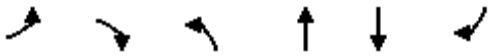
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	288	25	244	712	607
Volume Left (vph)	152	25	0	5	115
Volume Right (vph)	5	0	105	100	158
Hadj (s)	0.13	0.53	-0.27	-0.05	-0.08
Departure Headway (s)	8.8	9.6	8.8	7.8	7.8
Degree Utilization, x	0.70	0.07	0.60	1.54	1.31
Capacity (veh/h)	400	364	394	467	474
Control Delay (s)	30.0	12.1	22.7	274.1	176.5
Approach Delay (s)	30.0	21.7		274.1	176.5
Approach LOS	D	C		F	F

Intersection Summary				
Delay	168.8			
HCM Level of Service	F			
Intersection Capacity Utilization	98.3%	ICU Level of Service		F
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	280	24	104	220	691	22	847	150	818	745	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99			1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1841			1833	1583	1770	1821		1770	1816	
Flt Permitted	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1841			1833	1583	1770	1821		1770	1816	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	202	308	26	114	242	759	24	931	165	899	819	166
RTOR Reduction (vph)	0	3	0	0	0	365	0	6	0	0	6	0
Lane Group Flow (vph)	202	331	0	0	356	394	24	1090	0	899	979	0
Turn Type	Split			Split		Perm	Split			Split		
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	22.2	22.2			24.0	24.0	22.0	22.0		22.0	22.0	
Effective Green, g (s)	22.2	22.2			24.0	24.0	22.0	22.0		22.0	22.0	
Actuated g/C Ratio	0.21	0.21			0.22	0.22	0.20	0.20		0.20	0.20	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	363	378			407	351	360	370		360	369	
v/s Ratio Prot	0.11	c0.18			0.19		0.01	c0.60		0.51	c0.54	
v/s Ratio Perm						c0.25						
v/c Ratio	0.56	0.88			0.87	1.12	0.07	2.95		2.50	2.65	
Uniform Delay, d1	38.6	41.7			40.6	42.1	34.8	43.1		43.1	43.1	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	19.6			18.4	85.5	0.1	883.5		682.0	751.2	
Delay (s)	40.4	61.3			59.1	127.6	34.9	926.6		725.1	794.3	
Level of Service	D	E			E	F	C	F		F	F	
Approach Delay (s)		53.4			105.7			907.5			761.3	
Approach LOS		D			F			F			F	

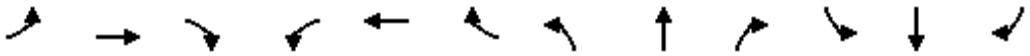
Intersection Summary			
HCM Average Control Delay	557.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.88		
Actuated Cycle Length (s)	108.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	147.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	32	51	25	891
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	34	54	27	948
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					418	
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	623	501	974			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	595	468	958			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	95			
cM capacity (veh/h)	431	576	696			

Direction, Lane #	NB 1	SB 1
Volume Total	88	974
Volume Left	34	0
Volume Right	0	948
cSH	696	1700
Volume to Capacity	0.05	0.57
Queue Length 95th (ft)	4	0
Control Delay (s)	4.3	0.0
Lane LOS	A	
Approach Delay (s)	4.3	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		



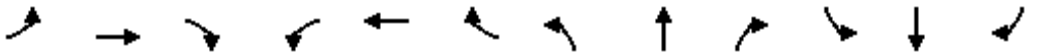
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	53	10	64	10	280	77	121	299	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	11	11	58	11	70	11	304	84	132	325	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	138	399	467
Volume Left (vph)	11	58	11	132
Volume Right (vph)	11	70	84	11
Hadj (s)	-0.10	-0.18	-0.09	0.08
Departure Headway (s)	6.3	5.9	5.0	5.0
Degree Utilization, x	0.06	0.23	0.55	0.65
Capacity (veh/h)	472	534	691	696
Control Delay (s)	9.7	10.6	13.9	17.1
Approach Delay (s)	9.7	10.6	13.9	17.1
Approach LOS	A	B	B	C

Intersection Summary				
Delay		14.8		
HCM Level of Service		B		
Intersection Capacity Utilization		63.6%	ICU Level of Service	B
Analysis Period (min)		15		

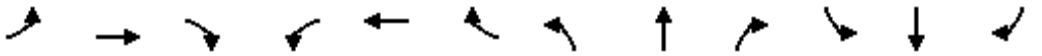
Cumulative Plus Project (Maximum FAR)
Mitigated
AM and PM Peak Hour
Synchro Worksheets

FEHR & PEERS
TRANSPORTATION CONSULTANTS



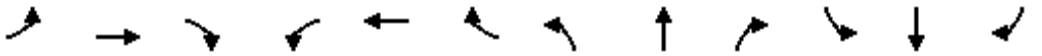
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	32	46	556	42	319	64	1420	336	451	874	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1697	1583	1770	3539	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.42	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1681	748	1583	1770	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	32	37	53	639	48	367	74	1632	386	518	1005	33
RTOR Reduction (vph)	0	0	51	0	0	289	0	0	104	0	0	14
Lane Group Flow (vph)	32	37	2	345	342	78	74	1632	282	518	1005	19
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	3.2	6.2	6.2	25.0	35.7	28.5	8.9	60.7	60.7	23.1	74.9	74.9
Effective Green, g (s)	3.2	6.2	6.2	25.0	35.7	28.5	8.9	60.7	60.7	23.1	74.9	74.9
Actuated g/C Ratio	0.02	0.05	0.05	0.19	0.27	0.21	0.07	0.45	0.45	0.17	0.56	0.56
Clearance Time (s)	4.0	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	42	87	74	315	378	338	118	1609	720	594	2853	888
v/s Ratio Prot	0.02	0.02		c0.21	0.17		0.04	c0.46		c0.15	0.20	
v/s Ratio Perm			0.00		c0.07	0.05			0.18			0.01
v/c Ratio	0.76	0.43	0.03	1.10	0.90	0.23	0.63	1.01	0.39	0.87	0.35	0.02
Uniform Delay, d1	64.8	61.9	60.8	54.2	47.3	43.4	60.7	36.4	24.2	53.8	16.0	13.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	56.2	1.2	0.1	78.7	23.8	0.1	7.3	26.0	1.6	12.9	0.3	0.0
Delay (s)	120.9	63.1	60.9	132.9	71.1	43.6	68.0	62.4	25.8	66.7	16.4	13.1
Level of Service	F	E	E	F	E	D	E	E	C	E	B	B
Approach Delay (s)		77.3			81.7			55.9			33.1	
Approach LOS		E			F			E			C	

Intersection Summary			
HCM Average Control Delay	54.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	133.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



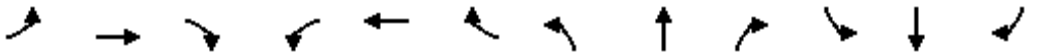
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	298	442	34	341	701	25	144	386	58	144	674	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3470		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3470		1770	3539	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	347	514	40	397	815	29	167	449	67	167	784	438
RTOR Reduction (vph)	0	0	27	0	0	14	0	12	0	0	0	153
Lane Group Flow (vph)	347	514	13	397	815	15	167	504	0	167	784	285
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	20.0	22.0	22.0	23.0	25.0	25.0	10.0	25.0		10.0	25.0	25.0
Effective Green, g (s)	20.0	22.0	22.0	23.0	25.0	25.0	10.0	25.0		10.0	25.0	25.0
Actuated g/C Ratio	0.20	0.22	0.22	0.23	0.25	0.25	0.10	0.25		0.10	0.25	0.25
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	354	779	348	407	885	396	177	868		177	885	396
v/s Ratio Prot	0.20	0.15		c0.22	c0.23		c0.09	0.15		0.09	c0.22	
v/s Ratio Perm			0.01			0.01						0.18
v/c Ratio	0.98	0.66	0.04	0.98	0.92	0.04	0.94	0.58		0.94	0.89	0.72
Uniform Delay, d1	39.8	35.6	30.7	38.2	36.5	28.4	44.7	32.9		44.7	36.1	34.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	42.5	2.3	0.1	37.9	14.8	0.1	51.4	1.2		51.4	10.8	6.6
Delay (s)	82.3	37.8	30.7	76.2	51.4	28.4	96.2	34.1		96.2	47.0	40.9
Level of Service	F	D	C	E	D	C	F	C		F	D	D
Approach Delay (s)		54.6			58.8			49.3			51.0	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM Average Control Delay	53.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



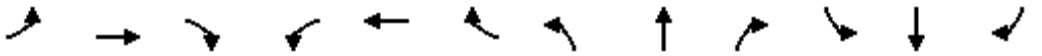
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	191	364	728	841	258	379	581	1535	1444	344	999	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.94	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	208	396	791	914	280	412	632	1668	1570	374	1086	225
RTOR Reduction (vph)	0	0	454	0	0	194	0	0	26	0	0	158
Lane Group Flow (vph)	208	396	337	914	280	218	632	1668	1544	374	1086	67
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	17.6	21.0	21.0	24.0	27.4	27.4	19.4	42.0	66.0	13.0	35.6	35.6
Effective Green, g (s)	17.6	21.0	21.0	24.0	27.4	27.4	19.4	42.0	66.0	13.0	35.6	35.6
Actuated g/C Ratio	0.15	0.18	0.18	0.20	0.23	0.23	0.16	0.35	0.55	0.11	0.30	0.30
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	504	619	488	998	425	361	807	1780	1533	372	1509	470
v/s Ratio Prot	0.06	0.11		0.18	0.15		0.13	0.33	c0.20	c0.11	0.21	
v/s Ratio Perm			c0.12			0.14			0.35			0.04
v/c Ratio	0.41	0.64	0.69	0.92	0.66	0.60	0.78	0.94	1.01	1.01	0.72	0.14
Uniform Delay, d1	46.5	46.0	46.5	47.0	42.1	41.5	48.3	37.7	27.0	53.5	37.7	31.0
Progression Factor	1.00	1.00	1.00	0.84	0.81	1.02	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	5.0	7.8	11.6	7.1	6.7	5.0	10.0	24.7	48.0	1.8	0.2
Delay (s)	47.1	51.0	54.3	50.9	41.3	49.0	53.3	47.8	51.7	101.5	39.5	31.2
Level of Service	D	D	D	D	D	D	D	D	D	F	D	C
Approach Delay (s)		52.3			48.7			50.3			52.2	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	50.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	168	1750	224	78	875	123	311	46	68	179	38	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4999		1770	6289		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4999		1770	6289		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	175	1823	233	81	911	128	324	48	71	186	40	175
RTOR Reduction (vph)	0	9	0	0	15	0	0	0	66	0	0	161
Lane Group Flow (vph)	175	2047	0	81	1024	0	324	48	5	186	40	14
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	15.8	66.6		5.5	56.3		19.5	7.8	7.8	21.6	9.9	9.9
Effective Green, g (s)	15.8	66.6		5.5	56.3		19.5	7.8	7.8	21.6	9.9	9.9
Actuated g/C Ratio	0.13	0.55		0.05	0.47		0.16	0.06	0.06	0.18	0.08	0.08
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	233	2774		81	2951		288	121	103	319	154	131
v/s Ratio Prot	0.10	c0.41		c0.05	0.16		c0.18	0.03		c0.11	0.02	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.75	0.74		1.00	0.35		1.12	0.40	0.04	0.58	0.26	0.11
Uniform Delay, d1	50.2	20.1		57.2	20.2		50.2	53.8	52.6	45.1	51.6	51.0
Progression Factor	0.98	1.02		0.66	0.33		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.1	0.6		98.0	0.3		91.0	2.5	0.2	1.8	1.1	0.4
Delay (s)	53.4	21.0		135.7	6.9		141.3	56.4	52.8	46.8	52.7	51.4
Level of Service	D	C		F	A		F	E	D	D	D	D
Approach Delay (s)		23.6			16.2			117.9			49.4	
Approach LOS		C			B			F			D	

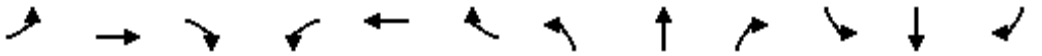
Intersection Summary			
HCM Average Control Delay	34.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	859	471	433	794	139	283	136	482	138	309	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	4972		1770	1863	2787	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	4972		1770	1863	2787	3433	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	176	895	491	451	827	145	295	142	502	144	322	98
RTOR Reduction (vph)	0	0	347	0	18	0	0	0	436	0	0	78
Lane Group Flow (vph)	176	895	144	451	954	0	295	142	66	144	322	20
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	15.1	35.3	35.3	18.4	38.6		23.1	15.8	15.8	32.0	24.7	24.7
Effective Green, g (s)	15.1	35.3	35.3	18.4	38.6		23.1	15.8	15.8	32.0	24.7	24.7
Actuated g/C Ratio	0.13	0.29	0.29	0.15	0.32		0.19	0.13	0.13	0.27	0.21	0.21
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0		2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	223	1496	466	526	1599		341	245	367	915	383	326
v/s Ratio Prot	0.10	0.18		c0.13	c0.19		c0.17	0.08		0.04	c0.17	
v/s Ratio Perm			0.09						0.02			0.01
v/c Ratio	0.79	0.60	0.31	0.86	0.60		0.87	0.58	0.18	0.16	0.84	0.06
Uniform Delay, d1	50.9	36.3	32.9	49.5	34.2		46.9	49.0	46.3	33.7	45.8	38.3
Progression Factor	0.79	0.93	2.93	0.79	0.75		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.7	1.5	1.5	11.5	1.5		19.2	3.3	0.2	0.0	15.2	0.1
Delay (s)	54.0	35.2	97.9	50.6	27.3		66.2	52.3	46.6	33.7	61.0	38.4
Level of Service	D	D	F	D	C		E	D	D	C	E	D
Approach Delay (s)		57.0			34.7			53.6			50.1	
Approach LOS		E			C			D			D	

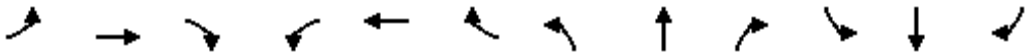
Intersection Summary			
HCM Average Control Delay	48.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	937	280	157	951	385	14	8	4	540	213	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	301	1065	318	178	1081	438	16	9	5	614	242	401
RTOR Reduction (vph)	0	0	119	0	0	198	0	0	5	0	0	298
Lane Group Flow (vph)	301	1065	199	178	1081	240	16	9	0	614	242	103
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	10.7	64.8	64.8	11.7	65.8	65.8	2.5	4.5	4.5	20.0	22.0	20.0
Effective Green, g (s)	10.7	64.8	64.8	11.7	65.8	65.8	2.5	4.5	4.5	20.0	22.0	20.0
Actuated g/C Ratio	0.09	0.54	0.54	0.10	0.55	0.55	0.02	0.04	0.04	0.17	0.18	0.17
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	306	1911	855	173	2788	868	37	133	59	572	342	264
v/s Ratio Prot	c0.09	c0.30		c0.10	0.21		c0.01	0.00		c0.18	0.13	
v/s Ratio Perm			0.13			0.15			0.00			0.06
v/c Ratio	0.98	0.56	0.23	1.03	0.39	0.28	0.43	0.07	0.00	1.07	0.71	0.39
Uniform Delay, d1	54.6	18.2	14.5	54.1	15.5	14.4	58.0	55.7	55.6	50.0	46.0	44.6
Progression Factor	0.69	0.99	1.32	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	44.3	1.1	0.6	76.2	0.4	0.8	2.9	0.3	0.0	58.9	5.4	0.3
Delay (s)	82.2	19.0	19.7	130.4	16.0	15.2	61.0	56.0	55.6	108.9	51.4	44.9
Level of Service	F	B	B	F	B	B	E	E	E	F	D	D
Approach Delay (s)		30.4			27.8			58.6			77.4	
Approach LOS		C			C			E			E	

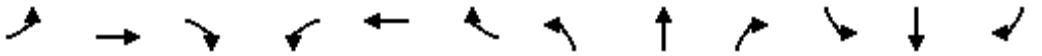
Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	62	81	2	66	41	38	0	147	22	60	420	42
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	81	105	3	86	53	49	0	191	29	78	545	55

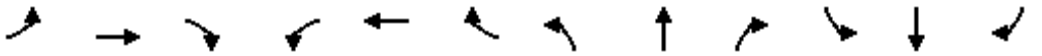
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	133	55	86	103	95	124	351	327
Volume Left (vph)	81	0	86	0	0	0	78	0
Volume Right (vph)	0	3	0	49	0	29	0	55
Hadj (s)	0.34	0.00	0.53	-0.30	0.03	-0.13	0.15	-0.08
Departure Headway (s)	7.4	7.0	7.6	6.7	6.7	6.5	6.2	6.0
Degree Utilization, x	0.27	0.11	0.18	0.19	0.18	0.22	0.60	0.54
Capacity (veh/h)	460	478	445	499	510	523	567	589
Control Delay (s)	11.9	9.7	11.0	10.1	9.9	10.2	17.0	14.6
Approach Delay (s)	11.3		10.6		10.1		15.9	
Approach LOS	B		B		B		C	

Intersection Summary				
Delay	13.4			
HCM Level of Service	B			
Intersection Capacity Utilization	39.8%	ICU Level of Service	A	
Analysis Period (min)	15			



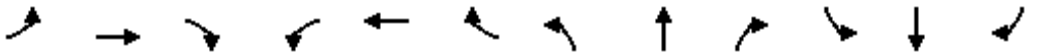
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	134	28	82	185	532	15	245	32	615	370	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1815			1835	1583	1770	1831		1770	1828	
Flt Permitted	0.95	1.00			0.84	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1815			1561	1583	1770	1831		1770	1828	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	65	140	29	85	193	554	16	255	33	641	385	55
RTOR Reduction (vph)	0	8	0	0	0	437	0	5	0	0	4	0
Lane Group Flow (vph)	65	161	0	0	278	117	16	283	0	641	436	0
Turn Type	Prot			Perm		Perm	Prot			Prot		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8		8						
Actuated Green, G (s)	4.0	28.3			20.3	20.3	2.8	21.7		32.7	51.6	
Effective Green, g (s)	4.0	28.3			20.3	20.3	2.8	21.7		32.7	51.6	
Actuated g/C Ratio	0.04	0.29			0.21	0.21	0.03	0.23		0.34	0.54	
Clearance Time (s)	4.0	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	74	534			329	334	52	413		602	981	
v/s Ratio Prot	c0.04	0.09					0.01	c0.15		c0.36	0.24	
v/s Ratio Perm					c0.18	0.07						
v/c Ratio	0.88	0.30			0.84	0.35	0.31	0.69		1.06	0.44	
Uniform Delay, d1	45.9	26.3			36.4	32.3	45.8	34.1		31.8	13.6	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	64.1	0.3			17.7	0.6	3.3	4.7		55.1	0.3	
Delay (s)	109.9	26.6			54.1	33.0	49.1	38.8		86.9	13.9	
Level of Service	F	C			D	C	D	D		F	B	
Approach Delay (s)		49.8			40.0			39.4			57.2	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	48.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	96.2	Sum of lost time (s)	17.5
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



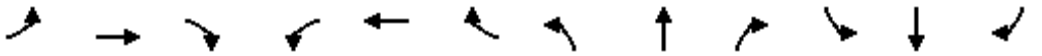
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	569	831	103	208	480	27	214	723	185	77	718	478
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3431		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3431		1770	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	587	857	106	214	495	28	221	745	191	79	740	493
RTOR Reduction (vph)	0	0	29	0	0	17	0	16	0	0	0	130
Lane Group Flow (vph)	587	857	77	214	495	11	221	920	0	79	740	363
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	46.0	47.4	47.4	22.1	23.5	23.5	17.0	41.0		8.0	32.0	32.0
Effective Green, g (s)	46.0	47.4	47.4	22.1	23.5	23.5	17.0	41.0		8.0	32.0	32.0
Actuated g/C Ratio	0.33	0.34	0.34	0.16	0.17	0.17	0.12	0.30		0.06	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	588	1211	542	282	600	269	217	1016		102	818	366
v/s Ratio Prot	c0.33	0.24		0.12	c0.14		c0.12	0.27		0.04	0.21	
v/s Ratio Perm			0.05			0.01						c0.23
v/c Ratio	1.00	0.71	0.14	0.76	0.82	0.04	1.02	0.91		0.77	0.90	0.99
Uniform Delay, d1	46.2	39.5	31.5	55.7	55.5	48.1	60.8	46.9		64.4	51.8	53.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	36.4	2.1	0.2	11.8	9.4	0.1	65.9	11.5		31.4	13.6	44.7
Delay (s)	82.7	41.6	31.7	67.4	65.0	48.2	126.7	58.4		95.7	65.4	97.9
Level of Service	F	D	C	E	E	D	F	E		F	E	F
Approach Delay (s)		56.5			65.0			71.4			79.4	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM Average Control Delay	67.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	138.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



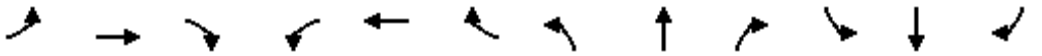
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	546	458	2077	549	741	803	1339	2539	688	705	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.88	0.94	1.00	1.00	0.94	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	4990	1863	1583	4990	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	181	607	509	2308	610	823	892	1488	2821	764	783	173
RTOR Reduction (vph)	0	0	333	0	0	231	0	0	2	0	0	121
Lane Group Flow (vph)	181	607	176	2308	610	592	892	1488	2819	764	783	52
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	9.0	22.0	22.0	39.0	52.0	52.0	17.0	38.0	77.0	21.0	42.0	42.0
Effective Green, g (s)	9.0	22.0	22.0	39.0	52.0	52.0	17.0	38.0	77.0	21.0	42.0	42.0
Actuated g/C Ratio	0.06	0.16	0.16	0.28	0.37	0.37	0.12	0.27	0.55	0.15	0.30	0.30
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	4.0
Lane Grp Cap (vph)	221	556	438	1390	692	588	606	1380	1533	515	1526	475
v/s Ratio Prot	0.05	0.17		0.46	0.33		0.18	0.29	c0.51	c0.22	0.15	
v/s Ratio Perm			0.06			c0.37			0.50			0.03
v/c Ratio	0.82	1.09	0.40	1.66	0.88	1.01	1.47	1.08	1.84	1.48	0.51	0.11
Uniform Delay, d1	64.7	59.0	53.1	50.5	41.1	44.0	61.5	51.0	31.5	59.5	40.5	35.5
Progression Factor	1.00	1.00	1.00	0.57	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	20.5	65.5	2.7	297.5	1.7	12.9	221.3	48.3	380.0	227.8	0.4	0.1
Delay (s)	85.2	124.5	55.8	326.3	36.2	49.9	282.8	99.3	411.5	287.3	40.9	35.6
Level of Service	F	F	E	F	D	D	F	F	F	F	D	D
Approach Delay (s)		92.1			218.2			300.1			149.8	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	230.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	136.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



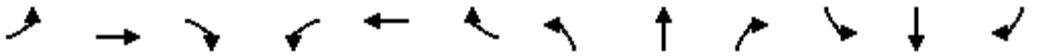
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	363	2850	494	174	2542	274	490	110	169	381	114	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4973		1770	6314		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4973		1770	6314		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	390	3065	531	187	2733	295	527	118	182	410	123	396
RTOR Reduction (vph)	0	15	0	0	12	0	0	0	89	0	0	179
Lane Group Flow (vph)	390	3581	0	187	3016	0	527	118	93	410	123	217
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	16.5	67.8		8.5	59.8		21.5	27.7	27.7	17.5	23.7	23.7
Effective Green, g (s)	16.5	67.8		8.5	59.8		21.5	27.7	27.7	17.5	23.7	23.7
Actuated g/C Ratio	0.12	0.48		0.06	0.43		0.15	0.20	0.20	0.12	0.17	0.17
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	3.5	3.5	2.0	3.5	3.5
Lane Grp Cap (vph)	209	2408		107	2697		272	369	313	221	315	268
v/s Ratio Prot	c0.22	c0.72		c0.11	0.48		c0.30	0.06		c0.23	0.07	
v/s Ratio Perm									0.06			c0.14
v/c Ratio	1.87	1.49		1.75	1.12		1.94	0.32	0.30	1.86	0.39	0.81
Uniform Delay, d1	61.8	36.1		65.8	40.1		59.2	48.1	47.9	61.2	51.7	56.0
Progression Factor	1.05	0.95		0.61	0.35		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	391.4	219.3		340.0	53.8		435.1	0.6	0.6	401.8	0.9	16.6
Delay (s)	456.1	253.8		380.0	67.9		494.4	48.7	48.5	463.0	52.7	72.6
Level of Service	F	F		F	E		F	D	D	F	D	E
Approach Delay (s)		273.6			86.0			332.7			242.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	208.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	121.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



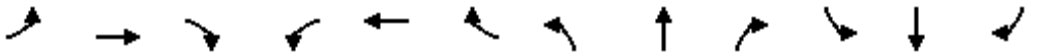
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	292	2469	637	245	2068	165	708	16	478	241	5	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4929		1770	5029		1770	1863	1583	1770	1590	
Flt Permitted	0.95	1.00		0.95	1.00		0.55	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1770	4929		1770	5029		1025	1863	1583	1390	1590	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	314	2655	685	263	2224	177	761	17	514	259	5	218
RTOR Reduction (vph)	0	33	0	0	6	0	0	0	118	0	124	0
Lane Group Flow (vph)	314	3307	0	263	2395	0	761	17	396	259	99	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	13.5	54.0		11.5	52.0		60.5	60.5	60.5	60.5	60.5	
Effective Green, g (s)	13.5	54.0		11.5	52.0		60.5	60.5	60.5	60.5	60.5	
Actuated g/C Ratio	0.10	0.39		0.08	0.37		0.43	0.43	0.43	0.43	0.43	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	171	1901		145	1868		443	805	684	601	687	
v/s Ratio Prot	0.18	c0.67		c0.15	0.48			0.01			0.06	
v/s Ratio Perm							c0.74		0.25	0.19		
v/c Ratio	1.84	1.74		1.81	1.28		1.72	0.02	0.58	0.43	0.14	
Uniform Delay, d1	63.2	43.0		64.2	44.0		39.8	22.8	30.1	27.7	24.1	
Progression Factor	0.95	0.93		1.37	1.08		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	378.4	333.1		368.7	127.3		332.5	0.0	0.7	0.2	0.0	
Delay (s)	438.4	373.3		456.6	174.7		372.2	22.8	30.9	27.9	24.1	
Level of Service	F	F		F	F		F	C	C	C	C	
Approach Delay (s)		378.9			202.5			231.8			26.2	
Approach LOS		F			F			F			C	

Intersection Summary			
HCM Average Control Delay	276.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	143.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



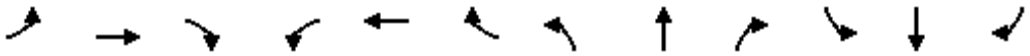
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	363	1887	963	867	1456	234	845	434	1040	321	371	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.91		1.00	1.00	0.88	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	4980		1770	1863	2787	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	4980		1770	1863	2787	3433	1863	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	370	1926	983	885	1486	239	862	443	1061	328	379	232
RTOR Reduction (vph)	0	0	274	0	15	0	0	0	268	0	0	154
Lane Group Flow (vph)	370	1926	709	885	1710	0	862	443	793	328	379	78
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	15.1	47.5	47.5	17.5	49.9		29.5	41.7	41.7	14.8	27.0	27.0
Effective Green, g (s)	15.1	47.5	47.5	17.5	49.9		29.5	41.7	41.7	14.8	27.0	27.0
Actuated g/C Ratio	0.11	0.34	0.34	0.12	0.36		0.21	0.30	0.30	0.11	0.19	0.19
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0		2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	370	1201	537	429	1775		373	555	830	363	359	305
v/s Ratio Prot	0.11	c0.54		c0.26	0.34		c0.49	0.24		0.10	c0.20	
v/s Ratio Perm			0.45						0.28			0.05
v/c Ratio	1.00	1.60	1.32	2.06	0.96		2.31	0.80	0.96	0.90	1.06	0.26
Uniform Delay, d1	62.5	46.2	46.2	61.2	44.1		55.2	45.3	48.2	61.9	56.5	48.0
Progression Factor	0.69	0.62	0.38	0.73	0.67		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.0	272.0	145.2	483.7	10.8		598.3	7.9	21.0	24.4	62.9	0.4
Delay (s)	56.9	300.7	162.6	528.7	40.2		653.6	53.1	69.3	86.3	119.4	48.4
Level of Service	E	F	F	F	D		F	D	E	F	F	D
Approach Delay (s)		231.8			205.9			279.1			90.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	222.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	158.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	751	1901	595	251	1934	463	66	28	8	527	85	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	5085	1583	1770	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	791	2001	626	264	2036	487	69	29	8	555	89	568
RTOR Reduction (vph)	0	0	110	0	0	205	0	0	8	0	0	496
Lane Group Flow (vph)	791	2001	516	264	2036	282	69	29	0	555	89	72
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		custom
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			7
Actuated Green, G (s)	20.5	83.0	83.0	14.5	77.0	77.0	8.7	5.8	5.8	17.7	14.8	17.7
Effective Green, g (s)	20.5	83.0	83.0	14.5	77.0	77.0	8.7	5.8	5.8	17.7	14.8	17.7
Actuated g/C Ratio	0.15	0.59	0.59	0.10	0.55	0.55	0.06	0.04	0.04	0.13	0.11	0.13
Clearance Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	5.0	4.5	5.0	4.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
Lane Grp Cap (vph)	503	2098	938	183	2797	871	110	147	66	434	197	200
v/s Ratio Prot	c0.23	c0.57		c0.15	0.40		0.04	0.01		c0.16	c0.05	
v/s Ratio Perm			0.33			0.18			0.00			0.05
v/c Ratio	1.57	0.95	0.55	1.44	0.73	0.32	0.63	0.20	0.01	1.28	0.45	0.36
Uniform Delay, d1	59.8	26.7	17.2	62.8	23.6	17.2	64.1	64.9	64.3	61.1	58.8	56.0
Progression Factor	0.63	0.31	0.18	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	258.5	1.5	0.2	227.3	1.7	1.0	7.8	0.9	0.0	142.2	0.6	0.4
Delay (s)	296.3	9.6	3.4	290.0	25.3	18.2	71.9	65.8	64.4	203.4	59.4	56.4
Level of Service	F	A	A	F	C	B	E	E	E	F	E	E
Approach Delay (s)		74.8			49.2			69.6			123.9	
Approach LOS		E			D			E			F	

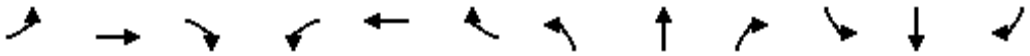
Intersection Summary			
HCM Average Control Delay	73.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	128	110	4	21	117	88	4	510	84	97	280	133
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	152	131	5	25	139	105	5	607	100	115	333	158

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	218	70	25	244	308	404	282	325
Volume Left (vph)	152	0	25	0	5	0	115	0
Volume Right (vph)	0	5	0	105	0	100	0	158
Hadj (s)	0.38	-0.01	0.53	-0.27	0.04	-0.14	0.24	-0.31
Departure Headway (s)	8.9	8.5	9.1	8.3	7.8	7.6	8.1	7.5
Degree Utilization, x	0.54	0.17	0.06	0.56	0.67	0.85	0.63	0.68
Capacity (veh/h)	383	401	372	409	451	468	430	463
Control Delay (s)	20.6	12.0	11.5	20.3	23.7	39.2	22.9	24.0
Approach Delay (s)	18.5		19.5		32.5		23.5	
Approach LOS	C		C		D		C	

Intersection Summary				
Delay	25.6			
HCM Level of Service	D			
Intersection Capacity Utilization	63.7%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	280	24	104	220	691	22	847	150	818	745	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99			1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1841			1833	1583	1770	1821		1770	1816	
Flt Permitted	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1841			1833	1583	1770	1821		1770	1816	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	202	308	26	114	242	759	24	931	165	899	819	166
RTOR Reduction (vph)	0	2	0	0	0	323	0	4	0	0	5	0
Lane Group Flow (vph)	202	332	0	0	356	436	24	1092	0	899	980	0
Turn Type	Prot			Split		Perm	Prot			Prot		
Protected Phases	7	4!		8!	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	10.5	41.5			26.5	26.5	2.5	58.3		38.5	94.3	
Effective Green, g (s)	10.5	41.5			26.5	26.5	2.5	58.3		38.5	94.3	
Actuated g/C Ratio	0.07	0.27			0.17	0.17	0.02	0.38		0.25	0.62	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	122	503			320	276	29	699		449	1128	
v/s Ratio Prot	c0.11	0.18			0.19		0.01	c0.60		c0.51	0.54	
v/s Ratio Perm						c0.28						
v/c Ratio	1.66	0.66			1.11	1.58	0.83	1.56		2.00	0.87	
Uniform Delay, d1	70.7	48.9			62.7	62.7	74.4	46.8		56.7	23.7	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	328.5	3.1			84.1	278.0	95.2	259.8		458.9	7.3	
Delay (s)	399.2	52.0			146.8	340.6	169.7	306.5		515.5	31.0	
Level of Service	F	D			F	F	F	F		F	C	
Approach Delay (s)		182.9			278.7			303.6			262.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	267.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	151.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	147.5%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group